

**Young People and Cannabis Use: A social psychological mixed
method analysis.**

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ABSTRACT

Research in the UK has used large-scale surveys to evaluate drug use among young people. However, the state of current descriptive and explanatory research does not yield a comprehensive understanding of the behaviour (Lloyd & McKeganey, 2010). This thesis addresses how young people decide whether or not to use cannabis, using an expanded version of the Theory of Planned Behaviour (TPB; Ajzen, 1985).

A mixed-method approach was adopted incorporating three research studies. **Study 1** was a TPB-based longitudinal questionnaire examining sixth form college students' (n=199, 16-18 years) decision-making processes regarding whether or not to use cannabis. Perceived parenting styles, moral norms and impulsivity were additional variables of interest. A panel element investigated parents' perspectives and measured parents' self-reported parenting styles. **Study 2** analysed university students' views on cannabis through the use of focus groups (n=20, 18-22). **Study 3** involved another extended TPB-based longitudinal study examining university students' (n=204, 18-22) decision making process regarding whether or not to use cannabis, involving a range of factors built from Study 1 & Study 2.

Study 1 showed that 'impulsivity' and 'moral norms' were important factors to be considered within the TPB when examining 16-18 year olds' decisions about cannabis use. The panel element demonstrated a lack of association between adolescent and parents' reports on parenting styles. Study 2 demonstrated university students' strong 'willingness' to use cannabis as well as a tendency to conceive cannabis use as part of their 'self-identity'. Finally, 'impulsivity', 'habit', and 'past behaviour' were among the few variables found to explain cannabis use decision-making among university students in Study 3.

Implications are that young people's reasons for using or not using cannabis are related to their individual behavioural motivations and self-regulation. Health-education interventions are advised to consider the importance of personality traits, such as impulsivity, in influencing changes of this behaviour.

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I dedicate this thesis to my PhD colleagues. I hope that my fulfilment of this project demonstrates that with a 'cool, calm and collected' mind-set one can reach their destination nonetheless.

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I. INTRODUCTION

One of the most serious threats to health in adulthood is the continuation of young people's risky behaviours from adolescence (Igra & Irwin, 1996). The United Nations Office on Drugs and Crime (UNODC) (2012) reports that cannabis use is becoming a normative risk-taking behaviour among young people worldwide. The British Crime Survey (BCS; Home Office, 2012) indicated that in the UK 15.7% of young adults had used cannabis in the preceding year, representing around 1 million people. The most recent report on substance misuse by young people in the UK claimed that the number of cases seen by specialist services for help with cannabis misuse had risen from 12,784 in 2010-11 to 13,200 in 2012 (National Treatment Agency for Substance Misuse, 2012). Although cannabis use has decreased in recent years (UNODC, 2012), it is imperative to understand why young people in particular choose to use this drug.

Research examining cannabis use focuses largely on descriptive information provided by young people. Data on when and with whom cannabis is consumed is extensively reported (Amos, Wiltshire, Bostock, Haw, & McNeill, 2004; Duffy, Schaefer, Coomber, O'Connell, & Turnbull, 2008) in contrast to exploring the psychological processes involved.

Drug use has been associated with contextual factors (e.g. socio-economic status, peer and family influence and life transitions) as well as individual and interpersonal factors (e.g. self-esteem, personality and attitudes, biological and genetic impact, mental health, ethnicity and gender). It has been difficult to determine whether these factors increase the likelihood of drug use or are merely associated with it. Several theories have been developed, attempting to form coherent pictures of adolescent substance use. These tend to be categorised as follows: theories that focus on the psychology of the individual (e.g. Availability-Proneness theory; Smart, 1977); theories that focus on social influence (e.g. Peer Selection model; Simons-Morton, 2007); theories that focus on society (e.g. Social Influence Theory; Becker, 1974); theories that focus on biological aspects (e.g. Neuro-Adaptation Theory; Koob & Lemoal, 1997) and theories that use an integrated approach, focusing on all these factors simultaneously (e.g. Domain Model; Huba, Wingard & Bentler, 1980). Although these theories provide an overall understanding of adolescent substance use, they still require re-formulation due to certain weaknesses such as failing to specify the mechanisms by which the psychological, social and biological factors interact to affect substance use.

Given the wide array of factors associated with cannabis use it is important that behavioural models incorporate cognitive, attitudinal and socio-structural factors that may be relevant in explaining the behaviour. The Theory of Planned Behaviour (TPB; Ajzen, 1991) incorporates distinct

factors, and the interrelationships resulting in certain behaviour, all within one framework. TPB allows for the prediction of specific behaviours in a given situation by plotting a decision-making pathway starting from a set of cognitive underlying beliefs which separately determine *attitudes*, *subjective norms* and *perceived behavioural control (PBC)*. The TPB variables account for an impressive amount of variance in explaining intentions/behaviour, but still leaves a large proportion unexplained (Sheeran, 2002). Thus, to increase the predictive validity of the TPB, certain variables considered to be important for this research project (e.g. moral norms, impulsivity, parenting styles, self-identity, past behaviour, etc.) will be incorporated.

The programme of work for this research project involves a mixed – method approach using three studies with young people ranging from 16-24 years old. Study 1 is a quantitative investigation of a series of TPB and additional variables in terms of explaining cannabis use. Study 2 explores the choice of additional variables in a qualitative manner. The findings from both studies inform the framework of the final TPB quantitative Study 3.

II. THESIS AIMS

The purpose of this thesis is to examine the decision-making processes of young people when they choose whether or not to use cannabis. The aim is to contribute to the understanding of socio-psychological and individual variables that help to explain and predict this behaviour, serving to inform health-intervention programmes directed at young people's cannabis use.

III. STUDY 1

Numerous factors have been associated with substance use amongst young people. Examples include, socio-economic background (McGee, Williams, Poulton, & Moffitt, 2000), Attention Deficit Hyperactivity Disorder (ADHD) and conduct disorder (Disney, Elkins, McGue, & Iacono, 1999a), as well as family and peer-related factors (Steinberg, Fletcher, & Darling, 1994). These risk factors often co-occur to produce direct or indirect effects on drug use. A range of environmental, social and individual factors have the potential to explain and predict cannabis use among young people (aged 16-18). Study 1 examines these novel variables within the Theory of Planned Behaviour (TPB) framework to investigate their relative predictive contribution. In order to obtain parents' perspectives on young people's cannabis use, a panel element was implemented as part of this Study 1.

The aims of Study 1 were:

- (1) To evaluate the extent to which TPB can predict and explain self-reported cannabis use among young people (aged 16-18).
- (2) To examine how far additional non-TPB variables (moral norms, impulsivity, parenting styles, strengths & difficulties, and delinquency) enhance the predictive utility of the basic TPB to predict self-reported cannabis use intentions and behaviour among young people (aged 16-18).
- (3) To assess parents' opinions on young people's cannabis use.

IV. STUDY 2

Large scale surveys have focused on describing and evaluating the extent of drug use among young people, such as reporting on the routine aspects of its use (e.g. how it is used, how often, what effects it has) (Hammersley, Marsland, & Reid, 2003; Home Office, 2004). Although some work has attempted to use small scale samples for a more detailed investigation (Amos, et al., 2004; Duffy, et al., 2008) there has been less focus on obtaining an in-depth understanding of why cannabis is used by some young people and why others refrain from use. A Home Office investigation of problem drug use among young people (Beckett et al., 2004) suggested that their findings would have been enriched by use of open-ended questioning of the participants about factors such as reasons for drug use, patterns of use, whether it was influenced by friends, how they reflected upon parental discipline and other 'everyday' elements.

A qualitative approach can help to capture the meanings young people (e.g. university students) give to their cannabis use in a more detailed manner. It can also provide them with the opportunity to disclose their own reasons for using cannabis or choosing not to use it. The TPB model was used to 'focus' and 'frame' the questions set during the focus groups which helped to place the TPB constructs in the context of young people's own experience. It also allowed an insight into young people's psychological processes regarding the behaviour.

The aims of Study 2 were:

- (1) To explore the role of the TPB constructs (attitudes, perceived norms, perceived behavioural control, intention) in university students' discussions about using or not using cannabis.

(2) To examine university students beliefs and perceptions regarding their own use and non-use of cannabis.

(3) To explore the roles of impulsivity and parenting styles (which were found to significantly contribute to explaining cannabis use in Study 1) in university students' decisions to use cannabis.

(4) To identify which other factors university students refer to in relation to cannabis use.

V. STUDY 3

Negative effects of cannabis use particularly relevant to the university student population include low academic achievement and motivation, lower attendance rates, lower levels of completion and less educational satisfaction (Hall, Degenhardt, & Lynsky, 2003; Lynskey & Hall, 2000). Hammersley and Leon (2006) demonstrated that although university students are aware of the cognitive disturbances such as depression and/or anxiety, users reported that they generally enjoyed cannabis use and presented it as a normalised behaviour during the university experience.

The aim of Study 3 was to enhance the understanding of which factors serve to predict and explain university students' cannabis use. This research examined university students' cannabis use using an extended version of the Theory of Planned Behaviour (TPB). Study 1 investigated young people's (aged 16-18) decision-making regarding cannabis use, with an extended version of the TPB. Similarly, Study 3 applies an extended version of the TPB to decision-making regarding cannabis use but with an older age group, namely university students (aged 18-24). The findings from these two studies could reflect differences between the two age groups in terms of their decisions to use cannabis.

The basis of Study 3 was to incorporate several variables (impulsivity, parenting styles, willingness, self-identity, habit, need satisfaction, past behaviour and perceived risk) that have been found to be important in either Studies 1 or 2.

The aims of Study 3 were:

- (1) To evaluate the extent to which TPB can predict and explain self-reported cannabis use among university students (aged 18-24).
- (2) To examine how far the additional variables (impulsivity, parenting styles, behavioural willingness, self-identity, habit, psychological need satisfaction and past behaviour) can

enhance its ability to predict self-reported cannabis use intentions and behaviour among university students (aged 18-24).

VI. THESIS OUTLINE

The literature review begins with **chapter one** which provides an overview of cannabis by clarifying the terminology surrounding cannabis (e.g. hash, skunk, marijuana, etc.) and then describing the drug's chemical composition and pharmacological effects. This chapter then discusses how cannabis is used with reference to experimental and recreational use, as well as problematic vs. functional use. The next part of the chapter provides a critical discussion that goes beyond the dichotomy of 'cannabis user' vs. 'non-user'. The current legal status as well as prevalence of cannabis both internationally and in the UK brings this chapter to an end.

Chapter two discusses factors associated with cannabis use through 'contextual' (e.g. socio-economic status, peer influence, family influence and adolescent life transitions) and 'individual and interpersonal' (e.g. self-esteem, personality, physiology, attitudes and values, biological and genetic impact, ethnicity and gender) categories. The consideration of both risk and protective factors and how they influence cannabis use simultaneously is evaluated through the social stress model. The chapter ends with a discussion of how the social stress model considers risk and protective factors in substance use interventions.

Chapter three provides an overview of the several theories that incorporate cognitive, social and personal variables to explain substance use among young people. These theories enhance our understanding of substance use as a behaviour that occurs as a result of many factors. This chapter ends with an emphasis on behavioural-based theories that integrate a range of individual, social and environmental factors into a single model, such as the Theory of Planned Behaviour (Ajzen, 1991).

Chapter four provides a critical evaluation and comparison of well-known health-behaviour models (e.g. Protection Motivation theory) prior to explaining the Theory of Planned Behaviour (TPB) as a theoretical and practical framework in the health-behaviour literature. The TPB is a health-behavioural model which incorporates cognitive, social and personal factors into explaining health-related behaviours (Ajzen, 1991). Within this chapter the TPB components (attitude, perceived norms and perceived behavioural control) are analysed in detail as to their definition, their

measurement, conceptual distinctions with other variables and empirical support. The TPB is then evaluated by referring to criticisms of TPB, the scope of additional variables within the TPB framework, and its application to substance use. This chapter concludes on the note that the TPB will be used in both a quantitative and qualitative manner for this research project.

Chapter five presents the first of the three studies and examines cannabis use decision-making among young people (16-18 years) with an expanded version of the Theory of Planned Behaviour (TPB) framework. The use of additional variables such as moral norms, impulsivity, perceived parenting styles, strengths and difficulties and delinquency were incorporated within the TPB framework. This was done in order to assess their ability to predict cannabis use intentions and/or behaviour, independently of the basic TPB variables (attitudes, perceived norms and PBC). Findings indicated that none of the additional variables predicted intentions to use cannabis, however moral norms and impulsivity: 'lack of premeditation' predicted cannabis use behaviour. The panel element investigating parents' perspectives regarding cannabis use demonstrated parents' understanding of young people's socio-experimental culture. The comparison between young people's perceived parenting styles and parents' actual parenting styles showed miscommunication between the two parties on this variable.

A qualitative approach to understanding young people's cannabis use was taken in Study 2, which is presented in **chapter six**. Thematic analysis identified themes which complemented the TPB constructs (e.g. 'Individual disposition of cannabis use' to complement Attitudes; 'Peers vs. Society's influence' to complement Perceived Norms; and 'Self-regulatory approach' to complement PBC). Among these themes, it became clear that variables such as habit, self-identity, behavioural willingness and impulsivity were important aspects to examine further in Study 3, in relation to university students' cannabis use.

Chapter seven presents Study 3 which examined another expanded version of the TPB. However, while participants in Study 1 were sixth form college students, Study 3's participants were university students. Additional variables (impulsivity, perceived parenting styles, behavioural willingness, self-identity, habit, psychological need satisfaction and past behaviour) found to be important in explaining cannabis use both in Study 1 and Study 2 were incorporated in the TPB. This was done in order to assess how far they predicted cannabis use independently of TPB basic variables.

Among the additional variables, behavioural willingness, self-identity, habit, psychological need satisfaction: 'autonomy' and past behaviour independently predicted intentions to use cannabis.

Among the additional variables, impulsivity: 'lack of perseverance', parenting style: 'warmth', parenting style: 'structure', habit and past behaviour were found to independently predict self-reported behaviour.

Chapter eight provides a general discussion of the studies' findings and considers the implications of the findings for theory and policy.

Chapter nine provides concluding remarks about the thesis and suggestions for future research in the area of young people and cannabis use.

1 CHAPTER 1: CANNABIS: WHAT IT IS, WHAT IT DOES AND WHAT THE LAW SAYS.

1.1 CHAPTER OVERVIEW

Cannabis is currently the most commonly used illicit drug in Europe (UNODC, 2012). In the UK, the percentage of young people (15 years old) having used cannabis in their lifetime is 23% of girls and 26% of boys (World Health Organization, 2008). This chapter explores the various patterns of cannabis use (experimental, recreational, problematic, functional) as outlined by Hunt (2006). It provides a synopsis of evidence on the positive (e.g. coping with difficult situations) and negative impacts (e.g. mental health, weaker educational outcomes) of this behaviour. The current legal and policy perspectives regarding cannabis are discussed and a critical evaluation of the unstable classification of cannabis over the past years in the UK is provided. International and UK surveys are used as evidence of cannabis use prevalence among the younger population. These statistical findings along with others related to cannabis use among young people are informative. However, it is argued that current understanding of the behaviour's antecedents remains limited. This chapter concludes by identifying the methodological or sampling limitations of international and UK based surveys. For instance, the point is raised that vulnerable young people (e.g. homeless, expelled from school, looked after) (Wilson, Sharp, & Patterson, 2006) are disregarded from these surveys.

1.2 WHAT IS CANNABIS?

1.2.1 TERMINOLOGY

Cannabis is a drug made from the *Cannabis sativa* (also known as Hemp) or *Cannabis indica* plant (United Nations Office on Drugs and Crime, 2012). 'Hashish' or 'Hash' is the secretion from the flowering tops of the plant which is later pressed into brown or black blocks, while 'marijuana', 'grass' or 'ganga' is the dried flower-bearing stems and top parts of the plant (United Nations Office on Drugs and Crime, 2012).

1.2.2 CHEMICAL DESCRIPTION

Cannabis grows in many parts of the world, having initially originated in the mountainous regions of India (Gossop, 2007). Among the 400 chemicals found in cannabis, 60 are cannabinoids including cannabidiol, cannabinolic acid, various tetrahydrocannabinol isomers and delta-9-tetrahydrocannabinol (THC) (Jenkins, 2006). THC is considered to be the main psychoactive cannabinoid largely responsible for psychological and physical effects (Ashton, 2001).

1.2.3 PHARMACOLOGICAL EFFECTS OF CANNABIS

The pharmacokinetics of cannabinoids are reviewed by Agurell et al. (1996) who explains that around 50 % of THC in a cigarette with herbal cannabis is inhaled and rapidly absorbed by the lungs, entering the bloodstream and reaching the brain within minutes. Once absorbed, THC and other cannabinoids are widely allocated to other tissues at rates dependent on the blood flow, and then are eventually released back to other body compartments including the brain (Ashton, 2001). Within the brain, THC and other cannabinoids are separately distributed such that high concentrations reach the neo-cortical, limbic, sensory and motor regions.

THC acts on at least two types of cannabinoid receptors (CB1 and CB2) (Felder & Glass, 1998). CB1 receptors are predominantly found in regions of the brain which are responsible for cognition, memory, reward, pain perception and motor coordination (Murray, Morrison, Henquet, & Di Forti, 2007). In contrast to CB1 receptors, CB2 receptors are not found in the central nervous system but are distributed in peripheral tissues and predominantly found in the spleen and blood-producing cells (Pertwee, 1997, 1999). The existence of CB2 receptors creates the molecular basis required for the immunosuppressive actions of cannabis (Ameri, 1999) (for detailed review of possible mechanisms of CB2 receptors see Pertwee, 1997). The consequences of these pharmacological effects are evident through impairments occurring in the central nervous system where there are noted deficits in verbal learning, memory and attention (Solowij et al., 2002). However these

effects are mainly reported by heavy cannabis users and have been largely dependent on the duration and frequency of use and cumulative dose of THC.

1.2.4 POTENCY OF CANNABIS

In the UK, the potency of cannabis has been the subject of widespread media attention. Reports have claimed that 'skunk' has become 30 times stronger in recent years (Collins, Connolly, Crowley, & Morgan, 2004). New scientific evidence contrasted this statement by claiming that 'skunk' strength had merely doubled (Henderson, 2005). Home-grown cannabis is generally thought to be more readily available and stronger than imported varieties (King, Carpentier, & Griffiths, 2005). The non-pollinated female cannabis plant known as sinsemilla has recorded increased potency in the UK. A Home Office report found that home-grown sinsemilla had a mean THC concentration of 16.2 %, compared to 8.4 % of an imported sample (Hardwick & King, 2008).

Using cannabis in a water pipe as opposed to smoking it with tobacco, is considered to be the most efficient way to achieve the desired psychoactive effects (Iversen, 2008). This method causes the amount of THC delivered to the lungs to vary between 20% and 70%, while 5% and 24 % reaches the brain. A feeling of 'high' occurs after using 2-3 mg of THC but this also depends on how regular the use of cannabis is; regular users with higher tolerance levels can smoke up to 3-5 rolled cigarettes with cannabis to feel 'high' (Iversen, 2008).

1.3 THE LEGAL STATUS AND POLICY ISSUES

1.3.1 CANNABIS TODAY- THE LEGAL PERSPECTIVE

Cannabis first became illegal in the UK on 28th September 1928. This was a consequence of the introduction of the 1925 Dangerous Drugs Act prior to which there had been no parliamentary debates for or against prohibition (Blanchard, 2005). Cannabis became part of mass consciousness around the 1960s when many musicians, artists and politicians discovered it. One of the most influential newspapers, The Sunday Times, published a full-page advertisement that called for a review of the drug's legal status in 1967 (Blanchard, 2005). Since then opinions have diverged with some arguing that cannabis poses damaging risks to physical and mental health while others believe that any effects are minor by comparison with those of alcohol or tobacco (Wodak, Reinerman, Cohen, & Drummond, 2002). In a survey conducted in 1999 by MORI the majority of 1600 adults were in favour of stronger drug laws, although half of those questioned disagreed with the current classification of cannabis as a Class B illegal drug and preferred that it became Class C

(Pearson & Shiner, 2002). In reference to the cannabis classification, Nutt (2009) argued that the issues relating to cannabis pose a challenge to whether the Misuse of Drugs Act (1971) is working as originally intended. He argues that drug classification has become complex and increasingly politicised.

Today, it is estimated that 31.6% of young European adults (15-34 years) have tried cannabis while 12.6% reported to have used it in the last year and 6.9% in the last month (EMCDDA, 2010).

1.3.2 THE POLICY CONTEXT

The Misuse of Drugs Act (Home Office, 1971) remains the main legislation regulating the possession and supply of drugs in the UK. While the government has been committed to addressing the underlying issues associated with problematic drug use, its tough approach to ‘eradicate’ drugs has been relatively criticized. A reformulation of policy was therefore conducted on the basis of reflecting the changing social and cultural context of the 21st century (Measham, 2004). In 2000, a new 10-year drug strategy known as ‘Tackling Drugs to Build a Better Britain’ was launched in an attempt to deal with the problem.

On the basis of a substantial review, ‘The Police Foundation Runciman Inquiry into the Misuse of Drugs Act’, recommended that cannabis move from a Class B to a Class C drug. Having also obtained advice from the group charged with the task of advising the government on such issues, the Advisory Council on the Misuse of Drugs (ACMD) supported the reclassification of cannabis. Cannabis was not found to lead to problems in respect of intoxication or drug-driven crime, and instead occupied considerable police and court time accounting for 71% of all drug seizures (Buchanan, 2010).

In 2002 the government confirmed that cannabis would be reclassified to a Class C drug, implying that the maximum penalty for possession went down from five to two years and the maximum period for trafficking/supply from 14 to 5 years. In 2007 however cannabis was re-classified. After the ACMD once again recommended that it remained as a Class C drug, this was largely ignored and cannabis was reclassified as a Class B drug in January 2009 (see Table 1.1).

To this day, how and whether cannabis policing will change again remains an open question. While the Home Secretary stated the need for a more consistent system with regards to cannabis, the debate for or against reclassification is ongoing. Lloyd (2008) debates as to whether “more severe penalties” and “re-imposition of criminal penalties” (Degenhardt, Hall, Roxburgh, & Mattick, 2007, p.1541) are representative consequences of moving cannabis from Class C to Class B.

TABLE 1:1 CLASSIFICATION HIERARCHY OF DRUGS (HOME OFFICE, 1971)

Class	Type of Drug	Possession	Dealing
Class A	Ecstasy, LSD, heroin, cocaine, crack cocaine, magic mushrooms	Up to seven years in prison or an unlimited fine or both	Up to life in prison or an unlimited fine or both
Class B	Amphetamines, cannabis, barbiturates, pholcodine	Up to five years in prison or an unlimited fine or both. A young person will be arrested and given a reprimand, final warning or charge depending on the seriousness of the offence.	Up to 14 years in prison or an unlimited fine or both
Class C	Anabolic steroids, benzodiazepines, ketamine, minor tranquilisers (without doctor's prescription)	Up to two years in prison or an unlimited fine or both	Up to 14 years in prison or an unlimited fine or both

Furthermore, it has been suggested that these policies have a limited effect on those that they target as young people's cannabis use remains an issue (Reuter & Stevens, 2007). The House of Commons Committee of Public Accounts (2010) also stated that while the focus and energy of resources are upon illicit drugs, alcohol problems are being largely discounted. The Office for National Statistics reported that in 1996 alcohol-related deaths stood at 6.7% but this increased dramatically to 13.6% in 2008 (Office for National Statistics, 2010).

1.4 HOW IS CANNABIS USED?

Young people's use of illicit substances is not the same for all. In a book examining international perspectives on drugs among young people, Hunt (2006) identifies several patterns of use: trying drugs out of curiosity; as part of their lifestyle; and using drugs in a way that will substantially dominate their focus and activities within life. Distinguishing between patterns of cannabis use among young people is imperative as it allows for clarified understanding of what constitutes 'use'.

1.4.1 EXPERIMENTAL AND RECREATIONAL USE

It has been asserted that for most young individuals experimentation with drugs is merely an attempt to be part of the drug culture even if only for a little while, without further intention of

long-term habitual use (Hunt, 2006). Recreational use on the other hand refers to a more instrumental, routine-based drug taking. Data from a sample of 13 European countries, accounting for 77% of the adult population of the European Union, showed that of the estimated 12.5 million Europeans who used cannabis in the past month, around 40% consumed the drug on 1-3 days a month, around 30% on 4-19 days a month and around 25 % on 20 days or more (EMCDDA, 2010). This provides evidence to estimate that around 4 million European adults are using cannabis on a daily basis or almost daily, with most of the population ranging between 15 to 34 years old.

A European School Survey Project on Alcohol and Drugs (ESPAD) provides evidence for young people's cannabis use across ten European countries (EMCDDA, 2010). It showed that 5-12% of male students had used cannabis on 40 or more occasions, almost double the amount used among female students. In most of these countries participants reported that around 9% of respondents had initiated cannabis use at 13 years old or younger (EMCDDA, 2010). This group is of concern as early onset of use has been associated with the development of intensive and concerning drug consumption levels in later life (Brook, Balka, & Whiteman, 1999).

1.4.2 PROBLEMATIC USE VS. FUNCTIONAL USE

There are two main sources of clinical definition that are widely used with regards to problematic illicit drug use (including cannabis). The International Classification of Diseases and Health Problems (World Health Organization, 1992) refers to a "dependence syndrome", while the American Psychiatric Association refer to this as "substance use and dependence" as defined in their Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 1994).

Physical dependence is distinguished from psychological dependence. The former creates a higher drug-intake threshold due to persistence of THC in the brain cells which enhances withdrawal symptoms. The latter produces a strong desire or craving to be in the 'drugged state' or to be 'high' rather than to be sober (van der Pol et al., 2011). In his literature review, Hunt (2006) explains that young people who regularly use cannabis find the terms "addict", "drug misuse" or "drug abuse" very alienating. He suggests that drug intervention programmes aimed at young people take this into consideration.

While the severity and consequences of cannabis dependence may seem less serious than those commonly associated with other illicit psychoactive substances (e.g. heroin or cocaine) problems develop when mental and physical health is influenced. This has an effect on social and personal relationships, academic performance, work-related issues and legal problems associated with the criminalised status of cannabis use, or any other illicit drug use (Gossop, 2007).

Although functional use is not a common typology of cannabis use, there is good reason for including this term as something that is not necessarily problematic, and is distinguished from recreational use (Hunt, 2006). Functional use involves using cannabis to cope with everyday performance and to deal with difficult situations. Young people generally adopt this pattern of use if they undergo harsh economic situations, stress, depression or physical/sexual abuse (Ball & Howard, 1995). Young people's risk-taking and experimentation with alternative lifestyles may be functional for the normal developmental tasks of their adolescent years and cannabis use could represent a manifestation of this (McCusker, Roberts, Douthwaite, & Williams, 1995)

1.4.3 BEYOND THE 'USER VS. NON-USER' DICHOTOMY

One of the limitations noted among studies examining illicit substance use has been the method of assigning participants to user and non-user groups (Orford, 1985). Rather, it may be important to distinguish between stages of progression to more frequent and problematic drug use among young people and predictive variables therein (Kandel, Yamaguchi, & Chen, 1992). Research has sought to identify why certain individuals progress to using other substances. Rigter and van Laar (2002) explain that social disadvantage and low levels of parental attachment are associated with early cannabis use and that these factors themselves could be influential in progression to other drugs. We should however note that these indications may be part of the story but do not complete the full picture.

McCurkey, Roberts, Douthwaite and Williams (1995) moved beyond this distinction towards examining sub-groups among the 'active' and 'non-active' samples. The primary basis for this is that a one-off or experimental user of an illegal substance may be very different from the young person who uses the substance on a regular basis. Four groups were defined. Among the non-users, the 'vulnerable' group referred to individuals who may have not yet used illicit drugs but have the intentions to do so, or are influenced by both risk and protective factors. A contrasting non-user 'resistant' group was identified within which 'protective' influences were the only factors at play. Among the users the 'experimental' group was defined as those who use substances on one-off occasions while the 'repeated' group were considered those potentially at risk for higher problematic drug use. The sub-group differences provide an indication as to the risk and protective influences within each group, and demonstrate which factors were associated with more frequent usage once illicit drug-taking had been initiated. For instance, the 'vulnerable' non-user group were less satisfied with their lives at home and school and had greater levels of deviance in comparison to the 'resistant' non-user group. Although differences between the 'experimental' and 'repeated'

user group were more difficult to identify some distinct factors were noted, such that the 'repeated' user group had proportionately more friends who used cannabis in comparison to the 'experimental' user group. Acknowledging these sub-group differences allows for an understanding of the extensive array of factors associated with cannabis use that would otherwise not be taken into account under the user vs. non user dichotomy (McCusker et al., 1999).

1.5 YOUNG PEOPLE'S PERSPECTIVES: NEGATIVE AND POSITIVE FUNCTIONS OF CANNABIS

The effects of cannabis use depend on the dose received, the mode of administration, any previous experience with this drug and aspects of the social setting and surrounding (such as the user's attitude and mood) (Hall & Degenhardt, 2009). The generic positive and negative functions of cannabis use are examined below using both studies and qualitative accounts taken from independent drug monitoring reports.

1.5.1 POSITIVE EFFECTS OF CANNABIS USE

Various studies portray cannabis use as having a range of positive functions. Williams and Parker (2001) used a longitudinal study to explore whether a sample of young English adolescents who used drugs in their teenage years subsequently reduced their use. Although it was found that participants were less involved in drugs, cannabis generally remained in use due to its positive functions like stress reduction. An important finding was that cannabis was considered to be the 'ideal' drug to relax, which acted as a motivating factor to using the drug. Interestingly, the authors urged a re-evaluation of the government's strategies towards a more effective harm reduction programme when dealing with young people. This was as a consequence of the main findings: young adults claimed to have made reasoned choices about the role of the psycho-active substances and believed that self-controlled drug use can be functional and consistent with their productive lifestyles.

Other work qualitatively explored the impact of heavy cannabis use on young people (Melrose, Turner, Pitts, & Barrett, 2007). In terms of the positive functions cited, cannabis use acted as a 'social lubricant' which encouraged peer bonding and provided a sense of social belonging. Participants stated that it helped alleviate worries and relax them. In addition, cannabis use was found to play a role in anger management and the avoiding of other sorts of trouble. Finally, the

drug was suggested to provide a relief from boredom by enhancing daily activities due to the 'high' effect.

Research investigating cannabis use amongst 11- 19 year olds showed that the majority used it for social networking purposes and buying it was a shared activity (Duffy, et al., 2008). Melrose et al. (2007) suggested that practitioners should take into consideration the positive benefits young people attribute to using cannabis. Indeed, most young people thought that the idea of attending treatment agencies had little or nothing to do with their own cannabis use, and that they existed only for problematic drug users (such as heavy cocaine, heroin or opiate users).

1.5.2 THE NEGATIVE EFFECTS OF CANNABIS USE

The negative effects of cannabis use extend across psychiatric symptoms, respiratory effects, cognitive impairments and/or psychosocial problems (Kalant, 2004). There have been increasing associations between cannabis use and higher risk of psychosocial difficulties (World Health Organization, 2008) and it is sometimes argued that cannabis use is a common prerequisite to later substance use in adolescence (Joy, Watson, & Benson, 1999). As far as young people are concerned it seems that on their behalf there is less consideration and reflection on the negative impacts, and rather a mere acceptance of it as a 'social thing' (Duffy, et al., 2008). An extensive report by the Joseph Rowntree Foundation (Melrose, et al., 2007) claimed that for young people 'heavy cannabis use' was defined not so much by the amounts consumed or spent but by the personal and social impacts of regular use. Moreover when young people generally talked about their experiences with cannabis they reported a range of negative impacts, whether they recognised them or not (Melrose, et al., 2007). These negative associations along with many others provided by various studies are discussed below.

1.5.2.1 EDUCATIONAL OUTCOMES

A wide range of cross-sectional surveys have provided results which show an association between early cannabis use and educational difficulties such as lower grade-point average and less satisfaction with school (Resnick et al., 1997), and general negative attitudes to school (Brook et al., 1998). According to findings of a qualitative exploration of young people's accounts of cannabis use, it was reported that young people listed demotivation and laziness as an undesirable outcome (Melrose, et al., 2007). This 'amotivational syndrome' reduced their interest in getting assignments completed. Still, there is no clear evidence that such a condition is caused by use of cannabis. As suggested in the report it may be the case that young people feel there is little to be motivated

about in the first place and thus the observed lack of motivation has more to do with a “perceived absence of opportunity” (Melrose, et al., 2007, p. 39) than with cannabis use.

1.5.2.2 MENTAL HEALTH PROBLEMS

Studies in the USA have demonstrated that cannabis use is linked with an increased risk of major depression (Chen, Wagner, & Anthony, 2002). A large scale study in New Zealand found a significant link between heavy cannabis use and serious attempts at suicide (Beautrais, Joyce, & Mulder, 1999). While these links have been found it is important to understand whether these studies explain if cannabis precipitates depression and attempted suicide or whether serious depression causes people, especially younger adults, to make greater use of cannabis as way of self-treatment (Kalant, 2004). Attempting to provide a clearer picture, a long-term prospective study in New Zealand examined the linkage between cannabis use and mental health problems between the ages of 15 and 21 years old (McGee, et al., 2000). It was found that both were linked to low socioeconomic status, childhood behavioural problems and separation from the parents during adolescent years. Additionally, mental health problems at age 15 were a predictor of later cannabis use at age 18, while cannabis use at age 18 was a predictor of higher risk of mental illness at age 21. The authors asserted that with regards to this younger population, it is more likely that emotional difficulties or social problems lead to increased cannabis use among the teenager group, while for the young adult group it is more likely that heavy cannabis use causes mental health problems.

A similar cohort study followed 1265 children in New Zealand, examining them annually from birth to age 16, and then again at ages 18 and 21 (Fergusson, Horwood, & Swain-Campbell, 2002). A strong correlation was found between heavy cannabis use and various indicators of poor psychosocial outcomes, such as use of other illicit drugs, delinquent activities, depression and suicide attempts (Fergusson, et al., 2002). Even after controlling for confounding factors it was still found that cannabis use was directly related to poor psychosocial outcomes.

1.5.2.3 EFFECTS ON COGNITION

The main characteristic of recreational use of cannabis is that it produces euphoria. This is induced with doses of THC as low as 2.5 mg in an herbal cigarette and includes feelings of intoxication, decreased anxiety and tension, and increased sociability. While this causes a pleasurable feeling, it can also produce dysphoric reactions such as increased anxiety, panic attacks, paranoia and psychosis (Ashton, 2001). According to Kalant (2004), effects on

perception may vary such as emotions becoming more intense, while time and spatial perception become distorted. Not surprisingly, cognitive and psychomotor performance is affected in that there is a slower reaction time, lack of motor coordination, specific deficits in short-term memory and an impaired working memory (Jacobsen, Mencl, Westerveld, & Pugh, 2004).

1.6 PREVALENCE OF CANNABIS USE

In comparison to the 1990s it is becoming apparent that nowadays youth experiences are changing (UNODC, 2012). In the UK, usually 40% of young adults are in higher education and another 20% in occupational training until the end of their teenage years, while marriage and parenting is delayed due to the focus on individualized goals and ambitions (Williams & Parker, 2001). This kind of lifestyle leads younger adults into an uncertain, rapidly changing world which requires risk-taking and flexibility as necessary skills (Miles, 2002).

1.6.1 INTERNATIONAL SURVEYS

Two of the most notable sources of international data on the prevalence of cannabis use among both children and adolescents are the Health Behaviour in School-aged Children study (HBSC) and the European School Survey Project on Alcohol and Other Drugs (ESPAD).

The latest available findings from the HBSC study report how cannabis use generally appears to be a normative behaviour among adolescents in North America and in several European countries (World Health Organization, 2008). While there are large cross-country differences in the experience of lifetime cannabis use among 15 year-olds with rates ranging from 3% for Romania to 34% for Canada, England is placed as one of the top ten countries with 23% of girls and 26% of boys having used cannabis in their lifetime. Using self-report questionnaires, the HBSC report found that among this age group cannabis use was described as regular rather than experimental use. Although this type of occasional cannabis use may be normative in many different countries and has also been associated with better social skills and social adjustment (Melrose, et al., 2007) population studies have shown that young people who use cannabis suffer increased rates of externalizing disorders. A few examples are juvenile offending and conduct problems (McGee, et al., 2000) and internalizing problems such as psychosis and depression (World Health Organization, 2008).

The ESPAD focuses on the level of substance use among 15-16 year old European students with the aim of comparing the trends between and within countries. Using a sample of 100,000 students

from 35 countries in Europe, 30% of respondents stated that cannabis was the most readily available drug (Hibell et al., 2009). Boys considered cannabis slightly more easily obtainable than girls did. Reported use of illicit drugs varied considerably across the countries, however cannabis remains the most commonly used drug among students who have tried illicit drugs. Lifetime cannabis use was reported by almost 20% of the students while 7% had tried one or more of any other illicit drug (including ecstasy, amphetamine, cocaine and LSD) at least once. 14% of all students reported having used cannabis over the past 12 months while use in the past month was reported by 9% of boys and 6% of girls. The high prevalence rates of cannabis use among young people in Europe raises considerable concern for the effects this drug may be having both on the individual and the society. Almost half the ESPAD countries provided data showing an overall 14% of past-year cannabis users being classified as having a high risk of developing cannabis-related problems.

1.6.2 TRENDS IN THE UK

The latest statistical review on illicit drug use among 16-24 year olds has estimated that around 37.7% have ever used illicit drugs. This translates to around 2.5 million young adults out of the estimated population of 6.6 million in England and Wales (Home Office, 2010a). Around 20% had used one or more illicit drugs in the last year while 11.1% had used drugs in the last month. Despite a general decrease in the use of illicit drugs among young people with a 29.7% decrease since 1996 and a 22.6% decrease since 2009, it has been asserted that these figures should be interpreted with caution given the contradictory trends in cocaine use which have been increasing (Home Office, 2010a).

Despite this general decline in drug use, cannabis still remains the drug most likely to be used by young people. The BCS 2011/12 (Home Office, 2012) survey estimated that 15.7% of young adults used cannabis in the last year, representing around 1 million young adults. Cannabis was the most prevalent drug used in the last month with 9.2% reporting to have used it in that period. Similar to previous years cocaine remains the second most commonly used drug (4.2%), followed by ecstasy (3.3%) and other drugs such as amphetamines (2%), ketamine (1.8%), ketamine (1.7%) and amyl nitrate (1.7%). Moreover, cannabis is the leading drug to be tried first by 16 to 19 year olds, with 73% of young adults having reported it as the first drug to be used at the age of 15 (Fuller, 2008). Figure 1.2 shows how the most common age at which cannabis use is first used is lower than the age at which cocaine and ecstasy are used.

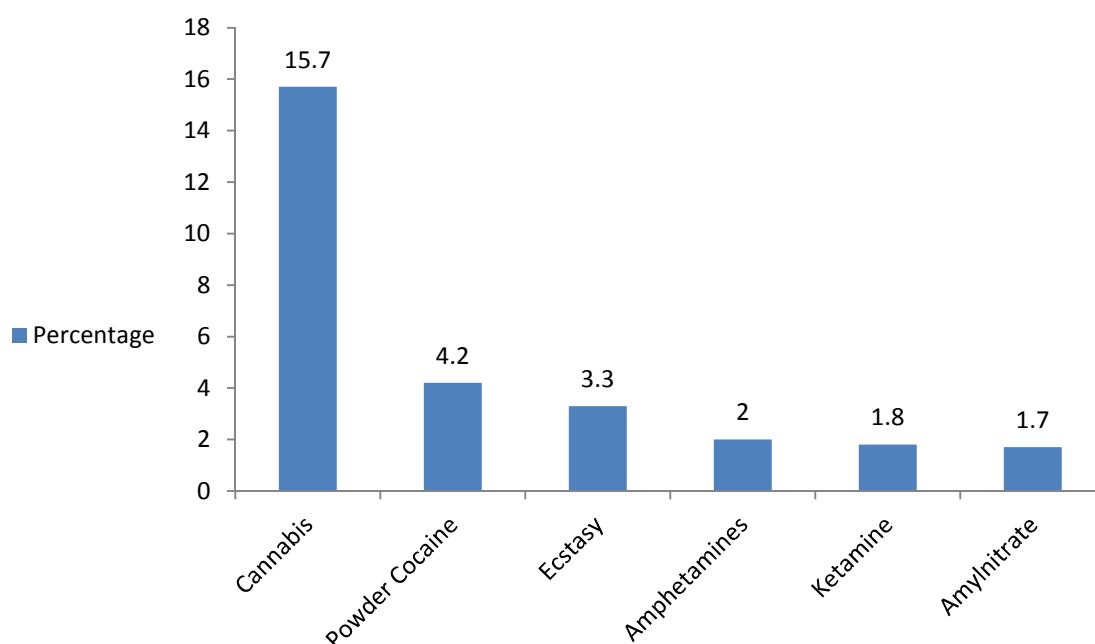


FIGURE 1.1 PERCENTAGE OF 16 TO 24 YEAR OLDS REPORTING USE OF THE MOST PREVALENT DRUGS IN THE LAST YEAR 2011/2012 (HOME OFFICE, 2012)

A cross-sectional NHS survey report by Fuller and Sanchez (2010) explains how young adults between 11 and 15 years old are more likely to initiate the use of cannabis if other volatile substances such as glue, gas, or solvents have been tried. Interestingly those who have tried these substances are more likely to have tried them out of curiosity and less likely to report frequent drug use. The young adults that frequently use cannabis tend to be older who may have taken or tried volatile substances more than once, but are also less likely to have taken Class A drugs. An interesting point about the Fuller and Sanchez (2010) report is their finding that young adults had a more tolerant stance toward the use of cannabis (9% thought it was OK to try it once, 5% to use it once a week) in comparison to glue sniffing (9% once, 3% once a week).

Figure 1.1 underlines the need to examine cannabis use between 16-20 year olds given that for these age bands cannabis is the most prevalent drug reported at first use. Despite the general declining trend in the amount of cannabis being used among 16-24 year olds and among school pupils, these slow decreases in use disguise a fundamental shift in the type of cannabis used, with a shift away from smoking cannabis resin towards smoking herbal cannabis, including skunk (Lloyd & McKeganey, 2010) (see Figure 1.3).

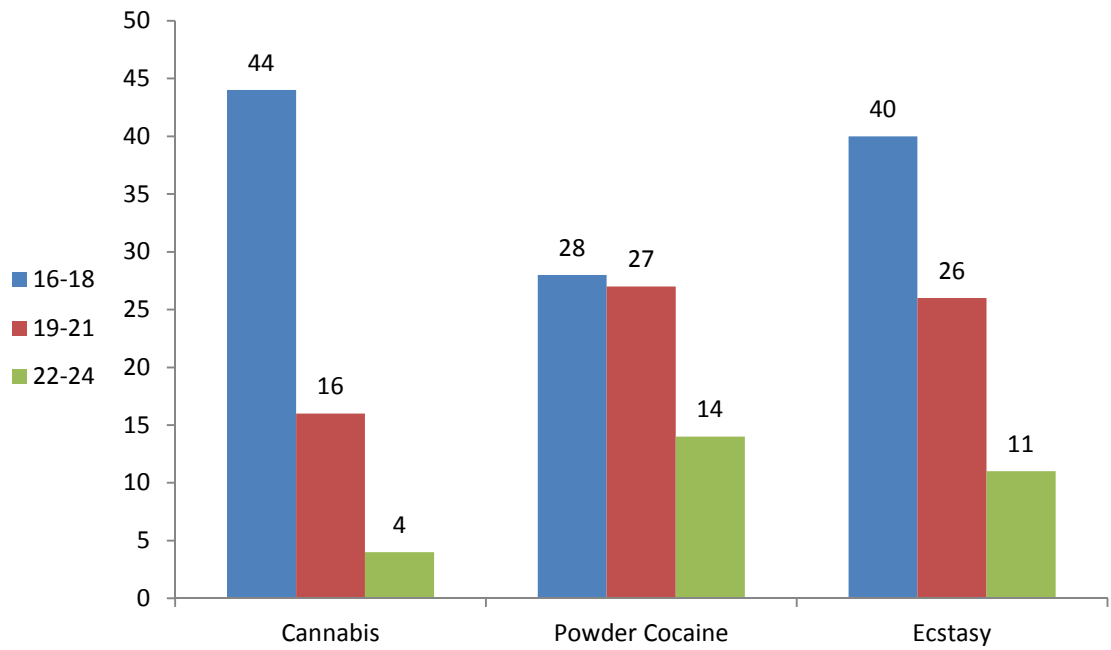


FIGURE 1:2 THE MOST COMMON AGE AT WHICH LIFETIME DRUG USE REPORTED FIRST DRUG USE (HOME OFFICE 2011/2012)

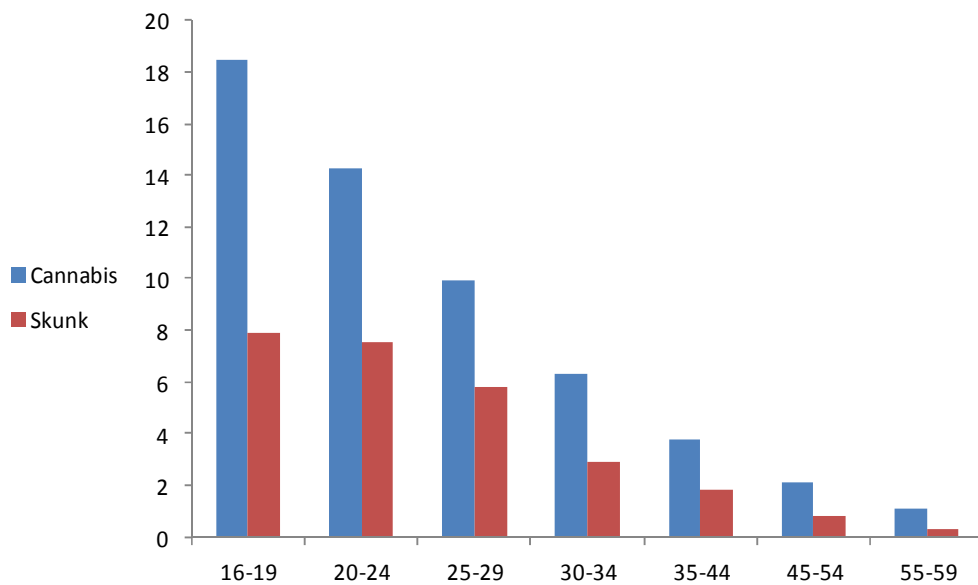


FIGURE 1:3 PROPORTION OF 16 TO 59 YEAR OLDS REPORTING USE OF CANNABIS AND 'SKUNK' IN THE LAST YEAR, BY AGE, 2009/10, BCS (HOME OFFICE, 2010A).

1.6.3 METHODOLOGICAL & SAMPLING CONSIDERATIONS

Household surveys are the only surveys which experts claim to be highly representative due to their sophisticated sampling techniques and large sample sizes. But while they may be a useful indicator of adolescent cannabis use, they often lack information on frequency and other aspects of use (Jenkins, 2006). In fact the British Crime Surveys should be understood in the context of the surveys' methodological weaknesses. For instance, random sampling from household reports lead to an underestimation of the level of substance use in the general population, as they do not sample certain groups most likely to use illicit drugs (e.g. homeless people, young offenders). This could potentially skew the results towards the lower spectrum of drug use.

In fact, a report from the UK Home Office Drug Research Programme, documented the prevalence of cannabis use among the young homeless in four areas of England and Wales (Wincup, Buckland, & Bayliss, 2003). Using a total of 160 homeless people, under the age of 25, it was found that cannabis use in the past year was reported by 80% of the respondents aged 16 to 17. Another Home Office report in 2003 examined substance use among a sample of 12 to 18 year old young offenders and found that 86% of the sample had used cannabis at least once during their lives, and 71% reported having used it in the last four weeks (Hammersley, et al., 2003). An interesting point was that of those who had used cannabis at some point during the previous year, 71% were classified as 'heavy' or 'dependent' users (25 to 365 times a year). The wide range of frequency classified as 'heavy' users is perhaps an indication of drug surveys misrepresenting the prevalence of drug use in the population (United Nations Office on Drugs and Crime, 2002a).

School-based surveys have allowed researchers to track developmental changes over time, given that the school context provides an easy follow-up sample for longitudinal research (Parker, Williams, & Aldridge, 2002). The design of these surveys has allowed for a closer examination of young people's drug use, yet most of these surveys do not take into account the most vulnerable sample within schools likely to have used drugs such as truants, or those suspended or expelled from school. According to the Offending and Criminal Justice Survey (OCJS) 2003-2005 (Wilson, et al., 2006) young people (10-16 years old) in vulnerable groups such as young offenders, young homeless people, children excluded/truant from school and children looked after by local authorities (Becker & Roe, 2005) were more likely to report having used any type of drug (35%) than those not in a vulnerable group (7%). These key groups may represent an important attrition to the sample overall.

McCambridge and Strang (2004a) used a vulnerable sample of young people in further education colleges in London. Two-hundred young people aged 16-20 were recruited on the basis that they were all currently involved in illegal drug use on more than an occasional basis, defined as a minimum of weekly cannabis use and/or stimulant drug use in the past three months. The results indicated that 48% of the sample used cannabis almost every day and 31% used it weekly. Furthermore, almost half the sample stated that nearly all their friends used cannabis and 45% reported that they almost never used cannabis alone. These supplementary findings present a small insight into the drug use behaviours of young people; a somewhat more interesting picture as a result of using a vulnerable sample.

Although the government has devoted a significant amount of money to drug-research the methods involved large-scale surveys which monitor and evaluate drug use. A more exploratory approach is needed to contribute to the gaps in our understanding of how and why this behaviour occurs (Lloyd & McKeganey, 2010).

1.7 CHAPTER SUMMARY

- Cannabis is a drug that comes in many forms and is grown in many parts of the world. It contains cannabinoids (THC) which have psychoactive effects.
- Cannabis is the most commonly used drug among younger adolescents in Europe with the UK having one of the highest percentages of cannabis use among young people; 73% of young adults reported cannabis as the first drug tried at the age of 15 (BCS, 2009).
- UK policy concerning cannabis use has been inconsistent. It is now a Class B drug.
- Patterns of use have been sub-divided into experimental, recreational, problematic and functional use (Hunt, 2006). Moving beyond a dichotomy of 'user' vs. 'non-user' towards identifying distinct sub-groups (vulnerable non-user, resistant non-user, experimental user, recreational user) is essential in terms of understanding how the factors differ for each one of these sub-groups.
- School-based surveys have allowed researchers to track developmental changes over time yet most of these surveys do not consider vulnerable sample groups likely to have used drugs such as truants, or those suspended or expelled from school (Wilson, et al., 2006).
- Moving from a general macro-scale approach to a more specific understanding of the individual decision-making processes could serve to understand the stages which lead to cannabis use.

2 CHAPTER 2: FACTORS ASSOCIATED WITH CANNABIS USE

2.1 CHAPTER OVERVIEW

Understanding why young people use cannabis requires an examination of ‘risk factors’ (e.g. weak family bonds) as well as factors that are ‘protective’ to the individual (e.g. supportive parenting). The literature to be reviewed is principally based on studies that help capture a holistic understanding of which factors underlie young people’s cannabis use. The distinction between ‘drug use’ and ‘drug abuse’ is made both in relation to the different aetiologies (Spooner, 1999) but also in relation to the consequences of the drug user’s behaviour (Maisto, Galizio, & Connors, 2011). This thesis adheres to this distinction given that these terms represent different types of behaviours and are therefore associated with different array of factors.

There exist a range of contextual factors, that are considered as external to the individual such as the socio-economic status (Spooner & Hetherington, 2004). The influence of peers (Garnier & Stein, 1998) the role of family influence (Hawkins, Catalano, & Miller, 1992) and the importance of an adolescent’s social context such as transition to university (Eckersley & Dear, 2002) are also considered as external factors in relation to young people’s cannabis use. Interpersonal factors affecting young people’s cannabis use involve aspects such as low self esteem (Kaplan, Martin, & Robbins, 1984b) as well as attitudes and impulsivity traits (Churchill, Jessop, & Sparks, 2008). In consideration of the aforementioned this chapter concludes with a critical discussion on balancing risk and protective factors using an integrative approach such as that proposed by the social stress model (Jason & Rhodes, 1990). The various approaches by which adolescent substance use behaviour is understood are discussed in Chapter 3.

2.2 INTRODUCTION

A comprehensive review and analysis of drug use among young people, makes a crucial distinction between the aetiology of drug use and drug abuse (Spooner, 1999). It was suggested that those who use drugs do not necessarily become continual long term users, nor do they necessarily become addicts. Therefore the causes at each stage of drug use may be different. Spooner (1999) suggests that causal factors of drug use are more social, while those for problematic use tend to be more individual-oriented. It is important to note that not all authors agree on this simple distinction between drug use and drug abuse. For instance it has been argued that the definition of abuse is determined by the consequences of the drug user's behaviour both to others that surround them and themselves (Maisto, et al., 2011). Drug use may therefore be perceived as a large category within which drug abuse is a subset of drug use. Nonetheless there is good reason to separate the factors leading to drug use vs. abuse before positive behavioural changes can be implemented (Calabrese & Adams, 1990). The definition of 'problematic' drug use according to the EMCDDA (1998) is one which refers to long-term or regular use of opiates, cocaine and/or amphetamines, excluding ecstasy and cannabis.

The factors associated with young people's cannabis use will be analysed considering the extent to which they are situated as contextual factors (e.g. cultural, environmental, economic, family-related and social causes) or individual-oriented factors (e.g. self-esteem, biological or genetic factors and individual norms and attitudes) (Spooner, Hall, & Lynskey, 2001). Each of these factors will be analysed as to how far they act as risk factors (increasing the likelihood of cannabis use such as living in socially deprived areas) or protective factors (inhibiting the likelihood of cannabis such as having a supportive family). It is important to note that many of these factors can be categorised as both contextual and individual factors, yet further discussion on this matter is beyond the scope of this research.

2.3 CONTEXTUAL FACTORS ASSOCIATED WITH CANNABIS USE

Research exploring social influences or aetiologies of cannabis use, can be categorised into those focusing on the impact of socio-economic status, the influence of peers, the role of family and the effect of adolescent life transitions.

2.3.1 SOCIO-ECONOMIC STATUS

Although socio-economic status (SES) may be considered as a factor that is central to the individual, it is included as a contextual factor because it is substantially influenced by government policies and

programmes as well as by economic environmental changes. Indicators of socio-economic status usually include education level, occupational class, personal income, spending power and housing occupancy (Spooner & Hetherington, 2004).

Most reports on drug use focus on the geographical differences between cannabis use in urban and rural areas. A Home Office (2010) report investigated cannabis use by classifying households into one of the 56 types according to demographic, employment and housing characteristics of the neighbourhood ('A Classification of Residential Neighbourhoods'; ACORN). This helped to specify the nature of the social environment in which households are located. The five main group categories included 'Wealthy Achievers' (e.g. wealthy executives, well-off families), the 'Urban Prosperity' (e.g. prosperous professionals, and students living in towns and city areas), the 'Comfortably Off' (e.g. young couples, secure families), the 'Moderate Means' (e.g. Asian communities, skilled manual workers) and the 'Hard Pressed' (e.g. low-income families, people living in inner city estates)(Home Office, 2010c). The findings showed that the group with the highest use was the 'Urban prosperity' (9.5%) followed by the 'Hard Pressed' (8.0%), the 'Comfortably Off' (6.4 %), the 'Moderate Means' (6.3 %) and the 'Wealthy Achievers' (4.6%). Therefore, it seems that there is a non-linear relationship between SES and cannabis use.

In a review of the impact of SES and unemployment on substance use, it was found that people from low SES groups, unemployed or underemployed had much higher risk of using drugs than the general population (Stuart & Price, 2000). Yet using socio-economic status to predict or explain substance use requires caution. A study across 31 countries suggested that as personal consumer expenditure increased (an important indicator of socio-economic status), cannabis use also significantly increased among mid-adolescents (Ter Bogt, Schmid, Nic Gabhainn, Fotiou, & Vollebergh, 2006).

2.3.2 THE INFLUENCE OF PEERS

According to Harris' group socialization theory (Harris, 1998), children acquire their behaviours and attitudes through their experiences with peers, and then carry these learned behaviours and attitudes into adulthood. Specifically, interactions with friends in adolescence becomes more frequent and time consuming than pre-adolescence which has as an outcome the maintenance of social bonds and attainment of peer status (Garnier & Stein, 2002). Adolescents are known to spend more time with peers and less with families thereby providing one explanation as to why peers may have more influence than families in adolescents' behaviours (Steinberg, Dornbusch, & Brown, 1992).

Peer association can be a risk factor if young people selectively choose their peers on the basis of their substance use. In other words, young people want to feel a sense of belongingness with other substance-using peers and therefore engage in their own substance use to feel as part of the group (Dishion & Owne, 2002). In the US, a study found that school environment promoted easy availability of cannabis and triggered cannabis use among 18 year old students (Swaim, 2003). A study examining adolescent cannabis use in relation to peer and school factors found that when students saw others coming into school intoxicated or using cannabis on school premises this increased their own cannabis use (Kuntsche & Jordan, 2006).

Nevertheless, peer affiliation can act as a protective factor if adolescents tend to associate with peers who share similar backgrounds to their own, as a way of reinforcing parental values (Elder, 1980). Non-substance using friends encourage pro-social behaviour as well as academic aspirations, creating a slight detour from affiliating with substance-using groups (Garnier & Stein, 2002).

2.3.3 FAMILY INFLUENCE: THE ROLE OF PARENTING STYLES

Social learning theories (Akers, 1985; Bandura, 1977) propose that children acquire their values and behaviours from observation and imitation of role models and social reinforcement. Although peers may serve as role models, the role of parents needs to also be considered as a factor associated with young people's cannabis use.

Unconventional values¹ in families are one of the key factors in the development of problem behaviours among adolescents (Garnier & Stein, 2002). Unconventional parental values are not only related to their own behaviours and associated risks but these values are also transferred to their children (Garnier & Stein, 1998). Through political orientations, religious beliefs, and lifestyle choices parents can indirectly transmit their values to their children (Kohn, 1983). While there exists a direct influence of parental drug use on initiation of adolescent drug use (Baumrind, 1991) research suggests that parents can also indirectly establish drug use behaviours. This occurs through parents' positive attitudes to drug use, encouragement to seek affiliation with peers who use drugs and by reducing children's internal behavioural restraints (Duncan & Petosa, 1995). Hawkins, Catalano and Miller (1992) provided a list of family-related features that can contribute to adolescent drug use which included: family conflict, poor bonding (e.g. lack of mutual attachment and nurturing); inconsistent and ineffective parenting skills; and negative communication patterns.

¹ Unconventionality in health –related behaviours has been described as less involvement with health-related behaviour such as regular physical activity and more involvement in delinquent-type behaviour (Donovan, Jessor & Frances, 1991).

The role of family can also be considered as a protective factor. Hawkins et al. (1992) states that effective parental discipline as well as teaching parents how to handle conflicts with their children can serve to protect the child from becoming distant from the family. The National Institute of Drug Abuse (NIDA) explained how parental monitoring with clear, consistent rules of conduct and positive parental involvement in children's lives reduces adolescents' drug use (National Institute on Drug Abuse (NIDA), 1997). It is apparent that maintaining strong family values such as secure and stable family routines, supportive parents, strong children-parent attachments as well as strong family norms can protect young people from drug use (Spooner, et al., 2001).

2.3.4 ADOLESCENT LIFE TRANSITIONS

Transition from college to university is a complex process by which change, ambiguity and adjustment replace the otherwise secure and predictable lives of adolescents (Bray & Born, 2004). In the context of early experiences at university it was reported that transition to university led to adolescents decreasing their levels of physical activity (Bray & Born, 2004). The authors explained how vigorous physical activity is related to psychological well-being and that therefore a decrease in physical activity triggers a negative change in mood and increases anxiety and stress levels.

The timing of adolescent transitions has changed over the last century with young people experiencing a longer period of adolescence², implying longer periods of sharing experiences with peers and delaying entry as adults to work settings (Smith, 1995). Eckersley and Dear (2002) argue these delayed transitions into adulthood result in tensions between dependence and autonomy, which subsequently develop a series of psychosocial disorders. Cannabis use, and particularly regular or heavy use has been associated with increased rates of a range of adjustment problems in adolescence/ young adulthood (Fergusson, et al., 2002).

Moreover, living in a society which is open to a wide range of global influences can affect young people's transitional experiences in many ways and forms. For instance, powerlessness in identity formation results in identity confusion and social non-adjustment which can both lead to problems such as depression and drug abuse (Spooner & Hetherington, 2004)

2.4 INDIVIDUAL AND INTERPERSONAL FACTORS

The individual and interpersonal factors regarding young people's cannabis use refer to an individual's motivation and disposition towards drug use which is influenced by their short-term

² The World Health Organization defines adolescents as young people aged between 10 and 19 years who are often in the process of a critical transition characterized by growth and change (WHO, 2008).

affective states (Petraitis, Flay, & Miller, 1995). Indeed, resilience has been defined as “the ability to be well adjusted and interpersonally effective in the face of an adverse environment” (Spooner, et al., 2001, p. 12). Therefore there is a general emphasis on the importance of individual and interpersonal factors which will be broadly covered by features such as self-esteem, biological or genetic factors, individual norms and attitudes and individual personality traits.

2.4.1 SELF-ESTEEM

Drug use is just one of the many areas that have employed the self-esteem construct in the prediction of a given behaviour. It has been well-established that poor self-concept and low self-evaluations are associated with drug use and/or abuse (Dielman, Campanelli, Shope, & Butchart, 1987). Proponents of this belief state that because tobacco, alcohol and cannabis are harmful types of substances, those with low self-worth would feel inclined to use them as a way of manifesting their perceived self-degradation. Accordingly many drug prevention and treatment efforts have been directed at enhancing the self-esteem of young people (Dielman, et al., 1987).

Self-derogation theory (Kaplan, et al., 1984b) seeks to explain how low self-esteem can act as a risk factor to young people’s inclination towards substances. Young people who feel unwanted or who do not conform to conventional standards tend to feel alienated from conventional role models (Petraitis et al., 1995). They may also be motivated to rebel against the ideologies of conventional standards and engage in alternative behaviours (e.g. becoming involved with deviant peers) which will boost their sense of self-worth (Petraitis et al., 1995).

Therefore the young individual is viewed as more prone to use cannabis or any other illicit substance as a means of coping with low self-worth. Still, studies examining self-esteem in relation to drug use have found inconsistent associations (Dielman, et al., 1987; Schroeder, Laflin, & Weis, 1993). They have suggested an integrated view in that self-esteem only has an impact if considered alongside peer bonding, family values, and other social or individual factors.

2.4.2 INDIVIDUAL COMPOSITION: PERSONALITY, PHYSIOLOGY, ATTITUDES AND VALUES

2.4.2.1 PERSONALITY

The problem-behaviour theory proposed by Jessor and colleagues recognizes that adolescent risk behaviour is the result of a complex interaction between people and their environment (Jessor, Van Den Bos, Costa, & Turbin, 1995). This theory is largely based on the relationships among three psychosocial variables: the personality system (including values, personal beliefs, expectations, attitudes and perception toward self and the society); the perceived environment system (referring

to parents' perceptions and peers' attitudes towards a behaviour); and the behaviour system that concerns both risky and protective behaviour. For the purposes of expanding on aspects of the individual level, only features related to the personality system will be further analysed. Several aspects related to personality have been considered as risk factors such as alienation or rebelliousness towards social groups, and resistance to authority (Hawkins, Catalano, & Miller, 1992). Alternatively, high levels of social competence and social interaction skills (Spooner, et al., 2001) serve as protective factors to the individual.

2.4.2.2 PHYSIOLOGY

On a physiological level, a range of individual factors have been examined in relation to substance use including sensation-seeking, curiosity, boredom and poor impulse control (Hawkins, Catalano, & Miller, 1992). Specifically, impulsivity has been associated with an inability to wait, and insensitivity to the long-term consequences of action (Churchill & Jessop, 2010a). Churchill, Jessop and Sparks (2008) explain how impulsivity significantly contributes to the prediction of behaviour which may not be adequately characterized by careful, analytic decision-making strategies. The fact that some people may be more inclined to make speedy, impulsive and non-reflective decisions emphasizes the importance of examining the propensities that are reflected in individual differences with regards to young people choosing whether or not to use cannabis.

2.4.2.3 ATTITUDES

In a report by the United Nations (2003) the risk factors for adolescent substance use included: favourable attitudes towards substance use and knowledge about drugs (Hawkins, Catalano, & Miller, 1992); high delinquency tendencies such as shoplifting and gang fighting (Lane, Gerstein, Huang, & Wright, 2001); and a general sense of hopelessness about life (Jessor, et al., 1995). In contrast the individual-related protective factors referred to effective coping styles such as: problem-solving and internal locus of control (Spooner & Hetherington, 2004); negative attitudes towards deviance (Jessor, et al., 1995); maintaining high moral beliefs and values; a general optimistic stance towards good health (Jessor, et al., 1995; Spooner, et al., 2001); and perceptions of substance use risks (Lane, et al., 2001). Given the fundamental nature of attitudes and norms in terms of using substances, these constructs deserve in-depth examination both of which will be thoroughly discussed in chapter three.

2.4.2.4 VALUES

It has been suggested that in the latter half of the twentieth century there have been two inter-related changes in moral values and religious beliefs between younger and older generations in Europe (Halpern, 1995). The first change refers to a reduction of shared norms, values and constraints at the more casual level, creating a sense of greater individualism and libertarianism. The second has been the substitution of shared norms by formal norms, values and constraints on a jurisdictional level (Spooner, et al., 2001). While there have been many benefits associated with individualism, it has also triggered a detachment from society resulting in weaker social cohesion and personal resilience (Eckersley, 2002). Eckersley argues that modern Western society has not provided a strong bond of society resulting in young adults not having the guidance to make sense of the stress and strains of life, which is especially important at the early stages of development and socialisation (Eckersley, 2000).

2.4.3 BIOLOGICAL AND GENETIC IMPACT

There has not been much research in terms of which genetic factors contribute to cannabis use, in comparison to the amount of research on genetic influences on alcohol and nicotine dependence (Lynskey et al., 2002). Kendler and Prescott (1998) have demonstrated that genetic factors account for a substantial amount of variance in cannabis abuse and dependence, rather than experimental cannabis use. Indeed, an important distinction has been made; Glantz and Pickens (1992) state that experimentation and infrequent substance use tends to be a function of peer and social factors while abuse or problem use is associated with biological and psychological factors. This suggests that genetic factors may play a more influential role in the aetiology of cannabis misuse rather than at the earlier stages of cannabis use or experimentation (Lynskey, et al., 2002).

Social disadvantage, family dysfunction and early childhood conduct problems have been shown to act as shared environmental influences on the risk of cannabis dependence (Kendler & Prescott, 1998). This creates an uncertainty as to whether genetic or biological dispositions to use cannabis can be characterized as independent risk or protective factors given the strong mediating influence of environmental factors. In order to account for these correlates of cannabis dependence, Lynskey et al. (2002) found evidence of significant genetic effects on risk of cannabis use among young adults even after controlling for shared and non-shared environmental factors (44.7 % of the variance in liability to cannabis dependence was accounted for by genetic factors, 20.1 % was attributed to shared environmental factors and 35.3 % was attributed to non-shared environmental factors). Moreover, Kendler et al. (2008) found that genetic factors had little or no influence on problematic

substance use in early adolescence and that they gradually increased in their effect with increasing age.

On another note, there has been substantial concern about the possible association between Attention Deficit Hyperactivity Disorder (ADHD) and substance use or abuse, particularly during adolescence. A range of studies have found that the association between ADHD and substance use disorders appears to be almost entirely mediated by conduct disorder (Klein & Mannuzza, 1991; Lynskey & Fergusson, 1995). Moreover, another study examining the interplay between ADHD, conduct disorder and gender differences among adolescents, found that conduct disorder increased the risk of substance use in adolescents regardless of gender, while ADHD did not independently increase the risk of substance use problems (Disney, Elkins, McGue, & Iacono, 1999b).

2.4.4 MENTAL HEALTH

Use of cannabis among young people has been related to a series of co-morbid mental health problems (McGee, et al., 2000). While users of cannabis do not necessarily progress to problems of cannabis dependence or abuse, rates of co-morbidity with other mental health disorders may be somewhat high. In the McGee et al. (2000) study, it was found that of the 46 adolescents reporting frequent cannabis use at 15 years old, 43 of them had a co-morbid mental health disorder. This tended to be non-aggressive conduct disorder that included running away from home, truanting and persistent lying. A cross-sectional study of 16-19 year olds showed that those with cannabis dependence were three times more likely than those without cannabis dependence to report a history of major depressive disorder (Deykin, Levy, & Wells, 1986). While this study reported depression as an antecedent to substance use it remains unclear as to whether or not a person's mental health state is the cause or the effect of substance use. Fergusson and Horwood (1997) noted three ways of accounting for the relationship between cannabis use and mental health problems: (a) by association resulting from sharing common risk factors such as poor family structures; (b) using cannabis as a way to treat mental health problems as reported by Johnson & Kaplan (1990); and (c) harmful psychological consequences such as deterioration of interpersonal functioning as an outcome of using cannabis (Fergusson & Horwood, 1997).

Although cannabis use and mental health problems share common aetiological factors this does not necessarily explain the nature of the relationship between the two (McGee, et al., 2000). This relationship is stronger from pre-adolescence to adolescence (Henry et al., 1993) than at later ages (Brook, et al., 1998). It has been suggested that the extent of mental health consequences related to

using cannabis, in comparison to using other substances, are much more difficult to measure (McGee, et al., 2000).

2.4.5 ETHNICITY

Adolescents under the age of 14 make up 30% of ethnic minority groups in the UK: 40 % of Bangladeshis are aged 14 years or under compared to 19% of the white British population (Scott, Pearce, & Goldblatt, 2001). Around 50% of people from ethnic minority groups live in London where drug use rates are considered to be the highest in England. Moreover national samples have grouped adolescents into 'White', 'Black' or 'Asian' categories which is a practice that could conceal significant differences in health behaviours between ethnic groups (Jayakody et al., 2006).

The Home Office (2010a) estimated illicit drug use by ethnicity by a combination of three-year BCS datasets (2006/07, 2007/08, 2008/09). The findings showed that adults from mixed ethnic backgrounds were more likely to have taken any drug in the last year whereas adults from the Asian or Asian British group generally had lowest levels of previous year drug use. Also drug use was found to be higher for the White or Mixed groups in comparison to adults from a Black or Black British background. Within the Black or Black British group, adults from a Black Caribbean background had higher levels of cannabis use than Black African adults (Home Office, 2010a). While there was higher drug use among the mixed ethnic groups compared to adults with White background, there was no difference between the groups when examining the individual drug types (Home Office, 2010a).

2.4.6 GENDER

Gender differences among adolescents in terms of substance use have been highlighted in empirical-based studies (Home Office, 2010a; Miller & Plant, 2002). Miller and Plant (2002) demonstrated that boys were more likely than girls to have used illicit drugs and that alcohol use was higher amongst boys. The British Crime Survey (2010) reported that in 2009-2010 men were twice as likely as women to have used cannabis in the last year (9.3% and 4.0% respectively) and that levels of last year cannabis use was again higher for men (11.5%) than women (7.3%).

Factors associated with cannabis initiation among boys and girls are also different. Cannabis risk factors for boys include frequenting bars and having free leisure time, while for girls these include smoking and incontrollable use of alcohol (Pérez, Ariza, Sánchez-Martínez, & Nebot, 2010).

2.5 CONSIDERING BOTH RISK AND PROTECTIVE FACTORS SIMULTANEOUSLY

Although there have been various attempts to organize the known vulnerability, risk and protective factors for adolescents' drug use and abuse (Hawkins, Catalano, & Miller, 1992; Petraitis, et al., 1995), there seems to be no consensus about which of these factors are most important (von Sydow, Lieb, Pfister, Höfler, & Wittchen, 2002). Inconsistent findings on which risk factors are the most important may be attributed to differences in methodology or to the gap between using either low risk general population samples or high risk treatment seeking cannabis users (Temple, Brown, & Hine, 2011). More detailed information on the consumption of cannabis (e.g. number of joints, type of cannabis, amount of cannabis per joint) rather than just the frequency levels could help to understand the role of cannabis exposure in the development of dependence in frequent users (Temple, et al., 2011).

2.5.1 SOCIAL STRESS MODEL: IMPORTANCE OF RISK & PROTECTIVE FACTORS FOR SUBSTANCE USE INTERVENTIONS

Jason and Rhodes (1990) developed a social stress model with the purpose of considering both risk and protective factors, on an individual and community level, when planning young people's substance use interventions. Stress, normalization, and experience with the substance were considered as risk factors while attachment, skills and resources were considered as protective factors. However, Spooner et al. (2001) pointed out that many of these factors are not associated with either risk or protection but can rather be considered as interrelated on a conceptual level.

The World Health Organization's Programme on Substance Abuse modified the Social Stress Model (1990) and included effects of substances, the personal response of the individual to the substances and additional environmental, social and cultural variables. This modified social stress model improves understanding of vulnerability to substance use behaviour by examining which risk factors increase vulnerability and which protective factors decrease vulnerability. Six components known to influence vulnerability include the following: 'Stress' referring to life strains, everyday problems, life transitions and adolescent developmental changes; 'Normalization of substance use' relating to the cultural role of the substance such as its legality, availability and price; 'Experience of substance use' referring to the user, the substance and the setting; 'Attachments' including personal relationships with significant others; 'Skills' referring to physical and performance capabilities that help individuals' internal, behavioural and social coping strategies; and 'Resources' including internal resources such as willingness to work hard and environmental resources such as attending school (World Health Organization, 2002). This demonstrates how in order to understand substance use in a holistic

manner, it is necessary to consider a wide array of factors that are both contextual and individual-oriented.

In an attempt to develop and balance interrelated conceptual domains of risk and protective factors Jessor (1998) suggested an integrated outlook. Integrating risk factors (e.g. low self-esteem, family history of substance use, other substance using peers) along with protective factors (e.g. attitudinal intolerance of deviance, valuing health and having friends as models of conventional behaviour) could influence the way we understand young people's risk behaviours. Cross-cultural evidence indicates that there are a range of psychological, social and behavioural factors that are protective of health, especially during adolescence (World Health Organization, 2008). This has permitted treatment programmes in incorporating protective factors to provide greater opportunities for those wanting to maintain drug-free lives.

2.6 CHAPTER SUMMARY

- Understanding factors associated with cannabis use requires distinguishing drug use vs. drug abuse. Causal factors for drug use are social, while those for problematic use tend to be individual-oriented (Spooner, 1999).
- Not all authors agree on a simple distinction between drug use and drug abuse. For instance, the definition of abuse is determined by the consequences of the drug user's behaviour both to others that surround them and themselves (Maisto, et al., 2011). Drug use may therefore be perceived as a large category within which drug abuse is a subset of drug use.
- Socio-economic status (Spooner & Hetherington, 2004) is categorised as one of the main contextual factors related to cannabis use.
- Another contextual factor is the role of peers. One of the ways in which peer association can be a risk factor to cannabis use is if adolescents choose to select their peers on the basis of their substance-use habits (Dishion & Owne, 2002).
- The role of family and specifically parenting styles seems to exert both a direct and indirect influence on later initiation of adolescent drug use (Baumrind, 1991). Parental warmth and supervision may inhibit drug use, while harsh parenting practices such as neglect may act as a contributing factor to drug use.
- It has been suggested that during university young people engage in less physical activity and thereby increase their stress levels (Bray & Born, 2004). Adolescent life transitions are then considered to trigger to cannabis use.
- Individual-oriented factors associated with cannabis use include aspects such as self-esteem, biological or genetic factors, individual norms and attitudes as well as individual personality traits.
- Use of cannabis among young people has been related to a series of co-morbid or concurrent mental health problems (McGee, et al., 2000). The extent to which poor mental health and cannabis use is a one-way or two-way relationship is yet to be determined.

- Several aspects related to personality have been considered as risk factors for cannabis use such as alienation or rebelliousness towards social groups (Hawkins, Catalano, & Miller, 1992) or protective factors such as having strong social interaction skills (Spooner, et al., 2001).
- Ethnic group differences in drug use were indicated by the ACORN categories used by the Home Office (2010). The study demonstrated the importance of going beyond the urban and rural categorisation when examining drug use.
- Studies of gender differences and cannabis use indicated that boys were more likely than girls to use illicit drugs (Miller & Plant, 2002).
- The social stress model developed by Jones and Rhodes (1990) and later modified by the World Health Organisation (2002) discusses vulnerability to substance use behaviour by examining how vulnerability is influenced by risk and protective factors. Treatment programmes therefore focus on incorporating protective factors to provide greater opportunities for those wanting to maintain drug-free lives.

3 CHAPTER 3: THEORIES OF SUBSTANCE USE

3.1 CHAPTER OVERVIEW

Adolescence is a period during which engagement in risky or problem behaviours, such as substance use, most commonly begins (Arnett, 2000). It is argued that before becoming dependent on substances, adolescents go through a stage of substance experimentation, during which a substance has yet to become the main aspect of their lives (Petratis, et al., 1995). Numerous factors associated with substance use have been highlighted in Chapter 2 but determining whether these factors increase the likelihood or are simply associated with drug use remains ambiguous. As Hawkins, Catalano and Miller (1992) stated, the pieces in the puzzle are so many that is difficult to form a holistic picture of why some adolescents engage in substance use. However, numerous theorists have attempted to form coherent pictures of adolescent substance use. This chapter will provide an overview of the theories of substance use. For the purpose of this review the categories within which theories will be analysed are as follows:

- Theories that focus on the psychology of the individual
- Theories that focus on social influence
- Theories that focus on the importance of society
- Theories that explain the importance of biological aspects
- Theories that integrate these factors simultaneously.

It is important to note that many of these theories can be classified into more than one category such that some consider factors related to the self but also consider factors related to social influence. Some of these theories were not explicitly formulated for explaining adolescent substance use yet their theoretical conceptualisations are relevant in understanding this behaviour.

3.2 INTRODUCTION

Risk-taking represents an important way for adolescents to shape their identities, experiment with new decision-making skills and develop realistic assessments of themselves, others and society around them (Ponton, 1997). Adolescents need their time to experiment and experience the outcome of their own decision-making in various novel situations (Hamburg, 1997). However, the likelihood of these exploratory behaviours posing threats to their health is relatively high (American Psychological Association, 2002). Some of these risky behaviours include inadequate physical activity, inadequate nutrition, sexual behaviour that may lead to unintended pregnancy or infections, substance use and abuse and behaviours that lead to unintentional injuries and violence (Eaton et al., 2006). This chapter will focus on substance use, as an example of risky behaviour given its potential to negatively impact health (Chassin & Hussong, 2009).

In considering the theories that attempt to explain why adolescents engage in substance use it is important to recognise that not all adolescents behave in the same way and that their reasons for engaging in substance use may vary significantly (Jaffe, 1998). The samples used in this research will most likely not include problematic users and therefore some addiction theories that refer exclusively to problematic substance users (e.g. The Disease Model of Addiction; Jellinek, 1960) will be excluded from this review.

3.3 THEORIES THAT FOCUS ON THE PSYCHOLOGY OF THE INDIVIDUAL

Historically, theories that place emphasis on aspects related to the individual have tended to use psychoanalytic approaches to explain substance use. More recent theories however focus on the cognitive learning processes of the individual, such as inhibition of control and habit learning.

3.3.1 PSYCHOANALYTIC AND PSYCHOSOCIAL THEORIES

The psychoanalytic position, as originally stated by Freud, conceptualized drug use as a replacement for sexual pleasure and masturbation but after elaboration was seen as a narcissistic disorder (Spotts & Shontz, 1985). In other words, the user is perceived as being unable to deal with adult responsibilities and consequently regresses to childlike states to deal with negative feelings and poor self-esteem. The influences of early psychoanalysis are seen in “id” formulations of addictions that presume the existence of unconscious death wishes and self-destructive tendencies that account for the destructiveness and risks associated with drug dependence (Spotts & Shontz, 1985). Menninger

(1938) referred to such behaviour as “chronic suicide”. The psychology of conscious and unconscious tendencies to self-destruct reflects failures in ego functions involving self-care and self-protection.

Wurmser’s ‘defense structure theory’ (1980) suggests that drugs are generally used to cope with unhappy emotional states or negative emotions. Drugs serve as a form of protection against these fears or anxieties and are used to counteract these negative feelings.

Milkman and Frosch’s ‘coping theory’ (1980) also emphasizes the function of drugs as a way to alleviate problems of depression, anxiety and alienation. In reference to existentialism, Greaves (1974) argues that drug dependent individuals use drugs as a form of self-medication in order to substitute other forms of spontaneity, creativity or joy mainly as a result of their personality dysfunction. A recent contemporary psychoanalytic view of substance use is that it is a defence against anxiety (Thombs, 2006).

Early psychoanalytic research on drug abuse ignored social and familial factors and instead focused on the psychodynamic functioning of the abuser. Hendin’s psychosocial theory establishes the importance of both individual and family dynamics (Hendin, 1980). As a result of weak family attachment the adolescent feels the need to express self-harm, through engaging in a behaviour that is known to have negative consequences.

There is some evidence supporting the use of these psychoanalytic approaches in explaining substance use (Morgenstern & Leeds, 1993) however Ghaffari (1987) argues that psychoanalytic theories generally lack valid empirical support. In order to explain substance use, other self-related theories take a broader perspective on individual dysfunctions, such as behavioural conduct problems.

3.3.2 SHER’S VULNERABILITY MODEL (1991)

Some theories position adolescent substance use within the broader framework of behavioural deviance (Elliott, Huizinga, & Menard, 1985; Jessor & Jessor, 1977).

According to Sher’s (1991) deviance proneness sub model, adolescents are at risk of substance use disorders because of their difficult behaviour and cognitive deficits (e.g. weak verbal skills) which contribute to lower levels of self-regulation (Chassin & Hussong, 2009). This combination of temperamental, cognitive and environmental risk factors leads to a deviation from the mainstream peer group towards an affiliation with deviant peers who provide opportunities and approval for non-conventional behaviours such as substance use.

A wealth of research supports Sher's vulnerability model; it has been linked to the onset and frequency of substance use as well as heavier consumption (Chassin, Flora, & King, 2004; Chassin, Pitts, & Prost, 2002; Desrichard & Denarie, 2005). Regarding temperament, traits related to impulsivity and behavioural disinhibition are most consistently associated with substance use and the development of substance use problems (Sher, Grekin, & Williams, 2005). Alternative delinquent behaviour and substance use have been typically found to co-occur during adolescence (Loeber & Farrington, 2000).

Theories in which psychosocial characteristics play a role are considered as the strongest theories in terms of predicting adolescent substance use. The 'availability proneness model' (Smart, 1980) assumes that, within any given social setting, adolescents differ from each other according their personal motivations and transient affective states as well as behavioural skills.

3.3.3 AVAILABILITY PRONENESS MODEL

According to the availability-proneness theory, drug use begins when an individual is exposed to drugs in their everyday lives (from parents, friends, associates or other peers) and when there is a sense of individual proneness such as an attitude of curiosity or impulsivity (Smart, 1980). The concept of 'availability' refers to the set of physical, social and economic circumstances regarding the ease or difficulty of obtaining drugs (Smart, 1977). For instance, when the cost of a drug is high or the effort required to obtain it is great, the tendency to use drugs will be low but could be overcome by a high level of proneness in the user, such as he/she having a curious attitude towards trying it. Cannabis users do not require a great amount of 'proneness' given the low levels of addictive liability and easy 'availability' of the drug.

However, the concepts of 'availability' and 'proneness' are quite ambiguous in that they carry global meanings which could be subjective according to every individual. For instance, certain individuals may choose to not use drugs even when availability is extremely high (e.g. Turkish and Mexican opium growers) (Smart, 1980) which means that other explanatory variables are required to fully explain this behaviour.

3.3.4 INHIBITION DYSREGULATION THEORY

According to this theory, the inhibitory system - which involves brain regions that function in relation to response inhibition and response selection - underlies compulsive behaviours associated with drug addiction (Lubman, Yücel, & Pantelis, 2004). Aspects of drug use decision-making are compromised in either a dysfunctional inhibitory system or indirectly via a dysfunctional reward system. Addiction

is described as a compulsive, substance-seeking behaviour reinforced by the drug's effects (Lubman et al., 2004). Lubman et al. (2004) explain that addiction-related provocation causes impulsive behaviour (or loss of control) with little consideration of future consequences. In other words, the inhibitory system is overwhelmed by intense motivational drives that result in the disinhibition of behaviour that is instead dominated by stimulus-driven tendencies (Lubman, 1998).

Nonetheless while these theories capture important elements of drug use, the importance of the social environment needs to be discussed in order to capture a holistic understanding of this behaviour.

3.4 THEORIES THAT FOCUS ON SOCIAL INFLUENCE

Individual-oriented theories emphasize individualistic factors yet the researchers who propose them also indicate the importance of social influence. Social influence has been described as the effect others have on individual and groups attitudes and behaviour (Berkman, 2000). The theories to be reviewed in this section focus on social influence such as social learning, social cues, the impact of peer socialisation and selection, and the influence of family interaction and family systems on substance use.

3.4.1 SOCIAL LEARNING THEORIES

One of the most prominent theories on the influence of others in terms of adolescent behaviour is Social Learning Theory (Akers, 1977). This builds upon Sutherland's (1939) differential association theory wherein adolescents acquire their beliefs about non-conventional behaviours from their close role models. Akers' Social Learning Theory (1977) asserts that adolescent substance use originates from being exposed to substance specific attitudes and behaviours of people who serve as role models. The anticipated consequences of having imitated the substance-specific behaviour are largely social such as being accepted by peers, as well as physiological such as the positive physiological reactions to the substances. The development of this theory to include the cognitive-affective aspect occurred with Bandura's Social Cognitive Learning theory (1986). Adolescents' exposures to friends/peers who use substances essentially shape their own substance-specific beliefs. For instance, observing peers who smoke cannabis (in order to relax socially) shapes adolescents' beliefs about the consequences of, and their attitudes towards, their own substance use. Bandura's theory suggests that preventing adolescent substance use involves self-efficacy and refusal self-efficacy (Petratis, et al., 1995). For instance, if an adolescent observes a friend refusing to use cannabis and/or other drugs this may boost their own self-efficacy by having imitated the necessary skills to avoid substance use.

There is much empirical evidence for these theories given that adolescents who have discussed using illicit drugs with their friends (Kandel, Kessler, & Margulies, 1978), who have held positive attitudes towards cannabis (Bailey & Hubbard, 1990; Kandel, et al., 1978) and have been exposed to cannabis and other drugs either by being offered or by friends who use it, are more likely to use cannabis themselves (Kandel, et al., 1978). Yet this support must be interpreted with caution given the ambiguity in the direction of relationship between peer use and adolescents' own use (i.e. does peer use cause adolescents' own use or vice versa) (Petratis, et al., 1995). Recent research has demonstrated that some adolescents seek out friends who may share similar music preferences (Mulder et al., 2010) or who explicitly prefer to associate with substance using peers (Farrell, 1994).

3.4.1.1 HABIT LEARNING MODEL

In learning theory, the habit learning model suggests that a habitual response is always elicited by its associated stimuli even if in the interim, the consequences of that response have become aversive (Dickinson, 1994). While the motivational value of a response should influence the initial acquisition of stimulus-response associations, the habitual performance will not be affected by the motivational value. Habits are therefore contrasted with goal-directed behaviours which, unlike habits, are performed as a result of expecting some desirable outcome (Ostlund & Balleine, 2008). It is therefore easy to see the appeal of the habit learning account of compulsive drug use, whereby habitual stimulus-response learning underlies the drug use behaviour, irrespective of the consequences.

3.4.2 PEER RELATED THEORIES

The processes by which peer influence creates peer group homogeneity of behaviour are described as peer socialisation and peer selection (Simons-Morton, 2007). Socialisation refers to group conformity occurring as a result of attitudes and behaviour being influenced by actual and/or perceived attitudes and behaviour of one's friends (Simons-Morton, 2007). Selection, on the other hand, refers to adolescents who initiate substance use after proactively seeking out peer groups that are more closely related to their newly acquired behaviour and attitudes (Farrell, 1994). A third explanation combines these two processes by explaining how adolescents tend to select friends on the basis of sharing similar substance-use attitudes but who are also susceptible to conformity pressures by the selected peers (Kandel, 1985). This is referred to as a Bidirectional Influences Model (Kandel, 1985) combining aspects of both the peer selection and peer socialisation models. While these peer –related theories show associations between adolescents' behaviours and their peers' perceived activities there are certain methodological issues that need to be considered. Maxwell (2002) states that correlations between a person's self-reported behaviour and their perception of a

friend's behaviour are artificially inflated when the person projects these actions onto the friend. For instance, when a peer's real behaviour is considered, the association between normative expectations and an adolescent's own behaviour is reduced (Bauman, Botvin, Botvin, & Baker, 1992). Therefore, measures that examine actual peer behaviour are considered better estimators of social influence (Maxwell, 2002).

3.4.3 SELF-DEROGATION THEORY

The main premise of this theory focuses on 'self-esteem' such that when adolescents experience negative evaluations from their social world (e.g. friends, parents, teachers) they feel that their social attributes do not meet the socially desirable expectations (Kaplan, Martin, & Robbins, 1984a). This creates a series of reactions, as a result of defending their egos, which include: isolation from social conventional role models; a desire to rebel against conventional standards; engagement in alternative conventional behaviours which will enhance self-worth; and interactions with deviant non-conventional peers who will enhance self-esteem (Petraitis, et al., 1995). Although this theory may seem that it is central to the self it is largely based on the individual's reactions to others.

In examining the relationship between self-esteem and drug use, Schroeder, Debra, Laflin and Weis (1993) explained that there are various methodological problems such as measurement of self-esteem, as well as a series of confounding variables which make the relationship a much more indirect, rather than direct one. For example, Kaplan et al. (1984a) concluded that weak self-esteem directly relates to involvement with other substance-using peers but indirectly relates to adolescent substance use, suggesting that there are a range of other variables that influence the relationship between self-esteem and drug use.

3.4.4 MULTISTAGE SOCIAL LEARNING MODEL

Drawing upon variables such as socialisation and stress coping, this model developed by Simons, Conger and Whitbeck (1988) attempts to provide an explanation for why adolescents join substance using groups. It should be noted that this theory assigns equal importance to several self-related variables by integrating social learning processes with intrapersonal characteristics such as emotional distress, social interaction skills and inadequate coping skills (Petraitis, et al., 1995). Although it offers a broad focus, it includes distal or background variables that are considered to have an indirect influence on substance use.

According to this model substance use is explained using three stages (Simons, et al., 1988). The first stage suggests that substance use is determined by the individual's personal value systems which

include current goals concerning family, religion and education, a lack of parental warmth, supervision and discipline as well as parents' own substance use. The second stage proposes that substance use will occur as a result of interacting with substance-using peers. This is particularly probable if adolescents have had a history of using substance in the past. Finally, the third stage attempts to go beyond initial, experimental use to explaining regular use and abuse (Simons, et al., 1988). This stage explains how substance use escalates when adolescents observe their own parents' substance use, have substance-using peers who encourage their own use, are emotionally distressed and have weak coping skills (Petratis, et al., 1995).

Several aspects of this theory have been supported through evidence showing that parental substance use encourages adolescent substance use (Kaplow, Curran, & Dodge, 2002). However, there is much less evidence suggesting that the integration of these variables predict substance use (Petratis et al. 1995). Nonetheless, integrating adolescent characteristics, parents and peers all within one single model of substance use is an impressive attempt to explain substance use. The proceeding Family Interaction Theory and Family Systems Theory will contribute to understanding how family dynamics influence adolescent substance use more specifically.

3.4.5 FAMILY INTERACTION THEORY (FIT)

Variations in several aspects of parenting including nurturance, discipline, monitoring and conflict have been associated with adolescent substance use (Hawkins, Catalano, & Associates, 1992). The FIT (Brook, Brook, Gordon, Whiteman, & Cohen, 1990) operates under the major psychological mechanisms of social modelling, parental attachment and identification with values and behaviours, all as a result of parent-child attachment. The child's attachment to their family and to social institutions (e.g. school) is considered to be central to the child's behavioural functioning. According to FIT, the parent-child relationship is considered to influence important aspects of the child's personality which can affect substance use in adolescence (Brook, Saar, & Brook, 2010).

The FIT explains that parent-child attachments are influenced by conventional values among parents, warm and supportive parenting styles, maternal psychological adjustment and maternal control over a child. By maintaining a strong attachment to the parent, the adolescent is able to develop a conventional and well-adjusted personality and interact with non-substance using peers. Weak parent-child attachments contribute to higher involvement with substance-using peers which leads to substance use (Petratis, et al., 1995). The impact of parents' involvement with their children is demonstrated in a study which found that negative parental interactions (e.g. low parental warmth) were associated with elevated rates of children's disruptive behaviour problems (Stormshak,

Bierman, McCahon, Lengua, & Conduct Problems Prevention Research Group, 2000). Moreover, guided by the FIT, another study found that having family rules, high family involvement and greater family communication offset the risks in psychological and peer domains (Fang, Schinke, & Cole, 2009).

Therefore, more than most theories FIT is empirically supported in terms of its assumptions, particularly that parent-child interactions influence adolescent substance use. Not only interactions, but individual family-member experiences have been found to be related to adolescent substance use, as posited by the Family Systems Theory.

3.4.6 FAMILY SYSTEMS THEORY (FST)

Some of the central concepts of the FST assume that the family members function in relation to one another and so the experiences of one member affect the social and psychological functioning of another (Bowen, 1974). Similarly, if there is a dysfunction in the family, such that a member is using or abusing substances, this will mean that all the members in the family will play a part in this dysfunction. Research has indicated that living with both parents has been associated with reduced drug use among adolescents and that the role of the mother was important in regulating substance-using behaviour of young people (McArdle et al., 2002).

Individual behaviour such as adolescent substance use is best understood in the family context (Levine, 1985). This is because within the family system, patterns of interaction regularities are described in terms of parenting practices or family system characteristics (Becvar & Becvar, 1982). Some family system characteristics (e.g. quality of interactions, type of structure) serve as important variables in understanding both the initiation and regular use of substances by adolescents (Needle et al., 1986). The FST is based on several theoretical concepts, a few of which will be briefly summarized to convey a notion of how using substances fit into the larger theory.

The over-involvement hypothesis (Noller, Seth-Smith, Bouma, & Schweitzer, 1992) provides a basis for assuming that families of adolescent substance abusers are typically characterized by a parent who is overly involved in the adolescent's life and another who is uninvolved. Volk, Edwards, Lewis and Sprenkle (1989) suggested that the level of family bonding was related to adolescent substance use. The functional hypothesis (Noller et al., 1992) explains that adolescent substance users serve a function for their families by placing an emphasis on the substance use problem, and taking away the focus from any other family problems such as marital conflict. Research indicates a positive relationship between highly bonded family systems and adolescent substance use (Levine, 1985) yet

conflicting results have indicated that strong emotional bonds reduce the risk for adolescent substance use (Steinglass, 1984).

The impact of these multiple settings on the development of antisocial behaviour, or adolescent substance use in this case, has been characterized as “dynamic, conditional and interactive rather than additive in nature” (Snyder, Reid, & Patterson, 2003, p.32). Understanding the broader societal factors will enhance our knowledge of why this drug use occurs in some and does not occur in others.

3.4.7 STRENGTHS & WEAKNESSES OF THEORIES THAT FOCUS ON SOCIAL INFLUENCE

The theories that have focused on social influence have asserted the importance of peers, friends, family and close significant others in terms of drug use. The self-derogation theory (Kaplans, Martins and Robins, 1984a) focuses on the self yet it is largely characterised by adolescents’ negative evaluations of their social world leading to non-conventional behaviour. The Multistage Social Learning model (Simons, Conger & Whitbeck, 1988) incorporates intrapersonal characteristics with social learning processes. The Family Interaction theory (Brook, Brook, Gordon, Whiteman & Cohen, 1990) and Family Systems theory (Bowen, 1974) emphasize the role of the family in terms of adolescent substance use. The common underlying weakness of these theories is the lack of consideration for factors that take into account the influence of society. The next section gives an overview of theories that focus on the wider social context such as the importance of social norms and societal conventions in explaining adolescent substance use.

3.5 THEORIES THAT FOCUS ON SOCIETY

The following theories shift attention away from the individual’s psychological state and social influence (e.g. peers and family) and towards understanding drug use as a result of the wider societal context.

3.5.1 SOCIAL CONTROL THEORY (SCT)

The Social Control Theory (Elliott, et al., 1985) highlights how having weak bonds with societal institutions as well as social values and attachments lowers the need to adhere to conventional standards of behaviour. Although this theory is similar to Social Learning Theory in that they both assume emotional attachment to other substance using peers, the SCT assumes that the individual is prone to deviant behaviours as a result of weak conventional bonds (Elliott, et al., 1985). Three causes for these weak conventional bonds have been: ‘strain’, which refers to the discrepancy between an adolescent’s aspirations, and their perception of opportunities available necessary to achieve these aspirations; ‘social disorganization’ referring to how weak social institutions such as

poor neighbourhoods lead to a sense of social detachment; and 'non-socialisation of adopting conventional standards' which refers to going against societal conventions (Elliott, et al., 1985).

In other words, adolescents who feel alienated from and uncommitted to conventional society, school and/or conventional role models (e.g. parents and teachers) will not internalize conventional standards or values which are necessary for conventional behaviours. These adolescents are therefore more likely to become attached to substance-using peers.

3.5.2 SOCIAL DEVELOPMENT MODEL (SDM)

Based on similar premises as those proposed by the SCT, the SDM suggests that adolescents become attached to substance using peers if they feel uncommitted to societal conventions or detached from role models such as their parents (Hawkins & Weis, 1985). However, while SCT focuses on social systems SDM relates to the individual and their own social development as well as their immediate social interactions (Hawkins & Weis, 1985). For instance, the SDM postulates that adolescents are at higher risk of engaging in substance use if their home/school does not provide them with rewarding interactions, successful interpersonal and academic skills and/or positive reinforcement.

The SDM is presented as a model within which the individual characteristics of adolescents concurrently influence, and are influenced by, interactions with conventional and deviant role models (Hawkins & Weis, 1985). Consistent with these theoretical postulations, available empirical evidence suggests that adolescents with poor grades (Cox, Zhang, Johnson, & Bender, 2007) low educational aspirations (Paulson, Combs, & Richardson, 1990), poor school connectedness (Bond et al., 2007) as well as low value and expectations for attaining educational success (Jessor & Jessor, 1977) are at higher risk of using illicit drugs.

3.5.3 SOCIAL INFLUENCE THEORY (SIT)

According to the SIT, Becker (1974) explains that after people take drugs their experiences are likely to be influenced by their ideas and beliefs about the drug. Information obtained by the social setting in which the drug was taken essentially reflects the user's personal experience of the drug. This demonstrates how cannabis sub-cultural values and conduct norms are mediated through the peer group.

3.5.4 STRENGTHS & WEAKNESSES OF THEORIES THAT FOCUS ON SOCIETY

These social-based theories focus on the influence of the wider society in explaining substance use. They emphasize the association between weak conventional bonds and adolescent substance use as result of going against societal conventions (e.g. schools, parents). While these theories successfully capture the elements of nurture in terms of how adolescents learn to use substances, they do not take into account the elements of nature. Biological and genetic influences can significantly improve our understanding of substance use. Theories focusing on these aspects will be described below.

3.6 THEORIES THAT FOCUS ON BIOLOGICAL ASPECTS

Theories that focus on biological aspects indicate which specific physical mechanisms in individuals impel or influence their experimentation or abuse of drugs. It should be noted that biological theories refer to substance use either as an addiction problem, or in terms of abuse but do not describe it as a recreational behaviour. A brief review of the theories that refer to biological rhythms, neuro-psychobiological predispositions and chemical imbalances will be made in this section.

3.6.1 HOCHHAUSER'S BIOLOGICAL RHYTHM THEORY (1980)

Hochhauser's Biological Rhythm Theory (1980) considers the role of chronobiological rhythms in substance abuse. Hochhauser suggests that during the adolescent period significant internal changes occur: hormonal changes, brain maturation and cognitive development (Hochhauser, 1980). These changes affect the way adolescents respond to the environment, and therefore can also affect the way that they respond to using drugs. This theory assumes that drug use is a form of obtaining some form of internal control over perceptions of helplessness.

Gorsuch and Butler (1976a) suggest initial drug use may occur as a result of responding to a state of physical pain, dealing with mental anguish or providing relief from boredom through sensation-seeking. Several studies of adolescent drug use suggest that depression is often a consequence of adolescents' inability to effectively cope with physiological and psychological changes (Braucht, Brakarsh, Follingstad, & Berry, 1973). It is the inability to cope with stressful experiences that contributes to the development of drug use. However the interrelationship between changing chronobiological rhythms, perceptions of internal control and drug use still needs further clarification (Hochhauser, 1980)

3.6.2 THE SOCIAL NEUROBIOLOGICAL THEORY

The Social Neurobiological Theory (Prescott & Wallace, 1978) explains drug use from the perspective of somatosensory affectional deprivation (SAD). According to this theory individuals have a neuropsychobiological predisposition or need for drugs and alcohol (Prescott & Wallace, 1978). Any factor that inhibits or reduces the afferent activity in the somesthetic (touch) and vestibular (movement) sensory modalities from conception onwards is considered to increase the likelihood of substance use (Prescott & Wallace, 1978). Maternal substance use during gestation (Prescott & Wallace, 1978) or leaving children to cry for prolonged periods without providing nurturance, could be potential causes for seeking artificial psycho-chemical stimulation later in life. Reich (1973) explains that the failure of adolescents to develop close friendships and/or intimate relationships among their peers is a contributing factor to developing weak neuro-psychobiological foundations. This results in substance use and other non-conventional behaviours.

3.6.3 NEURO-ADAPTATION THEORY

Neuro-adaptation refers to changes in the brain that occur as a result of defending against a drug's acute actions after repeated drug administration (Koob & Lemoal, 1997). The two types of changes that occur are known as the 'within-systems' adaptations, where the changes occur at the site of the drug's action, and the 'between-systems' adaptation where the changes occur in different mechanisms triggered by the drug's action. After repeated use of drugs, changes occur in the dopamine reward system and the endogenous opioid system (Koob & Lemoal, 1997). In the case of discontinuation of drug use, adaptations are no longer opposed but the brain's homeostasis is disrupted (Koob & Lemoal, 1997). These stressful stimuli are known to activate the dopamine reward system resulting in vulnerability and as a result of that, relapse.

Furthermore, motivational symptoms such as dysphoria, depression, irritability and anxiety have been examined alongside neurobiological changes. It has been argued that these negative motivational symptoms result from neurobiological changes and these changes can cause a shift from use to dependence as well as contribute to relapse (Koob et al., 1997).

3.6.4 STRENGTHS & WEAKNESSES OF THEORIES THAT FOCUS ON BIOLOGICAL ASPECTS

According to Hochhauser's Biological Rhythm Theory (1980) drug use has been described as an attempt on the part of the user to artificially adapt to internal physiological changes. An important strength of these biological theories is the integration of social factors in combination with the biological (i.e. using a socio-biological perspective). These theories are useful in reminding us that

drug use is partially explained by our biological processes. However, there are other individual and social processes which need to be taken into account when attempting to understand adolescent substance use (Petraitis et al. 1995).

3.7 THEORIES THAT INTEGRATE THE PSYCHOLOGY OF THE INDIVIDUAL, THE SOCIAL, SOCIETY & BIOLOGICAL ASPECTS.

The theories reviewed so far have focused on the psychology of the individual, social influence, impact of wider societal conventions and biological influences. None of these theories have focused on all of these aspects simultaneously. By contrast, the theories to be analysed in this section simultaneously integrate individual-related, social and biological factors in their explanations of adolescent substance use.

3.7.1 PROBLEM BEHAVIOUR THEORY (PBT)

Problem Behaviour Theory (PBT) is a model that explains risky health-related behaviours, such as substance use, using three independent, explanatory systems: personality; environment; and behavioural motivations. These systems interrelate in order to generate a level of proneness to problem behaviours (Jessor & Jessor, 1977).

Behaviour is considered to occur as a result of personality-environment interaction: 'personality' refers to individual values, expectations, beliefs and attitudes; and 'environment' refers to social influence, controls and the expectations of others. The environment's structures are categorised into distal (e.g. perceived support from parents and friends, parental attachment) and proximal (e.g. friends'/parents' approval or disapproval of problem behaviour). Therefore, according to the distal structure, an adolescent will be at risk of substance use if they are unattached to their parents, are close to their peers and are more influenced by their peers than their parents (Petraitis, et al., 1995). According to the proximal structure, an adolescent will more likely use substances if their friends/parents approve of substance use behaviour (Petraitis, et al., 1995).

PBT has been employed in cross-sectional and longitudinal studies of cannabis use examining local and national samples using males and females (Jessor & Jessor, 1977). A review of problem-behaviour theory provided evidence to support this theory in accounting for adolescent cannabis use (Donovan, 1996). Petraitis et al. (1995) argue that although PBT attempts to integrate a wide array of aspects in terms of explaining substance use, it lacks sufficiency in some areas. For instance, the role of cognitive-affective mechanisms is not taken into consideration. This is because emphasis is placed on the role of peers, discounting the role of substance-specific beliefs (Petraitis, et al., 1995). Lezak

(1995) demonstrated that lower levels of executive functioning, which have implications for decision-making, inhibitory control and self-regulation were found to explain adolescent substance use. Adolescents therefore find it difficult to create goal-oriented responses which modify their behaviour in relation to drug-using stimuli (Peterson & Pihl, 1990). This lowered level of behavioural control subsequently results in impulsive behaviour which increases the risk for substance use and substance use disorders (Peterson & Pihl, 1990).

Moreover, the PBT does little to describe the mechanisms by which indirect effects, such as self-esteem, operate. Although it has been suggested that low self-esteem indirectly influences substance use (Jessor, Donovan, & Costa, 1991), there is no further specification describing whether this occurs through interpersonal characteristics or weak conventional bonds. Nonetheless, the importance of PBT is not to be underestimated given that it is among the first theories that integrate environmental and interpersonal structures in adolescent substance use.

3.7.2 DOMAIN MODEL

This theory explains that adolescent substance use is caused by several domains of influences that interact to modify each other. Specifically, the domain model argues that there are more than 50 potential causes of this behaviour that can be clustered into 13 categories, depending on the proximity of their influence (Petraitis, et al., 1995). These 13 clusters are then subdivided into four separate domains: (a) biological, (b) intrapersonal (c) interpersonal and (d) socio-cultural (Huba, Wingard, & Bentler, 1980)(Huba, Wingard, & Bentler, 1980)(Huba, Wingard, & Bentler, 1980)(Huba, Wingard, & Bentler, 1980)(Huba, Wingard, & Bentler, 1980). The biological domain refers to genetic influences on an adolescent's susceptibility to addictive behaviours as well as their physiological reactions to substances and general health (Huba, et al., 1980). The intrapersonal domain includes adolescents' beliefs about substance use (e.g. anticipated consequences of substance use), as well as personal values, personality traits (e.g. impulsivity and sensation-seeking) and emotional states (e.g. anxiety) (Huba, et al., 1980). The interpersonal domain refers to the interpersonal influences from others who provide support to the adolescent and to whom an adolescent is emotionally attached (Huba, et al., 1980). Finally, the socio-cultural domain refers to external influences such as media depictions of substance use, availability of substance, price and legal sanctions against substance use (Huba, et al., 1980). Within this theory emphasis is placed on an adolescent's rebelliousness and sensation-seeking (Petraitis, et al., 1995).

This model has been criticised on the basis that its theoretical components are somewhat general for empirical testing. For example, Huba and Bentler (1982) suggested that there are interactions among

the different domains but failed to specify how or which domains might interact. Similarly, while they claimed that the relationships among the domains may change over time, as an adolescent becomes more engaged in substance use, they did not explain why or how these relationships may change (Huba & Bentler, 1982). Yet, this theory stands as one of the most comprehensive theories in providing a coherent understanding of adolescent substance use (Petraitis, et al., 1995).

3.7.3 STRENGTHS & WEAKNESS OF THEORIES THAT INTEGRATE THE PSYCHOLOGY OF THE INDIVIDUAL, THE SOCIAL, SOCIETY & BIOLOGICAL ASPECTS

These integrative theories attempt to explain substance use on the basis of concepts related to the individual, social influence, society and biological aspects. Problem Behaviour Theory (1977) assumes that the emergence of substance use behaviours occurs as a result of personality-environment interaction. Alternatively, the Domain Model argues that adolescent substance use is caused by factors within several domains (biological, intrapersonal, interpersonal and socio-cultural) that interact to modify each other in terms of the behaviour. Both these theories make good attempts at assembling the picture of adolescent substance use yet it seems that they still have weaknesses that are in need of re-formulation. For instance they fail to specify the mechanisms by which the individual, social and biological factors interact. Nonetheless, they have increased our understanding of substance use as a behaviour that occurs by an integration of individual, social, societal and biological factors. The next chapter reviews behavioural-based theories which integrate a range of individual, social and environmental factors into a single model, such as the Theory of Planned Behaviour (Ajzen, 1991).

3.8 CHAPTER SUMMARY

- Adolescence is a period during which experimentation with substances typically begins, yet it is important to note that not all adolescents engage in this behaviour (Arnett, 2000).
- Psychoanalytic perspectives position substance use as a way of coping with negative affective states such as anxiety, depression and feelings of alienation.
- Theories that focus on the psychology of the individual refer to associations of substance use with unconventional lifestyles. The interrelation between availability (of a drug) and proneness (of the individual) was also examined in relation to substance use.
- Theories that focus on social influence build upon the idea that non-conventional behaviours, just like conventional behaviours, are acquired via social learning, as assumed by the Social Learning Theory (Akers, 1977).
- Weak self-esteem has been associated with adolescent substance use (Self-Derogation Theory; Kaplan et al., 1984). However other theories highlight the importance of intrapersonal characteristics such as emotional distress on the social learning processes (Multistage Social Learning model; Simons et al., 1988).
- The role of the family is emphasized such that weak family structures or low levels of family bonding are known to be associated with adolescent substance use, according to the FIT (Brooke et al., 1990) and FST (Bowen, 1974) theories.
- Going against societal conventions forms the foundations of theories that focus on the influence of society in relation to substance use (e.g. Social Development model; Hawkins & Weis, 1985).
- Biological rhythms (Hochhauser, 1980), neuro-psychobiological predispositions (Prescott & Wallace, 1978) and neuro-adaptations (Koob & Leomoal, 1997) are among the main determinants of the theories that focus on the importance of biological aspects.
- Theories such as the Problem Behaviour Theory (Jessor & Jessor, 1977) and the Domain model (Huba, Wingard & Bentler, 1980) integrate the psychology of the individual, social influence, society and biological aspects simultaneously in explaining adolescent substance use.

- These theories make good attempts at assembling the picture of adolescent substance use but are still in need of re-formulation. Behavioural-based theories (e.g. Theory of Planned Behaviour; Ajzen, 1991) that integrate a range of individual, social and environmental factors are more powerful in explaining substance use.

4 CHAPTER 4: THEORY OF PLANNED BEHAVIOUR; A THEORETICAL AND PRACTICAL FRAMEWORK

4.1 CHAPTER OVERVIEW

Health-Behaviour models guide our understanding of health behaviour as well as provide scope for intervention. Attempting to identify the number of factors that influence health-related behaviour, a range of existing health-behaviour models such as Protection Motivation Theory (Rogers, 1983), the Health-Belief Model (Rosenstock, Strecher, & Becker, 1994), Social Cognitive Theory (Bandura, 1998) and the Transtheoretical Model of Change (Prochaska & DiClemente, 1992) are examined. These models refer to a series of cognitive, attitudinal and socio-structural factors, yet it is important to realise that in order to understand a behaviour it is useful to examine all these factors using one unitary model. The Theory of Planned Behaviour (TPB) incorporates distinct specific factors and their interrelationships towards certain behaviour, all within one framework. TPB allows for prediction of specific behaviours in a given situation by plotting a pathway that initiates from a set of cognitive underlying beliefs which separately represent *attitudes*, *subjective norms* and *perceived behavioural control (PBC)*. These three basic constructs all form *intentions*, which acts as the most immediate predictor of *behaviour*. In terms of the TPB, it is assumed that attitudes, normative factors and PBC all influence behaviour as a result of them being mediated by behavioural intentions. PBC is assumed to have a direct influence on behaviour (Ajzen, 1991). Notwithstanding the substantial amount of variance for which the TPB can account, there remains a large proportion of variance in intentions/behaviour that is not explained by TPB variables (Sheeran, 2002). To increase the predictive utility of the TPB certain moderator and mediator variables that could influence the relationship between cognition-intention and cognition-behaviour are analysed. This chapter ends with a discussion on how TPB is a powerful framework for examining cannabis use among young people.

4.2 HEALTH-BEHAVIOUR MODELS

Health-behaviour models incorporate a range of influencing factors that play an important role in guiding health-related behaviours. A few examples include social influences (e.g. peers, parents, media), personality traits (e.g. self –esteem) and cognitive factors (e.g. attitudes, beliefs, perceived control over behaviour) (Conner & Norman, 2005). It should be noted that not all health-behaviour models are discussed in this chapter. A few examples include Gollwitzer’s Implementation Intentions (1993) model and Bagozzi’s Goal Theory (1992). Both these models are principally concerned with improving intention-behaviour relations. However there has been little research focusing on conceptualising the discrete stages involved in these models. The Health Action Process approach (Schwarzer, 1992) represents a multi-stage model, but has also been excluded from the discussion in this chapter. This is because although it provides details of the measurement of components in the motivational phase of behaviour it fails to operationalize the variables in the volitional phase. Therefore, exclusion of these models from the discussion is on the grounds that they do not sufficiently account for or promote health behaviour change (Fishbein, 1975).

4.2.1 PROTECTION-MOTIVATION THEORY

4.2.1.1 BACKGROUND

Roger’s Protection-Motivation Theory (PMT) (1983) is one of the major theories of behavioural change that attempts to explain the cognitive mediation process of behavioural change using two appraisal processes: threat and coping appraisal.

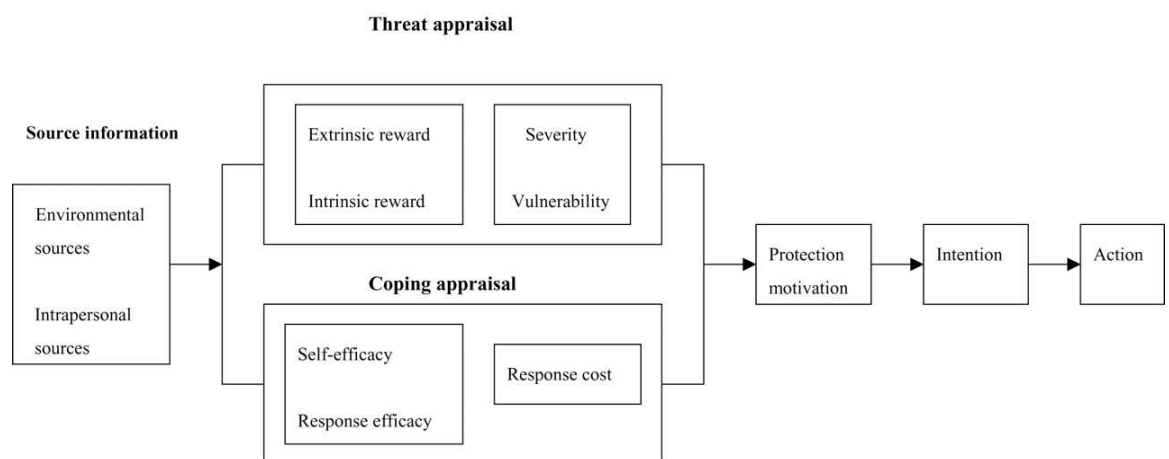


FIGURE 4:1 PROTECTION MOTIVATION THEORY (ROGERS, 1983)

4.2.1.2 DESCRIPTION OF MODEL

PMT is based on the work of Lazarus (1966) and Leventhal (1970). It describes health behaviour as represented by adaptive coping (beneficial to health) and maladaptive coping (harmful to health) resulting from two appraisal processes (Rogers, 1983). 'Protection motivation' determines these two forms of coping through the function of two appraisal processes: a 'threat appraisal' determined by the perceived vulnerability and perceived severity, and 'coping appraisal' determined by the perceived usefulness of the response (i.e. response efficacy) and the confidence in one's own ability to perform the behaviour (i.e. self-efficacy) (Rogers, 1983).

Threat appraisal focuses on the cause of the threat and the factors that increase or decrease the probability of maladaptive coping such as denial, avoidance and wishful thinking (Norman, Boer, & Seydel, 2005). For instance, smokers may be aware of the threat of lung cancer, and along with fear of this threat will perceive themselves to be more vulnerable to this threat, thereby increasing the motivation to engage in protective behaviour. On the other hand, coping appraisal focuses on the coping responses that are available to the individual to cope with the threat. For instance, smokers may believe that they have resources necessary to quit smoking. The probability of an adaptive response increases if the perceived response efficacy is perceived as effective and self-efficacy is considered to be positive. Therefore smokers would have an adaptive response once they appraise that quitting smoking would reduce the chances of suffering lung cancer and once they realise their own levels of capability to do so.

Appraisal of these two processes consequently form the intention to perform adaptive responses (where protection motivation increases) or to engage in maladaptive responses (where protection motivation decreases) (Rogers, 1983). In order to stimulate protection motivation the perceptions of severity and vulnerability must outweigh the rewards associated with maladaptive responses (Norman, et al., 2005).

The PMT assumes that the intention to protect one self (one's health) depends upon four factors that are as follows: (1) the perceived severity of a threatened event/situation, (2) the perceived likelihood of occurrence, or vulnerability (3) the perceived response efficacy, or the efficacy of the behaviour used to prevent this and (4) the perceived self-efficacy (see figure 4.1).

4.2.1.3 RESEARCH SUMMARY

In a meta-analysis of 27 studies, threat and coping-appraisal components of PMT were found to be useful in predicting concurrent behaviour, but not as useful in predicting later behaviour (Milne, Orbell, & Sheeran, 2002).

The PMT has been used to predict a range of health-related behaviours such as exercise, healthy eating, smoking and alcohol consumption (Milne, Sheeran & Orbell, 2006). Regarding exercise, self-efficacy was found to be a significant predictor of exercise intentions. Intentions was the only significant predictor of exercise behaviour (Plontikoff & Higginbottom, 1998). Similar results were found among an Australian sample of young adults; however perceived vulnerability and perceived severity were not significant predictors of behaviour. Nonetheless this study provides support for the cross-cultural applicability of PMT (Plontikoff & Higginbottom, 2002). PMT was also found to be predictive of simultaneous smoking behaviour in a sample of approximately 700 adolescents (Greening, 1997). Specifically, the cognitive appraisals of the theory such as minimising consequence severity of smoking and disregarding the benefits associated with non-smoking predicted adolescents' smoking behaviour. Furthermore, a study examining drug-related behaviours among adolescents, such as drug trafficking showed that low levels of health protection motivation were strongly correlated with high levels of intentions to engage in drug-trafficking behaviour (Wu, Stanton, Li, Galbraith, & Cole, 2005).

PMT has also been associated with a range of other behaviours such as sexual behaviours, cancer-related preventive behaviour and medical adherence behaviours (Norman, et al., 2005).

Overall, PMT has received support as a social cognition model to predict health behaviour. However predictive validity of its measures still requires further attention. For instance, most experimental tests have measured cognitions and intentions immediately after experimental manipulation rather than using long-term assessments. This shows that the validity of PMT can still be improved.

4.2.2 HEALTH BELIEF MODEL

4.2.2.1 BACKGROUND

The Health Belief Model (HBM) (Rosenstock, et al., 1994) is a psychological model that attempts to explain and predict health behaviours by emphasising the role of individual attitudes and beliefs.

4.2.2.2 DESCRIPTION

The HBM is based on two aspects of individuals' representations of health behaviour: threat perception and behavioural evaluation.

Threat perception is comprised of perceived susceptibility to health problems and the respective perceived severity of the consequences. Behavioural evaluation, on the other hand, consists of the perceived benefits of recommended health behaviour and perceived barriers of engaging in the behaviour. Therefore, an individual is likely to carry out the behaviour if he/she has high perceived threat of a health problem, if benefits can be obtained from the behaviour and if there are few barriers to performing the behaviour. The model also proposes that cues to action (such as media, personal influence and external reminders) can stimulate health behaviour when these beliefs are held (see Figure 4. 2).

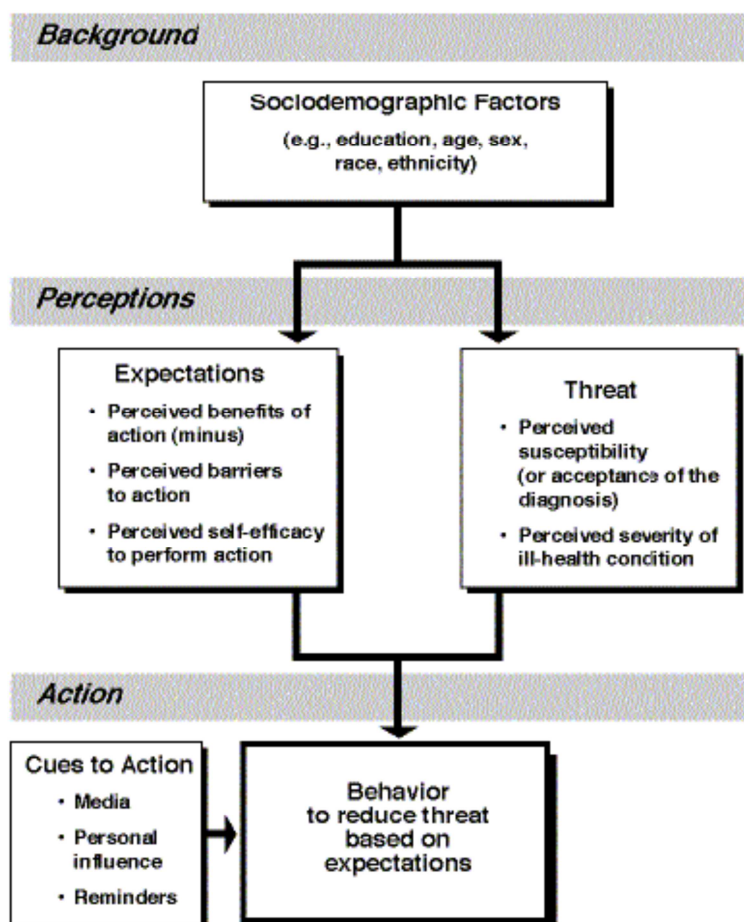


FIGURE 4:2 HEALTH BELIEF MODEL (ROSENSTOCK, ET AL., 1994)

4.2.2.3 RESEARCH SUMMARY

The model has been applied to a range of behaviours. Examples include risk behaviours such as exposure to environmental smoke (Li, Cheng, Ma, & Swan, 2003), preventive behaviours such as screening for colorectal cancer (Rawl, Menon, Champion, Foster, & Skinner, 2000) and adherence

behaviours such as examining for malaria prophylaxis regimens (Abraham, Clift, & Grabowski, 1999). However, the model functions on the basis that its six factors independently influence variance in health behaviours (Abraham & Sheeran, 2005). This implies that the components have been created without definition and without any rules of combination. For example, although perceived threat is assumed to be composed of perceived severity and perceived susceptibility, they are presented as separate predictors of behaviour. A meta-analysis examining the predictive validity of the HBM confirmed that there was lack of operational homogeneity, which consequently weakens the HBM's utility and status as a health behavioural model (Harrison, Mullen, & Green, 1992).

4.2.3 SOCIAL COGNITIVE THEORY

4.2.3.1 BACKGROUND

Social Cognitive Theory (SCT) is largely based on Social Learning Theory (Miller & Dollard, 1941). The Social Learning Theory proposes that when the individual is motivated to learn a particular behaviour, this is learned through clear observations. Through imitation, the individual learns how to perform the learned behaviour and eventually is rewarded with positive reinforcement. Therefore SCT is a learning theory based on the idea that people learn a certain behaviour by watching other people and generating thought processes central to understanding that behaviour (Bandura, 1986).

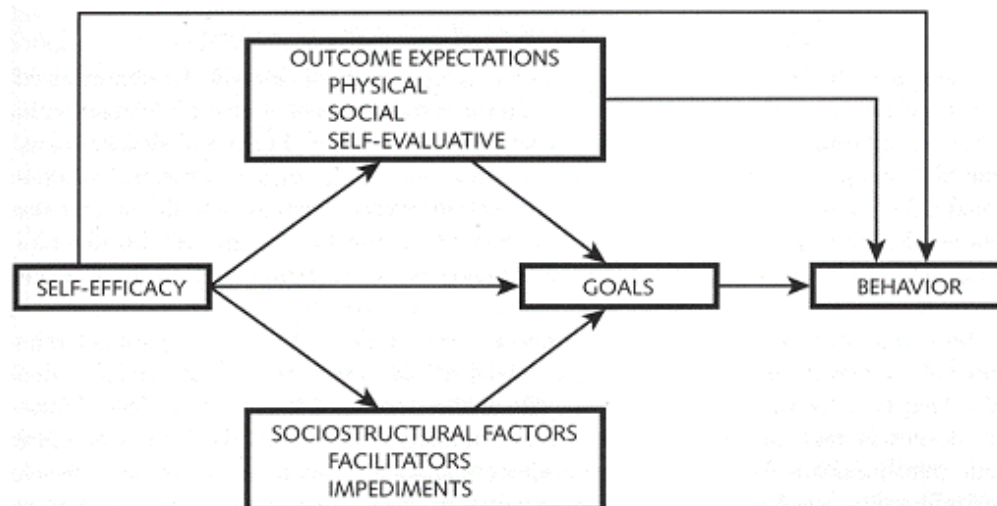


FIGURE 4:3 AN ILLUSTRATION OF SOCIAL COGNITIVE THEORY (BANDURA, 1998)

4.2.3.2 DESCRIPTION

The SCT underlines a number of crucial factors that influence behaviour, the two main determinants being: self-efficacy and outcome expectations (Bandura, 1997). Self-efficacy refers to one's perceived

capability to perform specific actions required to obtain a desired outcome. Outcome-expectations refer to one's beliefs about the possible consequences of their actions (according to situation and action). As seen in Figure 4.3, SCT additionally incorporates goals and socio-structural factors.

According to SCT individuals form a goal and then perform the behaviour. SCT distinguishes between distal and proximal goals and characterizes 'intentions' to perform an action as very similar to a proximal goal than to a distal goal (Bandura, 1997). Outcome expectancies, involve weighing the advantages and disadvantages of changing one's behaviour, and according to the individual's decision, influence the intention to act or the intention to not act (Di Clemente, Prochaska, & Gibertini, 1985).

Goal-setting is influenced by socio-structural factors. SCT assumes that these factors involve barriers (impediments) or opportunities (facilitators) that are determined by perceived self-efficacy. If an individual has optimistic self-efficacy, the focus will lie in examining the opportunities instead of the barriers to performing the behaviour (Bandura, 1997). What is more, people with a strong sense of self-efficacy will believe they have more control over performing the behaviour even if the environment provides more barriers than opportunities. To summarise, SCT predicts that behaviours are performed on the basis that: one perceives control over the outcome, there are few environmental barriers, and one has confidence in one's own ability.

4.2.3.3 RESEARCH SUMMARY

SCT has been used to predict a range of health behaviours as well as behavioural intentions. However the model, typically, explains only small to medium proportions of variance in behaviour (Armitage & Conner, 2000). Still, the self-efficacy component maintains its role as the main determinant of the theory in that it is the strongest predictor of behaviour.

A study monitoring physical activity among 10-16 year old adolescents found self-efficacy to be highly related to performing this behaviour (Strauss, Rodzilsky, Burack, & Colin, 2001). In relation to addictive behaviours, Dijkstra and DeVries (2000) examined self-efficacy expectations with regard to different tasks in smoking cessation. They found that the more confident a smoker was in overcoming barriers related to smoking cessation, the more likely they were to engage in quitting smoking. Moreover, a longitudinal study by Cohen and Fromme (2002) examined how self-efficacy and outcome expectancies differentially related to young adult substance use and risky sexual behaviours. It was found that positive outcome expectancies and self-efficacy were strongly associated with drug use and sexual behaviour, respectively. It has additionally been demonstrated

that greater perceived self-efficacy to resist smoking temptations strongly predicted a decrease in smoking (Velicer, Di Clemente, Ross, & Prochaska, 1990).

According to Armitage and Conner (2000) the notion of self-efficacy is central not only within the SCT but in other health behavioural models such as PMT and the Theory of Planned Behaviour. Given that self-efficacy has a wide range of influence across behavioural models, it can be suggested that 'self-efficacy' is perhaps even more important than the SCT *per se*.

4.2.4 TRANSTHEORETICAL MODEL OF CHANGE

4.2.4.1 BACKGROUND

One aspect of health behaviour refers to the extent to which people have intentions to change their behaviours. The transtheoretical model of change is a model of intentional change which focuses on the decision-making processes of the individual (DiClemente & Prochaska, 1998). The model was developed in the context of changing health-risky behaviours such as smoking and substance use (DiClemente & Prochaska, 1998).

4.2.4.2 DESCRIPTION

According to this model, behaviour change occurs through five stages: pre-contemplation, contemplation, preparation, action and maintenance (see Figure 4.4). Although change had been initially conceptualised as a linear progression through the stages, it became apparent that people who engage in problematic health-risk behaviours rarely go through this linear progress. Instead they can relapse at any stage to an earlier stage and therefore cycle repeatedly through stages in one sequence (Prochaska & Norcross, 2002). For instance, a smoker may attempt to give up smoking, but may relapse, and therefore regress to an earlier stage. Di Clemente and Prochaska (1998) note three regressions commonly occur through the stages before behaviour becomes stabilised.

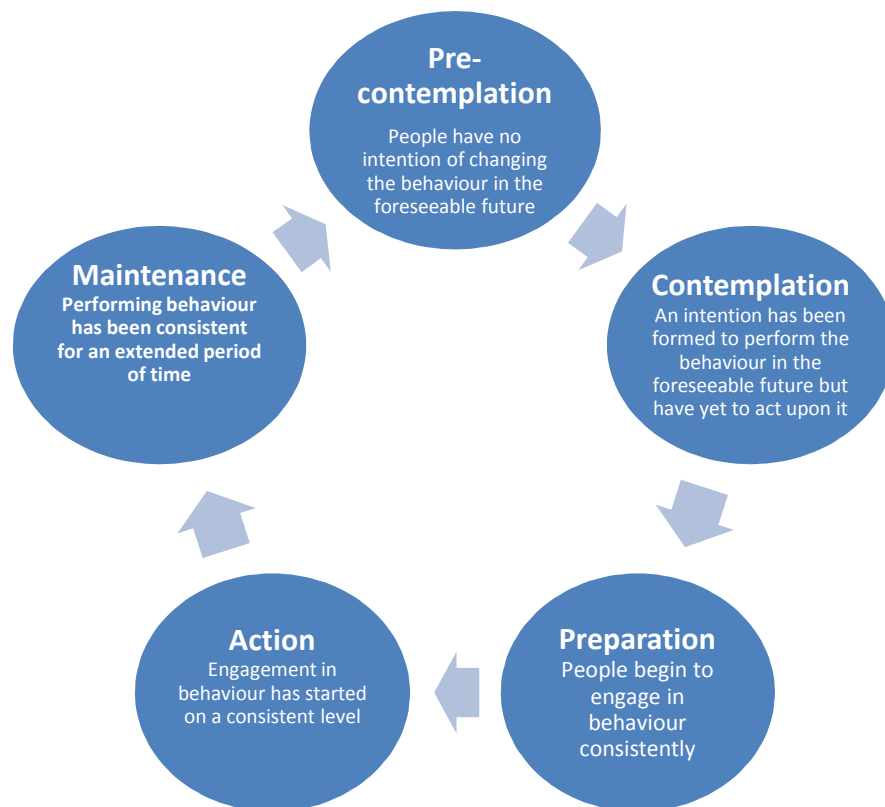


FIGURE 4:4 TRANSTHEORETICAL MODEL OF CHANGE (PROCHASKA & DI CLEMENTE, 1992)

In this model it is assumed that different processes are involved in the transition from one stage to the next and therefore different intervention strategies are required at different points in the cycle (Prochaska et al. 1992). For instance, cognitive strategies are thought to be effective in moving from the pre-contemplation stage to the contemplation stage, whereas behavioural-based strategies are effective in transition from the action stage to the maintenance stage.

4.2.4.3 RESEARCH SUMMARY

The stages of change model clarifies how behaviour change is not an all-or-nothing process but rather involves a series of stages within which different strategies are required to move from one stage to the next. The model has been applied to a number of behaviours including smoking cessation (Di Clemente et al., 1991), exercise (Marcas, Rakowski, & Rossi, 1992) and alcohol treatment (Di Clemente & Hughes, 1990).

A weakness of the model, however, is that it does not specify the mechanisms by which these stages of change occur. The role of other social cognitive variables has not been taken into account and so there is little evidence about the role of such variables in the change process. For example, a study

based on fat intake reported that attitudes and social pressure to change were highest among those at the contemplation and preparation stage (Brug, Hospers and Kok, 1997). Yet, the model does not take these socio-psychological processes into account. Fishbein and Ajzen (2010) argue that socio-psychological determinants such as attitudes, intentions and perceived control could be relatively unchanged between pre-contemplation and contemplation and only become favourable when moving from contemplation to preparation. This radical change of attitudes, for instance, is characterised by a unique process assumed to be active in the transition from contemplation to preparation. Rather than a discrete sequence of steps there is reason to assume a gradual process of behaviour change (Fishbein & Ajzen, 2010).

4.2.4.4 SUMMARY

A general background regarding health-behaviour models was provided with specific reference to the PMT, the HBM, the SCT and the Transtheoretical Model of Change. Research provided empirical support as to the validity of these models in explaining health-related behaviours. However, certain weaknesses limit the level of reliability and applicability of these models. This summary will briefly analyse these weaknesses and demonstrate how the Theory of Planned Behaviour (TPB; Azjen, 1991) manages to account for these.

Meta-analyses on the PMT have shown that the model lacks predictive power in explaining future health-related behaviour (Milne, Orbell & Sheeran, 2002). Alternatively, the TPB has consistently shown strong prediction of short-term and long-term behaviour. In comparison to the HBM, the TPB has demonstrated stronger operational homogeneity (Fishbein & Azjen, 2010) for which the HMB has been criticised. Within the SCT, the self-efficacy component maintains its role as the main determinant of the theory in that it is usually the dominant predictor of behaviour. The SCT highlights the importance of environmental barriers or facilitators in terms of predicting behaviour yet it does not take into account the cognitive determinants of self-efficacy, which are however specified in the TPB within the components of control beliefs and perceived behavioural control.

While the transtheoretical model of change manages to capture the individual decision-making process and refers to stages of intention change it fails to account for social-cognitive variables such as attitudes towards behaviour. The TPB however improves the prediction of behaviour by including attitudes as one of its key behavioural antecedents. Some authors have suggested that the apparent superiority of TPB over other health-behaviour models may simply reflect better definition of the constructs (Sheeran & Abraham, 1996). Furthermore, strong empirical evidence has supported the attitude-behaviour relationship (Armitage & Conner, 2001).

Although these models take into consideration a range of important factors in relation to behaviour, the TPB manages to incorporate and integrate these factors simultaneously in a socio-cognitive framework.

4.3 THEORY OF PLANNED BEHAVIOUR (TPB)

Dispositional explanations of behaviour have a well-established history in personality and social psychology. It has been argued that an aggregate sample of behaviour represents a more valid measure of the basic behavioural disposition than any other single behaviour (Ajzen, 1991). The principle of 'aggregation', however, does not explain behavioural variability across situations nor does it allow for prediction of specific behaviours in a given situation (Ajzen, 2005b). The nature of these behaviour-specific factors is dealt with in the framework of the Theory of Planned Behaviour (TPB).

4.3.1 GENERAL BACKGROUND

TPB is an extension of the earlier model known as Theory of Reasoned Action (TRA). TRA places intention as the proximal determinant of behaviour, thereby defining it as the motivation required to perform a particular behaviour (Ajzen, 1985). Thus, the more one intends to perform a behaviour the higher the likelihood that it will be performed. Within this framework, intention is determined by attitudes; a component referring to an individual's attitude towards the behaviour and subjective norms; a component referring to an individual's beliefs about how significant others view the relevant behaviour. Attitude is itself determined by behaviour-related beliefs including a person's *expectancy* that the behaviour will produce a desired outcome and the relative *value* attached to this consequence. Similarly, subjective norms are determined by significant others' expectations of the individual to perform/not perform a behaviour and the individual's *motivation* to comply with these expectations (Ajzen & Manstead, 2007).

The TRA model therefore aimed to propose an expectancy value framework that would explain relationship between beliefs and attitudes. However, this theory was developed explicitly to deal with pure volitional behaviours that were solely dependent on personal agency (formation of intention). Perception of control over a behaviour (personal/environmental determinants) was considered to be somewhat unimportant (Ajzen, 1985).

4.3.1.1 DESCRIPTION OF THE MODEL

To counter the aforementioned criticisms, Ajzen (1991) included a new component, that of Perceived Behavioural Control (PBC), resulting in the revised model known as Theory of Planned Behaviour (TPB). This was used to broaden the applicability of TRA beyond volitional behaviours by including explicit considerations of perceptions of control over performance of the behaviour as an extra predictor of behaviour. According to the TPB, intentions and behaviours are a function of three basic features, one personal in nature, one reflecting social influence, and another involving the issue of control (Ajzen, 2005). Perceived Behavioural Control (PBC) extends application of the theory beyond easily performed volitional behaviours to more complex behaviours which are dependent upon performance of a complex array of other behaviours. The theory suggests how PBC influences behaviour in two ways: firstly, by having a direct effect on behavioural intentions (an individual's intention to engage in a particular behaviour is affected by the confidence in their ability to do so) and secondly, by directly affecting behaviour (see Figure 4.5).

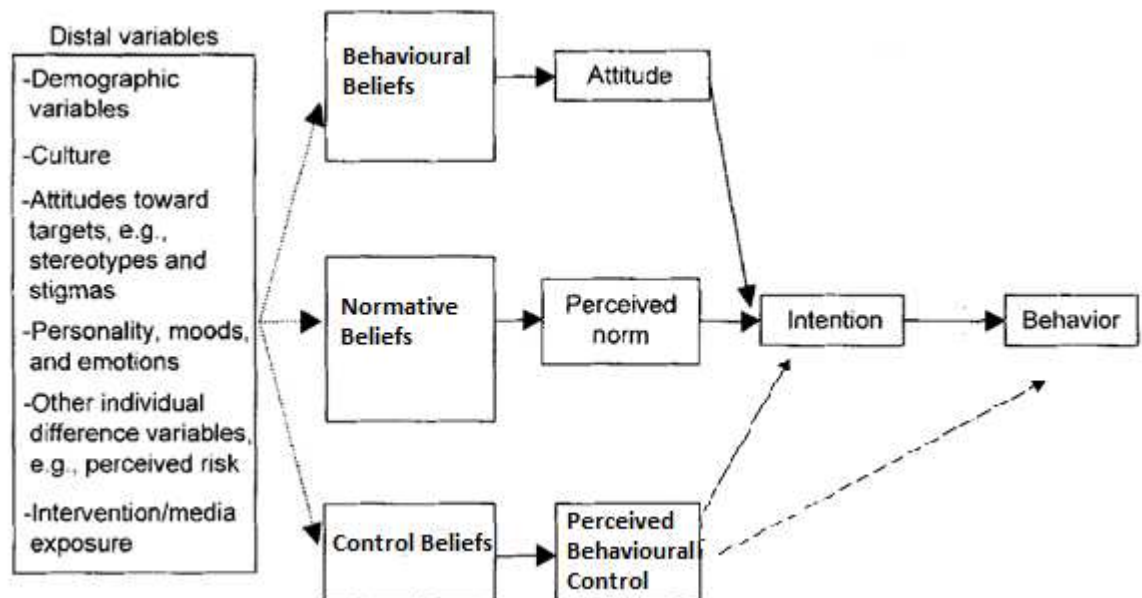


FIGURE 4:5 THE THEORY OF PLANNED BEHAVIOUR (AJZEN, 1985, 1991)

Although the link between intention and behaviour reflects people's tendency to engage in behaviour that they intend to perform, the link between PBC and behaviour is not as straightforward (Conner & Sparks, 1996). The fact that there are both direct and indirect effects of PBC on behaviour demonstrates the usefulness of this component in situations where volitional control (actual control) decreases. Including this component is based on the rationale that, holding intention as a constant, greater perceived control will increase the likelihood that performing the behaviour will be

successful. In fact, where PBC proved to be an accurate proxy measure of actual control it proved stronger predictions of behaviour and moderated the intention-behaviour relationship (Sheeran, 2002).

4.3.1.2 BEHAVIOURAL BELIEFS, NORMATIVE BELIEFS, CONTROL BELIEFS

The antecedents of attitude, subjective norm and PBC are corresponding beliefs, representing the underlying cognitive structure of each component. Consistent with the expectancy-value model, the logic lies in applying the beliefs about the consequences of a behaviour and weighing that by the subjective value of the consequence in question (Fishbein & Ajzen, 1975). Each **behavioural belief** therefore is composed of two factors: the outcome belief and the outcome evaluation. The outcome belief refers to the likelihood of certain outcomes occurring. Only outcomes that are valued are likely to influence the attitude of behaviour in question (Ajzen, 2005b). A similar pattern follows for the salient **normative beliefs** underpinning subjective norms. Given that subjective norms refer to the general perceptions of social pressure, normative beliefs are concerned with the perceived behavioural expectations of the important referent individuals or groups, such as the person's family, friends, co-workers, teachers (Ajzen & Manstead, 2007). These beliefs, as well as the person's motivation to comply with the various referents, form the prevailing subjective norm regarding the behaviour. Finally, **control beliefs** refer to the perceived presence of factors that will help or hinder performance of a behaviour (Ajzen, 1991). Like the other beliefs, the formulation takes account of the perceived power of each control factor that promotes or inhibits performance which is multiplied with the person's subjective probability of the power of these factors to inhibit/ promote the behaviour (Ajzen, 2005a).

4.3.1.3 BELIEF FORMATION

There are three different processes that underlie belief formation. Firstly, on the basis of direct observation (observational beliefs), secondly by using an inferential process whereby an individual will observe the outcomes produced by another person's behaviour and infer that similar outcomes would occur if he/she were to perform that behaviour (inferential beliefs) and thirdly by accepting information that is provided by others (informational beliefs) (Fishbein & Ajzen, 2010). For instance, people may decide to smoke cannabis on the basis of observing others doing this behaviour (observational belief), or by inferring that it will cause them to relax given that it creates this effect in others (inferential belief), and/or by being externally informed either by friends, internet or television on its use (informational beliefs).

The role of background factors in determining belief formation has been analysed through a series of studies. Several demographic variables such as gender, age, ethnicity and socioeconomic status are often found to influence, but not explain, differences in behaviour. Alternatively, personal dispositions such as self-esteem, sensation-seeking, intelligence and/or political views seem to hold more meaningful explanations for behaviour (Fishbein & Ajzen, 2010).

4.3.2 DETERMINANTS OF TPB VARIABLES

Intention is the most proximal determinant of behaviour and is itself essentially determined by *Attitudes, Subjective Norms and Perceived Behavioural Control (PBC)*. This combination indicates that intentions are a function of one's evaluation of personally engaging in a behaviour, one's perception of what is socially approvable by significant others and one's perceptions of control over performance of a behaviour (Conner & Sparks, 2005). *Attitude* is a disposition to respond in a consistently favourable or unfavourable manner to an object, person, institution or event (Ajzen, 2005). It maintains an evaluative nature which then locates an individual on an evaluative dimension vis-à-vis the attitude object (Fishbein & Ajzen, 1975). The relationship between behavioural beliefs and attitudes is based on Fishbein's summative model of attitudes (1967a), which assumes that a person may possess a large number of beliefs about a particular behaviour but only the salient beliefs are the ones which determine a person's attitude. The link between behavioural beliefs and attitudes is assumed to be strong as supported by Armitage and Conner (2001). *Subjective norm (SN)* is a function of normative beliefs which involve perceptions of significant others' preferences about whether one should or should not engage in a behaviour (Ajzen, 1991). *PBC* is influenced by beliefs concerning whether one has access to the necessary resources and opportunities to perform the behaviour successfully weighted by the perceived factor of each factor (Ajzen, 1988). The perception of factors that determine whether the performance of the behaviour will be inhibited or facilitated are referred to as control beliefs. Both internal (personal deficiencies, skills, abilities) and external (opportunities, barriers, dependence on others) variables are included in these control factors (Conner & Sparks, 2005). Thus, the more resources and opportunities one possesses the greater should be their perceived control over the behaviour.

Ajzen (1991) states how the relative importance of attitude, subjective norm and PBC is expected to differ across behaviours and situations with regards to predicting intention. That is, in situations where attitudes are strong, or where normative influences are controlling, PBC may be less predictive of intentions and thus of the performance of behaviour. Therefore the extent of the PBC-intention relationship seems largely dependent upon the type of behaviour and nature of the situation (Armitage & Conner, 2001). However, in a meta-analysis that reviewed the theory of

planned behaviour, PBC was found to significantly predict intention and behaviour, over and above attitudes and subjective norms (Armitage & Conner, 2001).

4.3.3 MODERATOR-MEDIATOR VARIABLE DISTINCTION

Distinguishing between a moderator and mediator variable can help us understand their conceptual and functional difference. The influential paper by Baron and Kenny (1986) emphasizes differences on a strategic, statistical and conceptual level. A moderator is defined as “a qualitative (e.g. sex, race, class) or quantitative (e.g. level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable” (p. 1174). Alternatively, a mediator is characterized as “an active organism (that) intervenes between stimulus and response” (p.1176).

The basic considerations for the moderator variable as seen in Figure 4.6 are that (1) it must be uncorrelated with both the predictor and the criterion to provide a clearly interpretable interaction term and (2) the moderator-predictor variables are at the same level in regards to their role as causal variables, that is they always function as independent variables.

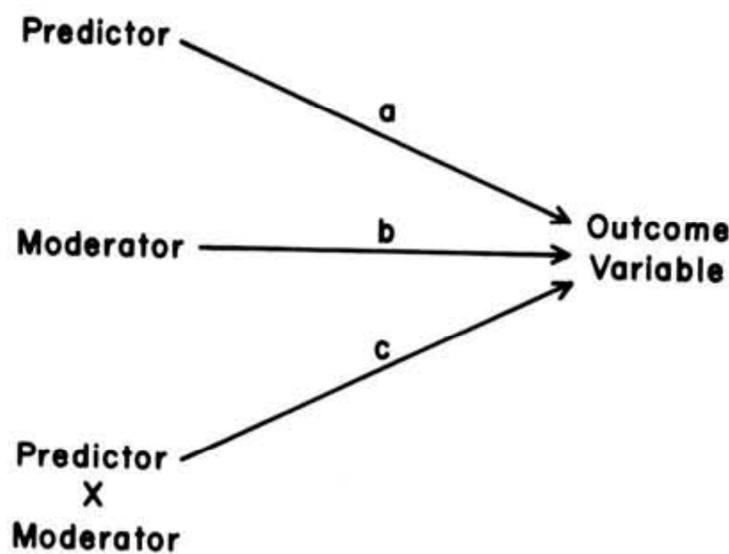


FIGURE 4:6 MODERATOR MODEL (BARON & KENNY, 1986)

On the other hand, a variable functions as a mediator (Figure 4.7) under the following considerations: (1) The path *a* is significant such that the variations in the levels of the independent variable (IV) significantly account for variations in the mediator; (2) the path *b* is significant, so that variations in the mediator significantly account for variations in the outcome variable; and (3) path *c*

is zero, where it can be assumed that there is strong evidence for a single dominant mediator, while if path *c* is not zero then there are probably multiple mediating variables.

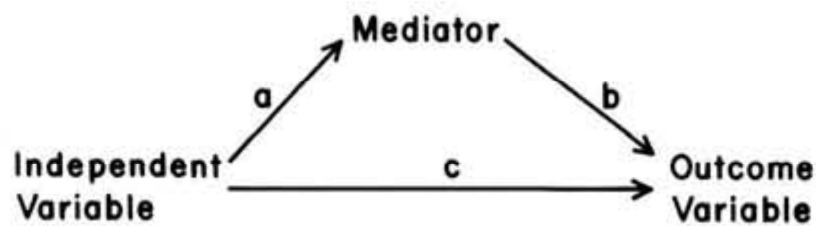


FIGURE 4:7 MEDIATOR MODEL (BARON & KENNY, 1986)

In terms of the TPB model, it is assumed that the relationship between attitudes and the normative factors on behaviour are mediated through behavioural intentions. Moreover, as suggested in the Baron and Kenny paper (1986) some variables such as gender, are best viewed as moderators of the behavioural intention-behaviour relationship. Nonetheless, placing both moderator and mediator variables within the same model helps to make the dynamic distinction between these two variables more important. This is because while moderator variables will specify when certain effects will occur, the mediator variables will explain how and why such effects occur. For example, when examining the relation between socio-economic status (SES) and breast cancer screening (BCS), age may act as a moderator variable in that the relation between SES and BCS would be stronger for older women and weaker for younger women, while education may act as a mediator variable by explaining why there is a relation between SES and BCS.

4.3.4 PRINCIPLE OF COMPATIBILITY

4.3.4.1 THE IDEA OF AGGREGATION

The principle of aggregation is based on the assumption that “any single sample of behaviour reflects not only the influence of a relevant general disposition, but also the influence of various other factors unique to the particular occasion, situation, and action being observed” (Ajzen, 1991, p.180). In other words, a slight change in one of these factors can produce a completely different reaction. By using an aggregate measure it is possible to represent the influence of factors consistently present across a variety of contexts and occasions (Ajzen, 2005a). In doing so, the factors thought to influence behaviour tend to cancel each other, resulting in an aggregate measure that is more valid of the underlying behavioural disposition than any single behaviour. Observing behavioural tendencies from a series of multiple acts allows for a better reflection of the broad underlying behavioural disposition.

4.3.4.2 TARGET, ACTION, CONTEXT AND TIME (TACT)

Even though a behavioural disposition can vary along a dimension of generality, from very broad to very specific, it can be systematically defined in terms of four elements: (1) the behavioural Target, (2) the Action(s) involved, (3) the Context in which the disposition is occurring and (4) the Time at which it is performed. The 'principle of compatibility' is based on these four elements. Two markers of a given disposition are considered compatible with each other if the four elements can be assessed on an equal level of generality and specificity (Ajzen & Fishbein, 1977). A typical analogy applied to describe the 'principle of compatibility' has been the 'contiguity hypothesis' in Guttman's facet theory. This states that the correlation between two variables increases with the similarity between the elements defining them (Guttman, 1957). An intention is therefore compatible with a behaviour if both are measured at the identical levels of TACT. For example, asking a general question such as "Do you intend to use drugs in the future" does not apply the elements required. This increases the probability of a lower association with behaviour. Instead, a question such as "Do you intend to use cannabis at school in the next two weeks" covers the targeted behaviour, the action, the context and the time in which this behaviour will occur, thereby formulating a more specific behavioural disposition.

Although the principle of compatibility is empirically well-supported, further emphasis is needed to understand the mechanism whereby it operates. This is because while it serves for understanding most general behavioural tendencies, it does not explain behavioural variability across a situation. For instance, when attitude and behaviour are assessed at the level of a single action, the notion of aggregation does not explain the high correlations among these two. Instead 'belief congruence' has been used to explain how attitudes as well as behaviours are guided respectively, by beliefs that are salient in the context in which both attitudes and behaviour are present (Ajzen, 2005b). Therefore even if two measures involve exactly the same target, action, context and time elements, activation of different salient beliefs in the attitudinal and behavioural contexts may result in reduced belief congruence, causing inconsistency between behaviour and the attitude or intention. It can be assumed that the relationship between the cognitive predictors of a behaviour and the performance of the behaviour will be stronger if the behavioural and cognitive elements are compatible (Ajzen & Fishbein, 1977) .

4.4 INTENTION-BEHAVIOUR RELATION

A central component in the TPB is the individual's intention to perform a given behaviour. Intentions are assumed to reflect upon the motivational aspects that influence a behaviour such as the amount of effort placed into performing the act, or how hard one tries to perform the act (Ajzen, 1991). The

basic rule is that the stronger the intention, the more likely it is that the behaviour will be performed. It should be noted that intention exerts influence upon behaviour only if a behaviour is under volitional control (where the person willingly decides whether to perform or not to perform a behaviour).

While some behaviours are highly volitional the existence of factors such as availability of required opportunities and resources (e.g. time, skills, involvement of others), makes the notion of non-motivational behaviours more important. Therefore actual control over a behaviour would determine the extent to which a person has the opportunities and resources to perform the intended behaviour (Ajzen, 1991). To summarise, intentions are expected to influence performance of behaviour if both motivation and ability are present.

4.4.1 PREDICTIVE VALIDITY OF INTENTIONS

The predictive validity of behavioural intentions has been thoroughly examined with intentions accounting for a significant proportion of variance in behaviour. A meta-analysis covering a wide range of behavioural domains resulted in an overall correlation of .53 between intention and behaviour (Sheeran, 2002). Similarly, a review of 185 studies in the framework of the TPB revealed that, on average, 27% of the variance in behaviour was explained by behavioural intentions (Armitage & Conner, 2001).

However, low intention-behaviour correlations are also obtained. A classic study on racial prejudice dating back to the 1930's found inconsistent results regarding intention-behaviour relation. A series of establishments such as hotels and restaurants had replied to a letter of inquiry stating their refusal to accept any members of Chinese race in their establishments, yet when a Chinese couple had visited these establishments, they were accepted without hesitation (La Piere, 1934). Consistent with the principle of compatibility, a fundamental requirement for a strong relation between intention and behaviour is a high degree of compatibility. The 'La Piere' study gives evidence of behavioural incompatibility which acts as one of the many factors that may affect the predictive validity of intentions.

The use of different scales for measures of intentions and behaviours is also likely to result in lower correlations among the two. The importance of scale compatibility was indicated in a study using a frequency measure of intention and a dichotomous graded measure of intention to examine the frequency of physical activity (Courneya, 1994). As expected, the frequency measure of intention was the better predictor of the behavioural frequency than the dichotomous measure. Category incompatibility (measuring general intentions for a specific behaviour or vice versa) has also been

reported to account for lower correlations in the intention-behaviour relation (Kerner & Grossman, 1998).

There exist a variety of factors that may be responsible for the weak intention-behaviour correlations. Even though an intention may be fully compatible with the behavioural criterion, if the intention changes after it has been assessed and before the performance of the behaviour, the predictive validity will decline. This is known as 'temporal stability', referring to the consistency of cognitions during a given time interval (Sheeran & Taylor, 1999). The idea is that intentions remaining stable over time should better predict behaviour than intentions that remain unstable. For instance, a study examining frequently performed behaviour and infrequently performed behaviour found temporal stability to moderate the relationship between intention and behaviour; more stable intentions were better predictors of behaviour (Conner, Sheeran, Norman & Armitage, 2000). Thus temporal stability could act as a critical mechanism by which the gap of intention-behaviour can be narrowed down.

4.4.2 INTENTION – BEHAVIOUR DISPARITY

'Implementation intentions' is one of the interventions developed to reduce the disparity between intention and behaviour. Having individuals formulate a specific plan as to the performance of a behaviour, such as indicating where, when and how they will perform the particular behaviour, increases their sense of commitment towards that behaviour (Ajzen, Casch, & Flood, 2009). Implementation intentions allow individuals to gain a sense of control over the directed behaviour, thereby increasing their intentions to engage in such behaviour. According to Gollwitzer (1999), they produce automaticity in behaviour through a cognitive process of mentally pairing the particular behaviour with a range of critical stimulus cues. In an empirical study, regarding simple tasks such as rating TV newscasts, implementation intentions were found to be extremely effective in raising levels of task performance (Ajzen, et al., 2009). The main implications suggest that forming a general implementation intention leads people to form a specific implicit implementation intention which in itself encourages the performance of the intended behaviour. Therefore, formulating implementation intentions increases the levels of commitment to the behaviour which is necessary to encourage compliance of behaviour.

4.5 ATTITUDE, SUBJECTIVE NORM AND PERCEIVED BEHAVIOURAL CONTROL

The TPB has the ability to trace the causes of behaviour to the person's accessible beliefs, providing a comprehensive account of the factors that shape the behaviour. Hence, at the initial level, behaviour is influenced by intention and PBC. At the next level, the intentions are explained by a number of preceding variables (attitude, subjective norms and PBC) while the third level describes the underlying salient beliefs which lie at the core nature of each of the variables and provide the informational foundation of intentions and behaviour (Ajzen, 2005).

The TPB assumes that behaviour is a function of salient information or beliefs relevant to the behaviour. It is these salient beliefs that are considered to be the overarching features of a person's intentions and actions. Therefore, the antecedents of attitude, subjective norms and PBC lie in the corresponding beliefs that reflect the relative cognitive structure. A behaviour is associated with a particular outcome by the behavioural belief that links them (Armitage & Conner, 2001). To better understand how these beliefs function within these critical components it is necessary to deeply examine each construct separately.

4.5.1 ATTITUDES: A DETAILED ANALYSIS

4.5.1.1 A CLEAR DEFINITION

To understand the notion of attitude a clear definition must be implemented. Fishbein and Azjen (2010) have suggested it to be a "latent disposition or tendency to respond with some degree of favourableness or unfavourableness to a psychological object" (p.76). Therefore attitudes are evaluative in nature with different kinds of evaluative responses used so as to infer it. The first to apply psychometric methods in measuring attitudes was Thurstone (1928). He argued for a specified continuum, in the form of a scaling procedure that produces a single score indicating an individual's attitude toward a given behaviour/object. Although this measurement procedure initially received some scepticism with regards to the potential gap between the theoretical conceptualization of attitude and the method of measurement, theory and research have agreed towards a one-dimensional concept of attitude.

Attitude has been used to refer to an evaluation of an object, behaviour, and/or event rather than an emotional perspective. Although it is recognised that attitudes may be influenced by moods and emotions, when measuring for attitudes individuals are asked to rate the degree of liking/disliking, and pleasant/unpleasantness (Ajzen & Fishbein, 1970) which reflects upon its evaluative nature.

4.5.1.2 MEASUREMENT

The measurement of attitudes is based on Osgood's semantic differential scale which measures a construct on a set of bipolar adjective scales, usually with seven rating points (Osgood, Suci, & Tannenbaum, 1957). The responses are usually scored from -3 on the negative side, including terms such as dislike, bad, unpleasant, to +3 on the positive side, with terms such as like, good, pleasant. In a study of cannabis use among college students the participants were asked to evaluate the use of cannabis using 'good-bad' and 'pleasant-unpleasant' as the semantic differential scales (Conner & McMillan, 1999).

4.5.1.3 INSTRUMENTAL VS. EXPERIENTIAL ITEMS

Examining the semantic differential scale reveals a mixture of cognitive (useful- useless) and affective (pleasant-unpleasant) components within it (Osgood, et al., 1957). Although these two types of scales are often strongly correlated, at times they are found to reflect two different underlying constructs, whereby affective judgements may be more predictive than cognitive evaluations (Ajzen & Timko, 1986).

Although it has been maintained that there exists a one-dimensional view of attitude, further research has supported the distinction of attitude into two sub-types: instrumental and experiential. Instrumental reflects the anticipated positive or negative consequences, and involves dimensions such as 'harmful-beneficial'. Experiential refers to the positive or negative experience associated with the object/behaviour in question and involves dimensions such as 'pleasant-unpleasant' (Fishbein & Ajzen, 2010). A study conducted to examine adherence to a training program among teenage swimmers found a clear distinction between these two concepts (Mummary & Wankel, 1999). After using a 12 item seven-point semantic differential scale to examine the attitude towards training, a factor analysis revealed an instrumental and experiential factor present among the adjectives used to measure this attitude. This supports a distinction between these two interrelated aspects. Yet, another interpretation of this finding could be that the two dimensions identified differ not in their features but rather in the valence associated with the attitude. For example, it could be that the participants were inferring a positive or negative valence towards this behaviour, therefore implying that although two factors emerge in the factor analysis, these factors are both evaluative in nature. Although it is important to include instrumental and experiential adjective pairs, the option of omitting these from the measurement scales if they do not meet the criterion for inclusion in the final scale, should be considered.

4.5.1.4 EXPECTANCY-VALUE MODEL

The way in which beliefs influence attitudes is described as a model of attitude formation and structure, known as the '*expectancy value model*'. 'Belief' in this model is characterised as the subjective probability that the object has a certain attribute (Fishbein & Ajzen, 1975). The main aim of the model is to explain how the subjective value of a given outcome influences the attitude in direct proportion to the strength of the belief. The basic structure of the model is demonstrated in the following equation:

$$A \propto \sum b_i e_i$$

FIGURE 4:8 THE BELIEF COMPOSITION OF ATTITUDE

The figure above shows that 'A' is the attitude towards the outcome, 'b' represents the strength of the belief, while 'e' is the value/evaluation given towards that outcome, and 'p' is the number of salient outcomes. It can be understood that the evaluation of each attribute contributes to the attitude in direct proportion to the strength of the belief. Therefore, individuals hold favourable attitudes towards behaviours/objects if the attributes associated are favourable as well, and will hold unfavourable attitudes if the attributes associated are negatively valued (Fishbein & Ajzen, 2010). The expectancy-value model also assumes that the product term of attitude ($b_i e_i$) must produce a significant increase in the explained variance. There has been enough empirical support for this assumption (Ajzen & Fishbein, 2008).

4.5.1.5 ACCESSIBILITY OF BELIEFS

An important implication of the expectancy-value model of attitude formation is that attitudes towards a behaviour are acquired automatically, by attending to the beliefs that are most salient to the person's attitude (Ajzen, 1985). The activation of these beliefs will occur without much cognitive effort and will be readily available when a person has a reason to retrieve them. It is therefore worth noting that the expectancy-value model does not assume deliberate or conscious processing of attitude construction, but an automatic activation of beliefs when a person is confronted with the attitude object.

In terms of beliefs, 'salience' is quite different to what is referred to as 'importance'. Although the two are related in that individually important beliefs are bound to be salient, the former is operated in terms of frequency of elicitation, whilst the latter functions as a result of a subjective selection of

beliefs based on what people perceive as important considerations. Fishbein and Ajzen (1975) suggest that in terms of relative weights, subjective estimates of perceived importance have little to do with the empirically derived weights. Incorporating a small number of subjectively important beliefs has been shown to be more closely related to attitudes and behaviour, in comparison to incorporating all of these beliefs under a category of 'modally salient' beliefs (van der Pligt & de Vries, 1998). This suggests that by including individually selected important beliefs which are more accessible than the modally salient ones, according to van der Pligt and de Vries (1998), the belief structure underlying the attitudinal decisions becomes more descriptive and more sensitive.

The importance of belief salience is supported by the correlation between belief strength and belief frequency known as the belief accessibility (Ajzen & Sexton, 1999). The evaluative component of the attitude will vary depending on the particular beliefs that are accessible at the given time, considering that beliefs can change over time resulting in new beliefs being formed. Attitudes will therefore alter depending on the number of salient beliefs, their evaluative nature and their strength. This confirms the general rule that individuals holding different accessible beliefs will react with different attitudes regarding a particular behaviour (Ajzen & Sexton, 1999). However, given that attitudes are measured using an aggregated evaluation of the **total set** of accessible beliefs, it may be that two different sets of beliefs produce very similar overall attitudes.

4.5.1.6 EMPIRICAL SUPPORT

Behavioural beliefs have been assessed as to their consistency with the expectancy-value model. There has been enough evidence to support the expectancy-value model as applied to attitudes towards a behaviour. A meta-analysis conducted to examine for strength of relationship between the expectancy-value index of beliefs ($\sum b_i e_i$) and a direct attitude measure, across a range of behaviours, found a correlation of .53 (Armitage & Conner, 2001).

Other findings however, have shown a much lower correlation between the expectancy-value index and the attitude measure. Yet the reason for this has been attributed to the use of non-salient beliefs as a measure of attitude. A study examined undergraduate students' beliefs, attitudes and intentions with regards to making abortion illegal. In the belief elicitation phase salient beliefs were found to predict attitudes significantly better than non-salient beliefs (Petkova, Ajzen, & Driver, 1995). The $\sum b_i e_i$ index correlated .77 with the direct attitude measure, while the $\sum b_i e_i$ index based on non-salient beliefs produced a correlation of .67. These results support the expectancy value model and reflect the importance of attitude strength (salient vs. non-salient) in determining the structure and predictive validity of attitudes.

4.5.1.7 ASSESSING BELIEF STRENGTH

Empirical evidence or psychological criterion determine method of scoring for belief strength (Fishbein & Ajzen, 2010). With regard to the attitude construct, two scaling methods have been acknowledged. In both scales a seven point likelihood is used, ranging from -3 to +3 (a bipolar scale) or 1 to 7 (a unipolar scale). Ajzen (1991) supported the use of unipolar scoring based on the idea that beliefs are to be regarded as a subjective probability and that a probability cannot take negative values, therefore using only the positive scale values. However, he also suggested the use of bipolar scoring for both belief strength and evaluation, so as to ascertain the positive contribution of attitude towards behaviour if there happens to be a disagreement that behaviour leads to a negative outcome. Therefore, Ajzen (1991) proposed that appropriate scoring of belief strength should be based on empirical criterion.

In order to compare unipolar and bipolar scoring of belief scales Sparks, Hedderley and Shepherd (1991) examined results of seven studies regarding eating various foods. The results produced ambivalent findings in that on one occasion, eating one type of food produced higher correlation between the belief composite and attitude measure when scored in a unipolar fashion, whereas in many other occasions bipolar scoring proved to have significantly stronger correlations. More recent research by Gagne and Godin (2000) examined the results of 12 studies in the health domain, including behaviours such as condom use and hypertension control medication. They found that for all studies apart from one, bipolar scoring was found to have significantly stronger correlations between belief-based measures and TPB components, than unipolar scoring.

4.5.2 SUBJECTIVE NORMS: A DETAILED ANALYSIS

4.5.2.1 A CLEAR DEFINITION

Social norms refer to what is generally acceptable or not acceptable behaviour within a group or a society. Within the TPB, social norms are given a more specific definition such as the perceived social pressure to perform or not perform a particular behaviour (Ajzen, 1991). The TPB posits that there is an indirect influence of subjective norms upon a given behaviour, and that intentions act as the mediating variable. It should be noted that although the normative component is strongly associated with intentions, it often accounts for little or no unique variance in intentions (Hagger, Chatzisarantis, & Biddle, 2002). In a meta-analytic review of the TPB across several behavioural domains Armitage and Conner (2001) concluded that subjective norms were the TPB predictor most weakly related to

intention. One of the reasons for this could be because it does not capture crucial social-psychological aspects of social influence, such as social identity (Manning, 2009).

4.5.2.2 MEASUREMENT

Normative beliefs are beliefs that important individuals or groups have towards the given behaviour coupled with the motivation of the individual to comply with the perceived norms of these salient others (Manning, 2009). It is important to note that normative beliefs differ from behavioural beliefs in that the former does not involve the association of performing the behaviour because of a certain outcome, but rather due to normative pressure.

According to the above it can therefore be assumed that subjective norms are based on a total set of normative beliefs weighed by the motivation to comply with each salient referent (Fishbein & Ajzen, 2010). This is shown in Figure 4.9 where subjective norms is the injunctive norm about referent i , n is the injunctive normative belief, towards i , m is the motivation to comply with referent i , and the sum is the total number of salient referents.

In terms of scale measurement, normative beliefs are measured on bipolar scales, while motivation to comply is measured using a unipolar scale. This is based on the idea that if an individual does not find it important to comply with a certain referent, then it does not necessarily imply that the individual will do the opposite (Fishbein & Ajzen, 2010). For instance, if an adolescent disagrees with his/her parent on their views of cannabis use, this does not mean the adolescent will necessarily engage in cannabis use behaviour.

$$SN \propto \sum n_i m_i$$

FIGURE 4:9 THE BELIEF COMPOSITION OF SUBJECTIVE NORMS

4.5.2.3 ACCESSIBILITY OF BELIEFS

In line with the belief elicitation procedure for attitudes, normative beliefs are elicited in the same way. After an individual has listed a series of individual normative beliefs and the level of motivation to comply for each salient referent, a set of modal normative beliefs are constructed. These are later used in the standard questionnaire to assess injunctive norms. The influence of each normative referent on the injunctive norm is obtained by correlating the 'NB_j* MC_j' product with the direct measure of injunctive norm.

4.5.2.4 THE DISTINCTION: INJUNCTIVE AND DESCRIPTIVE NORMS

As suggested by very early work of Deutsch and Gerrard (1955), the distinction between injunctive norms and descriptive norms can be attributed to the fact that they function as different sources of motivation. Injunctive norms refer to the social pressures to engage in a behaviour based on the perceptions of what people ought to do. Descriptive norms are social pressures not based on perceptions of what others approve, but what others actually do (Cialdini, Reno, & Kallgren, 1990). Originally, subjective norms were conceptualized as injunctive norms but there are suggestions to include both types of normative measures when constructing behaviour surveys (Ajzen & Fishbein, 2005).

Cialdini and associates proposed a 'Norm Focus Theory' that distinguished between three different types of norms: injunctive, descriptive and personal (Cialdini, et al., 1990). Personal norms referred to internalized values and expectations for behaviour that focused primarily on the self. It seems that injunctive norms influence behaviour by assuming informal assumptions, in the form of approval/disapproval, of what is deemed to be socially acceptable behaviour (Cialdini, 2007). There is evidence to suggest that such evaluations result in strong compliance with others approval. Even if the important others are not close referents but part of the wider society, social pressure as to what is approvable or not can be quite impactful (van Empelen, Schaalma, Kok, & Jansen, 2001a). Descriptive norms on the other hand, seem to influence behaviour through social information processing, whereby the behaviour that is being observed constitutes evidence as to what will most likely be adaptive and effective in the setting. In fact a norm-congruent behaviour is promoted in that if many people are performing a certain behaviour it would seem reasonable to exert the same behaviour (Cialdini, 2007). This information processing advantage obtained by imitating others behaviours acts as a decision-making shortcut when choosing how to behave in a certain setting. Therefore it can be assumed that descriptive norms require less cognitive effort, thereby having a bigger impact on behaviour than injunctive norms (Manning, 2009).

4.5.2.5 THE FINDINGS: INJUNCTIVE AND DESCRIPTIVE NORMS

It should be noted that injunctive and descriptive norms can equally co-exist and also be distinct in their functioning towards perceived social pressure.

Manning (2009) investigated the relationship between subjective norms and a range of behaviours within the TPB. A series of analyses on the separate effects of descriptive norms and injunctive norms on each type of behaviour showed how these two are conceptually different constructs. Part

of this study was to look at the several moderators that contributed to a stronger descriptive norm-intention relation in comparison to an injunctive norm-intention relation. For instance, less social approval of a behaviour increased the association between descriptive norm and behaviour probably because individuals needed more social cues and justification to engage in non-approved behaviours. When behaviours were socially motivated, the descriptive normative influence on behaviour was stronger. The same effect occurred in relation to hedonic behaviours. In comparison to utilitarian behaviours, hedonic behaviours involved less cognitive effort as they focused on instant gratification therefore deterring the influence of intentions. This meta-analysis demonstrated that descriptive and injunctive norms are distinct in their functioning towards perceived social norms.

In relation to Norm Focus Theory, a study was conducted to examine alcohol, tobacco and marijuana use among Mexican youth, using the TPB to explain the normative processes involved with these types of behaviour (Kam, Matsunaga, Hecht, & Ndiaye, 2009). Norms were separated into conduct that important others deemed as acceptable (injunctive), important others seem to engage in (descriptive) and conduct that the youth thought was appropriate (personal). The findings supported the multidimensionality of norms given that different norm types functioned as triggers for substance use behaviours. Therefore, the norms which are postulated in the TPB as a unitary construct (e.g. subjective norms) can be expanded to involve multiple dimensions such as parental injunctive, peer injunctive, descriptive and personal norms (Elek, Miller-Day, & Hecht, 2006).

A study by Smith – McLallen and Fishbein (2008) also obtained measures of descriptive and injunctive norms. Three cancer-screening behaviours as well as three healthy lifestyle behaviours were examined. All six injunctive and six descriptive norms were assessed as predictors of participant's intentions to engage in each behaviour. The findings indicated that the roles of injunctive norms and descriptive norms in predicting behavioural intentions seemed to vary by behaviour. The descriptive norms were found to be partially associated with exercise intentions, and strongly associated with intentions to eat fruits and vegetables. Injunctive norms were found to be strongly predictive of intentions to engage in cancer screening behaviours but not predictive of intentions to exercise. The correlations between injunctive and descriptive norms ranged from .46 to .54 for the screening behaviours and from .25 to .46 for the healthy lifestyle behaviours. This suggests how distinguishing injunctive and descriptive norms and including them as a single construct (subjective norms) can help capture more elements of the construct and improve its predictive validity.

According to a paper by Hagger and Chatzisarantis (2005) the validity of distinctions between the two aspects of each of the TPB variables was corroborated, but it also provided support for a hierarchical

view of the three components. In other words, a hierarchical model that enters experiential and instrumental attitudes, as well as injunctive and descriptive norms as separate factors performs no better than a model in which these sub-components are treated as indicators of the higher-order constructs of attitude and subjective norms. It is therefore important to include both measures of these norms in the pilot phase of research with the TPB theory.

4.5.3 PERCEIVED BEHAVIOURAL CONTROL (PBC): A DETAILED ANALYSIS

4.5.3.1 A CLEAR DEFINITION

The TPB was derived from the TRA, which posited that behaviour was under complete volitional control and hence can be predicted from intentions (Fishbein & Ajzen, 1975). The construct of PBC was added so as to accommodate the non-volitional potential elements in all behaviours. PBC has been described as a basic sense of personal competence or perceived ability towards certain behaviour. It is worth noting that the term ‘actual behavioural control’ has also been used to refer to the extent to which an individual has the skills, resources and environmental opportunities required to perform the targeted behaviour (Fishbein & Ajzen, 2010). This reflects a more sufficient level of behavioural control in that it accounts for the features needed for people to have actual control over performance of a behaviour. For most behaviours, however, actual control is not available and thus, to the extent that PBC is accurate, it can serve as a proxy of actual control and used for the prediction of behaviour. As Fishbein and Ajzen (2010) explain, PBC considers factors such as skills and availability of information, as well as opportunities or obstacles present that will either help or inhibit the performance of behaviour. The greater the PBC, the greater will be the association with intention to perform the targeted behaviour.

4.5.3.2 SELF-EFFICACY

It is important to note that PBC is largely influenced by the ‘self-efficacy’ notion of Bandura’s Social Cognitive Theory (Bandura, 1991). Self-efficacy refers to “people’s beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives” (Bandura, 1991, p.257). Still, this is not a context-free global disposition but as Bandura refines in his later publications, it should “be measured in terms of particularized judgments of capability that may vary across realms of activity, under different levels of task demand within a given activity domain, and under different situational circumstances” (Bandura, 1997, p.42). Therefore, perceived self efficacy refers to the perceived ability to perform each step in the course of actions required to produce given attainments. So although both self efficacy and PBC are concerned with perceived ability to

perform a behaviour, Ajzen (2002) explains that the distinction lies between the efficacy expectation (e.g. the perceived ability to perform the behaviour) and outcome expectation (e.g. the perceived likelihood that performing the behaviour will produce a given outcome).

4.5.3.3 MEASUREMENT

As it stands with the other constructs in the TPB, PBC must be assessed in accordance with the principle of compatibility such that TACT elements match the behavioural criterion (Ajzen, 2002). Similar to attitudes and subjective norms, PBC can be measured by asking direct questions about the capability to perform a behaviour, and also indirectly with beliefs based on the ability to deal with several inhibiting or facilitating factors. To measure the belief-based measure of PBC, the belief strength (i.e. the perceived likelihood of a given control factor being present) is multiplied by the power of control belief (i.e. the extent to which the control factor's presence has the power to inhibit or facilitate performance of behaviour). Both items are scored on bipolar scales. The resulting product of all accessible control factors is then summed to measure for PBC, as shown below in Figure 4.10.

$$PBC \propto \sum c_i p_i$$

FIGURE 4:10 THE BELIEF COMPOSITION ON PBC

4.5.3.4 ACCESSIBILITY OF BELIEFS

The personal accessible beliefs or a standard list of the most commonly held beliefs are known as the modal salient beliefs. These are elicited through a pilot questionnaire constructed before the direct 'PBC' measure is obtained. By asking individuals to list the factors that would enhance or impede the performance of a behaviour, the individuals 'control beliefs' are obtained.

As indicated in several studies examining the control factors with respect to a given behaviour, it can be assumed that the factors are both internal and external in nature. Armitage and Conner (1999a) examined eating low-fat diet and found the control factors elicited to include aspects such as skills, time, cost, inconvenience, poor knowledge, and familiarity. Similarly, Ajzen and Madden (1986) identified, among the area of academic achievement, several factors that made it easier or harder to obtain better grades such as demands on time and energy, difficult reading materials and availability of assistance. In eliciting control beliefs, there are both control factors that are internal to the

individual (e.g. skills, knowledge, and familiarity) as well as external to the individual (e.g. time, difficult text and reading material, availability of assistance). The belief-based measure of PBC considers all accessible control factors, both internal and external (Ajzen, 2002).

4.5.3.5 THE DISTINCTION: SELF-EFFICACY AND PBC

There are important differences between self-efficacy expectations (the ease or difficulty of performing a behaviour) and perceived control (belief about the extent to which performing the behaviour is up to the individual) (Ajzen, 2002). It is worth noting that these two concepts have been assimilated to external and internal locus of control, respectively, in that self-efficacy reflects internal barriers while controllability reflects beliefs about the operation of external factors. However, due to a lack of indication in Bandura's (1997) theorizing that self-efficacy beliefs are restricted to internal factors, there is a lack of empirical evidence to support this conceptual overlap. Indeed, one of the very few studies that did examine the relation of specific beliefs to the separate measures of self-efficacy and controllability, showed the erratic nature of the distinction between internal and external locus of causality (Armitage & Conner, 1999b). The ambiguous results demonstrated a substantial overlap between the control beliefs and the two constructs.

A meta-analysis conducted to examine the type of items employed within the studies measuring PBC found that most items employed self-efficacy items either alone or combined with controllability items (Cheung & Chan, 2000). More importantly, self-efficacy was found to significantly contribute to the variance in intentions, over and above the other TPB constructs, while controllability only added to the prediction of behaviour but not the prediction of intentions. Another study by Terry and O'Leary (1995) confirmed the predicted two-factor structure in that two separate variables contributed more strongly than as part of a unitary construct. However, an important limitation was the type of items used to measure 'self-efficacy'. Given that items used were concerned with perceived ease or difficulty of performing a behaviour it is worth re-considering how far these items are indicators of self-efficacy.

4.5.3.6 ALTERNATIVE DISTINCTIONS

In an attempt to propose alternative distinctions, other than those already asserted between self-efficacy and perceived control, the notion of perceived difficulty or perceived ease of performing a behaviour has been examined. Yzer (2004) investigated marijuana use among high school students, defining behaviour as the monthly use of marijuana over the next 12 months. Using a seven point scale from 'difficult' to 'easy', perceived difficulty of performing the behaviour was measured. PBC

was also measured using scales with endpoints such as 'not under my control- under my control' and 'not up to me- up to me'. Structural equation analyses indicated how the 'easy-difficult' item was actually viewed as an experiential aspect of attitude rather than as an indicator of perceived control. This showed how the use of perceived ease or perceived difficulty may be conceptually overlapping with the attitude construct.

Fishbein and Ajzen (2010) suggested the measurement of PBC by combining two factors: capacity and autonomy. Capacity reflects the ability to perform a behaviour, while autonomy reflects the degree of control over performing a behaviour. These two factors were considered to represent two aspects of PBC and self-efficacy which could yield a single PBC construct rather than act as separate indicators of it.

To sum, it can be assumed that within this construct, internal factors are reflected in questions that deal with the ability to perform the behaviour (capacity items), while external factors are reflected in questions that refer to the beliefs of control over the behaviour (autonomy items).

4.5.4 SUMMARY

The TPB allows for prediction of specific behaviours in a given situation using several components such as behavioural beliefs, attitudes, subjective norms, PBC and intentions. The corresponding beliefs represent the cognitive underlying structure of each component (attitudes, subjective norms and PBC). Despite the proximal influence of intentions on behaviour, there has been reference to a 'gap' in their relationship in terms of intentions not consistently predicting behaviour. A recent intervention to reduce this gap has been formulated with the concept of 'implementation intention'. Finally, attitudes, subjective norms and PBC have been thoroughly analysed, providing deeper understanding as to their conceptual background and function within the TPB model.

4.6 SUFFICIENCY OF THE TPB

4.6.1 CRITICISMS OF THE TPB

Applications of the TRA and TPB have relied on self-reports, despite the strong impact of self-presentational bias on such data (Gaes, Kalle, & Tedeschi, 1978). In a comparison of the multiple correlations of intention and PBC with objective and self-reported behaviour it was found that TPB accounted for large, significant proportions of the variance in prospective measures of both objective and self-reported behaviour (Armitage & Conner, 1999b). Moreover in a study examining TRA in

relation to tax evasion the implication was that self-reports of behaviour were unreliable when compared to more objective measures (Hessing, Elffers, & Weigel, 1988).

4.6.1.1 RATIONAL NATURE OF ACTIONS

A common criticism of TRA/TPB has been the failure to account for behaviour that is non-rational or non-cognitively determined. Ajzen and Fishbein (2005) argue that typical applications of TRA/TPB focus very little on the role of emotion which could be very relevant to a range of behaviours. It has been stated that the model has not sufficiently considered affective influences on behaviour because attitude, subjective norm and perceived control in TPB are based on cognitive belief (Bagozzi & Yi, 1988). However, McGuire (1969) explains that attitude refers not only to cognitive components (judgments, beliefs, thoughts associated with an attitude object) but also affective ones (emotions, feelings, drives associated with an attitude object). Indeed a recent study by Bae (2008) found that adding emotions such as empathy and sympathy with regards to organ donation enhanced the explanatory power of the theory of prediction intention. Nevertheless Ajzen and Fishbein (2005) stress how it may be particularly difficult for individuals to accurately identify strong emotions that determine their behaviour in real-life situations.

There has been much scepticism regarding the validity of the model in terms of rational versus spontaneous actions. Reyna and Farley (2006) explain how major explanatory models of risky decision can be separated into two types of models: (a) those that adhere to 'rational' behavioural decision making frameworks and stress the deliberate weighing of risks and benefits, such as the TPB and (b) those that refer to a more spontaneous reaction to the perceived prototypes within a situation. What is more, these authors emphasize that decision-making models fail to account for a substantial amount of young people's risk-taking which is reactive, spontaneous and rather impulsive. One reason for these shortcomings is that decision-making that involves health risk is different to that associated with other, less emotional behaviour (Cho, Keller, & Cooper, 1999). Some have argued that these models neglect the developmental course of decision-making and relevant antecedents of risk behaviour such as the temporal influence of family, temperament and context (Petratis et al., 1995).

The role of impulsivity has also been examined in relation to the TPB as a way of reflecting the non-deliberative process of behaviour. A study examining impulsivity (using four dimensions: urgency, lack of premeditation, lack of perseverance and sensation-seeking) showed that impulsivity significantly predicted snacking behaviour. It is implicated that impulsivity could be a sufficient

additional variable when predicting behaviours that are not characterized by careful, compensatory decision-making strategies (Churchill, et al., 2008).

With regards to the rationality of action assumed within the TPB, Fishbein and Azjen (2010) stress that the TPB has been largely misunderstood. In fact they emphasize that the TPB does not suggest that people behave in a rational manner or that they are rational, but it is merely the beliefs that are based on direct experience, intuition and wishful thinking that serve to form the three basic components and ultimately form intentions. It is only in the sense of order that the behaviour is considered to be rational such that attitudes, perceptions of normative pressure, PBC and ultimately intentions inevitably follow from their beliefs. What is more, there has been enough empirical evidence to support the fact that TPB can explain irrational or spontaneous behaviour. Studies examining a range of behaviours that appear to be irrational, such as sex without a condom, exceeding the speed limit, and smoking have found TPB to be valid in terms of the behavioural prediction (Fishbein & Azjen, 2010).

4.6.2 ADDITIONAL VARIABLES

The basic approach taken by Ajzen on extending TRA to TPB was based on the idea that more variance can be accounted for by including processes contained in wider tests of the theory. As phrased by Perugini and Bagozzi (2001) this general approach can be characterized as ‘theory broadening’ while ‘theory deepening’ refers to the introduction of a variable that explains how existing predictors function to influence intentions. Therefore by introducing new constructs that are considered to mediate or moderate the effects of existing variables some theoretical mechanisms can be better understood. Notwithstanding the impressive amount of variance for which the TPB can account, there remains a large proportion of variance in intentions/behaviour that is not explained by TPB variables (Sheeran, 2002). To increase the predictive validity of the TPB certain variables considered to be important for this research project (i.e. moral norms, impulsivity, parenting styles, self-identity, past behaviour, etc.) are examined in detail in chapters 5 and 7, within the context of study 1 and study 3, respectively.

4.6.3 APPLICATION OF TPB TO SUBSTANCE USE

In a paper reviewing theories of adolescent substance use, TPB was used as one of the cognitive-affective theories in understanding experimental substance use (ESU) (Petraitis, Flay & Miller, 1995). PBC was classified as involving two forms of self-efficacy: ‘use self-efficacy’ representing adolescents’ beliefs in their abilities to obtain and use substances (e.g. not knowing how to inhale cannabis rolled

cigarettes could deter cannabis use) and 'refusal self-efficacy' representing adolescents' beliefs in their abilities to resist social pressure to start substance use (e.g. not having necessary skills to refuse cannabis use when under social pressure). Thus adolescents' abilities to control their behaviours seem to contribute to the performing of ESU. As was further elaborated, Petraitis, Flay and Miller (1995) explained that TPB constructs strongly predict ESU: positive attitudes contributed to ESU; other people's beliefs endorsed their own ESU; and low perceived ability to refuse pressures to ESU formed ESU intentions. Still, concerns were posed as to whether substance-specific beliefs were a cause or a consequence of ESU and also how TPB focused on explaining the effects of substance specific cognitions rather than the causes.

Nonetheless the TPB has been successfully applied to the prediction and explanation of smoking (Conner et al., 2006), drinking alcohol (Armitage, Conner, Loach, & Willetts, 1999), cannabis use (Conner & McMillan, 1999) and other drugs (McMillan & Conner, 2003). Clearly these, and other findings, indicate that a reasoned action approach can account for a range of substance using behaviours. For this research project, the TPB is used as a behavioural model to explain and predict cannabis use in a quantitative manner but also as a theoretical framework within which its constructs are qualitatively explored in relation to other social-psychological variables. In other words, the programme of work conducted for this research project is based on using both quantitative and qualitative methodology. The former approach enables the investigation of a series of TPB and additional variables in explaining cannabis use (Study 1), while the latter explores the TPB constructs and additional variables in a qualitative manner (Study 2). Both of these studies subsequently inform the framework of the final TPB study (Study 3).

4.6.4 SUMMARY

The main criticism of TPB has been the failure to account for behaviour other than rational or non-cognitive determinants of human behaviour. Nonetheless, it has been emphasized that this assumption of rationality within the model is largely misunderstood. In fact, TPB has been shown to explain irrational or spontaneous behaviour. Notwithstanding the impressive amount of variance for which the TPB variables can account a large proportion of variance in intentions/behaviour remains unexplained (Sheeran, 2002). Several additional variables are considered to the extent that they help explain and predict behaviour. Finally, the TPB is presented as an important theory in explaining young people's substance use (Petraitis, et al., 1995).

4.7 CHAPTER SUMMARY

- Health-Behaviour models fundamentally guide our understanding of health behaviours. A range of factors such as coping appraisal, threat perception, self-efficacy and intention change represent the main features of these models.
- The Theory of Planned Behaviour (TPB) framework takes incorporates socio-psychological and cognitive factors in predicting behaviour using a socio-cognitive decision-making model.
- TPB allows for prediction of specific behaviours in a given situation by plotting a pathway that initiates from a set of cognitive beliefs underlying attitudes, subjective norms and PBC.
- These beliefs are influenced by a range of demographic variables, direct experiences and even intuition.
- Attitudes, subjective norms and PBC all form intentions, which in itself acts as the most proximal influence of behaviour.
- Each basic construct separately contributes to the TPB, while a range of studies have demonstrated the mediator-moderator distinction between each of the constructs and behaviour.
- The TPB has received criticism in its failure to account for behaviour that is not rational or not cognitively-determined.
- Extending TPB to include other variables was based on the idea of 'theory broadening'. Therefore, by introducing new constructs that could mediate or moderate the effects of existing TPB variables some behaviours can be better understood.
- A range of additional variables such as impulsivity have been used within the TPB to help explain and predict a set of behaviours.
- The TPB has been presented as an important framework in explaining young people's substance use. The programme of work for this TPB-based research project incorporates both a quantitative and qualitative approach.

5 CHAPTER 5: STUDY 1 – YOUNG PEOPLE AND CANNABIS USE: A THEORY OF PLANNED BEHAVIOUR STUDY AT A SIXTH FORM COLLEGE.

5.1 CHAPTER OVERVIEW

This study examines cannabis use decision-making among young people (16-18 years) using the Theory of Planned Behaviour (TPB) framework (Ajzen, 1991). The predictive utility of the basic TPB components (attitudes, perceived norms and PBC) for intention and behaviour across a range of behavioural domains has been widely demonstrated (Armitage & Conner, 2001). However, several existing and additional constructs demand more detailed investigation so that we develop a better understanding of their functioning.

The ability of the TPB variables (attitudes, perceived norms and PBC) and additional variables (moral norms, impulsivity, perceived parenting styles, strengths and difficulties and delinquency) to predict intentions and/or behaviour are examined. A correlation analysis helps to identify significant associations between the variables. A series of logistic regression analyses are conducted to determine which of the additional variables explain and predict intentions and/or behaviour independently of the basic TPB variables. Mediation analyses demonstrates whether the effect of any significant predictor of behaviour is fully or partially influenced by the mediating variable; intentions.

A panel element of this study involves the investigation of parents' perspectives regarding cannabis use. Frequency data gives a descriptive overview of the parents' general attitudes to drug use while a thematic analysis covers parents' views on young people's cannabis use. A comparison is also made between young people's perceived parenting styles and parents' actual parenting styles.

Finally, the strengths and limitations of the study are discussed. A few of the major strengths include overcoming obstacles of school and parental consent, the existence of a panel element such that parents and students' perspectives were obtained as well the use of robust established measures combined with novel ones. Policy implications are discussed in Chapter 8.

5.2 LITERATURE OVERVIEW

Young people's risky behaviours have been characterised as inadequate physical activity, inadequate nutrition, sexual behaviour that may lead to unintended pregnancy or infections, substance use and abuse and behaviours that lead to unintentional injuries and violence (Eaton, et al., 2006). The World Health Organization (WHO) (2008) shows that risky behaviours such as cannabis use are becoming a normalised trend among young people worldwide. In the UK, around 1.1 million young adults use cannabis on a yearly basis (BCS) (2009). Cannabis appears to be the leading drug to be first tried by 16-19 year olds with 73 % having reported it as first drug used at the age of 15 (Fuller, 2008).

Despite the extensive range of external (e.g. neighbourhood) and internal (e.g. self-esteem), risk (e.g. neglectful parenting) and protective (e.g. supportive parenting) factors associated with cannabis use, integrating a few selective factors under one unitary framework would aid a better understanding. This will allow an integrated consideration of various factors regarding substance use, in comparison to using an approach that considers these factors separately.

The Theory of Planned Behaviour (TPB) serves to understand behaviour with reference to a range of environmental, social and individual variables that can help to explain and predict a specific type of behaviour.

5.2.1 BASIC TPB VARIABLES

The core TPB components have already been discussed at length in the literature review (see Chapter 4, section 4.2) yet a short review will be provided to introduce the study.

5.2.1.1 ATTITUDE

One of the most well-established findings in the literature examining antecedents of behaviour has been that of a strong attitude-behaviour relationship. Despite Wicker (1969) suggesting that the attitude-behaviour relationship is not as strong as perceived, Armitage and Christian (2003) provide extensive evidence supporting the strength of attitude-behaviour relationship.

As the 'principle of compatibility' suggests, the appropriate behavioural criterion for a broad attitude that focuses on the target element is a measure of behaviour that is also defined in terms of the target element. In a meta-analysis of eight studies that manipulated level of compatibility, the prediction of behaviour from attitudes towards the general behaviour resulted in a correlation of .54, while prediction of single behaviour from a general attitude was only .13 (Kraus, 1995). Fishbein & Ajzen (2010) explain how in the majority of the situations where attitudes fail to predict behaviour in research, there is reason to suggest that the fault usually lies not with the attitude measure but

rather with the weak, unrepresentative measure of behaviour. According to the 'principle of compatibility' two markers of a given behavioural disposition must be compatible across the TACT elements (see Chapter 4, section 4.2.3.2). Even if two measures involve exactly the same TACT elements, activation of different salient beliefs in the attitudinal and behavioural contexts may result in reduced belief congruence, thereby causing inconsistency between behaviour and the attitude or intention. To sum, the relationship between the cognitive predictors of a behaviour and the performance of the behaviour will be stronger if the behavioural and cognitive elements are compatible (Ajzen & Fishbein, 1977). Attempts at strengthening the connection between attitudes and behaviour are examined below.

5.2.1.1.1 MODERATORS OF THE ATTITUDE-BEHAVIOUR RELATIONSHIP

The level of attitude-behaviour consistency is said to be moderated by factors involving the person performing the behaviour, the situation under which it is performed, and characteristics of the attitude itself. For instance, being exposed to peers who use cannabis may act as a moderator of the relation between attitude and behaviour such that attitudes towards using cannabis become more favourable as time spent with peers increases (*for detailed analysis on moderator-mediator distinction see Chapter 4; section 4.2.2*).

Attitude strength is considered a particularly important moderating factor given that strong attitudes are likely to be more predictive of people's behaviour than are weak attitudes (Fishbein & Ajzen, 2010). Strong attitudes reflect issues of personal relevance, are persistent over time and resistant throughout various situations, and have the potential to impact others' perceptions, and most importantly guide behaviours (Fishbein & Ajzen, 2010). Alternatively weak attitudes hold much lower predictive ability.

Fishbein and Ajzen (2010) explain that contemporary usage of the term 'attitude strength' has developed to include the following: attitudinal extremity; level of confidence held about the attitude (Sample & Warland, 1973); involvement with the attitude object; direct experience with the attitude object as opposed to second-hand experience (Fazio & Zanna, 1981); its centrality (Sivacek & Crano, 1982); attitudinal ambivalence (Armitage & Conner, 2001); the role that memory plays in attitude accessibility; and temporal stability (Conner, et al., 2000). Although attitude strength is viewed as an abstract hypothetical construct these aspects of attitude could serve as concrete indicators of attitude strength.

While on the one hand work on attitude strength provides information about how attitudes guide behaviour it is essential to understand how attitudes that are not under full conscious awareness guide behaviour.

5.2.1.1.2 IMPLICIT VERSUS EXPLICIT ATTITUDES

Research on attitude has largely focused on implicit attitude measurement. Implicit attitudes are measured to overcome social biases and strengthen covert attitudes of which individuals do not have full awareness of (Fazio & Olson, 2003). In order to examine which beliefs and attitudes individuals are less willing to, or unable to, self-report a variety of different implicit measurement techniques have been employed. These include various priming procedures (Fazio, Jackson, Dunton, & Williams, 1995), the Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998) and word-fragment completion tasks (Hetts, Sakuma, & Pelham, 1999).

As these measures are designed to capture hidden or “true” attitudes, it is generally agreed that implicit measures should best predict behaviours that are not consciously monitored or that are difficult to control, and should actually be weaker predictors of behaviours that are under conscious control. It is also assumed that explicit attitudes will best predict behaviours that are under volitional control but will be poor predictors of spontaneously driven reactions that are not under conscious awareness. A meta-analysis of research examining the Implicit Association Test (IAT) provided limited support as to the distinction of explicit and implicit attitudes on behaviour (Greenwald, Poehlman, Uhlmann, & Banaji, 2009)³. Although part of the Greenwald et al. (2009) findings were consistent with the expectation that explicit attitudes were weakly related to socially sensitive behavioural domains, there were no significant effects of implicit measures on the performance of specific behaviours. It is suggested that implicit and explicit methods may serve to assess two separate attitudes and behavioural predictions could be improved by assessing implicit and explicit measures simultaneously (Cunningham, Preacher, & Banaji, 2001; Fazio & Olson, 2003; Wilson, Lindsey, & Schooler, 2000).

Still, examinations of empirical studies that have assessed the same attitude using both explicit and implicit measures found no such improvement in prediction of behaviour. In most cases only one attitude type significantly correlated with behaviour such that where, for example, explicit attitudes were significant predictors and implicit attitudes were not (Asendorpf, Banse, & Mucke, 2002),

³ The IAT essentially measures the relative strength of an association between an attitude object and positively versus negatively evaluated objects. The participants are usually required to complete a computer task designed to tap automatic associations between concepts (e.g. smoking and drinking) and attributes (e.g. good or bad, male or female, self or other).

equally, implicit attitudes were significant predictors and explicit attitudes were not (Egloff & Schmukle, 2002). Including both measures in a regression analysis, it was found that the addition of implicit measure to the prediction where explicit measure were already used, only increased the variance in behaviour by 2% (Czopp, Monteith, Zimmerman, & Lynam, 2004).

Hence, although we are able to critically understand the importance of implicit and explicit attitudes in terms of sensitive attitudes such as stereotypes or drug use, the inclusion of both these measures does not seem to guarantee improvement in behavioural prediction (Fishbein & Ajzen, 2010).

5.2.1.1.3 ATTITUDES AND SELF-REGULATION

Recent research on the automaticity of attitudes has been increasingly associated with the notion of 'self-regulation'. People are often tempted by their impulses, or urges, where the capacity for self-control comes to play an important role in terms of overriding or changing "one's inner responses, as well as to interrupt undesired behavioural tendencies and refrain from acting on them" (Tangney, Baumeister, & Boone, 2004, p. 275). In situations where the implications of a certain impulse (e.g., the desire to smoke a cigarette) are in contradiction with personal goals (e.g., "I want to stop smoking"), the resulting conflict between impulse and self-control can resemble a "survival of the fittest" notion. In other words, the attribute which is a more dominant aspect of the individual's character (e.g. high impulse or high self-control) will eventually determine whether to engage in a behaviour or not.

To better understand the conflict between impulse and self-control, Hoffman, Rauch and Gowranski (2007) suggested implementing automatic attitudes to link these two notions. Impulsive action tendencies can be linked to automatically activated evaluations that result in avoiding or approaching a particular stimulus. With the impact of ego depletion, where self-control can be depleted if used extensively (Muraven & Baumeister, 2000), behaviour is influenced by automatic attitudes when self-regulatory capacity is low, but by personal standards when self-regulatory capacity is high. Ego depletion essentially refers to a state in which the self is temporarily less able and less willing to exercise executive functions such as self-regulation as normally or optimally as it would (Baumeister & Vohs, 2007). This results in yet more conflict in that impulsive action tendencies result from automatic evaluations and deliberate action tendencies result from personal goals or standards. It is presumed that spontaneous behaviour is predicted from automatically activated (but not self-reported) attitudes, while deliberate, controlled behaviour is predicted from self-reported (but not automatically activated attitudes) (Hoffman, et al., 2007).

A study examining cognitive bias among recreational cannabis users found that those with high levels of cannabis craving had a significant attentional bias for cannabis-related words on the visual probe task, but those with low levels of craving did not (Field, Mogg & Bradley, 2004). It was suggested that cannabis-related words were not necessarily perceived as 'positive' by the cannabis users but instead that their 'negative' associations were eliminated (Field, et al., 2004). In other words, users did not have positive implicit attitudes to cannabis, but at the same time did not express any negative attitude to cannabis cues either. This demonstrates the complex nature of cognitive biases in cannabis users and specifically the influence it may have on the attentional and evaluative components of behaviour.

5.2.1.2 PERCEIVED NORMS

The second determinant of intentions is known as perceived norms. This is defined as the perception of general social pressure from important others to perform or not to perform a certain behaviour (Ajzen, 1991). Although there has been much support for the attitude-behaviour link, there has been less support for the perceived norms-behaviour relationship. In a meta-analysis of 185 planned behaviour studies, it was reported that the average attitude-intention correlation was .49, while the average perceived norm-intention relation was a much lower .34, demonstrating that the perceived norm-intention relation is the weakest link of the TPB model (Armitage & Conner, 2001). The authors explain that the reason behind this finding may be due to the way the norms are conceptualized in that they do not seem to tap into the important facets of social influence, suggesting alternative conceptualizations such as social identification (identification with a relevant group moderates the effects of group norm on intention) (Terry & Hogg, 1996).

5.2.1.2.1 THE ROLE OF NORMS IN THE TPB

The effect of normative pressure on behaviour has been established with a substantial body of research demonstrating how people conform to the judgments and behaviours of others (Cialdini, et al., 1990). Fishbein and Ajzen (1975) argue that the weak role of perceived norms in prediction of behavioural intentions can be a result of perceived norms' validity changing according to the type of behaviour and specific population that is being observed.

5.2.1.2.2 MAGNITUDE OF THE PERCEIVED NORM-BEHAVIOUR RELATIONSHIP

The role of social influence is considered to be important only for certain individuals. As already mentioned, individual differences in attitudinal and normative control account for the weak predictive values of perceived norm in the TPB (Trafimow & Finlay, 1996). A meta-analysis performed to examine the effects of perceived norms on behaviour found that when behaviours were not

socially approved, there was a greater total effect of perceived norms on behaviour (Manning, 2009). The heightened role of normative influence is intuitive in that when some people engage in behaviours that are not socially approved they usually do so as a result of perceiving that their friends engage in these behaviours. Normative perceptions of an individual's peers may offer the justification and cue needed to engage in non-approved behaviour, regardless of how society views the behaviour.

Manning (2009) found strong total perceived norms effect on behaviours that were socially motivated. In studies that investigated underage drinking it was found that among young people, perceived norms were the most influential given that these types of behaviours are both not socially approved and performed so as to fulfil some social need (Coleman & Cater, 2005). This could have similar implications in terms of cannabis use. Chabrol et al. (2006) examined the contributions of social influences and expectations of use to cannabis intake in high-school students (13-18 years old). The influence of parental attitudes was not independently associated with their cannabis use but the number of peers using it was associated (Chabrol, et al., 2006).

The role of perceived norms also has a total effect on behaviour in terms of the type of behaviour being enacted. Manning (2009, p.628) explained that "when an individual engages in a behaviour that is more hedonic than utilitarian, in that the behavioural engagement fulfils a short-term need or pleasurable desire in contrast to a relatively more thought out and useful function, the effects of perceived norms on behaviour will be stronger". Applying this to behaviours that are less socially acceptable but more socially motivated such as cannabis use, it may be that the moderating effect of utility on the relation between perceived norms and behaviour could be mediated by the extent to which the behaviour is socially acceptable and socially motivated.

Overall there seem to be theoretical reasons to speculate the role of perceived norms on behaviour given the range of moderators or mediators that could influence this relationship. This implies that in examining perceived norms within this research, it is important to consider several additional factors (e.g. peer use, perceived parenting styles) that could exert strong influences on the relationship between perceived norms and behaviour.

5.2.1.3 PERCEIVED BEHAVIOURAL CONTROL (PBC)

PBC is the third basic component of the TPB, which was added to the Theory of Reasoned Action to account for non-volitional behaviours. Ajzen (1991) suggests that the control component acts as a predictor of both behavioural intention and, where the individual correctly perceives that they have high levels of control over the behaviour, can also act as a direct predictor of behaviour. Therefore it

can be assumed that the existence of personal and environmental barriers partially determine the implementation of intention into action, making the PBC increasingly useful as volitional control over behaviour decreases (Armitage & Conner, 1999b). PBC should therefore both facilitate the implementation of behavioural intentions into action and also predict behaviour directly.

Despite the extensive range of studies which have shown how PBC has additional predictive power in explaining behavioural intention and behaviour (Ajzen, 1991, 2002; Kam, et al., 2009), this component has triggered scepticism and disparities as to the way it is measured and its theoretical underpinning (Armitage & Conner, 1999b), both of which will be discussed below.

According to Ajzen's (1991) explanation of the direct effects of PBC on behaviour, the implication is that there are two functions of PBC. The first refers to perceived control reflecting one's personal control over internal resources such as confidence, skills or ability which are characteristics based on Bandura's (1986) concept of self-efficacy. The second suggests that if perceived control is an accurate representation of actual control then PBC will directly contribute to the prediction of behaviour.

Ajzen's (1991) conceptualization of PBC has been argued as being overly simplistic (Armitage & Conner, 1999b). Although it was intended to reflect perceptions of factors that are both internal (e.g. knowledge, skills, will-power) and external (e.g. time, availability and co-operation of others) to the actor, the extent to which these components can be captured under one unitary component has been questioned (Armitage & Conner, 2001). Some have suggested that a distinction between self-efficacy and perceived control is unnecessary given that perceived difficulty captures both facets. Armitage & Conner (1999b) contradict this by explaining how firstly, perceptions of difficulty do not relate explicitly to ability or perceived control given that individuals can understand 'difficulty' in terms of personal ability or control over a behaviour, and secondly, treating PBC as a unitary construct reduces the sensitivity of the TPB. The strength of association between how difficult the performance of the behaviour is and how much control the person perceives to have over performing the behaviour is considered with caution (*see Chapter 4 for more detail on the PBC measure*).

5.2.1.3.1 INTERNAL RELIABILITY OF PBC

Most TPB studies have treated PBC as a unidimensional construct that has often been measured by a mix of (all or some) items that capture perceived confidence, locus of control and perceived difficulty. However, there has been considerable variation in terms of the internal reliability of items designed to measure PBC construct. While some studies have reported high internal reliability (Conner & McMillan, 1999), other studies have reported low internal reliability (Ajzen & Madden,

1986; Beck & Ajzen, 1991b). A review conducted by Cheung and Chan (2000) showed that on average, the α coefficient calculated from 90 TPB studies was .65 which is somewhat lower than what is thought to be an adequate level. This implies that the internal consistency of the items designed to assess PBC is questionable in that the items do not sufficiently and consistently correlate between them which could mean they are measuring different aspects.

5.2.1.3.2 CONCEPTUAL OVERLAP BETWEEN ATTITUDES AND PBC

Regarding the theoretical underpinning of this construct, there have been some concerns as to whether PBC is conceptually overlapping with the construct of attitude (Chan & Fishbein, 1993; Leach, Hennessy, & Fishbein, 2001). The semantic differential type of items measured by the PBC such as 'easy/difficult' could be empirically and conceptually overlapping with several attitude items in semantic differential format. Trafimow and Duran (1998) explain that an individual probably considers it an advantage if the behaviour is easy to perform and a disadvantage if a behaviour is difficult to perform, both of which advantages and disadvantages could reflect attitude. Therefore it could be that PBC is simply an alternative way of measuring attitude given that the way one perceives actual performance reflects the affective or experiential component of attitude (Kraft, Rise, Sutton, & Røysamb, 2005). Even if PBC predicts intentions where the effect of attitude has been controlled for, it could simply indicate that two measures of attitude predict intentions better than one measure does (Kraft, et al., 2005). Confirmatory factor analysis conducted showed that perceived difficulty reflected both attitude and self-efficacy, thereby concluding that items comprising the PBC components should be used with great caution given its conceptual ambiguity (Leach, et al., 2001).

5.2.1.3.3 THE PBC-INTENTION RELATIONSHIP

The moderators of PBC relationship with intention in the TPB were examined in a meta-analysis which showed that both the belief-based measures of PBC and type of control measured (internal control vs. external control) had negligible effects on path coefficients from PBC to intention (Armitage & Conner, 2001). A study conducted to examine alcohol consumption found that PBC did not predict intentions, but only behaviour (Huchting, Lac, & LaBrie, 2008). The authors explained that intentions to engage in behaviour assume rational choice and planned decision. It can be assumed that any risk-taking behaviour tends to be more strongly associated with a lower sense of control suggesting that the behaviour is no longer a rational choice where intentions to act are formed.

a) 'Behaviour type' affecting PBC- intention relationship.

A review on the studies of health behaviours found that the increment in variance attributable to PBC ranged from .00 (Conner & Norman, 1994; attendance for health screening) to .63 (Rhodes & Courneya, 2005; exercise). In a study that examined the role of perceived control over taking versus over obtaining ecstasy among young people, evidence supported a distinction between the two when predicting intentions to engage in behaviour (Orbell, Blair, Sherlock, & Conner, 2001). Therefore, consideration of two distinctive sets of control beliefs (such as the extent to which obtaining is easy/ difficult and the extent to which it is easy/ difficult to refuse) could improve explanations of substance-use intentions.

Of particular importance seems to be the notion of familiarity of the behaviour (Sheeran, Trafimow, Finlay, & Norman, 2002). Findings indicate that familiarity of behaviour moderated the relationship between PBC and intentions such that PBC predicted intentions to perform unfamiliar behaviours less than intentions to perform familiar behaviours (Notani, 1998). With regards to the influence of PBC on intention, Ajzen (1991) explains that the relative importance of each of the basic TPB constructs, in the prediction of intention is expected to vary across behaviours and situations. Therefore where attitudes are especially strong, or where normative influences are considered to be powerful, PBC may be less predictive of intentions. For instance, the decision to engage in a 'difficult' behaviour (e.g. study for an exam) is more likely to be influenced by beliefs about one's ability to perform the behaviour than a decision to engage in a relatively 'easy' behaviour (e.g. read a book). This is because, in the former situation, the decision may be entirely determined by PBC, while in the latter, attitudes and perceived norms are likely to influence the behaviour more than PBC (Sheeran, et al., 2002). In other words, even if an individual has favourable attitudes and/or perceived norms concerning the behaviour, if he/she lacks the necessary resources required to perform the behaviour, then their intentions to perform the behaviour may be low (Madden, Ellen, & Ajzen, 1992).

b) 'Type of person' affecting PBC-intention relationship

Dispositional tendencies regarding the controllability of behaviours and outcomes could influence the weight that people tend to attach to PBC during intention formation (Sheeran, et al., 2002). This derives from a study comparing attitudinally versus normatively controlled people whereby individual tendencies to be under normative control explained the relationship between subjective norms and intentions to perform certain behaviours (Trafimow & Finlay, 1996). Attitudinally controlled individuals attach greater weight to the likely outcomes of the behaviour in forming intentions while normatively controlled individuals attach greater weight to the social pressure from

significant others when forming intentions to perform the behaviour. In a similar line of reasoning, Sheeran et al. (2002) demonstrated how PBC-controlled individuals placed greater weight on feasibility considerations when forming intentions to perform behaviour. This raises speculation regarding what dispositional variables could determine how much weight PBC generally receives during intention formation. Sheeran et al. (2002) explain that one possible candidate could be people's general tendency to view behaviours and outcomes as controllable versus uncontrollable, also known as locus of control (Rotter, 1966). PBC is likely to be more influential in determining intentions if the behaviour is considered as less controllable. In a study examining the role of perceived control on alcohol use in a college student sample, it was found that perceived lack of control over drinking was associated with individual difference measures indicative of psychological maladjustment and instability (Nagoshi, 1999). This placed perceived lack of control over drinking "within a constellation of variables including impulsivity, proneness to negative affect, irrational coping strategies" (Nagoshi, 1999, p.304).

Therefore, how well PBC predicts intention to perform a behaviour can be somewhat influenced by conceptual ambiguity, behavioural situation and type of person engaging in the behaviour.

5.2.1.4 INTENTIONS

Intention has been described as the closest cognitive antecedent of actual behavioural performance (Fishbein & Ajzen, 1975; Gollwitzer, 1999). Still, although intentions have a very strong predictive validity, they don't explain 70% or 80% of the variance in some health behaviours. Some evidence suggest that 'literal inconsistency' between stated hypothetical intentions and actual behaviour could explain for the lack of compatibility between intentions and behaviour (Fishbein & Ajzen, 2010). In other words, when individuals are asked to make a statement with regards to an intention (hypothetical question), they sometimes choose not to act the same in the actual situation. For instance, as part of the evaluation of the National Youth Anti-Drug Campaign (Hornik et al., 2002) adolescents were asked to indicate their intentions to smoke cannabis in the next 12 months. Although most participants, who indicated negative intentions to do so, actually did not use cannabis, 15% of the participants said they did not intend to use it but actually did. Therefore, perceptions in a real situation can change, producing a different intention compared to that stated in the questionnaire.

5.2.1.4.1 BEHAVIOURAL EXPECTATIONS AND WILLINGNESS VS. BEHAVIOURAL INTENTIONS

Intentions are characterised as plans or goals that individuals make, which indicate a person's readiness to perform behaviour. Yet the readiness to act can be represented by a series of

statements such as “I will/ intend to/ expect to engage in the behaviour”. As is expected from any hypothetical latent construct, there are many indicators used to assess the underlying dimension of intention (Fishbein & Ajzen, 2010).

Given the assumption that people do not often take this into account, Warshaw and Davis (1984) created the construct of behavioural expectation (BE), which they defined as a subjective estimate that a behaviour will actually be performed. While behavioural intentions refer to a plan, behavioural expectations refer to an estimation that is influenced by circumstances, past behaviour and anticipated change in intentions, all of which are hardly considered when forming goals or plans. A meta-analysis found that the correlation was higher between BE and behaviour in relation to intentions and behaviour (Sheppard, Hartwick, & Warshaw, 1989). However other meta-analyses have failed to provide support for the superiority of behavioural expectation measures over behavioural intention (Sheeran and Orbell, 1998).

Gibbons and Gerrard (1995) developed the prototype/willingness model (PWM) of health behaviour which essentially posits that much of health risk behaviour (binge drinking, substance use, unprotected sex) especially among young people, is much more a reaction to social circumstances and less so an intentional act. Behavioural Willingness (BW) captures this reactive component of risky behaviour which reflects an individual’s openness to opportunity. Unlike intentions, BW involves less pre-contemplation of the behaviour and is more associated with avoidance of thinking about its potential negative consequences (Gerrard et al., 2002). BW has demonstrated its ability to predict a variety of risk behaviours and to do so independently of behavioural intentions (Gerrard, et al., 2002).

In the PWM, prototypes is the second major tenet of the model, covering prototype favourability (favourable or unfavourable evaluation of an image), and prototype similarity (an individual’s evaluation of their similarity to the image) as well as their interaction (Gibbons, Gerrard, Blanton, & Russell, 1998). Adolescents tend to be preoccupied with their social images and will be very sensitive to the impact that their behaviour has on this image (Allen & Miga, 2010). Our current work focuses on BW within the PWM model and therefore the concept of prototypes is not discussed further.

A study conducted to measure intention, expectation and willingness in a combined manner found that, in relation to smoking, drinking and drug use, these three constructs yielded a single index (Gibbons, Gerrard, Cleveland, Wills, & Brody, 2004). The authors questioned the necessity for a distinction between these constructs and specified how perhaps each construct relates to a more specific or broader interpretation of intention. It can then be assumed that by specifying a context,

more unique variance will be added to the measure of intention. However the idea of a new construct related to intention has still to be clarified and should be treated with caution given its ambiguous definition (Fishbein & Ajzen, 2010). Taking the above into account this study will use intentions as a single construct and without the inclusion of other potentially conceptually overlapping constructs.

5.2.1.4.2 EXTERNAL DIMENSIONS INFLUENCING BEHAVIOURAL INTENTION-BEHAVIOUR RELATIONSHIP

Temporal stability has already been discussed (see *Chapter 4; section 4.4.1*) as a factor that is known to affect the predictability of intentions in that behaviours are better predicted by intentions when those intentions are relatively stable across a one-year period of time (Conner, et al., 2000). Related to this issue is another obvious factor known as 'time lag' between measurement of behavioural intentions and behaviour. Although this varies by behaviour (and individual's age), the behavioural intention-behaviour relation tends to diminish when the measurement gap exceeds two months or more (Sheeran & Orbell, 1998).

Another complicating factor is that of 'emotion' which tends to influence an individual more or less than what they expect. Although used widely interchangeably, mood and emotion do have distinct features in that emotions bias behaviour whereas mood biases cognition (Davidson, 1994). The role of emotions were discussed in a study where participants reported intentions to get a mammogram and not take into consideration the level of anxiety involved, which may at the time of the behaviour have inhibited the performance of the behaviour (Ajzen, Brown, & Carvajal, 2004). A similar process could be occurring when using substances whereby an individual may feel inhibited or more stimulated than expected at the time of execution (Ajzen & Fishbein, 2005).

Perhaps the most important moderator of the intention-behaviour relationship is the nature of the behaviour involved. With behaviours that require a series of actions to complete, such as screening for cancer, individuals tend to negate the complexity involved in the behaviour leading to a mismatch between behavioural intentions and behaviour (McEachan & Conner, 2005). Individuals will underestimate the likelihood of encountering several complexities before successfully performing the behaviour, therefore making intentions a less powerful predictor for complex behaviours.

Another dimension which refers to the issue of poor behavioural intention performance is that of social desirability. Sheeran (2002) reported that people who said they did not intend to engage in cancer screening, very seldom did, and those who did intend to engage in cancer screening tests (the socially desirable response) did not follow through. This concept is known as literal inconsistency

whereby people who do not intend to engage in a socially desirable behaviour will tend to act in accordance with their negative intentions, while those who do intend to engage, may or may not do so.

5.2.2 ADDITIONAL VARIABLES

5.2.2.1 IMPULSIVITY

In an attempt to place more consideration on the individual differences in personality within the theoretical framework of the TPB, the notion of impulsivity is one of the additional variables considered. Impulsivity has been associated with the development of multiple, social, emotional and behavioural problems (Lynam & Miller, 2004) and is a construct generally thought to be among the diagnostic criteria for a wide array of disorders such as antisocial disorders, borderline personality disorder and substance use disorders (Riggs, Chou, & Pentz, 2009).

5.2.2.1.1 IMPULSIVITY & CONTROL

There has been evidence supporting the non-deliberative processes guiding behaviour, particularly when cognitive resources are limited (Muraven & Baumeister, 2000). In relation to resisting temptations or engaging in behaviours that require a high degree of self-control, it was found that there was a weakening of self-control strength. This reflective influence on behaviour suggests that people may perform some behaviour on impulse rather than through reasoned deliberative processing. While the TPB focuses on the rationality of human behaviour, such that people make systematic and rational use of information available to them prior to engaging in a behaviour, it is also obvious that some people do not make decisions to engage in certain types of behaviour based on convoluted decision-making processes but rather based on spontaneous self-serving impulses (Churchill, et al., 2008).

In examining young children's agreeableness the aspects of effortful control and impulsivity were investigated (Cumberland-Li, Eisenberg, & Reiser, 2004). Impulsivity was found to be negatively related to agreeableness while effortful control was positively related to agreeableness suggesting that impulsivity and effortful control are separate constructs. A TPB study that examined intentions, attitudes, perceived norms and PBC as well as individual differences in terms of adolescent risk-taking behaviour found that 'sensation-seeking' predicted behaviours such as drugs use and engaging in sexual behaviour (Fishbein, Bleakley, Hennessy, & Jordan, in preparation). The effect of this personal disposition was however almost completely mediated by the theory's constructs which has important implications in terms of understanding the role of sensation-seeking in relation to risky behaviour among adolescents (Fishbein, et al., in preparation).

Tendencies to engage in sensation-seeking behaviour have been studied around the notion of poor behavioural control such that early levels of poor behavioural control prefigures higher levels of drug use (Wong et al., 2006). In a more recent study, where impulsivity was found to be a strong predictor of risk behaviour initiation and externalizing behaviours among a group of preadolescents (10-13 year olds), the authors explained that this can be expected given that these types of behaviours are characteristic of deficits in control (Romer et al., 2009).

Therefore any research that involves hypotheses concerning the antecedent conditions and causes of young people's drug abuse and other risk behaviours, within which the concepts of impulsivity, behavioural control and self-control play a role, should be aware of the inconsistencies in terminology due to the fact that these concepts have yet to be fully differentiated from one another (Romer, et al., 2009).

5.2.2.1.2 EFFECT OF IMPULSIVITY ON INTENTIONS

Churchill and Jessop (2010a) explain how impulsivity can moderate the effectiveness of an implementation intention intervention (mental specific plans of where, how and when to perform a certain type of behaviour). The effects of implementation intentions on behaviour should however reach maximal level given that it involves the implicit requirement of choice as well as active volitional control of information-processing (Brickell, Chatzisarantis, & Pretty, 2006). Research has demonstrated that implementation intention interventions particularly benefit individuals whose self-regulatory skills are compromised as a result of certain activities such as drug misuse which diminish the self-regulatory capacities (Webb & Sheeran, 2003).

Impulsivity has been characterised as a multi-dimensional construct which covers definitions such as an inability to wait, failure to avoid temptations, need for immediate sensation-seeking and tendency to act without thinking (Patton et al., 2002; Whiteside & Lynam, 2001; Zuckerman, Eysenck, & Eysenck, 1978). Generally, highly impulsive people would be more sensitive to reward and therefore more likely to approach tempting stimuli without thinking about the possible negative consequences of their actions (Avila & Parcet, 2001). In an attempt to explore whether impulsivity would influence the implementation intention intervention it was suggested that this intervention should be most effective for individuals with high impulsivity in relation to individuals with low impulsivity. This was because those with low impulsivity had more effective self-initiated plans and goal attainment than those with high impulsivity (Churchill & Jessop, 2010b). It was additionally argued that "the relationship between implementation intention formation and the capacity for self-regulation and impulse control might be dependent on aspects of the behaviour under investigation, such as its level

of difficulty” (Churchill & Jessop, 2010a, p.10). In other words, if a behaviour is considered to be difficult to achieve such as getting high scores on an exam, those with low impulsivity could be positively affected by implementation intention intervention, in that it will help them carry out their goal attainment while those with high impulsivity may render the goal attainment as unachievable irrespective of the implementation intentions intervention.

5.2.2.2 MORAL NORMS

Some forms of behaviour are thought to be inherently right or wrong, regardless of the personal or social consequences, which is what has come to be known as the idea of moral norms (Manstead, 2000). This form of normative influence seems to be an important additional predictor to the TPB due to its influence on increasing the proportion of explained variance in intentions (Beck & Ajzen, 1991a).

Moral norms have been used in TPB studies to examine risky behaviour, and even cannabis use (Conner & McMillan, 1999). This form of normative influence seems to be an important additional predictor to the TPB due to its influence on increasing the proportion of explained variance in intentions (Beck & Ajzen, 1991a). It should be noted that moral norms seem to have an especially important influence on a certain category of behaviours especially those with an ethical dimension, such as substance use.

In contrast to perceived norms, which are meaningful to most kinds of behaviour, moral norms are meaningful to only certain types of behaviour. In a review by Armitage and Conner (1998) moral norms were found to independently predict behaviour, over and above the basic TPB variables.

Rivis et al. (2009) explained how moral norms are activated when individuals possess awareness of the consequences of their actions for others and when they accept personal responsibility for those actions. With regards to young people, this group is less likely to accept personal responsibility for and to acknowledge the consequences of their negative actions therefore explaining the increased tendency to engage in health-risk behaviours. In the Rivis et al. (2009) study, it was expected that younger samples would engage in less acknowledgement of their actions. The findings showed that behaviours with a moral dimension were associated with stronger moral norm/intention relationship and moral norms was mediated by behavioural intentions (Rivis, et al., 2009). The extent to which cannabis use is considered a behaviour with a ‘moral dimension’ is under speculation, especially among young people. According to a Joseph Rowntree Foundation report (Duffy, et al., 2008), young people perceived cannabis use as merely a “social thing” with no particular reference to ethical dimensions or principles.

Still, Fishbein & Azjen (2010) explain how although moral norms add to the prediction of behaviour, over and above the basic TPB variables, they fail to meet the criteria for a permanent expansion of the TPB. This is because it can be viewed as representing additional aspects of the overall 'social norm'.

5.2.2.3 PARENTING STYLES

One of the few studies that explored parenting within the TPB in the context of young people's (10-14 year old) smoking found that the quality of parent-child relationship, psychological control and parental knowledge influenced young people's smoking behaviour indirectly, while parental smoking behaviour had a direct effect (Harakeh, Scholte, Vermulst, de Vries, & Engels, 2004). The quality of parent-child relationship and parental knowledge influenced young people's smoking onset indirectly through attitudes, social norms and self-efficacy (Harakeh, et al., 2004). Considering parenting styles as part of the TPB therefore seems imperative, whether as distal or proximal predictors of young people's behaviour.

Several studies have indicated that peer influence factors are the strongest predictors of young people's substance use (Brook, Whiteman, Czeisler, Shapiro, & Cohen, 1997), yet some authors have noted that peer influences, relative to parental influences, may be overestimated (Kandel, 1996). Relationships between parenting styles and young people's use of drugs and/or alcohol have shown a decreased risk of drug use among young people whose parents had an authoritative parenting style (Stephenson, Quick, Atkinson, & Tschida, 2005) while those whose parents had authoritarian or permissive styles were at higher risk for drinking, and/or using drugs (Weiss & Schwarz, 1996). In fact parental warmth has been described to inhibit young people's problem behaviour due to increased parental knowledge of young people's activities, thereby deterring misbehaviour (Fletcher, Steinberg, & Williams-Wheeler, 2004; Vieno, 2009). A very recent empirical review on parental styles and drug use showed that family plays a fundamental role in the prevention and treatment of substance use (Becona et al., 2012). It seems necessary however to go beyond the direct implications of parental style on adolescent behaviour and examine the indirect mediating processes by which it could influence such behaviour.

For example, Scaife (2008) discusses how when there is parental neglect, psychological effects on children could be damaging. This is because parents who maintain a permissive and/or neglectful parenting style could result in parent-child relationship inconsistencies as well as low levels of care and emotional availability. This 'emotional' and 'psychological abuse' leads to the reduction of emotional responsiveness, poor development of mental processes (intelligence, memory,

perception, attention) and inefficient moral development of adolescents (O'Hagan, 1993). These findings suggest that children who have early erratic family environments may be cognitively incompetent in making appropriate moral/conventional distinctions which could explain their engagement in risky behaviour. However, research regarding young people's risk-taking has suggested that young people are equally as competent decision-makers as are adults, and what influences their risk-taking are psychosocial factors which continue into adulthood (Steinberg, 2007). Several of these psychosocial factors include, impulse control, emotion regulation, future orientation, which could all be affected by parenting styles.

5.2.2.3.1 CONSTRUCTS OF PARENTING STYLES

While neglecting and chaotic parenting styles have been associated with young people's antisocial behaviour and/or substance use (Baumrind, 1991; Farrington, 2003), it has not been used within the TPB framework to explain and predict young people cannabis use. Baumrind's conceptualization of parenting styles identifies two important elements of parenting: parental responsiveness (e.g. parental supportiveness or warmth) and parental demandingness (e.g. behavioural control) (Baumrind, 1991). The upper or lower dimensions of these elements result in a typology of four parenting styles: authoritative (responsive and demanding); authoritarian (demanding but not responsive); permissive (responsive but not demanding); and neglecting (neither demanding nor responsive) (Maccoby & Martin, 1983). While authoritative parenting has been associated with a wide range of positive adolescent outcomes such as better academic performance and psychosocial development, permissive and neglecting parents result in poor behavioural adolescent outcomes (Bronte-Tinkew, Moore, & Carrano, 2006). Nevertheless, the importance of providing more specificity when defining the different components of parenting styles has been stressed (Darling & Steinberg, 1993). Such components are examined within a scale that is based on a motivational model of parenting (Skinner, Johnson, & Snyder, 2005). This multi-dimensional structure results in six dimensions: parental warmth vs. rejection; structure vs. chaos; and autonomy support vs. coercion (Skinner, et al., 2005). According to the authors the models of multiple (unipolar) dimensions provide a significantly better fit than traditional models of bipolar dimensions.

In one of the few studies that examined both parental and young people's perspectives on family functioning, in both clinic and non-clinic families, it was found that young people in the non-clinic group perceived their families significantly as less intimate and more conflicted than did their mothers (Noller, et al., 1992). This elicits a sense of caution when interpreting young people's perceptions of parenting styles. Therefore differences will be analysed between adolescent and

parental perceptions on parenting styles in this study in order to understand if and where there may be differences.

5.2.2.4 STRENGTHS & DIFFICULTIES

Among the extensive range of issues associated with cannabis use, there have been concerns about the extent to which cannabis use among young people is associated with increased levels of psychosocial problems. Specifically it has been documented that young people who use cannabis (and particularly heavy users) are an at-risk group for a range of adverse behavioural outcomes that include: conduct problems, antisocial behaviour and general socio-behavioural difficulties (Fergusson, et al., 2002).

According to a report investigating the mental health of children and young people in the UK in 2004, it was found that 28% of young people with a conduct disorder had taken drugs at some time compared with only 8% of other young people (Green, McGinnity, Meltzer, Ford, & Goodman, 2005). Among 14-16 year olds the difference was noticeable in that 43% of young people with a conduct disorder had taken drugs compared to only 15% of those who did not have a conduct disorder. Cannabis was the most commonly used drug, with an overall 23% of young people with a conduct disorder having taken drugs in relation to 6% of those without the conduct disorder.

The strengths & difficulties questionnaire covers common areas of emotional and behavioural difficulties faced by young people under the age of 15 (Bourdon, Goodman, Rae, Simpson, & Koretz, 2005). Although it is used as a method solely for investigating these problems among young people, it has not been used within a TPB framework and in relation to cannabis use. Including constructs such as emotional symptoms, peer problems, hyperactivity (inattention), conduct problems and pro-social behaviour will provide a thorough outlook with regards to the behavioural difficulties faced by young people.

5.2.2.5 DELINQUENCY

The relationship between cannabis use and crime levels/ delinquency among young people has been approached from different viewpoints. There is the assumption that associations between cannabis use and delinquency levels can be mediated by the role of psychosocial adjustment such that regardless of whether one causes another or vice versa, the development of crime, mental health problems and unemployment is documented (Lynskey & Hall, 2000). It has also been argued that the usage of illicit drugs triggers a ripple effect that includes further drug use and increased risks of adjustment problems (Kandel, Simcha-Fagan, & Davies, 1986). Poor school performance, conduct

problems and antisocial tendencies have been a few of the factors associated with increased drug use, all of which act as antecedents to higher delinquency levels among young people (Farrington, 2003).

5.3 AIMS AND OBJECTIVES

5.3.1 STUDY 1 AIMS

Gaps in the literature previously outlined informed the aims of this research. The overall aim was to evaluate the extent to which TPB can predict and explain cannabis use among 16-18 year olds. Additionally Study 1 investigated how far the additional variables (moral norms, impulsivity, parenting styles, strengths & difficulties, and delinquency) can enhance TPB's ability to predict this behaviour. Although the literature on substance use in general has repeatedly associated substance use (and also cannabis use) with most of the factors examined in this Study, these factors have not been implemented as part of a unitary model that can serve to explain and predict behaviour in a systematic manner. Therefore Study 1 attempts to understand the relative contribution of each variable '**separately**'⁴ within the model but also as part of one model including all additional variables under one '**unitary framework**'⁵.

Furthermore, the panel element of this study has an aim to examine the associations between parents' and young people's perceptions of parenting styles as well as obtain parents' opinions on young people's cannabis use. This will be an important contribution to our study given that it will enable better understanding both of parents' knowledge on cannabis use and on the nature of parent-adolescent relationship.

5.3.2 RESEARCH HYPOTHESES

5.3.2.1 HYPOTHESES

1. The basic TPB variables will have associations with intentions to use cannabis and with behaviour⁶
 - a) Young people with stronger intentions to use cannabis will be more likely to self-report higher levels of cannabis use behaviour.
 - b) Young people with more favourable attitudes towards cannabis use will have stronger intentions to use cannabis and self-report higher levels of cannabis use behaviour.

⁴ Each variable will be measured against the basic TPB variable, separately to one another.

⁵ The variables will be measured against the basic TPB variables, all at once to determine which holds the most significant contribution between them.

⁶ The term 'behaviour' refers to self-reported behaviour and not actual behaviour.

- c) Young people who have positive perceived norms towards cannabis use will also have stronger intentions to use cannabis and will be more likely to self-report higher levels of cannabis use behaviour.
 - d) Young people with higher levels of PBC over using cannabis will also have stronger intentions to use cannabis and will be more likely to self-report higher levels of cannabis use behaviour.
2. The basic TPB variables will predict cannabis use intentions.
- a) Favourable attitudes will predict higher intentions to use cannabis.
 - b) Positive perceived norms will predict higher intentions to use cannabis.
 - c) Higher levels of PBC will predict higher intentions to use cannabis.
3. The additional variables will **separately** explain and predict cannabis use intentions:
- a) Weaker moral norms will independently⁷ predict positive cannabis use intentions.
 - b) High impulsivity levels (sensation-seeking, urgency, lack of premeditation, lack of perseverance) will independently predict positive cannabis use intentions.
 - c) Higher levels of perceived negative parenting styles (rejection, chaos, coercion) and low levels positive parenting styles (warmth, structure, autonomy support) will independently predict positive cannabis use intentions.
 - d) Higher levels of strengths & difficulties will independently predict positive cannabis use intentions.
 - e) Higher levels of delinquency will independently predict positive cannabis use intentions.
4. Using the **unitary framework** will indicate which additional variables can positively predict cannabis use intentions amongst amongst all additional variables.
5. The basic TPB variables independently predict positive self-reported cannabis use behaviour:
- a) Higher intentions will independently predict positive cannabis use.
 - b) Higher PBC will independently predict positive cannabis use.

⁷ The term 'independently' refers to the extent to which each variable can separately predict intentions, independently to the basic TPB variables

6. The additional variables will **separately** explain and predict self-reported cannabis use behaviour:
 - a) Weaker moral norms will independently predict positive cannabis use.
 - b) High impulsivity levels (sensation-seeking, urgency, lack of premeditation, lack of perseverance) will independently predict positive cannabis use.
 - c) Higher levels of perceived negative parenting styles (Rejection, Chaos, Coercion) and low levels positive parenting styles (Warmth, Structure, Autonomy Support) will independently predict positive cannabis use.
 - d) Higher levels of strengths & difficulties will independently predict positive cannabis use.
 - e) Higher levels of delinquency will independently predict positive cannabis use.
7. Using the **unitary framework** will indicate which additional variable positively predict cannabis use behaviour amongst all additional variables.
8. Mediation analyses will demonstrate the extent to which intentions act as a partial/full mediator between any of the significant additional variables and behaviour.
9. The TPB cognitive beliefs (behavioural beliefs, normative beliefs, control beliefs) will positively predict intentions to use cannabis. This is based on Chabrol et al. (2004) findings which stressed the importance of beliefs in predicting cannabis use.
10. There will be positive associations between adolescent perceptions of parenting styles and parents' perceptions of parenting style.

5.4 METHOD

5.4.1 PARTICIPANTS

An opportunity sample of 199 students (aged 16-18 years old) was recruited through a Sixth Form College in Norwich, UK. This was done after permission from both the head-teacher and parents was acquired. After the second phase of data collection there was an attrition level of 25% (51 participants) leaving a total of 148 participants (69 males, 79 females) from a sample consisting of 199 participants (98 males, 101 females) during the first phase. For the panel element, an opportunity sample of the students' parents (n=199, one parent per students) were invited to participate the study via an article placed in the College Newsletter which explained the study's aims.

5.4.2 DESIGN

The design of this study was (prospective) longitudinal with the first questionnaire (Time 1) assessing participants intentions, as well as a range of other variables and a second questionnaire (Time 2) provided two weeks later assessing participants behaviour .

A belief-elicitation questionnaire was used to obtain the salient beliefs regarding the TPB constructs. This examined behavioural beliefs, normative beliefs and control beliefs (see *Appendix 1A*).

Participants gave fully informed consent (*Appendix 1B*) and the study was approved by the university's ethics committee.

At Time 1, questionnaires regarding young people's reports on (1) intentions, (2) attitudes, (3) perceived norms (4) PBC, (5) moral norms (6) impulsivity (7) adolescent perceptions of parenting style (8) strengths & difficulties and (9) delinquency, was distributed. At Time 2 (two weeks later) a follow-up questionnaire measuring 'self-reported behaviour' regarding cannabis was administered. Please see *Appendix 1C* for students' questionnaires.

Debrief sheets (*Appendix 1D*) were distributed including a range of support centres students could refer to with regards to any substance use problems or questions.

The panel element of this study included a questionnaire (*Appendix 1E*) regarding parental styles (as administered to the young people) administered to parents. This was done by sending the 'parenting style' questionnaire, via post, along with a separate consent form for the parents to sign (*Appendix 1E*).

5.4.3 MEASURES

5.4.3.1 DEMOGRAPHIC VARIABLES

Participants' **AGE** was measured (in years).

GENDER was coded as 1= male and 2 =female.

NATIONALITY was categorised as 1= English/British, 2= New Zealander, 3= European, 4= mixed, 5= Canadian, 6= American, 7= Indian, 8= Ethiopian.

5.4.3.2 BELIEF-BASED VARIABLES

Three belief-based variables were included in Study 1. All three were measured using the already existing TPB measures reported in (Fishbein & Ajzen, 1975, 2010).

For each of the four behavioural beliefs, the belief score on the 'belief strength' scale is multiplied by the relevant evaluation score on the 'outcome evaluation' scale. The multiplicative composite was composed of 'behavioural belief strength' (e.g. "Smoking cannabis would make me feel relaxed" on a 7 point Likert scale (1: disagree - 7: agree) by 'outcome evaluation' (e.g. "Feeling relaxed when smoking cannabis would be desirable" on a 7 point bipolar scale (-3: undesirable - 3: desirable). The resulting products across are summed to create an overall **BEHAVIOURAL BELIEF** ($\alpha=.61$) score.

For each of the four normative beliefs, the belief score on the 'normative belief strength' scale is multiplied by the score relating to their 'motivation to comply' with that belief. The multiplicative composite was composed of 'normative belief strength' (e.g. "My friends approve of me smoking cannabis" on a 7 point Likert scale (1: disagree - 7: agree) by 'motivation to comply' (e.g. "Regarding cannabis use I want to do what my friends want me to do") on a 7 point bipolar scale (-3: not at all - 3: very much). The resulting products are summed to create an overall **NORMATIVE BELIEF** ($\alpha= .64$) score.⁸

For each of the four control beliefs, the belief score on the 'control belief strength' scale is multiplied by the score relating to the relevant item on the 'control belief power' scale. The multiplicative composite was composed of 'control belief strength' (e.g. "I expect I will disappoint family and friends with my smoking cannabis" on a 7 point bipolar scale (-3: disagree - 3: agree) by 'control belief power' (e.g. "Disappointing family and friends because of smoking cannabis would make it more difficult/ more easy to smoke cannabis") on a 7 point Likert scale (1: more difficult - 7: more easy). The resulting products are summed to create an overall **CONTROL BELIEF** ($\alpha= .21$) score.

The Cronbach's alpha was relatively high apart from **CONTROL BELIEF** ($\alpha= .21$). However, internal consistency is not a requirement of the behavioural, normative, and control belief composites because different accessible beliefs may well be inconsistent with each other (Fishbein & Ajzen, 2010).

Moreover, with regards to the multiplicative composite nature of measuring beliefs Trafimow and Finlay (2002) commented that whether beliefs are positively or negatively structured should not affect their ability to predict attitudes. Also, the multiplicative assumption of having a bipolar scale

⁸ The way that normative beliefs are measured means that lower scores on belief strength indicate greater disapproval from significant others, and higher scores on motivation to comply indicate greater motivation to comply with significant others. Overall, normative belief will take a minus value as a result of a negative being multiplied with a positive to indicate compliance within this measure. This means that normative beliefs will have a negative relationship with intentions in a regression analysis.

and a unipolar scale (a negative * a negative= positive) suggests that a multiplicative model acts as a superior predictor of attitudes, or perceived norms and PBC, while an additive model would not allow for the logic of a double negative. Although Trafimow and Finlay (2002) contradicted these assumptions, Fishbein & Ajzen (2010) explain that using hierarchical regression analysis reveals the fallacy of this point. A beta weight is assigned to each component separately in each step (first for belief, then for evaluation), and then for the multiplicative component. It is therefore expected that this 'belief by evaluation' product will add little to the next step of the analysis, therefore explaining for the little or no predictive validity.

5.4.3.3 BASIC TPB AND ADDITIONAL VARIABLES⁹

INTENTIONS was assessed by two items ($\alpha = 0.89$; e.g. 'Please indicate how often you intend to use cannabis in the next two weeks' scored 1: Never to 7: most days, higher scores indicating an intention to take cannabis more frequently) that were summed and averaged.

ATTITUDE was assessed by a pair of semantic differentials (two items, $\alpha = 0.89$). The statement "Using cannabis over the next two weeks would be..." was completed with the semantic differential choices of *bad-good* and *unpleasant-pleasant*. The items were scored on a 7 -point scale ranging from -3 to +3 (higher scores indicating more positive attitude to cannabis use) that were summed and averaged.

PERCEIVED NORMS was measured using three items ($\alpha = 0.57$; e.g. 'Most friends who are important to me think I should smoke cannabis in the next two weeks'). The items were scored on a 7 point scale 1: disagree to 7: agree (higher scores indicating others' positive perceptions of smoking cannabis) that were summed and averaged.

PBC was assessed by four items ($\alpha = .50$; e.g. 'How much control do you have over whether or not you use cannabis in the next two weeks') scored 1: very little-7: complete control. The items were scored between were summed and averaged with higher scores indicating greater PBC. Due to the alpha level being higher when item 2 was dropped, the total score excluded item 2. The new alpha for PBC was then $\alpha = .58$.

MORAL NORMS was measured using items similar to those used by Conner & McMillan (1999) and consisted of three questions ($\alpha = 0.88$; e.g. 'It would be morally wrong for me to use

⁹ The complete set of items measuring each construct is available in *Appendix 1C*

cannabis'); scored 1: strongly disagree to 7: strongly agree. Higher scores indicated stronger moral norms not to use cannabis, which were summed averaged.

IMPULSIVITY was assessed using a measure created by Whiteside & Lynam (2001), which is composed of 4 sub-dimensions; *urgency* ($\alpha = 0.89$, 11 items, e.g. "It is hard for me to resist acting on my feelings", high scores indicate a tendency to engage in impulsive behaviour in order to alleviate negative emotions despite harmful consequences of these actions), *lack of premeditation* ($\alpha = 0.86$, 11 items, e.g. "I usually think carefully before doing anything", low scorers are thoughtful and deliberative while high scorers act on the spur of the moment), *lack of perseverance* ($\alpha = 0.86$, 10 items, e.g. "Once I start a project I almost always finish it", low scorers are able to complete projects while high scorers find it difficult to force themselves to do what they ought to do) and *sensation-seeking* ($\alpha = 0.89$, 12 items, e.g. "I generally seek new and exciting experiences and sensations", low scorers will avoid risk and danger while high scorers will seek new experiences that could be dangerous). The scoring ranged from 1: agree strongly - 4: disagree strongly. Each of these sub-dimensions were summed and averaged.

PARENTING STYLE was measured using a 24-item scale adapted from the Parents as Social Context Questionnaire (Adolescent Report) (PASCQ) (Skinner, Wellborn, & Regan, 1986) which had been modified to exclude items that were low on the factor loadings so as to constrain questionnaire length without compromising the quality of the measures. Items represent six dimensions of perceived parenting with four items for each dimension : Warmth ($\alpha = 0.87$, e.g. "My parents enjoy being with me") Rejection ($\alpha = 0.78$, e.g. "Sometimes I wonder if my parents lie me") Structure ($\alpha = 0.82$, e.g. If I ever have a problem my parents help me to figure out what to do about it") Chaos ($\alpha = 0.79$, e.g. "My parents keep changing the rules they set for me") Autonomy Support ($\alpha = 0.84$, e.g. "My parents accept me for myself") Coercion ($\alpha = 0.83$, e.g. "My parents think there is only one right way to do things- their way"). Each item's scores ranged from 1 (not at all true) to 4 (very true). The higher the scores on the positive dimensions of parenting (warmth, structure, autonomy) indicate young people's positive perception of parenting style while the higher the score on the negative dimensions (rejection, chaos, coercion) indicate young people's negative perception of parenting style.

STRENGTHS & DIFFICULTIES was taken directly from a 25-item widely used questionnaire examining young people's behavioural strengths & difficulties (Bourdon, et al., 2005). This was comprised of five sub-dimensions with five items for each dimension: Emotional Symptoms ($\alpha = 0.77$, e.g. "I get a lot of headaches, stomach aches or sickness"), Conduct Problems ($\alpha = 0.50$, e.g. "I get

very angry and lose my temper”), Hyperactivity ($\alpha = 0.71$, e.g. “I am restless, I cannot stay still for long”), Peer problems ($\alpha = 0.70$, e.g. “I get on better with adults than people my own age”), Pro-social ($\alpha = 0.70$, e.g. “I often volunteer to help others”). The scores ranged from 1: Not true – 3: Certainly true. To create a unitary measure, all dimensions were summed (excluding Pro-social dimension) ($\alpha = 0.80$).

DELINQUENCY was examined by using an already established delinquency scale (Tarry & Emler, 2007). This was comprised of 24 items ($\alpha = 0.88$, e.g. “Thrown stones at cars, trains, buses or other vehicles”) each scored from 1: Never, 2: Once or twice, 3: A few times, 4: Several times. These responses were then recoded from 0 to 3, giving a range of possible scores from 0 to 72. The inclusion of frequency data allowed for a more sensitive measure of delinquency in that it was easier to differentiate the upper limit of the range, than a simple count of the number of acts would have provided. The scores were summed with higher scores indicating more frequent delinquent acts.

BEHAVIOUR was assessed in a two week follow-up questionnaire using similar items as those used by Conner & McMillan (1999). This consisted of four items ($\alpha = 0.97$; e.g. ‘Over the past two weeks how often have you used cannabis?’ scored 1: never - 7: most days). The items were summed and averaged with higher scores indicating higher levels of cannabis use. Although ‘behaviour’ is the term to be used throughout this thesis, it should be noted here that it refers to self-reported behaviour.

5.4.3.4 PANEL ELEMENT: PARENTS’ PERSPECTIVES

PARENTING STYLE was measured using a 24-item scale adapted from the Parents as Social Context Questionnaire (Parent Report: PASCQ) (Skinner, et al., 1986) which had been modified to exclude items that were low on the factor loadings. Items represent six dimensions of parenting with five items for each dimension: Warmth ($\alpha = 0.58$, e.g. “I know a lot about what goes on with my child”); Rejection ($\alpha = 0.65$, e.g. “I don’t understand my child very well”); Structure ($\alpha = 0.75$, e.g. “I make it clear what will happen if my child does not follow our rules”); Chaos ($\alpha = 0.74$, e.g. “I let my child get away with things I really shouldn’t allow”); Autonomy Support ($\alpha = 0.65$, e.g. “I encourage my child to express his/ her feelings even when they are hard to hear”); Coercion ($\alpha = 0.72$, e.g. “To get my child to do something I have to shout at him/her”). Each item’s scores ranged from 1 (not at all true) to 4 (very true). Higher scores on the positive dimensions of parenting (warmth, structure, autonomy) indicate parents’ positive perception of parenting style while higher scores on the negative dimensions (rejection, chaos, coercion) indicate parents’ negative perception of parenting style.

AUDIT - C (short version) is a 3-item alcohol screen that can help identify persons who are hazardous drinkers or have active alcohol use disorders (including alcohol abuse or dependence). The AUDIT-C is a modified version of the 10 question AUDIT instrument.

AUDIT-C was included in the parents' questionnaire so as to measure the frequency of alcohol use. This included 3 items ($\alpha = 0.58$; e.g. "How often do you have a drink containing alcohol", 0: Never to 4: *4 or more times per week*). A total score of 1-3; the person is a lower risk drinker, 4-6; the person is possibly drinking at an increasing risk level, 7-9; the person is drinking at a higher risk drinking level, 10-12; the person is possibly alcohol dependent.

OTHER constructs were also examined for the purpose of examining a descriptive background as to the parents' general views on young people and cannabis use (e.g. "How often do you speak to your child about cannabis use/ alcohol use?", see Table 5. 15 for full list of items). All items were measured on a 7-point Likert scale, 1: Agree – 7: Disagree.

5.4.4 PROCEDURE

Initially the researcher contacted ten Sixth Form Colleges in Norwich. After acquiring a response only from one, the research purpose negotiations towards conducting the study were initiated with that particular College. This College was considered to hold a representative sample of students given their wide range of socio-economic backgrounds. The recruitment procedure continued once the College director provided formal written consent. The sample targeted were the Year 13 student group during their Assembly period.

5.4.4.1 STUDENT'S PARTICIPATION

A belief-elicitation study ($n=24$; Sixth Form College students) examining behavioural beliefs, normative beliefs and control beliefs was piloted. The responses were then used to frame the items used in the questionnaire. The students were asked to anonymously fill in the questionnaire during a revision session organised by one of the teachers.

Sixth Form College students were invited to take part in the Study and, upon receipt of parental consent they were requested to fill in the questionnaire during an assembly. The consent forms emphasized confidentiality and student's right to withdraw from the study at any time during or one month after the study. An alternative task was organised by the College for the four students identified prior to questionnaire administration who were refused participation by their parents.

The respondents were told that this study would examine their opinions regarding cannabis use. They were asked to write a code at the top of the questionnaire which was comprised of a specific

format and structure: the participant's initials; surname and name, and date of birth; dd/mm/yyyy, such that it follows the same structure for all (i.e. CM17/04/1992). This helped match the questionnaires with a follow-up questionnaire two weeks later and with the questionnaire administered to the parents.

The researcher was responsible for questionnaire administration during the Assembly time, where a verbal summary of the study's aims and participant rights was given prior to questionnaire completion. Data confidentiality was assured and the students were informed about the purposes of the data. The researcher also explained the importance of completing this questionnaire under exam-like conditions. A teacher accompanied the researcher at all times throughout the procedure of giving out and collecting the questionnaires but had no further involvement in the actual administration process or handling of data. During questionnaire completion the students were free to withdraw from the study if any feelings of discomfort occurred. Once the students completed the questionnaire they handed it back to the researcher.

Two weeks later the researcher conducted the follow-up questionnaire with the students recruited previously and under the same conditions.

5.4.4.2 PANEL ELEMENT: PARENTS' PERSPECTIVES: PARENTS' PARTICIPATION

A set of 199 pre-packed envelopes including letters and questionnaires were provided to the College in order to forward these to students' parents for participation (*Appendix 1E*).

In order to comply with the ethical guidelines regarding access to parents' addresses, the College was asked to post these to the parents. The researcher reimbursed the College for the postage cost. The parents were required to write a code on the top of the questionnaire (mentioned in more detail below) so as to match their questionnaire with that of their children's. In the case where the parents had one or more 16-18 year olds at the College, they were asked to complete the questionnaire by taking into consideration the oldest child. Of the 199 envelopes sent out to parents, 30 responded (24 mothers, 6 fathers).

Given that the response rate was low (15%) it is more likely that the parents who did participate will have characteristics that bias the sample. It has been indicated that parents who participate in family research tend to have distinct characteristics in that they have better family cohesion, fewer behavioural problems in children and tend to be better adjusted than non-participants (Costigan & Cox, 2001). Comparison of participants and non-participants was not possible however due to access

being directed only on permission by parents. In other words, there was no possibility of obtaining access to the demographic/ parenting style characteristics of the parents who did not respond.

5.5 RESULTS

5.5.1 OVERVIEW OF RESULTS

This section will describe the findings in relation to the variables predicting intention and behaviour. Prior to conducting the analysis it was necessary to carry out preliminary analysis to account for missing data and any significant differences between participants.

Correlation Analyses were conducted followed by a series of logistic regression analyses carried out to examine the predictive utility of the basic TPB and additional variables (moral norms, impulsivity, parenting styles, strength & difficulties and delinquency) in relation to intentions and behaviour. The variables were examined '**separately**' (each additional variable was inserted in the model using different steps every time) and under a '**unitary framework**' (the additional variables were inserted in the model using one step to determine which was the most significant out of all of them).

Given that intentions and behaviour were non-normally distributed they were transformed into dichotomous variables (Berry, 1993). In an attempt to clarify the role of intentions with regards to the relationship between some of the variables and behaviour a series of mediation analyses was undertaken, demonstrating the extent to which intentions acted as a full or partial mediator.

Alcohol and drug use responses as reported by 30 parents were analysed using frequency analysis. Correlation analyses demonstrated the associations between young people's' perceptions of parenting styles and parents' perceptions of parenting styles. Finally, using a qualitative approach, thematic analysis helped surface any overriding themes with regards to parents' views on why young people use cannabis.

5.5.2 BELIEF –ELICITATION STUDY

A frequency analysis indicated the most commonly reported answers in the belief-elicitation study which were then used to inform the design of the actual questionnaire (Table 5.1)

TABLE 5:1 BELIEF ELICITATION FREQUENCY ANALYSIS

Questions in belief-elicitation study	Responses with highest frequencies
Advantages of smoking cannabis	- 'feeling relaxed'
Disadvantages of smoking cannabis	- 'mental health problems'
Groups/individuals who approve of smoking cannabis	- 'other users/hippies'
Groups/individuals who disapprove of smoking cannabis	- 'parents'
What it would make it easier to smoke cannabis	- 'legalisation of cannabis'
What it would make it difficult to smoke cannabis	- 'illegality of cannabis'
Other aspects associated with using cannabis	- 'social enjoyment of cannabis' - 'academic failure' - 'drug cultures' - 'use dependent on quantity/quality of purchase'

These responses were used to frame the 'behavioural belief', 'normative belief' and 'control belief' items used in the questionnaire.

5.5.3 PRELIMINARY ANALYSES

Power analysis was conducted prior to data collection. The required sample size had been determined by power analysis which, according to Cohen (1988), it is reasonable to assume for a moderate effect size (multiple R of 0.3) for TPB studies using regression analysis. This suggests a sample size of 80, but because response rates tend to be around 50%, 160/200 participants were targeted for recruitment to facilitate attainment of the sample size required.

The data was firstly checked for normal distribution using visual aids, skewness and kurtosis values and checked for outliers. Although at Time 1, the sample consisted of 199 students, at Time 2 (after the second phase of data collection) there was an attrition rate of 25% leaving a total of 148 participants out of the 199. No outliers were found and all variables were sufficiently normally distributed according to the mentioned indicators, with the exception of intentions and behaviour (see *Appendix 1F*).

5.5.3.1 COLLINEARITY DIAGNOSTICS

Convergent validity of measures was determined by examining inter-correlations of items measuring the same variable (see 5.3.3. for Cronbach's alpha of all variables).

Discriminant validity of variables was confirmed by ensuring that the correlations between the variables did not exceed $r=.85$, as some researchers suggest that correlations above this level signal definitional overlap of concepts (Borsboom, Mellenbergh, & van Heerden, 2004). While this method is considered as a functionally sufficient test of discriminant validity other methods employ more stringent tests (Zait & Berteau, 2011).

One method that has helped avoid multicollinearity has been the mean centering method. The usual justification for mean centering has been to reduce potential multicollinearity effects on the estimation process (Cohen, Cohen, West, & Aiken, 2003). The correlations between the predictor and outcome variables are reduced by mean centering prior to conducting the analysis on the outcome variable, such that nonessential multicollinearity is removed. This serves to reduce the likelihood that rounding error will affect the results (Cohen, et al., 2003). However while we acknowledge that there is some interpretative value to centering the means prior to the analysis, the need to center predictor variables is more one of choice or interpretational convenience than one of necessity (Hayes & Matthes, 2009; Kromrey & Foster-Johnson, 1998). In our analysis we will not mean center the predictors.

The collinearity diagnostics conducted indicated that our data did not show multicollinearity. The criteria for assessing collinearity show that none of our variables have a tolerance value less than .1 (Menard, 2002), and also none of our variables has a VIF value greater than 10 (Myers, 1990). Given that there was no problem of multicollinearity further investigation by way of eigenvalues and condition index was not necessary (Field, 2005) (see *Appendix 1G* for collinearity statistics)

5.5.3.2 MISSING DATA

Other options were explored to transform the data into a normal distribution. A thorough investigation into the merits and limitations of these alternative options concluded that the best option was to proceed with the Expectation Maximization (EM). Expectation maximization is an effective technique that is often used in data analysis to manage missing data (for further discussion, see Schafer, 1997; Schafer & Olsen, 1998). Indeed, expectation maximization overcomes some of the limitations of other techniques, such as mean substitution or regression substitution. These alternative techniques generate biased estimates-and, specifically, underestimate the standard errors. EM overcomes this problem. It was necessary to establish if the data was completely missing at random, or not missing at random. For each variable it was assessed whether data differed

between individuals who responded to some variable and individuals who did not respond to some variable. This is determined by the Little MCAR test which if non-significant indicates that the data is completely missing at random and therefore it is possible to apply expectation maximization.

Because the level of missing data for most variables was small and/or did not appear to be systematic (Table 5.2) the assumption that it is missing at random was considered plausible (Little & Rubin, 2002). Due to the cumulative loss of participants that would have occurred due to listwise deletion biases estimates (Schafer & Graham, 2002), the maximum likelihood estimation was used so as to include all cases (Dempster, Laird, & Rubin, 1977).

TABLE 5:2 RESULTS OF LITTLE MCAR TEST

Little MCAR χ^2	df	P
2049.322	2067	.605

However, although EM imputation does a good job in estimating the mean values, it seriously underestimates variances, thereby invalidating statistical inferences from the imputed data (Allison, 2002).

Regression analysis conducted with the EM-imputed data and regression analysis conducted with the original non-imputed data **did not differ** in terms of which variables were significant. For this reason it was decided to present the analysis from the original non-imputed data (see *Appendix 1H* for regression analysis conducted with the EM- imputed data).

5.5.3.3 DIFFERENCES BETWEEN TIME 1 AND TIME 2 PARTICIPANTS

In terms of significant differences between the participants who completed both Time 1 and Time 2 questionnaires and those who only completed Time 1 questionnaire, a series of independent samples t-tests were carried out to search for mean differences between the groups. Using a Bonferroni correction p-value of 0.0025 as criteria for statistical significance the results showed that there were no significant differences in the means ($p > .0025$) across all variables measured.

TABLE 5:3 BIVARIATE CORRELATIONS BETWEEN VARIABLES

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Age	16.44	0.55																		
1 Intention	1.49	1.18	—																	
2 Attitude	-1.40	1.87	.720**	—																
3 Perceived norms	2.01	1.30	.505**	.502**	—															
4 PBC	4.80	1.41	.445**	.514**	.238**	—														
5 Moral Norms	4.52	2.06	-.567**	-.711**	-.428**	-.576**	—													
6 Urgency	2.73	0.63	.042	-.106	-.016	-.190*	.029	—												
7 Sensation Seeking	2.17	0.68	-.149*	-.235**	-.011	-.255**	.180*	.038	—											
8 Lack of Premeditation	2.22	0.54	.244**	.312**	.193*	.186**	-.415**	-.168*	-.093	—										
9 Lack of Perseverance	2.33	0.52	.148*	.258**	.149*	.176*	-.290*	-.264*	.158*	.507**	—									
10 PS: Warmth	3.15	0.72	-.089	-.041	-.089	-.101	.156*	.244**	-.090	-.235*	-.307*	—								
11 PS: Structure	2.74	0.76	-.092	-.082	-.125	-.120	.180*	.156*	-.116	-.235*	-.302*	.733**	—							
12 PS: Autonomy Support	3.19	0.72	-.113	-.082	-.099	-.064	.180*	.307**	-.098	-.342*	-.356*	.773**	.698**	—						
13 PS: Rejection	1.58	0.66	.114	.001	.074	.139	-.030	-.420*	.001	.172*	.200**	-.691*	-.519*	.826**	—					
14 PS: Chaos	1.99	0.72	.086	.041	.142*	.121	-.047	-.345*	.016	.072	.115	-.492*	-.460*	.846**	.556**	—				
15 PS: Coercion	1.87	0.70	.159*	.141*	.129	.075	-.075	-.284*	.038	.184**	.140*	-.415*	-.358*	.833**	.534**	.547**	—			
16 Strengths & Difficulties	12.84	6.01	.046	.085	.111	.124	-.118	-.537*	.215**	.179*	.395**	-.329*	-.338*	.449**	.410**	.353**	.382**	—		
17 Delinquency	30.42	7.78	.342**	.375**	.291**	.346**	-.393**	-.262*	-.253*	.305**	.195**	-.252*	-.171*	.206**	.274**	.163*	.086	.269**	—	
18 Behaviour	.74	.84	.692**	.536**	.454**	.354**	-.474**	.013	-.082	.295**	.107	-.058	-.033	-.046	-.082	-.084	-.033	.023	.291	—

Note: **= p<.01, * = p< .05

1. Intention scored 1 to 7 (higher scores indicated stronger intentions to use cannabis); 2. Attitude scored -3 to +3 (higher scores indicating favourable attitudes); 3. Perceived Norms scored 1 to 7 (higher scores indicating others' positive perceptions of cannabis use); 4. PBC scored 1 to 7 (higher scores indicating higher perceived control over using cannabis); 5. Moral norms scored 1 to 7 (higher scores indicating stronger moral norms to not use cannabis); Impulsivity with sub-dimensions of 6. Urgency, 7. Lack of Premeditation, 8. Lack of Perseverance and 9. Sensation-seeking all scored 1 to 4 (higher scores indicating a higher degree of impulsive tendency; Parenting Styles (PS) scored from 1 to 4 on sub-dimension of 10. Warmth, 11. Structure, 12. Autonomy Support, 13. Rejection, 14. Chaos, 15. Coercion (higher scores indicating a higher level of this dimension as reported by young people); 16. Strengths & Difficulties scored 1 to 3, but measured as a unitary

score ranging from 0 to 60 (higher scores indicating presence of behavioural difficulties); 17. Delinquency scored 0 to 72 (higher scores indicating more frequent delinquent acts) and 18. Behaviour scored 1 to 7 (higher scores indicating higher levels of self-reported cannabis use).

2. Correlations with Intentions were analysed using Point-Biserial Correlations (preferred correlation between a dichotomous and continuous variable).
3. Correlations with Behaviour were analysed using Point-Biserial Correlations (preferred correlation between a dichotomous and continuous variable).

5.5.4 DESCRIPTIVE DATA

On average, young people's attitudes on cannabis were slightly negative ($M=-1.40$, $SD=1.87$), their perceived norms with regards to cannabis use were negative ($M=2.01$, $SD=1.30$) and there was little control over using cannabis ($M=4.80$, $SD=1.41$).

Given that intentions and behaviour were dichotomised as a result of not meeting the normal distribution assumption, their frequencies will be reported rather than the means and standard deviations. Out of the 199 participants that completed Time 1 questionnaire (including the intentions measure) 147 participants were matched to the Time 2 questionnaire (including the behaviour measure). Out of these 147 respondents, 117 did not intend to use cannabis while 31 did intend to do so, while in terms of self-reported cannabis use, 131 did not use cannabis in the previous two weeks while 16 did.

Young people reported strong moral norms to not use cannabis ($M=4.52$, $SD=2.06$) and impulsivity levels were generally found to be moderately in the middle of the scale (e.g. Lack of Perseverance, $M=2.33$, $SD=0.52$). Moreover positive parenting styles were given on average higher ratings (e.g. PS: Warmth, $M=3.15$, $SD=0.72$), than negative parenting styles (e.g. PS: Rejection, $SD=0.66$). Overall, strengths & difficulties were reported as extremely low ($M=12.84$, $SD=6.01$) while delinquency levels were on the middle of the frequency scale which indicates a higher than average frequency rate ($M=30.42$, $SD=7.78$).

5.5.5 TESTING HYPOTHESIS 1- CORRELATIONS OF VARIABLES WITH INTENTION AND BEHAVIOUR

Table 5.3 gives the bivariate correlations (Pearson's r) and Point Biserial Correlations between the components of the model and shows that attitude ($r=.72$, $p<.01$), perceived norm ($r=.50$, $p<.01$) and PBC ($r=.45$, $p<.01$) all correlated with intention, as the theory postulates. Most importantly, the strongest correlation was found between intention and behaviour ($r=.69$, $p<.01$), which goes in accordance to the theory's basic assumption that intention acts as the strongest associated variable to behaviour. PBC, which is thought to have a direct relationship to behaviour also showed moderate significant association ($r=.35$, $p<.01$). These findings are in support of hypotheses 1a-1d.

5.5.5.1 OTHER CORRELATIONS

Other interesting correlations found between the variables may help to provide a more holistic picture of young people's characteristics. For instance, among the parenting style dimensions, it is clear that higher positive parenting styles (warmth, structure, autonomy support) share positive

association with higher moral norms to not use cannabis ($r = .18, p < .05$). Negative parenting styles (rejection, chaos, coercion) shared positive associations with strengths & difficulties ($r = .45, p < .01$).

Among the impulsivity dimensions, both lack of premeditation ($r = .31, p < .01$) and lack of perseverance ($r = .20, p < .01$) shared positive associations with delinquency. Delinquency was also positively associated with negative parenting styles ($r = .21, p < .01$) with rejection being significantly negatively associated ($r = .27, p < .01$).

5.5.6 SOCIAL-COGNITIVE PREDICTORS OF CANNABIS USE INTENTIONS- TESTING HYPOTHESES 2, 3 & 4.

Given that a large proportion of the sample scored on the lower end of the scale, intentions was a non-normally distributed variable as indicated by the Kolmogorov-Smirnov test, $p < .05$, and Shapiro-Wilk test, $p < .05$. This violated the assumptions for a multiple regression and so a logistic regression analysis was therefore utilized to examine predictors of those who intended to use cannabis and those who did not intend to use cannabis.

Missing values on the continuous predictors were imputed using the EM algorithm through SPSS Missing Values Analysis, after finding no statistically significant deviation from randomness using Little's MCAR test, $p = .605$. After deletion of 1 case with a ZResid of 10.995, data from 198 participants were available for analysis of logistic regression on intentions using the Time 1 dataset. It should be noted here that when conducting regression analysis on behaviour our sample size is reduced to $n = 147$ as this is the sample that was retained after matching Time 1 and Time 2 participants.

Since the aim of this study was to examine the '**separate**' contribution of each additional variable as well as how they all fit under one unitary framework a series of separate logistic regressions were run for each additional variable (see Table 5. 4 & Table 5. 5) and as one '**unitary framework**' (see Table 5. 6 & Table 5. 7). The basic TPB variables were always controlled for in order to determine which of the additional variables explained and predicted behaviour, over and above the basic TPB variables. This was also done as a guide to understanding whether the variables that predicted intention to use cannabis shared significant contributions to predicting behaviour, other than that shared by the basic TPB variables.

The finding that the Constant-only model was significant indicates that this null model should be rejected ($p < .001$).

5.5.6.1 TESTING **HYPOTHESIS 2**: THE BASIC TPB VARIABLES (ATTITUDES, PERCEIVED NORMS, PBC) WILL EXPLAIN AND PREDICT INTENTIONS TO USE CANNABIS.

Table 5.4 shows that in the first Block (1) attitudes, perceived norms and PBC were inserted as the predictors of intention, with the model being significant as $\chi^2 (3, N= 198) = 120.866, p<.001$, indicating that these TPB predictors reliably distinguished between those who had intentions to use cannabis and those who had not. This model correctly classified 90.3 % of cases overall, an improvement over the 76.5 % in Block 0. The basic TPB variables therefore do explain and predict intentions to use cannabis when examined among no other variables supporting hypotheses (2a)-(2c).

The rest of the steps were conducted in a way so as to show the improvement of the model always in reference to Block (1), essentially presenting how each additional variable **separately** contributed to the model while controlling for the basic TPB variables (attitudes, perceived norms and PBC).

5.5.6.2 TESTING **HYPOTHESIS 3**: THE ADDITIONAL VARIABLES (MORAL NORMS, IMPULSIVITY, PARENTING STYLES, STRENGTHS & DIFFICULTIES AND DELINQUENCY) WILL EXPLAIN AND PREDICT CANNABIS USE INTENTIONS.

In the second block (2), moral norms were inserted as a predictor of intentions. While the model as a whole was significant $\chi^2 (4, N= 198) = 122.213, p<.001$, meaning that these predictors could reliably distinguish those who had intentions to use cannabis and those who hadn't, Table 5.4 shows that only attitudes (Wald $\chi^2= 19.73, p<.01$) and perceived norms (Wald $\chi^2= 6.994, p<.01$) reliably predicted intentions. The Cox & Snell R square= .464 while Nagelkerke R square =.699, suggesting that between 46.4 % and 69.9% of the variability in intentions is explained by these predictors. The overall percentage of correctly classified cases remained as 89.8 % which is a result of moral norms not being a significant addition to the model.

The third block (3) examined the separate contribution of the impulsivity dimensions. Once again although the model as a whole was significant $\chi^2 (7, N= 198) = 121.840, p<.001$, none of the impulsivity dimensions could reliably distinguish between those who had intentions to use cannabis and those who hadn't.

In Block (4) the model was significant $\chi^2 (9, N= 198) = 119.766, p<.001$. This model which was examining the separate contribution of the parenting style dimensions shows how only the TPB variables were significantly distinguishing between those who had intentions to use cannabis and those who hadn't. This was the same in Block (5) examining strengths & difficulties and Block (6) examining delinquency, only that PBC was not a significant predictor in Block (5) as Wald $\chi^2= 5.636, p>.05$.

Overall moral norms, impulsivity, parenting styles, strengths & difficulties and delinquency did not act as direct independent predictors of intention which do not support our hypotheses (3a)-(3e).

5.5.6.3 TESTING **HYPOTHESIS 4** USING 'UNITARY FRAMEWORK'.

Given that none of the variables were found to be significant in the previous series of regression analysis, Table 5.6 & 5.7 present the analysis of stepwise forward conditional logistic regression (Menard, 2002) on intention using one 'unitary framework' whereby all additional variables are inserted in a separate step together. Table 5.6 shows how the Constant-only model was significant indicating that this null model should be rejected ($p < .001$).

In Block (1) all TPB variables were significant, with attitudes being the most significant predictor as $\text{Exp (B)} = 2.566$, indicating a positive relationship with intentions. Stepwise regression only produced one more model, given that no other predictor was significant apart from the parenting style dimension of rejection ($\text{Wald } \chi^2 = 4.082, p < .05$) with $\text{Exp (B)} = 2.151$, indicating that with every one unit increase in intentions to use cannabis, there was a 2.151 increase in the odds of the adolescent reporting higher on the parenting style dimension of rejection. This second model, correctly classified 89.4 % cases overall which is an improvement over 76.0 % in Block 0. The Cox & Snell R square = .463 while Nagelkerke R square = .693, suggesting that between 46.3 % and 69.3% of the variability in intentions is explained by these predictors. The -2 Log Likelihood decreased from 90.447 to 86.035, indicating how this model represents a better fit to the data than Block (1) with just the basic TPB variables. The extent to which parenting style rejection had an independent contribution to distinguishing between those who had intentions to use cannabis and those who without intentions to use cannabis is unclear given that when examined in a univariate logistic regression (Table 5.4) this variable was not significant. This implies that the significant effect is probably being caused due to an interaction with the TPB variables (see 5.6.1.1 for detailed explanation).

Therefore, when examined using a 'unitary framework' only the TPB variables were significant given that the parenting style: rejection significance level cannot be reliably interpreted.

TABLE 5:4 LOGISTIC REGRESSION ONTO INTENTIONS USING TPB VARIABLES AND SEPERATE STEPS FOR EACH ADDITIONAL VARIABLE

				<u>95 % Confidence Interval for Odds Ratio</u>	
	Predictors	B	Wald Chi-square	Odds ratio	Lower Upper
	(Constant)	-1.182	49.184**	.307	
1	<i>Attitude</i>	.990	25.809**	2.691	1.837 3.942
	<i>Perceived norms</i>	.601	7.197**	1.825	1.176 2.831
	<i>PBC</i>	.676	5.281*	1.966	1.105 3.498
	(Constant)	-4.636	9.787	0.010	
2	<i>Attitude</i>	.897	19.725**	2.451	1.643 3.658
	<i>Perceived norms</i>	.592	6.994**	1.808	1.166 2.803
	<i>PBC</i>	.525	2.737	1.690	.908 3.147
	Moral Norms	-.227	1.377	.797	.546 1.164
	(Constant)	-3.277	3.109	.078	
3	<i>Attitude</i>	1.018	23.638**	2.768	1.836 4.173
	<i>Perceived norms</i>	.572	6.037*	1.772	1.123 2.796
	<i>PBC</i>	.728	5.522*	2.071	1.128 3.802
	Impulsivity: Lack of Premeditation	.659	.957	1.932	.517 7.228
	Impulsivity: Urgency	.094	.038	1.098	.428 2.819
	Impulsivity: Sensation-seeking	.288	.312	1.334	.486 3.664
	Impulsivity: Lack of Perseverance	-.549	.832	.578	.178 1.878
	(Constant)	-5.796	3.555	.003	
4	<i>Attitude</i>	1.058	23.588**	2.881	1.880 4.416
	<i>Perceived norms</i>	.531	5.105*	1.701	1.073 2.697
	<i>PBC</i>	.675	4.738*	1.965	1.070 3.609
	PS: Warmth	.186	.057	1.204	.262 5.543
	PS: Rejection	1.017	3.025	2.766	.879 8.706
	PS: Structure	.244	.177	1.276	.410 3.975
	PS: Chaos	.020	.002	1.020	.383 2.720
	PS: Autonomy Support	.151	.036	1.163	.245 5.507

	PS: Coercion	.005	.000	1.005	.355	2.844
	(Constant)	-7.938	4.925*	.000		
5	<i>Attitude</i>	.958	24.149**	2.607	1.779	3.820
	<i>Perceived norms</i>	.551	5.833*	1.736	1.110	2.715
	<i>PBC</i>	.706	5.636	2.026	1.131	3.631
	Strengths & Difficulties	-.011	.057	.989	.907	1.079
	(Constant)	-4.523	8.298**	0.011		
8	<i>Attitude</i>	.953	23.195**	2.593	1.759	3.820
	<i>Perceived norms</i>	.581	6.739**	1.788	1.153	2.772
	<i>PBC</i>	.598	3.941*	1.818	1.008	3.281
	Delinquency	.024	.661	1.025	.966	1.087
	(Constant)	-5.073	9.162**	.006		

** = $p < .01$, * = $p < .05$.

TABLE 5:5 CHI-SQUARE AND R-SQUARES OF LOGISTIC REGRESSION ONTO INTENTIONS RUN USING DIFFERENT STEPS.

Model	Predictors	Chi-square	Hosmer & Lemeshow	Cox & Snell R square	Nagelkerke R square	-2Log Likelihood
1	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i>	120.866**	p=.869	.460	.693	92.729
2	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i> Moral Norms	122.213**	p=.865	.464	.699	91.383
3	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i> Impulsivity: Lack of Premeditation Impulsivity: Urgency Impulsivity: Sensation-seeking Impulsivity: Lack of Perseverance	121.840**	p=.540	.465	.699	91.219
4	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i> PS: Warmth PS: Rejection PS: Structure PS: Chaos PS: Autonomy Support PS: Coercion	119.766**	p=.640	.469	.704	87.709
5	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i> Strengths & Difficulties	111.256**	P=.697	.454	.680	91.172
8	<i>Attitude</i>	113.794**	P=.785	.461	.687	90.919

<i>Perceived norms</i>
<i>PBC</i>
<i>Delinquency</i>
** = p<.01, * = p<.05.

TABLE 5:6 LOGISTIC REGRESSION ON INTENTIONS BY ALL VARIABLES IN UNITARY FRAMEWORK USING THE STEPWISE METHOD

		<u>95 % Confidence Interval for Odds ratio</u>				
	Variables	B	Wald square	Chi- square	Odds ratio	<i>Lower</i> <i>Upper</i>
	Constant	-1.151	43.316**		.316	
1	Attitudes	.942	23.043**		2.566	1.746 3.769
	Perceived norms	.558	6.051*		1.747	1.120 2.725
	PBC	.682	5.256*		1.978	1.104 3.545
	(Constant)	-4.759	9.481		0.010	
2	Attitudes	1.006	23.171**		2.735	1.816 4.119
	Perceived norms	.471	4.074*		1.602	1.014 2.532
	PBC	.687	5.026*		1.989	1.090 3.682
	Parenting style: Rejection	.766	4.082*		2.151	1.023 4.521
	(Constant)	-5.742	12.006		.003**	

TABLE 5:7 CHI-SQUARE AND R-SQUARES OF LOGISTIC REGRESSION ONTO INTENTIONS USING UNITARY FRAMEWORK

Model	Predictors	Chi-square	Hosmer & Lemeshow	Cox & Snell R square	Nagelkerke R square	-2Log Likelihood
1	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i>	106.932**	p=.494	.450	.673	90.447
2	<i>Attitude</i> <i>Perceived norms</i> <i>PBC</i> Parenting style: Rejection	111.343**	p=.669	.463	.693	86.035

** = p<.01, * = p<.05.

5.5.7 PREDICTING BEHAVIOUR OF CANNABIS USE: TESTING HYPOTHESES 5, 6 & 7

5.5.7.1 TESTING **HYPOTHESIS 5**: THE BASIC TPB VARIABLES (INTENTIONS, PBC) WILL EXPLAIN AND PREDICT CANNABIS USE BEHAVIOUR.

Since the dependent variable was non-normally distributed it was dichotomized (users/non-users). A hierarchical logistic regression analysis was therefore utilized to examine predictors of cannabis use versus non-use.

Missing values on the continuous predictors were imputed using the EM algorithm through SPSS Missing Values Analysis, after finding no statistically significant deviation from randomness using Little's MCAR test, $p = .605$. After deletion of 1 case with a ZResid of 10.995, data from 198 participants were available for analysis: 54 participants had missing values on the behaviour variable; therefore having a total of 144 participants who completed both Time 1 and Time 2.

Since the aim of this study was to examine the 'separate' contribution of each additional variable as well as how they all fit under one 'unitary framework' a series of separate logistic regressions were run for each additional variable (see Table 5. 8 & Table 5. 9) and as one unitary framework (see

Table 5. 10 & Table 5. 11). PBC was always controlled for in order to determine which of the additional variables explained and predicted behaviour independently. The regression analyses are conducted such that intentions were inserted at the end of every step so as to determine which variables may be mediated by intentions.

The finding that the Constant-only model was significant indicates that this null model should be rejected ($p < .001$). In the first Block (1) PBC was inserted as the only predictor of behaviour, with the model being significant as $\chi^2 (1, N = 144) = 21.292, p < .001$. From Table 5.9 it is clear that Cox & Snell R square = .134, while Nagelkerke R Square = .263, suggesting that between 13.4 % and 26.3 % of the variability in behaviour is explained by PBC. However, PBC was not found to be predictive of behaviour throughout the regression analysis given that at step 2, it did not remain significant. Therefore, we can only partially support hypothesis (5b), and the extent to which the PBC-behaviour relationship is mediated by intentions is examined in Mediation analysis A. The predictive power of intentions is discussed below.

5.5.7.2 TESTING **HYPOTHESIS 6:** THE ADDITIONAL VARIABLES (MORAL NORMS, IMPULSIVITY, PARENTING STYLES, STRENGTHS & DIFFICULTIES AND DELINQUENCY) WILL EXPLAIN AND PREDICT CANNABIS USE BEHAVIOUR.

In the second block (2), the model as a whole was significant $\chi^2 (3, N = 144) = 47.335, p < .001$. Table 5.8 shows that moral norms negatively predicted behaviour (Wald $\chi^2 = 11.856, p < .01$). The Cox & Snell R square = .274 while Nagelkerke R square = .537, suggesting that between 27.4 % and 53.7% of the variability in behaviour is explained by these variables. Moral norms remained significant (Wald $\chi^2 = 5.689, p < .05$) even when intentions was inserted in the model (see Mediation analysis B for influence of intentions on moral norm-behaviour relationship). Our hypothesis (6a) that weaker moral norms independently predict behaviour is supported meaning that those who did not believe cannabis use to go against their moral principles engaged in cannabis use.

The third block (3) including impulsivity dimensions depicted the model as a whole to be significant as $\chi^2 (6, N = 144) = 45.519, p < .001$. This model was found to be a good fit as shown by the Hosmer and Lemeshow test ($p > .05$), with 31.8 % (Cox & Snell R Square) and 63.5 % (Nagelkerke R square) of the variability in behaviour being explained by these variables. Impulsivity: lack of premeditation shared significant contribution to explaining for variance in behaviour (Wald $\chi^2 = 7.413, p < .01$), even after intentions was inserted in the model (Wald $\chi^2 = 4.562, p < .05$), partially supporting hypothesis (6b). Mediation analysis C demonstrates the extent to which intentions act as a mediator between the impulsivity: lack of premeditation-behaviour relationship.

In Block (4) although the model was significant χ^2 (8, N= 144) =47.099, $p<.001$. None of the parenting style dimensions were found to predict behaviour. Block (5) demonstrated how the strengths and difficulties did not predict behaviour although the model once again was significant χ^2 (3, N= 144) =39.060, $p<.001$. These findings do not support hypotheses 6c and 6d, respectively.

Finally, in Block (6) delinquency was found to share positive significant relationship with behaviour as Wald χ^2 = 5.266, $p<.05$. However, when intentions were inserted in the model, delinquency became non-significant. This shows that our hypothesis (6e) cannot be supported given that delinquency was not an independent predictor of cannabis use behaviour.

Given that intentions was found to be a reliable predictor of behaviour throughout the regression shows that hypothesis (5a) is accepted. The extent to which these significant variables are direct predictors of cannabis use is examined in a series of mediation analysis carried in section 5.4.7 of this chapter.

TABLE 5:8 LOGISTIC REGRESSION ONTO BEHAVIOUR WITH SEPERATE STEPS FOR EACH ADDITIONAL VARIABLE

			<u>95 % Confidence Interval for Odds Ratio</u>		
Predictors	B	Wald Chi-square	Odds ratio	Lower	Upper
Constant	-2.042	62.743**	.130		
1 PBC	1.024	13.450**	2.785	1.611	4.813
(Constant)	-7.685	19.990**	.000		
2 PBC	.436/.258	1.893/.323	1.547/1.294	.831/.532	2.879/3.148
Moral Norms	-.887/-.691	11.856**/5.689*	.412/.501	.248/.284	.682/.884
Intentions	1.964	6.609*	7.128	1.595	31.858
(Constant)	-4.366	2.546	.013		
3 PBC	1.050/.753	11.659**/4.635*	2.858/2.122	1.561/1.070	5.236/4.211
Lack of	1.960/1.659	7.413**/4.562*	7.098/5.253	1.732/1.146	29.096/24.068
Premeditation					
Urgency	.525/.310	1.170/.185	1.690/1.363	.653/.332	4.375/5.596
Sensation- seeking	-.085/.014	.030/.001	.919/1.014	.354/.343	2.382/2.993
Lack of	-.294/-.415	.163/.301	.745/.661	.179/.150	3.099/2.903
Perseverance					
Intentions	2.587	11.219**	13.296	2.925	60.430
(Constant)	-12.772	10.713	.000		
4 PBC	1.109/.751	13.140**/4.060*	3.032/2.120	1.664/1.021	5.523/4.403
PS: Warmth	-.829/-.983	1.295/1.261	.436/.374	.105/.067	1.820/2.080
PS: Rejection	-1.223/-1.191	2.781/2.335	.294/.304	.070/.066	1.239/1.400
PS: Structure	.023/-.240	.002/.144	1.023/.787	.357/.227	2.936/2.722
PS: Chaos	-.838/-1.000	2.261/.1736	.433/.368	.145/.083	1.290/1.628
PS: Autonomy	-.763/-1.260	.943/.075	.466/.771	.100/.120	2.175/4.973
Support					
PS: Coercion	.136/.045	.051/.003	1.145/1.046	.352/.195	3.731/5.628
Intentions	2.916	14.199**	18.466	4.052	84.153
(Constant)	-1.677	.170	.187		
5 PBC	.998/.618	12.715**/3.567*	2.714/1.855	1.568/.977	4.697/3.522
Strengths& Difficulties	-.007/.006	.027/.008	.993/1.006	.913/.893	1.080/1.132

	Intentions	2.806	14.658**	16.547	3.394	69.598
	(Constant)	-9.724	20.066**	.000		
6	<i>PBC</i>	.951/ .671	11.324**/ 4.340*	2.588/ 1.957	1.487/ 1.041	4.503/ 3.680
	Delinquency	.070/ .067	5.266*/ 3.514	1.073/ 1.069	1.010/ .997	1.140/ 1.146
	Intentions	2.673	13.468**	14.477	3.477	60.274
	(Constant)	-11.911	20.677**	.000		

p** = p<.01, * = p<.05.

Note: Intentions were inserted at the end of every step. The '/' demonstrates the change in values occurring after intentions were included in the model.

TABLE 5:9 CHI SQUARE AND R-SQUARES OF LOGISTIC REGRESSION ONTO BEHAVIOUR WITH SEPERATE STEPS

Model	Step/Predictors	Chi-square	Hosmer & Lemeshow	Cox & Snell R square	Nagelkerke R square	-2Log Likelihood
1	<i>PBC</i>	21.292**	P=.951	.134	.263	84.252
2	<i>PBC</i> Moral Norms <i>Intentions</i>	47.335**	P=.986	.274	.537	58.209
3	<i>PBC</i> <i>Lack of Premeditation</i> Sensation seeking Urgency Lack of Perseverance Intentions	45.519**	P=.804	.266	.521	59.780
4	<i>PBC</i> PS: Warmth PS: Rejection PS: Structure PS: Chaos PS: Autonomy Support PS: Coercion <i>Intentions</i>	47.099**	P=.910	.273	.535	58.455
5	<i>PBC</i> Strengths & Difficulties <i>Intentions</i>	39.060**	P=.218	.242	.464	64.731
6	<i>PBC</i> Delinquency <i>Intentions</i>	43.174**	P=.713	.253	.496	62.370

**= p<.01, *=p<.05

TABLE 5:10 FORWARD CONDITIONAL LOGISTIC REGRESSION ON BEHAVIOUR USING SIGNIFICANT VARIABLES FOUND IN PREVIOUS REGRESSION

			<i>95 % Confidence Interval for Odds ratio</i>			
	Variables	B	Wald Chi-square	Odds Ratio	<i>Lower</i>	<i>Upper</i>
1	PBC	1.371	12.444**	3.941	1.839	8.443
	(Constant)	-7.745	18.398	.000		
2	PBC	.583	1.750	1.792	.755	4.252
	Moral Norms	-.919/ -.695	11.162**/ 4.424*	.399/ .499	.233/ .261	.684/ .954
	Intentions	2.378	7.537**	10.780	1.974	58.864
	(Constant)	-5.117	2.745	.006		

Note: Forward Conditional is a stepwise selection method with entry testing based on the significance of the score statistic, and removal testing based on the probability of a likelihood-ratio statistic based on conditional parameter estimates. Variables that were not significant were removed from the model for the sake of parsimony (impulsivity: urgency, impulsivity: sensation-seeking, impulsivity: lack of perseverance, P. style: Warmth, P. style: Rejection, P. style: Structure, P. style: Chaos, P. style: Autonomy Support, P. style: Coercion, strengths & difficulties). Only variables that were significant in the previous series of regression analysis were entered in the model (Moral norms, impulsivity: lack of premeditation).

*= p<.05, **= p<.01

TABLE 5:11 CHI-SQUARE, HOSMER & LEMESHOW AND PSEUDO R SQUARES OF STEPWISE LOGISTIC REGRESSION OF BEHAVIOUR AS A FUNCTION OF BASIC TPB VARIABLES AND ADDITIONAL VARIABLES.

Block	Steps	Chi-square	Hosmer & Lemeshow	Cox & Snell R square	Nagelkerke R Square	-2Log Likelihood
1	PBC	20.098**	p=.967	.135	.264	79.166
2	PBC	47.393**	p=.988	.289	.566	51.871
	Moral Norms					
	Intentions					

*= p<.05, **= p<.01

5.5.7.1 TESTING **HYPOTHESIS 7** USING 'UNITARY FRAMEWORK'.

Although there have been a series of studies conducted to examine cannabis use among young people, research examining cannabis use with a series of novel variables in an analysis that allows for simultaneous testing of these variables is limited. It should be noted that stepwise methods were used for testing the additional variables under one 'unitary framework' given that no sufficiently relevant work exists on which to base a hypothesis for testing, and the aim of this analysis is to find a model to fit the data (Menard, 2002). The backward method has been suggested as more preferable to forward method due to the suppressor effect which occurs when a predictor has a significant effect but only when another variable is held constant, therefore making the forward method more prone to Type II error (Field, 2005). However, a paper dedicated specifically to evaluating the alternative algorithms for distribution models using logistic regression suggested that the predictive accuracy of a model is enhanced by employing variable selection procedures that stringently guard against the inclusion of extraneous variables in a model (Pearce & Ferrier, 2000). The authors recommended the forwards selection method as the most appropriate method with a 5% significance level and the removal of non-significant variables at each stage of the selection process. Moreover, correction for multiple testing using the Bonferroni correction factor did not improve the accuracy of their models.

Therefore, another logistic regression was conducted to examine how well the data fits in a 'unitary framework', using the variables found to be significant in the previous series of regression analyses.

The stepwise logistic regression did not produce results for all additional variables given that they were found to be not significant in terms of reliably distinguishing between those who had and hadn't smoked cannabis. This resulted in the regression analysis producing only two blocks which contained variables that did share significant contributions to predicting self-reported behaviour.

Table 5. 10 shows how after controlling for PBC the only variable which remained to share significant variance in predicting behaviour was moral norms (Wald $\chi^2= 11.162$, $p<.01$). In this block (2) the model was significant as $\chi^2 (3, N= 144) = 47.393$, $p<.001$ indicating that the predictors reliably distinguished between those who had smoked cannabis and those who did not. The Hosmer and Lemeshow Test also supports this model as being as good fit given that $p >.05$. Also, Cox & Snell R square = .289, while Nagelkerke R Square = .566, suggesting that between 28.9% and 56.6% of the variability in behaviour is explained by the variables in this Block. These findings imply that moral norms can reliably distinguish between those who had smoked cannabis and those who did not.

5.5.8 MEDIATION ANALYSES FOR TESTING HYPOTHESIS 8

5.5.8.1 TESTING **HYPOTHESIS 8**: MEDIATION ANALYSES WILL DEMONSTRATE THE EXTENT TO WHICH INTENTIONS ACT AS A PARTIAL/FULL MEDIATOR BETWEEN ANY OF THE SIGNIFICANT ADDITIONAL VARIABLES AND BEHAVIOUR.

A series of mediation analyses were conducted to further examine the nature of the relationships between the variables. Three criteria have to be met to establish mediation; first the predictor variable has to be a significant predictor of the mediator variable, second, the predictor variable has to be a significant predictor of the outcome variable, and third, the mediator has to be a significant predictor of the outcome variable (Baron & Kenny, 1986). The next stage follows only if the above assumptions are met, and if that is the case, then a multiple regression is conducted to check for whether the mediator is statistically significant and whether it is “perfect” or “partial” mediator. Given that the outcome variable is dichotomous, a logistic regression was conducted instead.

Sobel’s test of indirect effects will also be used to assess whether the impact of the mediator is statistically significant (Preacher & Leonardelli, 2001; Sobel, 1982). In terms of running a mediation analysis with a dichotomous variable, the Sobel test is considered an appropriate measure which accounts for the above (Kenny, 1993). The Sobel statistic was calculated using an online software calculator (Preacher & Leonardelli, 2010)

5.5.8.1.1 MEDIATION A: MEDIATION ANALYSIS EXAMINING THE INFLUENCE OF INTENTIONS ON PBC-BEHAVIOUR.

Mediation analysis was carried out to examine the whether the effects of PBC on behaviour were mediated through intentions or not. It should be noted that although PBC showed strong correlation (in Table 5. 3) with behaviour, when inserted into a regression model with other variables PBC did not make any significant contribution to behaviour. This is in support with a long-standing conceptual and methodological ambiguity with regards to PBC and its predictive validity in terms of behaviour (please refer to section 5.2.1.3.1 for further explanation and see Cheung and Chan (2000) for review on PBC internal consistency).

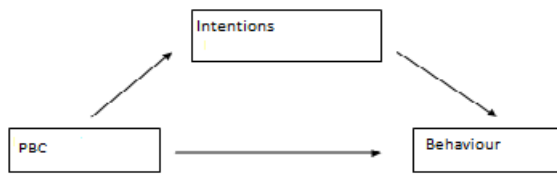


FIGURE 5:1 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN PBC AND BEHAVIOUR.

Stage 1: PBC predict intentions given Exp (B) is 3.395 ($p < .01$).

Stage 2: PBC predicts behaviour given that Exp (B) is 4.052 ($p < .01$).

Stage 3: Intentions predict behaviour given that Exp (B) is 23.757 ($p < .01$).

TABLE 5:12 MEDIATION A- LOGISTIC REGRESSION ANALYSIS OF PBC AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	PBC	.462	3.810	.051	2.466
	Intentions	.828	14.630**	.000	23.757

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions was not a significant mediator of PBC on behaviour as the Sobel statistic =1.85, $p > .05$. This would imply that PBC's relationship with behaviour (when examined separately) is not mediated through intentions and has a direct relationship instead.

5.5.8.1.2 MEDIATION B: MEDIATION ANALYSIS TESTING THE INFLUENCE OF INTENTIONS ON MORAL NORMS-BEHAVIOUR.

Figure 5.2 shows the relationship to be examined using mediation analysis.

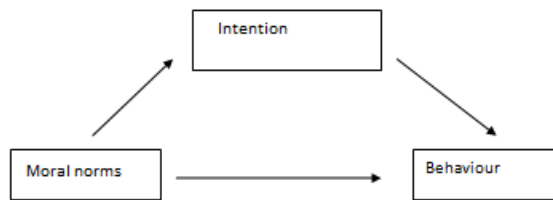


FIGURE 5:2 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN MORAL NORMS AND BEHAVIOUR.

Stage 1: Moral norms predict intentions given that Exp (B) is .432 ($p < .01$)

Stage 2: Moral Norms predict behaviour given that Exp (B) is .339 ($p < .01$).

Stage 3: Intentions predict behaviour given that Exp (B) is 12.123 ($p < .01$).

Once again, the above relationships needed to be established so as to proceed with mediation analysis. Stage 4 required that a logistic regression analysis was conducted with moral norms and intentions predicting behaviour.

TABLE 5:13 MEDIATION B- LOGISTIC REGRESSION ANALYSIS OF MORAL NORMS AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	Moral norms	.294	7.607**	.006	.444
	Intentions	.854	8.540**	.003	12.123

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions was a significant mediator of moral norms on behaviour as the Sobel statistic = 2.54, $p < .01$. This would imply that intentions act as a significant partial mediator of moral norms on behaviour, given that upon controlling for the mediator (intentions), the relationship between moral norms and behaviour was still significant.

5.5.8.1.3 MEDIATION C: MEDIATION ANALYSIS TESTING THE INFLUENCE OF INTENTIONS ON IMPULSIVITY: LACK OF PREMEDITATION-BEHAVIOUR

To further examine the relationship between impulsivity: lack of premeditation and behaviour as found in logistic regression analysis (Table 5. 8) a mediation analysis was carried out. This was done to determine whether the effect on behaviour was direct, or indirect (influenced by intentions).

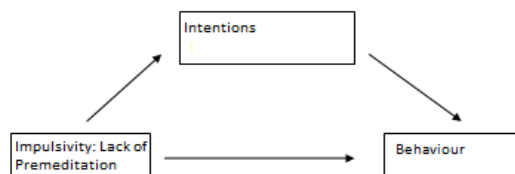


FIGURE 5:3 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN IMPULSIVITY: LACK OF PREMEDITATION AND BEHAVIOUR.

Stage 1: Impulsivity: lack of premeditation predict intentions given that Exp (B) is 3.010 ($p < .01$).

Stage 2: Impulsivity: lack of premeditation predict behaviour given that Exp (B) is 6.682 ($p < .01$).

Stage 3: Intentions predict behaviour given that Exp (B) is 34.449 ($p < .01$).

Stage 4 required that a logistic regression analysis was conducted with impulsivity: lack of premeditation and intentions predicting behaviour.

TABLE 5:14 MEDIATION C- LOGISTIC REGRESSION ANALYSIS OF IMPULSIVITY: LACK OF PREMEDITATION AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	Impulsivity: Lack of Premeditation	.678	3.318	.069	3.436
	Intentions	3.539	18.940**	.000	34.449

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions were not a significant partial mediator of impulsivity: lack of premeditation on behaviour as the Sobel statistic

=1.59, $p > .05$. This implies that an individual's lack of premeditation can directly explain cannabis use, without having the intention to use cannabis.

5.5.9 COGNITIVE-BASED BELIEF PREDICTING INTENTIONS: TESTING HYPOTHESIS 9

5.5.9.1 TESTING **HYPOTHESIS 9**: THE COGNITIVE-BASED BELIEFS WILL PREDICT INTENTIONS TO USE CANNABIS.

Using logistic regression, intention was regressed on the attitude beliefs, normative beliefs and control beliefs that had been used to produce the scales of attitude, perceived norms and PBC. This was done to test whether the control beliefs predicted intentions to use cannabis more so than the other cognitive-based beliefs, according to empirical research. The variables were entered together and Table 5. 15 demonstrate the results.

The finding that the constant only model was significant ($p < .001$), indicates that this model can be rejected. As seen, when examined using logistic regression, attitude Belief (Wald $\chi^2 = 35.492$, $p < .01$) and Normative Beliefs (Wald $\chi^2 = 4.479$, $p < .05$) could reliably distinguish between those who had intentions to use cannabis and those who hadn't. Control Beliefs was not a significant contributor (Wald $\chi^2 = 2.550$, $p > .05$) therefore partially supporting hypothesis (9). This implies that behavioural beliefs and normative beliefs can distinguish between those with intentions to use cannabis and those without, while beliefs about the levels of control they have over using cannabis do not explain intentions.

TABLE 5:15 INTENTIONS BY INDIVIDUAL BELIEFS USING LOGISTIC REGRESSION

		95 % Confidence Interval for Odds Ratio			
Variables	B	Wald Chi-square	Odds ratio	Lower	Upper
Constant					
1 Behavioural Beliefs	.096	35.492**	1.100	1.066	1.135
Normative Beliefs	-.031	4.479*	.969	.942	.998
Control Beliefs	-.024	3.550	.060	.952	1.001
(Constant)	-.498	2.839	.607		

** = $p < .01$, * = $p < .05$.

5.5.10 INTERIM SUMMARY

So far young people's attitudes, perceived norms and PBC have significantly predicted intentions to use cannabis. None of the additional variables predicted cannabis use intentions. Self-reported behaviour to use cannabis was predicted by intentions, while PBC was an inconsistent predictor throughout the regression analysis. Among the additional variables, young people's low moral norms and high levels of lack of premeditation independently positively predicted cannabis use behaviour. Behavioural beliefs and normative beliefs predicted intentions to use cannabis while control beliefs did not explain intentions to use cannabis.

Having examined young peoples' responses to cannabis use intentions and behaviour, we now turn our focus to understanding parents' opinions regarding cannabis use. Frequency analysis describes the parents' general knowledge on young people's cannabis use. A panel element to this secondary study involves conducting a correlation analysis that compares and contrasts adolescent and parent's perceptions on parenting styles. A qualitative thematic analysis provides an overview of parents' perspectives on young people's cannabis use.

5.5.11 PANEL ELEMENT: ANALYSES OF PARENTS' PERSEPCTIVES ON YOUNG PEOPLE'S CANNABIS USE AND OWN PERSPECTIVES ON PARENTING STYLES- TESTING HYPOTHESIS 10

5.5.11.1 DESCRIPTIVE ANALYSIS

As can be summarised by Table 5.16 parents talk to their children about alcohol use more frequently than they talk to their children about cannabis use. Parents moderately agreed that cannabis is a normal part of young people's culture ($M = 4.60$, $SD = 2.20$) and that they simply want to experiment with cannabis use without becoming long-term users ($M = 3.63$, $SD = 2.07$). Parents perceived smoking cigarettes ($M = 4.33$, $SD = .71$), as more dangerous than using cannabis ($M = 3.76$, $SD = .97$) which was however considered more dangerous than using alcohol ($M = 3.46$, $SD = .68$).

Parents showed to be least tolerant to their child smoking cigarettes ($M = 4.56$, $SD = .67$), followed by using cannabis ($M = 4.26$, $SD = .90$), and most tolerant towards their child using alcohol ($M = 3.23$, $SD = .73$).

Finally, parents felt somewhat knowledgeable on the issue of cannabis even though as seen in Table 5. 16, a 33.3% of parents classified cannabis as a Class C drug, and 6.7% classified it as a Class A drug; both of which are inaccurate representations of the current classification in the UK today (Class B).

5.5.11.2 USING THE AUDIT-C MEASURE TO EXAMINE PARENTS' ALCOHOL USE

The bar chart in Figure 5.4 shows the frequency of total scores.

The findings showed that 40% of parents scored a total between 4 and 6, indicating that 40% of the parents could be possibly drinking at an increasing risk level. 9.9% scored a total between 7 and 9, indicating that these parents are drinking at a higher risk level.

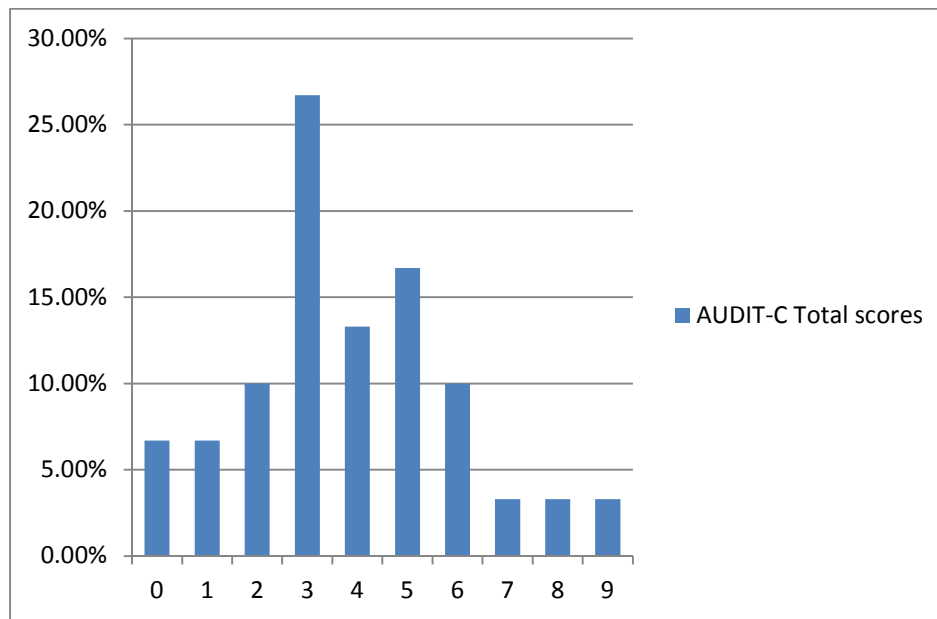


FIGURE 5:4 BAR CHART INDICATING PERCENTAGE OF AUDIT-C TOTAL SCORES

TABLE 5:16 MEANS AND SD OF QUESTIONS REGARDING PARENTS' GENERAL OPINION ON CANNABIS

Question	Mean	SD
How often do you speak to your child about cannabis use? (1: never – 7: very frequently)	3.63	1.56
How often do you speak to your child about alcohol use? (1: never – 7: very frequently)	4.96	1.27
Cannabis is a normal part of young people's culture (1: agree- 7: disagree)	5.06	1.83
Any young person caught using cannabis should be prosecuted by the police (1: agree- 7: disagree)	4.43	2.31
Any young person caught using cannabis should be cautioned by the police (1: agree- 7: disagree)	2.96	2.20
Cannabis use is NOT an issue for parents to overreact (1: agree- 7: disagree)	4.60	2.20
Most young people want to experiment with cannabis use and will not become long term or problem-users (1: agree- 7: disagree)	3.63	2.07
How dangerous is it for your child to use cannabis? (1: Not at all- 5: Very dangerous).	3.76	.97
How dangerous is it for your child to use alcohol? (1: Not at all- 5: Very dangerous).	3.46	.68
How dangerous is it for your child to smoke cigarettes? (1: Not at all- 5: Very dangerous).	4.33	.71

What are your tolerance levels towards your child using cannabis? (1:Very tolerant -5: Not at all tolerant)	4.26	.90
What are your tolerance levels towards your child using alcohol? (1:Very tolerant- 5: Not at all tolerant)	3.23	.73
What are your tolerance levels towards your child smoking cigarettes? (1: Very tolerant- 5: Not at all tolerant)	4.56	.57
How knowledgeable do you feel on the issue of cannabis use? (1: Not at all knowledgeable -5: Very knowledgeable)	3.13	1.22

TABLE 5:17 PARENTS' RESPONSES TO FINDING OUT CHILD USES CANNABIS & PERCEIVED CANNABIS CLASSIFICATION LEVELS

Categorical questions	Frequency of responses (%)
If you found out your child used cannabis which of the following would you do:	
- Deal with it myself	75.9%
- Ask advice from School/teachers	16.7%
- Ask advice from relatives	20%
- Ask advice from friends	30%
- I would report it to the police	3.3%
- Get support from nearby drug treatment service	40%
- I would ask advice from GP	36.7%
- I would use internet to find out more information	76.7%

How is cannabis classified as a drug?

- | | |
|-----------|-------|
| - Class A | 6.7% |
| - Class B | 60.7% |
| - Class C | 33.3% |
-

TABLE 5:18 FREQUENCY OF RESPONSES (%) OF AUDIT-C MEASURE

Audit- C (Alcohol Disorder measure)		Frequency (%)
How often do you have a drink containing alcohol	Never	6.7%
	Monthly or less	13.3%
	2 or 4 times a month	20.0%
	2 or 3 times a week	33.3%
	4 or more times a week	26.7%
How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	53.3%
	3 or 4	40.0%
	5 or 6	3.3%
	7 to 9	3.3%
How often do you have six or more drinks on one occasion?	Never	56.7%
	Less than monthly	26.7%
	Monthly	10%
	Weekly	6.7%

TABLE 5:19 PARENTS' REPORT OF OWN DRUG USE

Type of Drug	Used in past month	Used in past year	Never
Amphetamines	-	-	100%
Cannabis	3.4%	20.7%	75.9%
Cocaine	-	-	100%
Crack	-	-	100%
Kopamol*	-	-	100%
Ecstasy	-	-	100%
Heroin	-	-	100%
Methadone	-	-	100%
LSD	-	-	100%
Magic mushrooms	-	-	100%
Other	-	-	100%

Note: * Kopamol was a fake drug-name created by the researcher so as to control for fake responses.

5.5.11.3 TESTING **HYPOTHESIS 10**: THERE WILL BE POSITIVE ASSOCIATIONS BETWEEN ADOLESCENT PERCEPTIONS OF PARENTING STYLES AND PARENTS' PERCEPTIONS OF PARENTING STYLE.

As seen in Table 5.20, young people's and parent's reports on parenting styles were matched so as to run for a correlation analysis (Pearson's correlation).

The correlation analysis showed that there was a significant negative correlation between young people's report of parental warmth and parent's report of parental coercion ($r=-.49$, $p<.01$) and a moderately significant positive correlation between young people report of parental warmth and parent's report of parental autonomy support ($r=.42$, $p<.05$). This indicates that as young people reported higher levels of warmth in terms of parenting style, the parents reported lower levels of coercion with regards to their parenting styles and higher levels of autonomy support. Also the

higher the scores on parental structure reported by adolescents, the higher the reports of parental autonomy support reported by parents ($r=.39$, $p<.05$).

Therefore, hypothesis (10) cannot be fully supported. Although there were positive associations between young people's and parents' perceptions of parenting styles, most responses were either negatively associated or were not significantly associated. This implies a miscommunication between young peoples' and parents' perception of parenting styles.

TABLE 5:20 COMPARISON BETWEEN ADOLESCENT & PARENTAL REPORTS ON PARENTING STYLES

		Adolescent 's reports						M	SD
		Warmth	Rejection	Structure	Chaos	Autonomy support	Coercion		
Parents' reports	Warmth	.183	-.159	.254	.024	.247	-.079	3.14	.45
	Rejection	.049	.013	.141	.086	-.066	.022	1.80	.57
	Structure	.064	.116	.215	-.049	.034	-.101	3.45	.55
	Chaos	-.016	.073	-.180	.061	-.032	.055	1.48	.46
	Autonomy Support	.416*	-.089	.391*	-.113	.452*	-.188	3.57	.41
	Coercion	-.486**	.310	-.265	.326	-.370*	.369*	1.81	.63
	M	3.15	1.58	2.74	1.99	3.13	1.87		
SD	.45	.66	.76	.72	.72	.70			

*; $p<.05$, **; $p<.01$

5.5.12 THEMATIC ANALYSIS OF PARENTS' RESPONSES

A Thematic Analysis (TA) was conducted with 30 parents (24 mothers, 6 fathers). The mean age of parents was 48.2 years ($S.D= 5.06$). The majority of the parents were English (26), followed by Americans (2) and Europeans (2). The employment status was as follows; 17 had part-time employment, 8 had full time employment and 5 reported to be under the category of 'other', without further specification.

The content analysis is shown in Table 5. 21 & 5.22 (see section 5.6.5.3. for discussion of the findings).

TABLE 5:21 MAIN THEMES OBTAINED FROM THEMATIC ANALYSIS

MAIN THEMES	
i.	IMPORTANCE OF INTER-FAMILY COMMUNICATION (A) (F) (G) (J) (M) (V) (W) (X) (Y)
ii.	UNDERSTANDING OF ADOLESCENT SOCIO-EXPERIMENTAL CULTURE (E) (I) (L) (N) (O) (Q) (R) (S) (T)
iii.	AWARENESS OF CANNABIS IMPACT (K) (P)
iv.	INFLUENCE OF EXTERNAL FACTORS (C) (D) (H) (Y)

TABLE 5:22 THEMATIC ANALYSIS SHOWING SUB-THEMES AND HIGHER ORDER THEMES OF PARENTS' RESPONSES.

Question	Sub-themes	Which participants mentioned	Higher-order themes
		<i>father</i> _____	
		<i>mother</i> _____	
Who is most responsible for educating/talking to your child about drugs?	(1) Father & mother	213, 227, 235, 202, , 49, 144, 97, 55, 175, 113, 72, 109, 15, 155, 172, 52, 2, 22,73, 122, 127, 170, 62,138, 8, 237, 238, 241	A. Family ; (1), (9)
	(2) School	213, 202, 49, 144, 90, 28, 169, 185, 109, 15, 155, 52, 22, 122, 26, 170, 62	B. School; (2), (7)
	(3) Experts from other organisations	213, 28, 2,26,50	C. Multi-party partnership; (5)
	(4) Government	235, 50	D. Other parties/ ways ; (3), (4), (6), (8)
	(5) Partnership between home, school, GP, society	49, 126, 109, 99, 2, 102, 239, 240	
	(6) Police	144, 170	

	(7) School nurse	126	
	(8) Books	169	
	(9) Siblings	135	
What would make it easier to talk to your child about cannabis use?	(1) More information by experts	213, 235, 144, 49, 90, 155, 172, 102,26, 62, 138	E. Child-orientated factors; (4)
	(2) Easy enough	227, 126, 55, 175, 28, 169, 109, 99, 73, 122, 127, 237, 238, 239, 240,241	F. Increase in parental knowledge; (1), (8), (9)
	(3) De-regulation	49, 8	G. Level of family inter-communication; (2), (5)
	(4) If child desired to talk about it	185, 52,2	H. External factors; (3), (6), (7)
	(5) Older sibling present	15	
	(6) TV advert/ marketing	155, 8	
	(7) If School helped	22	
	(8) Medical knowledge	138	
	(9) Own experience	138	
What would make it more difficult to talk to your child about cannabis use?	(1) Unsure	235	I. Child-related factors; (2), (9), (10), (11)
	(2) If child is misinformed from friends or media	213, 113	
	(3) Criminalisation of cannabis	49, 8	J. Family-related factors; (6), (7), (8)
	(4) Limited knowledge on cannabis	144, 172, 238	K. Cannabis-related factors; (3), (4), (5)
	(5) If cannabis became legal	97, 72	
	(6) If poor relationship with child	175, 109, 99,2	
	(7) If family members use	169, 237, 240	
	(8) If parent was extremely against it	15	
	(9) Other peers present	52	
	(10) If child is using it	127	
	(11) Child's reluctance	2, 138,241	

If used cannabis, brief description of location and when you tried it	(1) With friends	227, 126, 113, 169, 185, 72, 109, 2, 22, 62, 237, 239, 240, 241	L. Social activity; (1), (3), (4), (5)
	(2) Not living with parents	227	M. Absence of parents (2)
	(3) Used socially	202, 126, 28, 22	
	(4) Peer pressure	55	
	(5) College	28, 113, 185, 15	
	(6) Not enjoyable	2	
What , in your opinion, are the main reasons why young people try cannabis?	(1) Curiosity/ experimentation	213, 49, 126, 175, 185, 72, 109, 155, 172, 52, 2, 22, 50, 170, 138, 8, 237, 238, 239, 240	N. Experimental reasons; (1), (5)
	(2) Peer pressure	213, 227, 235, 144, 97, 126, 90, 175, 28, 113, 72, 109, 155, 99, 172, 52, 2, 22, 72, 102, 122, 26, 127, 50, 170, 62, 138, 8, 237, 238, 239, 241	P. Characteristics of cannabis itself; (3), (6), (7)
	(3) Cannabis helps to relax/ escape from Stresses of life	235, 169, 109, 237, 241	Q. "Because they can! " (4)
	(4) "Because they can"	202	
	(5) Its fun to do something they shouldn't be doing	55, 15, 72, 237	
	(6) Availability at low price	28, 122	
	(7) Seems 'harmless'	113, 169, 52, 127	
	(8) Look cool	237, 238	
What, in your opinion are the main reasons why young people try alcohol?	(1) Social acceptance	213, 227, 235, 97, 126, 90, 113, 169, 185, 72, 109, 155, 99, 172, 52, 22, 122, 127, 170, 62, 138, 8, 237, 238, 239, 241	R. Fit in socially; (1)
	(2) look like adults who drink/ feel more grown up	235, 15, 122, 138, 237	S. Experimental/recreational; (4), (6), (7), (9)
	(3) Accessible	202, 28, 99, 122, 127	T. "Part of the English culture"; (2), (3), (5), (10)
	(4) curiosity/ experimentation	49, 144, 126, 185, 72, 109, 155, 172, 22, 72, 237, 239, 240	U. Level of parental involvement (or lack of) ; (8), (11)
	(5) media	144, 138	

	(6) fun	55, 113, 15,2, 170	
	(7) boredom	55, 52	
	(8) lack of parental supervision	55, 102,26	
	(9) lose inhibitions/confidence boosting	90, 113, 169, 109,22, 138, 237, 238, 240,241	
	(10) part of 'English' culture (pubs, at celebrations)	175, 99, 52,8, 237	
	(11) parental consent	155, 172,	
Additional issues regarding young people & cannabis use	(1) Peer approval	213, 175	V. Role of child's personality type; (8)
	(2) Greater cultural knowledge of alcohol	213	W. Role of parental communication; (3), (6), (9)
	(3) Awareness of child's cannabis use	213	
	(4) Incapability to control	213	X. Extent of parental control; (1), (4), (5)
	(5) Fear of increased psychosis after use	213, 175	
	(6) Awareness of importance of parental communication	55	Y. Socio-Cultural Issue; (2), (7), (10)
	(7) Cannabis is not regulated in society	175, 113	
	(8) Personality types play a role	175, 240	
	(9) Adverse effect of intolerance	240	
	(10) higher potency level in comparison to 50's	240	

5.6 DISCUSSION

5.6.1 PREDICTING INTENTION AND BEHAVIOUR

Although the study used a sample that was diverse in its social and economic background, there was a challenge in terms of restricted variance in intention and behaviour scores, which is common when using young adult samples in a school setting (Brenner et al., 2006). Still, this sample represented a broad spectrum of people in terms of their cognitions, social and environmental factors. Given the non-normal distribution of intentions and behaviour, these two variables were treated as dichotomous variables in the logistic regression analyses.

5.6.1.1 PREDICTION OF INTENTION

Our hypothesis (2) can be supported given that attitude, perceived norms and PBC were significant predictors of intentions.

A stepwise forward conditional logistic regression was conducted to examine the predictive power of all TPB and additional variables in one 'unitary framework' (see Table 5. 6 & 5.7). This showed that the perceived parenting style dimension of 'rejection' was the only significant predictor of intention (other than attitudes, perceived norms and PBC). However, this variable was not found to be significant when examined in a univariate logistic regression, therefore meaning that its significance cannot be reliably interpreted.

Behavioural beliefs and normative beliefs about using cannabis were found to be the cognitive beliefs that reliably distinguished between those who had intentions to use cannabis and those who didn't (Table 5. 14). These findings support hypothesis (9) and stress the importance of young people's own beliefs about cannabis use (Chabrol, Massot, & Mullet, 2004). Our findings show that control beliefs play no role in terms of young people's intentions to use cannabis. Rather, beliefs relating to the individual's evaluation and beliefs about significant others in terms of cannabis use are more influential.

5.6.1.2 PREDICTION OF BEHAVIOUR

Some research using the TPB often collects data at one time point only and therefore does not consider the prediction of behaviour (Godin & Kok, 1996). The present study addressed this limitation by collecting data at two separate time points, whereby data was collected from 199 participants who responded on all items at Time 1 and Time 2.

Intention was a significant predictor of behaviour supporting hypothesis 5(a). PBC was not a significant contributor of behaviour throughout the regression analysis which goes against hypothesis (5b). This finding is in support of Conner and McMillan (1999) who in their study on cannabis use among students found that PBC was not a significant predictor of behaviour. It is possible that PBC could only have had an effect on behaviour if mediated through intentions. *Mediation Analysis A* showed that any effect of PBC on behaviour was not mediated by intentions. This should be interpreted with caution, however, as PBC only presented an effect on behaviour when examined separately (without other TPB variables). Given that PBC refers to perception of factors that may facilitate or inhibit performance of behaviour, one might presume that in the prediction of risky and/or desirable behaviours, the notion of control does not share a significant explanation. Young people will less likely take account of facilitating/inhibiting factors, prior to performing a desirable behaviour (Armitage, et al., 1999). Sheeran et al. (2002) explain that in terms of controllable versus uncontrollable behaviour, PBC is likely to be more influential in determining intentions if the behaviour is considered as less controllable. Given the inconsistency of PBC prediction in our study, the reliability of PBC's internal consistency is questioned. Cheung and Chan (2000) showed that on average, the α coefficient for the PBC construct calculated from 90 TPB studies was .65 which is somewhat lower than what is thought to be an adequate level. This implies that the internal consistency of the items designed to assess PBC is questionable.

A series of regression analyses were conducted to determine which of all variables separately predicted behaviour, independently of the basic TPB variables. Moral norms (Block 2-Table 5. 8) and impulsivity: lack of premeditation (Block3-Table 5. 8) significantly contributed to predicting behaviour, thereby supporting hypotheses (6a) and (6b). Another logistic regression was conducted using one unitary framework (see Table 5. 10 & 5.11). Moral norms were found to significantly predict behaviour. Ravis et al. (2009) explained how among younger samples, behaviours with a moral dimension were associated with stronger moral norm-behaviour relationship and moral norms was mediated by behavioural intentions. Although the extent to which cannabis use is a behaviour with a moral dimension is uncertain, other studies have found moral norms to be predictive of illicit drug use (Mcmillan & Conner, 2003) and cannabis use in particular (Conner & McMillan, 1999).

5.6.2 PANEL ELEMENT: PARENTS' DATA

In order to compare and contrast adolescent and parent's parenting styles as well as obtain parents' perspectives on cannabis use, parent's the panel element of this study involved frequency analysis, correlation analysis, and a qualitative thematic analysis.

The findings on parents indicated parents' tendencies to talk to their child about alcohol use more often than about cannabis use. According to the AUDIT-C parents' alcohol use showed 40% of parents possibly drinking at an increasing risk level. When asked about their personal drug use, the only drug reported to have been tried was cannabis. Furthermore, thematic analysis (Table 5. 20 & Table 5. 21) demonstrated parents' emphasis on the importance of intra-family communication as well as their recognition that young people's cannabis use is a normal part of their socio-experimental culture.

Parents' and young peoples' perceptions of parenting styles were also matched but showed very few significant associations between the reports, going against hypothesis (10).

5.6.3 FINDINGS: BASIC TPB VARIABLES

5.6.3.1 ATTITUDES

On average, respondents' attitudes to cannabis were slightly negative. Supporting our hypotheses (1b & 2b), attitudes shared a very strong correlation and prediction with intentions. This is consistent with other findings on the strong role of attitudes on substance use behaviours (Armitage, et al., 1999; Conner & McMillan, 1999; Orbell, et al., 2001).

Dispositional tendencies influence people's decision-making during intention formation (Sheeran, et al., 2002). According to Trafimow and Finlay (1996), if the type of person was attitudinally controlled they would attach greater weight on the likely outcomes of the behaviour in forming intentions, whereas if the type of person was normatively controlled they would attach greater weight on the social pressure from significant others. The young people in this sample could have been attitudinally controlled in that when forming intentions of whether or not to use cannabis greater importance was placed on the likely outcomes of the behaviour (e.g. "Using cannabis would be desirable").

Attitude also had strong correlations with some of the additional variables. Moral norms were significantly negatively correlated with attitudes meaning that young people who found using cannabis desirable/good also reported that using cannabis would not go against their principles. This finding is in accordance with the McMillan and Conner (1999) study on cannabis use among young people which found that on average those who reported positive attitudes towards cannabis also had weaker moral norms to not use cannabis. Favourable attitudes were also associated with lower levels of sensation-seeking, lack of premeditation and lack of perseverance. This means that respondents, who regarded cannabis as something good, surprisingly did not seek out new and exciting experiences, but did have tendencies to act on the spur of the moment without giving regard

to the consequences and also found it difficult to force themselves to do what they wanted to do. These findings recommend a re-conceptualisation of positive attitudes towards cannabis as linked to a behaviour that is 'exciting yet dangerous' towards a less deliberative action resulting from personality dispositions to act spontaneously. More work is necessary to understand the close link between spontaneity and favourable attitudes to cannabis use among young people, which could eventually enhance our understanding of the manner in which this behaviour occurs.

Interestingly, a positive association between favourable attitudes to use cannabis and levels of parental coercion was reported. Parental coercion is considered as one of the negative parenting styles dimensions, and is positioned on the opposite spectrum of autonomy support. Parental coercion characterizes interactions in which children are not allowed to express their views and opinions either towards planning or problem solving (Skinner, et al., 2005). Results from this study showed that young people who had more favourable attitudes towards cannabis use also experienced lack of autonomy support from their parents. This finding accords with many studies investigating the role of parenting in young people's substance use behaviours, such that negative parenting style has been found to be associated with increased favourability towards drug use (Cleveland, Gibbons, Gerrard, Pomery, & Brody, 2005; Dishion & O'ne, 2002; Farrington, 2003).

With relation to the cognitive antecedents of attitudes, it was found that behavioural beliefs significantly predicted intentions. Young people use their cognitive antecedents, specifically outcome-related beliefs, to determine whether or not they will form intentions to use cannabis. This finding can be useful for interventions such as motivational interviewing (MI), which is a client-centred, non-confrontational and directive counselling style that has been found to be effective in drug and alcohol dependency treatment (Burke, Arkowitz, & Menchola, 2003). Shorter versions of MI have been developed for prevention purposes in targeting young people at early stages of drug misuse so as to reduce consumption and/or prevent further involvement in drug use and encourage informed choice. A study found that within ten sixth form colleges across London, students who received MI reduced the use of cannabis, alcohol and other drugs, in comparison to students who did not receive MI (McCambridge & Strang, 2005). However, the positive effects of the intervention were short-term given that these changes were not maintained a year later. It could be argued that to enhance the type of intervention received by these young people, the content of this counselling could be focused on changing belief-based perceptions, using cognitive-based techniques to supplement the attitude-based interventions.

5.6.3.2 PERCEIVED NORMS

Perceived norms also showed very strong correlations with intentions, and were a significant predictor of intentions which supported both hypotheses (1c & 2c). This means that young people's perceptions about how others view cannabis use were associated with their intentions to use cannabis. This finding supports previous studies which examined cannabis use among young people and found subjective norms (Orbell, et al., 2001) and descriptive norms (Kam, et al., 2009; Mcmillan & Conner, 2003) to play a role in determining intentions to use cannabis. Given that parenting styles seemed to not be as strongly related to intentions, in contrast to peer influence which had both a much stronger correlation and predicting role, it can be suggested that young people develop independence from their family as they grow older, placing more importance on peer influences than parental influences (Kam, et al., 2009).

Perceived norms shared correlations with two impulsivity sub-dimensions; lack of premeditation and lack of perseverance. In other words, as young people reported that others' perceptions towards cannabis was positive they also found it difficult to do what they wanted to do, and also were more likely to act on the spur of the moment. Although the relationship between these factors is merely by association, acknowledging that both these factors play a role may be worth further consideration. For instance, in a situation where a young person has to decide whether or not to use cannabis, the combination of having an impulsive personality and having the influence of others' positive perceptions about cannabis use, makes the decision a bit easier to take than if these two factors were absent.

An interesting correlation noted was that of perceived norms and parenting style-chaos ($r = .142$, $p < .05$). This re-establishes the aforementioned argument, that as young people grow older they rely on peer influences much more than on parental guidance. In fact, the positive association between levels of parental chaos reported and peers' positive perceptions of smoking cannabis could indicate that young people's lack of parental structure encourages them to rely on what others' perceptions and attitudes are as a form of guidance regarding whether or not to engage in a behaviour. Although there aren't many studies exploring the direct association between parental chaos and peer influences, this finding can be assimilated to research which has indicated that young people's use of cannabis is separately associated with chaotic family styles (father's drug use), and peers' substance use (Chabrol, et al., 2006). As has also been suggested by Palmer and Hollin (2000), it is likely that the degree of parent-child attachment can influence the level of child's involvement with the family. This could subsequently influence the degree to which children are influenced by their parents' values.

5.6.3.3 PBC

PBC was a significant predictor of intentions both when placed only with the TPB variables and also when examined among the other additional variables in the regression analysis. However, this was not a consistent pattern throughout the regression model. PBC was a significant predictor of behaviour, but had an inconsistent significance level throughout indicating that it may have been influenced by other variables in the regression model. Our hypotheses (2c) and (5b) are therefore only partially supported.

Meta-analytic reviews have supported the PBC-intention relation such that across 76 applications of the TPB, PBC predicted intention in 65 cases (86%) and explained an additional 13% of the variance on average (Godin & Kok, 1996). Similar findings were obtained in meta-analyses by Sheeran and Taylor (1999) and Armitage and Conner (2001). Although PBC correlated with intentions (supporting our hypothesis 1d) the strength of the correlation was weak. Eagly and Chaiken (1993) explain that we should not necessarily expect a strong correlation given that if one is capable of performing a behaviour it does not imply that he/she will have the intention to do so.

Additionally, control beliefs did not share any significant contribution to predicting intentions, which partially goes against hypothesis (9). In trying to change behaviour, Armitage, Conner, Loach and Willets (1999) implied how strengthening or challenging control-based beliefs will theoretically reduce opportunities and motivation to use cannabis, such that increasing the cost would increase self-control and reduce the likelihood of cannabis use. However, the sample used in our study was found to not be influenced by the control-based beliefs in terms of forming their intentions.

Although other studies examining illicit drug use have found PBC to be a strong predictor of cannabis use behaviour (Armitage, et al., 1999; Mcmillan & Conner, 2003), the present findings suggest an alternative result. PBC was not a consistent predictor of behaviour. Yet a mediation analysis conducted to examine whether the relationship between PBC and behaviour was attributable to intentions found that PBC was not mediated by intentions (*Mediation A*). Measuring PBC in a more sensitive manner could help to accurately reflect the type of self-control people are asked about. For instance, Orbell et al. (2001) emphasises the importance of distinguishing between perceptions of control over taking ecstasy vs. obtaining ecstasy in the prediction of intentions among young people. Therefore, one way to improve the PBC-behaviour relationship with regards to cannabis use could be to understand the difference in young people's beliefs regarding obtaining vs. using cannabis.

Given that PBC reflects perceptions of factors that may facilitate or inhibit performance of behaviour, one might presume that in the prediction of risky and/or desirable behaviours, the notion of control

does not share a significant explanation. Young people will be less likely to take account of facilitating/inhibiting factors, prior to performing a desirable behaviour (Armitage, et al., 1999). Ajzen (1991) suggests that the relative importance of each of the basic TPB constructs, in the prediction of intention and behaviour is expected to vary across behaviours and situations. Therefore, where attitudes and normative influences are strong, PBC may hold less predictive power. In our study, attitudes and perceived norms were the two most significant predictors of intentions, implying that the use of cannabis among young people becomes accentuated in it being “attitudinally-controlled” and “normatively-controlled” (Trafimow & Duran, 1998). It can therefore be argued that in attempts to create behavioural interventions, one should consider how in forming their decisions about whether or not to use cannabis, young people place greater weight on the outcome evaluations of cannabis use, and the social pressures perceived, rather on their own levels of self-control.

What is more, another condition which strongly determines the strength of the PBC-behaviour relationship is that “perceptions of behavioural control must reflect actual control in the situation with some degree of accuracy. When this is not the case, the measure of PBC can add little to the prediction of behaviour” (Ajzen & Madden, 1986, p. 460). In other words, where there is no effect of PBC on behaviour, it is because actual control is the determinant instead. It can be argued that young people’s actual control would be a better predictor of cannabis use than their perceived control. There is substantial literature on factors that influence people’s illusions of control such as task familiarity, accuracy and self-enhancement motives and mood (Thompson, Armstrong, & Thomas, 1998). In a study done to validate a proxy measure of actual control as well as assess the accuracy of PBC in moderating the PBC-behaviour relationship, it was stated that including actual control in the model could stimulate greater research on the role of resources, opportunity and cooperation as predictors of behaviour which could improve prediction of behaviour (Sheeran, Trafimow, & Armitage, 2003).

5.6.4 FINDINGS: ADDITIONAL VARIABLES

5.6.4.1 MORAL NORMS

Moral norms were significantly negatively correlated with cannabis use intentions, which is consistent with Conner and McMillan (1999). Our findings also showed that moral norms did not significantly predict intentions. This contradicts findings from a meta-analysis conducted by (Conner & Armitage, 1998) whereby in 9 out of 10 studies, moral norms were found to significantly predict intentions in health risk behaviours.

In relation to behaviour (Table 5.5 & 5.6), moral norms independently predicted behaviour, both when examined separately and also when examined using forward stepwise regression. Mediation analysis (*Mediation B*) showed how intentions acted as a significant partial mediator of the moral norm-behaviour relationship, indicating that an individual's intention to not use cannabis would partially influence the relationship between moral norms and behaviour. Rivas et al. (2009) explained that among younger samples, behaviours with a moral dimension were associated with stronger moral norm-behaviour relationship and moral norms was mediated by behavioural intentions. Personal responsibility and acknowledgment of negative consequences regarding a behaviour is less likely to be accounted for by students aged 16-18 therefore explaining the increased tendency to engage in health-risk behaviours. The extent to which cannabis use is considered a type of behaviour with a 'moral dimension' is under speculation however, especially among young people. According to a Joseph Rowntree Foundation report (Duffy, et al., 2008), young people perceived cannabis use as merely a "social thing" with no particular reference to ethical dimensions or principles. Perhaps the school context embeds the moral construction of the good pupil, creating a school conduct principle that taps into the moral perception of engaging health-risk behaviours (Thornberg, 2009).

This helps acknowledge that young people's intentions to use cannabis cannot be characterized as a purely ethical decision making process. Kuther and Higgins D'Alessandro (2000) found that in a sample of 70 high-school students the decision to engage in substance use and/ or risky behaviour in general was more likely viewed as a personal decision than as either a moral or conventional decision. The findings of this present study place further emphasis on the notion of personal choice which is consistent with the developmental task of identity formation reflecting adolescent's desire for autonomy (Erikson, 1950). It can also be presumed that young people have begun to understand that societal conventions are rather arbitrary and not based on rational considerations (Smetana, 1995). Drug education-based interventions should aim towards encouraging the sense of 'social responsibility' among young adults so as to increase the perception of risky activities as a societal issue while at the same time allowing their own sense of personal judgement and autonomy to form their decision (Kuther & Higgins- D' Alessandro, 2000).

Moral norms shared significant positive correlations with positive parenting styles such as warmth, structure and autonomy support. These findings comply with the already established notion of family interaction styles having an effect on adolescent socio-behavioural adjustment (Palmer & Hollin, 2000).

5.6.4.2 IMPULSIVITY

None of the impulsivity dimensions were found to significantly distinguish between those who had intentions to use cannabis and those who hadn't therefore not supporting hypothesis (3b). However, this could have been masked by PBC which has been argued to be conceptually similar to impulsivity. Romer et al. (2009) explain that any research that involves causes of young people's drug abuse and other risk behaviours, within which the concepts of impulsivity, behavioural control and self-control are simultaneously examined, should be aware of the potential for confusion due to the inconsistencies in terminology and due to the fact that these concepts have yet to be fully differentiated from one another.

However, impulsivity: lack of premeditation was found to have a significant contribution to the prediction of behaviour partially supporting hypothesis (6b). This relationship was further examined using a mediation analysis, which showed that effect of impulsivity: lack of premeditation on behaviour is not mediated by intentions. These findings are in accordance with a TPB study that examined individual differences in terms of adolescent risk-taking behaviour and found sensation-seeking (a sub-dimension of impulsivity) to predict drug use and engagement in sexual activities (Fishbein, et al., in preparation). In another study, impulsivity was found to be a strong predictor of risk behaviour initiation and externalizing behaviours among a group of preadolescents (10-13 year olds), where the authors explained that this is expected given that these types of behaviours are characteristic of deficits in control (Romer, et al., 2009).

The role of impulsivity in cannabis use could have been the reason behind PBC acting as a non-significant contributor to explaining cannabis use throughout the regression models, in that impulsivity could have masked the effects of PBC on intentions and behaviour. This is because, particularly in relation to resisting temptations, or engaging in behaviours that require a high degree of self-control, it has been found that self-control strength diminishes. The cognitive resources to help with self-control in risky or desirable behaviours become limited, which result in behaviour being based on non-deliberative thought processes (Muraven & Baumeister, 2000). Churchill et al. (2008) explain that although the TPB focuses on the rational thought processes of human behaviour, such that people make subjectively rational use of information available to them, it is also clear that for some people the decisions to engage in certain types of behaviour are based on spontaneous self-serving impulses. Attempting to understand the conflict between impulse and self-control, Hoffman, Rauch and Gowranski (2007) suggest implementing automatic attitudes to link these two notions. Specifically, impulsive action tendencies can be linked to automatically activated evaluations whereby impulsive action tendencies to avoid or approach a particular stimulus are the result of

automatically activated evaluations. Therefore, with the impact of ego depletion (where self-control can be depleted if used extensively) (Muraven & Baumeister, 2000), behaviour is influenced by automatic attitudes when self-regulatory capacity is low, but by personal standards when self-regulatory capacity is high. This results in yet more conflict in that impulsive action tendencies result from automatic evaluations and deliberate action tendencies result from personal goals or standards. It is presumed that spontaneous behaviour is predicted from automatically activated (but not self-reported) attitudes, while deliberate, controlled behaviour is predicted from self-reported (but not automatically activated) attitudes (Hoffman, et al., 2007).

5.6.4.3 PARENTING STYLES

Perceived negative parenting style dimensions (rejection, chaos, and coercion) did not predict intentions therefore not supporting hypothesis (3c) and did not predict self-reported cannabis use behaviour, going against hypothesis (6c).

Although perceived negative parenting styles did not act as significant predictors of behaviour, when examined among all additional variables perceived rejection significantly predicted intentions. However, this finding is interpreted with caution as it is most likely the case that the significance was caused by the interaction effects of the TPB variables (given that perceived rejection was not significant when examined in a univariate logistic regression- see Table 5.4). Four possible reasons for this could be: (1) the effect of an unbalanced sample size; (2) the influence of missing data; (3) an extremely large within group variation, relative to between group variation; and (4) the presence of interaction between other variables (Lo, Li, Tsou, & See, 1995). It is possible that with our data, the significant effect of perceived rejection was a result of interacting with the TPB variables

There were some interesting correlations between the parenting style dimensions and the other variables. For instance, impulsivity: urgency was significantly positively correlated with total positive parenting style indicating that as young people reported higher levels of parental warmth, structure and autonomy support there was a higher tendency to engage in impulsive behaviour in order to alleviate negative emotions despite harmful consequences of these actions to act. Palmer and Hollin (2000) refer to a dimension known as 'over-protection' which characterizes high levels of perceived parental control and intrusion. In their study examining young offenders and non-offenders 'over-protection' was found to be significantly positively correlated with rejection for both parents in the non-offenders group. It could be that in our study, when young people reported positive parenting styles, they actually were reporting their own altered interpretation of parenting style. Palmer and Hollin (2000) explained that parents' over-protection could be perceived by young people in two

ways: as a warm and smothering style, or as a harsh, meddling style. It could be that the tendency for young people to act in an impulsive manner in order to alleviate negative emotions could actually be mirroring young people's need for more firm guidance or a more convincing form of support. It should be noted here that there were very few significant correlations found between young people perceptions of parenting styles and parent perceptions of parenting styles (see section 5.5.5.2 for further discussion).

5.6.4.4 STRENGTHS & DIFFICULTIES

The strengths & difficulties measure aimed to capture any socio-behavioural difficulties faced by young people, on average were given a low scoring by the respondents. In other words, the young people in this sample did not seem to be particularly experiencing intense emotional symptoms, conduct problems, peer problems or hyperactivity and were rather placed on the pro-social level of behaviour. This variable did not provide any significant contribution to explaining and predicting intentions to use cannabis and actual behaviour, providing no support for our hypotheses (3d) and (5d) respectively. A reason for this could be that this measure is more often used for young people under the age of 15 (Bourdon, et al., 2005), while the sample in this study included young people aged 16-18. Another reason could be that this sample has high levels of socio-behavioural functioning. Perhaps the wording of the items, or the general content of this measure was not made-to-fit this age group. This could have resulted in it having no significant associations or predictions within the model.

5.6.4.5 DELINQUENCY

The scores reported by young people with regards to delinquency were fairly low, given the possible range of scores being 0 to 72, the sample in our study scored an average of 12.84. This indicates that the young people were not involved in many delinquent acts, or preferred to underreport their responses.

Delinquency was not a significant predictor of intentions and behaviour to use cannabis not supporting hypothesis (3e) and (6e) respectively. This contradicts previous research within which the role of delinquency is closely documented and linked to high school students' cannabis use (Mensch & Kandel, 1988). The extent to which this sample is widely representative of the young people's population in terms of socio-behavioural difficulties and delinquency levels is however questioned. Vulnerable groups who are more likely to have these characteristics are usually excluded from school/college based research which has important implications for health promotion interventions (see Chapter 8 for detailed discussion).

However delinquency had a negative correlation with moral norms meaning that as the delinquency levels increased young people did not have strong moral norms against cannabis use. This complies with many findings which have associated the level of moral reasoning with delinquency among adolescents (Raaijmakers, Engels, & Van Hoof, 2005; Stams et al., 2006; Tarry & Emler, 2007). Although our study established associations between moral norms and delinquency it has been documented as a complex relationship and no further implications should be derived given the array of mediating factors, such as age (Raaijmakers, et al., 2005) that could influence how this relationship works.

5.6.5 PANEL ELEMENT: FINDINGS ON PARENTS' PERSPECTIVES

In order to obtain a holistic understanding of parenting styles reported by the young people in this study, parents' own reports on this measure as well as their opinions on cannabis were obtained. Although the response rate was low (15%), the information provided some interesting findings, such as identifying a difference between adolescent and parents' perception on parenting styles. The length of the questionnaire may have disengaged some parents, as length of questionnaires has been found to have an effect on response rate (Burchell & Marsh, 1992). Still, whilst the length of the questionnaire was considered a concern in the design phase, and attempts were made to shorten it (e.g. removing some items regarding drug use), a balance was felt to be found between length and need to attain data on key variables.

5.6.5.1 DESCRIPTIVE DATA

Descriptive analysis demonstrated that parents tend to talk to their children about alcohol use more frequently than about cannabis use, and at the same time disagree that cannabis is a normal part of young people's culture. However, it was acknowledged that young people simply want to experiment with cannabis use and are not likely to become long-term users. With regards to the danger involved in using any substance, parents perceived smoking cigarettes as more dangerous than using cannabis, which was however perceived as more dangerous than using alcohol. Similar findings were reported in a Home Office report which showed that parents were most concerned about young people's smoking and alcohol in comparison to drug use (Home Office, 2004). Although parents felt somewhat knowledgeable on the issue of cannabis use, most of them incorrectly classified cannabis as a Class A, or Class C drug, when in fact it is Class B.

With regards to their own substance use levels around 40% of parents were drinking at an increasing risk level, while 100% of those reported to have ever used substances noted that the only drug used was cannabis with 20.7% having used it in the past year and 3.4% used it in the past month.

5.6.5.2 PARENTING STYLE PERCEPTIONS

In this study, the existence of very few significant correlations between adolescent and parents' perceptions of parenting styles indicate a gap in terms of inter-family communication and triggers the question as to who has the more reality-based view of the family. This finding partially supports our hypothesis (10) which claimed that there will be associations between young people's and parents' perceptions of parenting styles. Although there were associations, most of these were non-significant, indicating a lack of shared view on certain parenting styles between the two parties.

Differences between family members in their perceptions of family interactions and family relationships have usually been characterised as sharing low levels of agreement (Jessop, 1981). It could be presumed that in some aspects, what parents perceive as parental coercion, young people perceive as much needed firm, authoritative guidance which helps to prevent cannabis use. Moreover the mere existence of parental structure, could cause a reverse effect in making young people want to rebel and go beyond the 'structure' of family boundaries. In other words, parents tend to have more loving, closer, understanding perceptions of their families while young people view their families as less communicative and more problematic (Noller & Callan, 1986). Noller et al. (1992) examined both parental and adolescent perspectives on family functioning, in both clinic and non-clinic families and found a mismatch in adolescent and parental perceptions. The young people in the non-clinic group perceived their families significantly as less intimate and more conflicting than did their mothers (Noller, et al., 1992).

The young people in our study, like other young people, could have somewhat unrealistic ideas about how families should function. Noller and Callan (1986) found that young people wanted the family to be high in cohesion and chaotic in terms of adaptability so as to provide them with the support of their parents while having complete freedom in doing whatever they wanted to do.

5.6.5.3 THEMATIC ANALYSIS

Brief responses to open-ended questions provided insight into parents' perspectives on cannabis use. A content analysis identified higher order themes (Table 5. 20 & Table 5. 21) which were then further categorised into four main themes (i. Importance of inter-family communication, ii. Understanding of adolescent socio-experimental culture, iii. Awareness of cannabis impact, iv. Influence of external factors) which will be discussed below. It should be noted that the short one-sentence responses given by the parents do not permit for an extensive in-depth analysis.

5.6.5.3.1 IMPORTANCE OF INTER-FAMILY COMMUNICATION

When parents were asked what would make it easier for them to talk to their child about cannabis use the most commonly reported factor was parental knowledge (i.e. obtaining more information by experts) with a general emphasis on the importance of family inter-communication:

“We already talk to our child about cannabis use but it would have been easier if he had been open and honest initially” (mother-241).

The Partnership for a Drug-Free America’s (PDFA’s) Partnership Attitude Tracking Study (2008) found that 37 per cent of teenagers said they had learned a lot from discussions with their parents about drugs, which marks the importance of family communication as found with this sample. In the UK a qualitative investigation exploring young people’s responses to their parents’ knowledge of their cannabis use reported that parents rarely talked to their children about cannabis use in relation to alcohol use (Highet, 2005). The authors suggested that supportive parenting should consider open discussions about actual or potential cannabis use before it began or it became problematic as an important step in reducing the harms associated with young people’s misuse of cannabis.

A similar pattern occurred when the parents were asked what would make it difficult to talk to their child about drug use. Some parents referred to the limited knowledge on cannabis use as a hindering factor of communication with their child:

“More knowledge-my children know more about drugs than I do!” (mother- 144)

A Home Office report asking parents of their opinions on their children’s drug use demonstrated that 28 % of parents interviewed admitted to not knowing enough about the dangers of drugs (Home Office, 2004). Moreover, in their study on parental knowledge of adolescent risk behaviour Young and Zimmerman (1998) showed that most parents were quite ignorant and had very little knowledge on the prevalence of these behaviours among their children. These findings imply that within family communication is not as effective in terms of discussing drug use. A Participation Action Study in the UK examined communication about drugs between parents and unrelated young people. They found that parents developed a more balanced perspective of young people’s drug use and young people felt empowered to openly discuss their experiences and perspectives (Mallick, 2007). This was because some of the obstacles within family communication were removed, which enabled open and honest two-way communication between the generations.

5.6.5.3.2 UNDERSTANDING YOUNG PEOPLE'S SOCIO-EXPERIMENTAL CULTURE

Parents demonstrated that they understood young people's socio-experimental culture:

"To experience a new sensation" (mother-237)

"If you're a young man you want to try all that life has to offer. It's only natural" (mother-240)

These statements accord with the findings in a Home Office report which showed that 80% of parents being interviewed acknowledged that young people would try drugs at some point (Home Office, 2004).

One mother in particular simply reported:

"Because they can!" (mother - 202).

This captures a different sense of understanding with regards to parents' understanding of young people's cannabis use. It seems that they acknowledge cannabis use as a type of behaviour that is based on opportunity and spontaneity.

5.6.5.3.3 AWARENESS OF CANNABIS IMPACT

Importantly, some parents recognised the physical effects of cannabis and reported that due to its characteristics such as causing relaxation, young people were more inclined to use it:

"To relax- 'healthier' alternative to alcohol" (mother-169)

The availability of this drug at "low price" was also cited as a reason for young people using it.

Some remarked that the extent of parental control was an issue to be considered. Some parents reported their incapability of controlling their child's cannabis use, while others, in fear of their child developing psychotic disorders, felt capable of control.

A direct comparison to the difference in potency levels between the 1950's and nowadays was also made:

"I am tolerant of cannabis use because I think being intolerant would have an adverse effect. If it were a question of dope being as it was in the 1950's, I'd have no problems with it!".

5.6.5.3.4 IMPACT OF EXTERNAL FACTORS

Parents widely recognised certain external factors that had an impact on young people's cannabis use such as peer pressure. Some quoted young people's alcohol use as 'part of the English culture':

"Its part of our culture, we go to the pub and we have taken the children from an early age, but alcohol forms part of the meal. We have given the children a taste of alcohol since they were teenagers" (mother-175)

Young people's cannabis use was characterized within the context of a socio-cultural issue given that the English culture places greater emphasis, and has more knowledge of, alcohol use:

"My knowledge of alcohol is greater as it has been part of my culture, whereas cannabis has not...It is difficult to get a good balanced view as I know my son has tried cannabis and alcohol and we allow him the latter but do not truly know what he does" (mother-213)

The role of the child's personality type was also noted by some parents when considering the issue of young people and cannabis use:

"Cannabis was never available when I was a young adult and I would have tried it if I could. My argument is that alcohol is regulated and cannabis is not. There will always be personality types who are prone to be more addictive than others." (mother- 175)

With regards to who would be most responsible for talking to their child about using cannabis the responses were mainly centred on 'Family' and 'School', while a particularly interesting approach was the idea of using a 'Multi-party partnership':

"People that have direct experience of drugs are best placed to educate/talk to my child. Their message should then be reinforced by parents." (mother-2).

Nevertheless, external factors also played a role in encouraging talks about cannabis use. Some mentioned relying on the TV/ marketing to facilitate education about drugs in order to shift the responsibility to external parties.

5.6.6 STRENGTHS & LIMITATIONS

One of the major strengths of this study was the ability to access young people aged 16-18 with regards to their responses on an issue as sensitive as cannabis use. For this study it was necessary to go through three separate gatekeepers with regards to accessing these young individuals; the College, the parents and the students themselves. Despite many other Colleges declining participation to the study, the researcher was able to get access to a Sixth Form College and also

obtain parental consent with regards to student's participation. Moreover, this study was longitudinal in design, obtaining measures of both intention and behaviour from a highly inaccessible sample (n=199), which enhances the applied value of the study as well as provides useful theoretical insights.

As with any study of a sensitive topic, there was a general concern about the accuracy of responses. One of the major strengths of this study included employing several proactive strategies to ensure accurate answers. First, an anonymous method for data collection was used making participants feel more comfortable in providing honest responses without a concern about lack of confidentiality. Second, both an informational letter as well as a verbal introduction prior to the study, helped to describe that all data would be disclosed only to the researcher explicitly stating that the College would have nothing to do with it. Thirdly the provision of envelopes in which to place the questionnaire once completed, enhanced the formality and confidentiality of the study.

Another strong feature of this study was the inclusion of parents' participation, given that only few studies have examined both students and parents' perspectives on cannabis use. Although parents' response rate was not very high, those that did respond provided very interesting information regarding their opinions on cannabis use. Until today, very few studies have matched parents' reports to young people's reports, using a method based on codes rather than names to promote honest responses from both parties. What this study added was the ability to match and compare young people's and parents' reports on parenting styles in an attempt to capture a more realistic, all-rounded perspective. This helped towards understanding the differences between these reports and what implications this has for parent-education interventions. Little is known about the differences in parents and young people's perspectives on parenting styles which makes this study's findings all the more notable.

Furthermore, to the best of our knowledge this is the first study to integrate the four dimensions of impulsivity (urgency, lack of premeditation, lack of perseverance, and sensation-seeking) specified by the UPPS impulsive behaviour scale (Whiteside & Lynam, 2001) in the context of young people's cannabis use, using a TPB framework. As such the findings have a number of theoretical and practical implications that could contribute to existing knowledge in this area (see Chapter 8).

One limitation to the present study was the reliance on a self-report measure of behaviour, in that the levels of honesty were compromised. While it is common to claim that there is a strong association between self-report and objective measures of behaviour, it should be noted that the strength of the relationship is likely to vary as a function of the behaviour in question (Ajzen &

Fishbein, 2004). Some empirical evidence suggests reasonable validity of self-reported drug use while other evidence shows that if the history of drug-use has not been examined, self-report measures are accounted as unreliable (Colon, Robles, & Sahai, 2001). Moreover, the Hawthorne effect (Noland, 1959) could also have taken place such that individuals may have under-reported cannabis use in response to knowing they were being experimentally measured. It could be suggested that a subsequent similar study uses a more objective measure of cannabis use, by obtaining measures regarding 'history of use' to reduce potential measurement bias. Nonetheless, this study gave young people the unique opportunity to report on their own cannabis use behaviour.

Self-report measures of individual difference variables such as impulsivity and delinquency also rely on individuals' honesty and understanding. It would be constructive to investigate whether the findings of the current study can be replicated using alternative measures which are less dependent on self-report and more dependent on objective behavioural tasks. For instance, to measure overt behaviour related to specific dimensions of impulsivity, a behavioural task or an event-related potential could be implemented so as to record the electrical brain activity in response to impulse-related tasks (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001).

Another limitation concerns the setting and the mode in which the study took place. Given the fact that the questionnaires were distributed, completed and collected at the College could have made the students feel uncomfortable in providing honest responses. Research on setting and mode of surveys examining health risk-behaviours of young people demonstrate that mode has no difference in the prevalence of risk behaviours reported whether at home or at school. However, students who responded using pencil and paper method (PAPI) had lower odds of reporting of behaviour than students who were in the computer -assisted self-interviewing mode (CASI) (Brener et al., 2002). Nevertheless, sample size and method of distribution could influence the prevalence of risk behaviours reported. In our study, the questionnaire took place during assembly (as instructed by the College) which had an inevitable compromise on the level of privacy available to the students.

A further potential limitation concerns the generalisation of the findings. The participants were recruited from one Sixth Form College located in Norwich, UK. Although the sample was diverse in terms of the socio-economic status, cultural background and gender, it may not represent all 16-18 year old students. Despite the fact that most English young people are involved in a school based on developmental stages (Department for Education, 2011), it is true that with the economic crises faced nowadays there are young people especially between 16-18, who do not attend school. Other same-age cohorts may attend vocational schools, universities or paid jobs. Since factors such as peer

environment and educational achievement can affect young peoples' intentions and actual behaviour regarding cannabis use, this study ought to be replicated with a larger sample including young people (aged 16-18) who are not in Sixth Form College education and/or who are working.

Theoretical and policy implications are discussed in Chapter 8.

5.7 CHAPTER SUMMARY

- An extended model of TPB is applied in this study, aiming to understand cannabis use behaviour among young people, by incorporating a range of additional variables (moral norms, impulsivity, parenting styles, strengths & difficulties, and delinquency).
- The notion of impulsivity (Churchill et al., 2008) was one of the most important additional variables, as it has been associated with spontaneous but exciting behaviour which strongly characterises cannabis use behaviour.
- After a Belief-elicitation study, questionnaires were administered at Time 1, with a two-week follow up at Time 2. Students and parents were recruited through a Sixth Form College in Norwich, UK.
- Logistic regression analysis showed that attitudes, perceived norms and PBC significantly predicted intentions to use cannabis. None of the additional variables predicted cannabis use intentions.
- Among the cognitive antecedents, behavioural beliefs and normative beliefs predicted intentions to use cannabis but control beliefs did not.
- Behaviour to use cannabis was predicted by intentions, while PBC significant contribution was inconsistent throughout the regression analysis. Among the additional variables, moral norms and impulsivity: lack of premeditation independently predicted cannabis use behaviour.
- Parents' and young people's perceptions of parenting styles did not share as many significant associations as expected.
- Thematic analysis indicated that parents recognized young people's socio-experimental culture. The importance of inter-family communication was stressed in terms of reducing young people's cannabis use.
- The inconsistency of PBC in predicting behaviour is discussed in relation to young people exhibiting lower levels of self-control over spontaneous-driven behaviour. The role of

impulsivity in predicting behaviour is attributed to young people's tendency to engage in cannabis use using spontaneous impulses.

- Although one of the limitations noted includes relying on self-report measures, with the suggestion to implement behavioural tasks so as to obtain a more objective data, a major strength of the study was the accessibility to a young sample after having gone through several different gatekeepers' consent.

6 CHAPTER 6: STUDY 2- YOUNG PEOPLE AND CANNABIS USE: QUALITATIVE TPB-BASED STUDY WITH UNIVERSITY STUDENTS

6.1 CHAPTER OVERVIEW

This chapter represents Study 2 which adopts a qualitative approach in examining young people's cannabis use. Literature regarding cannabis use among university students' is extensively discussed. What follows is a critical evaluation of the benefits acquired in using a qualitative approach, such as Thematic Analysis, to explore young people's accounts of cannabis use. Study 2 aims to examine the perspectives of young people at university with regards to cannabis use, using an analytical framework derived from the TPB. The initial phase of the analysis involves a frequency analysis depicting participants' patterns of cannabis use. Through the use of Thematic Analysis, themes emerge that are considered and discussed in relation to the TPB constructs. For instance the theme of 'Individual disposition of cannabis use' is considered as a complementary construct of Attitudes. A schematic diagram is presented, depicting how these themes can be incorporated within the TPB framework. The findings are discussed in relation to the themes identified. Moreover, reference is made to which themes are to be considered in Study 3.

6.2 INTRODUCTION

Literature on the extent of drug use suggests that cannabis use is widespread in the UK, especially among the 16-24 age group (EMCDDA, 2010). In January 2009, cannabis was reclassified to Class B under the Misuse of Drugs Act (Home Office, 1971), only five years after declassification to Class C (Home Office, 2004), despite contrary advice from the Advisory Council for the Misuse of Drugs (ACMD, 2005, 2006). Most large scale surveys have focused on describing and evaluating the extent of drug use among young people, such as reporting on the routine aspects of its use (how it is used, how often, what effects it has) (Hammersley, et al., 2003; Home Office, 2004). However there has been little focus on obtaining an in-depth understanding as to why cannabis is used by some young people and why others refrain from use. Terry, Wright and Cochrane (2007) examined the factors contributing to changes in frequency of cannabis consumption by cannabis users through interviews. Their work demonstrated that perceived external constraints such as peer relations play important roles in upward and downward changes while perceived functional effects such as beneficial subjective effects

of the drug influence escalation. The mean age of the participants in this study was 30 years old (18-50 years) limiting applicability of these findings to younger age groups.

In the UK, around half of young people have never tried cannabis (Home Office, 2010a). An increasing number of studies (Amos, et al., 2004; Highet, 2004) have attempted to identify social psychological antecedents of cannabis use. The findings demonstrate that young people see considerable benefits of use such as being involved in a friendship network of users. Miller and Plant (2002) surveyed adolescent users and reported that users were not homogenous. By clustering them into different 'user' groups, Miller and Plant (2002) identified the following: the 'unhappy' group which showed signs of mental health problems and used cannabis to help them cope; the 'antisocial' group which fitted the standard profile for delinquency; and finally the 'ordinary' group. The 'ordinary group' tended to be conventional, not use other illicit drugs and not experience any problems. These findings imply that heavy cannabis using adolescents in the UK are by no means a standardized group and therefore different descriptions of the process by which they become users are necessary. In a paper which discusses the prospective design of The Dutch Cannabis Dependence study (van der Pol, et al., 2011) the authors refer to the use of a mixed method approach to investigate cannabis users' socio-demographics, personality, social functioning, family history and patterns of use. The qualitative aspect of this study however will focus on motives of cannabis users to change their pattern of use as well as how they perceived entering treatment (this paper refers to the prospective design of the study). Despite the common prevalence of cannabis use among young people (Home Office, 2010a) most research has focused on the routine aspects of use (Akre, Michaud, Berchtold, & Suris, 2010) and on the negative and positive effects associated with it (Amos, et al., 2004). Most of these studies used a younger adolescent sample, although USA-based evidence indicates that young adults at university have a higher prevalence of cannabis use than younger adults at high school (Bachman, Johnston, & O'Malley, 2006).

One of the few studies that considered university students' patterns of cannabis use demonstrated through interviews that some university students generally enjoyed cannabis use (Hammersley & Leon). They reported its benefits but also acknowledged cognitive disturbances such as depression and/or anxiety (Hammersley & Leon, 2006). Moreover, cannabis use was described as a normalised behaviour during the university experience with most users reporting how they used it in a casual or controlled fashion. The use of questionnaires, limits the explanation or discussion of the meanings that young people give to such apparently routine-based behaviours. As Hammersley and Leon (2006) suggest it could be an appropriate time to "reframe cannabis use in terms of health-related behaviours and normalised substance use rather than in terms of addiction/dependence, or a deviance approach"

(p.190). The following section discusses the value of using a qualitative approach to explore young people's accounts of cannabis use. The extent to which Thematic Analysis can be used as an analytic method to capture young people's perspectives with regards to cannabis will be evaluated. The depth of information obtained using a qualitative approach in this study can substantially complement existing quantitative research as well as other qualitative research that has focused on the consequences of cannabis use rather than the decision-making process.

6.2.1 BENEFITS OF USING A QUALITATIVE APPROACH

A growing number of studies have documented the effects of long-term cannabis use (Fergusson, et al., 2002), yet with a focus on assessing the nature and prevalence of cannabis dependence and other problems (e.g. cannabis as the gateway drug). There is evidence that for many young people, the decision to use a drug is based on a rational appraisal process, rather than a passive reaction to the context in which the substance is available (Boys et al., 1999). Reports tend to range from very broad statements (e.g. to feel relaxed) to more specific functions of use (e.g. to release inhibitions). However most of this research does not differentiate between the different types of illicit drugs and, given the diverse effects that different drugs have, it is assumed that reasons for use will closely mirror these differences. In a study conducted to understand the reasons for drug use amongst young people, it was found that different drugs served different functions for individuals (Boys, Marsden, & Strang, 2001). Still, this study was largely reflective of a 'drug use functions' model explaining how decisions are made about patterns of consumption. The Joseph Rowntree Foundation (Duffy, et al., 2008) used interviews to report young people's perspectives on cannabis use. However, like other research studies, it focused largely on descriptive information provided by young people with regards to their cannabis use such as with whom, when, and what the general consumption patterns were rather than exploring the psychological processes of cannabis use.

A Home Office report (Beckett, et al., 2004) conducted to investigate problem drug use among young people suggested that their findings would have been enriched by further use of open-ended questioning about factors such as reasons for drug use, patterns of use, whether it was influenced by friends, how they reflected upon parental discipline and other 'everyday' elements. While their quantitative model enabled identification of key factors in relation to problematic drug use, insights from users would have greatly added to their understanding of the processes involved. Therefore, the research literature is limited and does not sufficiently capture users' perspectives as to why they engage in cannabis use or as to which social-psychological aspects influence their decision-making of this behaviour.

In investigating cannabis use among young adults, Buckner, Bonn-Miller, Zvolensky and Schimdt (2007, p.2252) state that “future work could benefit by including a multi-method approach with larger sample sizes that would allow for subjective as well as objective ratings of the primary predictor and dependent variables under study”.

6.2.2 METHODS OF UNDERSTANDING BEHAVIOUR

Much research uses the Theory of Planned Behaviour (TPB; Ajzen, 1991) as a framework which serves to understand and predict behaviour using a series of environmental, social and personal variables. The TPB framework could serve to uniquely contribute to the qualitative field with regards to the specific appraisal processes undertaken by young people when deciding whether or not to use cannabis at university. Using this model to ‘focus’ and ‘frame’ the questions set during the focus groups can help to place these constructs in the context of young people’s own experience, allowing for an insight into young people’s psychological processes regarding their behaviour.

Opinions formed and lifestyles lived are generally determined not by individual information gathering but rather through communication with others (Albrecht, Johnson, & Walther, 1993). This is one of the benefits of using focus groups as opposed to one-to-one interviews. As Kitzinger (1995) explains, accessing focus group communication is useful because people’s knowledge and attitudes are not entirely encapsulated in reasoned responses to direct questions. This shows that focus groups are a particularly unique method that reveals dimensions of understanding which often remain untapped by conventional data collection techniques.

Focus groups may generate dialogue of interest, placing this kind of exploration under a co-constructed view (Linell, 2001). They usually function on two different levels: the intrapersonal (i.e. an individual’s thoughts, feelings, attitudes and values) and the intragroup (i.e. how people communicate and interact with each other in the group). By skilfully managing the group dynamics it is possible to cultivate conversation and discussion (through ‘synergy, snowballing, stimulation and spontaneity’) as a focus of investigation in its own right (Linell, 2001). Through discussion and interaction, focus groups have a relatively untapped potential to explore answers to ‘how’ and ‘why’ (i.e. process) questions as well as ‘what’ (i.e. content). Using focus groups to explore in-depth perspectives of cannabis use will encourage mutual intra-group support and will help towards expression of feelings that are common to the group but which they consider to deviate from mainstream culture (Kitzinger, 1995).

There are a variety of methods by which to contextualise qualitative information. The use of Thematic Analysis (TA) as one of the most widely used, yet “rarely acknowledged” (Braun & Clarke, 2006, p.77) methods will be discussed in the following section.

6.2.3 BENEFITS OF THEMATIC ANALYSIS

Qualitative approaches are considered to be diverse and complex, yet TA is seen as one of the foundational methods for qualitative analysis (Braun & Clarke, 2006). Although TA is widely used, it is not as powerful on the 'branding' that other methods of analysis, such as 'grounded theory' (Strauss & Corbin, 1994) have making it seem like a less rigorous method to use. However Roulston (2001) argue that TA is a rigorous, flexible method given that it is based on insightful analysis that responds to particular research questions.

There tend to be two different forms of thematic analysis; 'inductive' and 'theoretical' (Boyatzis, 1998). The former refers to an approach within which the themes identified are strongly linked to ideas which emerge from the data and are not driven by theoretical interest. The latter refers to the type of analysis that tends to be driven by the researcher's theoretical interest in the area (Boyatzis, 1998) and is therefore more explicitly analyst-driven. Using the TPB framework to shape and frame the qualitative analysis in this study will involve a theoretical approach of TA. Although this form of analysis provides a less rich description of the data overall, it provides a more detailed analysis of specific aspects of the data.

Using a semantic approach to identify relevant themes within the data involves progress from description (where the data has simply been organised to show patterns in semantic content) to interpretation (where theory is applied to the significance of the patterns and their broader meanings and implications) (Braun & Clarke, 2006). In relation to this study, applying TA would achieve a balance between providing the descriptive information about why young people use cannabis with an interpretative tone which would amplify any meanings regarding this behaviour as voiced by young people.

Ryan and Bernard (2000) explain how thematic coding is a process which reflects the broader 'analytic' traditions (such as 'grounded theory') placing it as a method in its own right. Most qualitative analytic methods are divided either into a particular theoretical and epistemological position such as Interpretative Phenomenological Analysis (Smith & Osborne, 2003) or are essentially independent of theory and epistemology. TA belongs to the latter division but is also compatible with essentialist and constructionist paradigms within psychology. Braun and Clarke (2006) explain that TA is not wedded to any pre-existing theoretical framework and so can be used within different theoretical frameworks and applied to different aspects within them. They argue that TA can be positioned as an essentialist method that captures the realities of participants' experiences and meanings or it can be employed

from a constructionist approach which explores the ways in which meanings and experiences arise through shared discourses within society. What is more, Braun and Clarke (2006) suggest that TA can also be situated in the mid-point between these two perspectives by maintaining a 'contextualist' method which both acknowledges the ways individuals make meaning of their experience, and in turn, the ways the broader social context impinges on those meanings. This qualitative perspective in Study 2 with young people at University (18-24 years) will complement the quantitative approach conducted with young people (16-18 years) in Study 1 as the meanings that young people give to their decisions of cannabis use will be explored in-depth. This will make it possible to obtain an understanding of how the transition to university influences young people's reasons to engage in cannabis use.

6.3 AIMS AND OBJECTIVES

6.3.1 STUDY 2 AIMS

The purpose of this study was to explore the perspectives of young people aged 18-24 at university with regards to cannabis use, using an analytical framework derived from the TPB. This was done using semi-structured interviews in focus groups.

The study's aims were: (1) to investigate how undergraduate students talk about cannabis use; (2) to apply the TPB constructs (attitudes, perceived norms, perceived behavioural control, intention) and examine how these constructs are reflected in students' discussions about using or not using cannabis; (3) to examine students beliefs and perceptions regarding their own use and non-use of cannabis; (4) to explore the notion of impulsivity and parenting styles (which were found to significantly contribute to explaining cannabis use in Study 1); and (5) to facilitate in-group discussions so as to better understand what other factors influence students' decisions to use or not use cannabis.

6.4 METHOD

6.4.1 PARTICIPANTS

Focus groups were held with a total of 20 participants. The focus group size ranged from four to seven individuals with each group varying in gender composition. Group 1 consisted of 3 male; 1 female, Group 2; 1 male, 3 female, Group 3; 5 male, and Group 4; 6 male, 1 female. Taken altogether there were 18 users and 2 non-users; all had tried cannabis at least once.

There were 18 undergraduate students and 2 postgraduate students aged between 18-24 years enrolled at an English University. Of these, 11 were British, 8 were European and 1 was American. The mean age of first time cannabis use was 16 years old. By allowing for differences in participant

background, or lifestyle, this may have on the one hand inhibited flow of discussion due to lack of common ground, but alternatively if all participants were to share similar or identical backgrounds or lifestyles, the discussion would have been flat and unproductive (Millward, 2006). General guidelines suggested using participants that exhibit at least some common characteristics (same socio-economic class, similar age group) to facilitate disclosure, unlike what would occur if discussion was among people who are extremely unknown to each other.

Only participants aged eighteen and over were asked to participate in the research as it was important that participants have the right to give their own consent. To confirm this aspect, participants were required to provide proof of age (by providing their student union card/ identity card) and minimise any risk of recruiting participants who may have required parental consent.

6.4.2 MEASURES AND DESIGN

Semi-structured questions were used to elicit responses regarding cannabis use or non-use (see Table 6.1). Like Stanton et al. (1993) who used constructs provided by the 'Protection Motivation Theory' to both 'focus' and 'frame' the focus group discussion which examined risk protection in the context of adolescent sexual behaviour, so this study used the 'Theory of Planned Behaviour' constructs to 'focus' and 'frame' the focus group discussion. Using theory as a framing device, the researcher faced the possibility of prejudicing the information gained in a way that eliminated other avenues that could otherwise be explored (Millward, 2006). However, participants may not have known where or how to initiate discussion, and so talked about relatively superficial aspects of the topic in question or using the focus group to offload personal issues. Given that some level of 'focus' was necessary and limitless time was not available, it was more sensible as Hilder (1997) suggests to scene-set in order to gain quality input on the interested topic within an agreed time-span. Patterns of cannabis use were also examined based on the Hammersley and Leon (2006) measure.

Immediately following the focus group, any original names used were removed and replaced with a pseudonym. These pseudonyms were used in transcription of the focus groups. The focus groups were recorded using an MP3 audio recording device. The audio tapes were transcribed and data was analysed using TA to build upon the TPB framework.

TABLE 6:1 SET OF FOCUS GROUP QUESTIONS

-
- 1 What is your general opinion on cannabis use?
 - 2 Does interacting with other users affect your own decision as to whether or not to use cannabis?
 - 3 Do you think the way society views this behaviour has any influence on your own decision as to whether or not to use cannabis?
 - 4 Do you feel that you have a sense of self-control over this behaviour?
 - 5 Research on intentions and behaviour show how intentions towards behaviour almost always results in the behaviour being carried out. Do you think this is the case with your own intentions to use cannabis? Is there something that affects your own intention-behaviour link?
 - 6 Do you feel that the way your parents brought you up influenced your decision as to whether or not to use cannabis?
 - 7 Do you think that cannabis use depends on a personality type?
 - 8 Is using cannabis a planned out behaviour or something that happens spontaneously?
 - 9 What is the message you would direct to the Government regarding policies on young people and cannabis use?
-

Note: Some questions were elaborated even further by the researcher if participants required more explanation.

6.4.3 PROCEDURE

An approximate number of 50 participants (aged 18 -24) were invited to take part in the study given that a refusal rate of 50% was estimated. A flier (*Appendix 2A*) was distributed across the university campus. Recruitment also entailed approaching and joining students' societies in an attempt to familiarise the researcher with potential participants and encourage participation. A total number of 50 participants showed interest to which more information about the planned focus groups via e-mail correspondence was provided. Participants were then asked to respond by phone or e-mail to indicate which focus group they wish to attend.

At this time, using snowball sampling, the participants were asked to pass on information about the study to others, who may have been interested in participating. In total, 20 participants agreed to take part. Once participants were recruited, the location and time of the focus group was confirmed.

On arrival at the venue, participants were provided with an information sheet (*Appendix 2B*) and consent form (*Appendix 2C*). Participants were informed of their right to withdraw and were assured that any information obtained in the focus group would remain confidential and anonymous (participants ticked a box to provide their written consent on the given date). Following this, the researcher then introduced herself to the groups and gave a verbal summary of what the study's aims were and what topics would be discussed (*Appendix 2D*).

After asking participants if there were any questions the researcher initiated an ice-breaker task during which participants took it in turns to introduce themselves (either with the actual name or the pseudonym). This information was not used in the data analysis but was noted down by the researcher. The aim behind the ice-breaker was to encourage participants to speak and feel more comfortable at expressing their views within the group. Once the ice-breaker task was completed the researcher began the discussion by asking the focus group questions (Table 6.1). In the case of the participants being hesitant the researcher used questions and/or probes to facilitate discussion.

When the discussion had finished the researcher ended the focus group with a closing statement (*Appendix 2F*), thanking all participants for attending and sharing their viewpoints. Participants were reminded not to repeat the details discussed during the focus group.

Participants were then provided with a written debrief (*Appendix 2G*) which included contact information drug use support centres, as well as a contact for the University Counselling service and research team contact details.

6.5 RESULTS

6.5.1 PARTICIPANTS' CANNABIS USE PROFILE

According to Figure 6.1, the two most commonly reported patterns of use involved buying cannabis and having a bit on most evenings, or using it both during the day and most evenings. The next most common patterns involved buying cannabis for special occasions but otherwise just using it if someone else offers, followed by buying some and using it all in a few days and then going without it for a while. The other patterns of use were not as popular among this group. Although no participant reported having never tried cannabis, it was specified later that although having tried it once, two participants were not current users. These patterns are in accordance with those found by Hammersley and Leon

(2006) who categorised users in two groups: the casual users who did not buy cannabis often, and the regular users who often bought cannabis and used it most days.

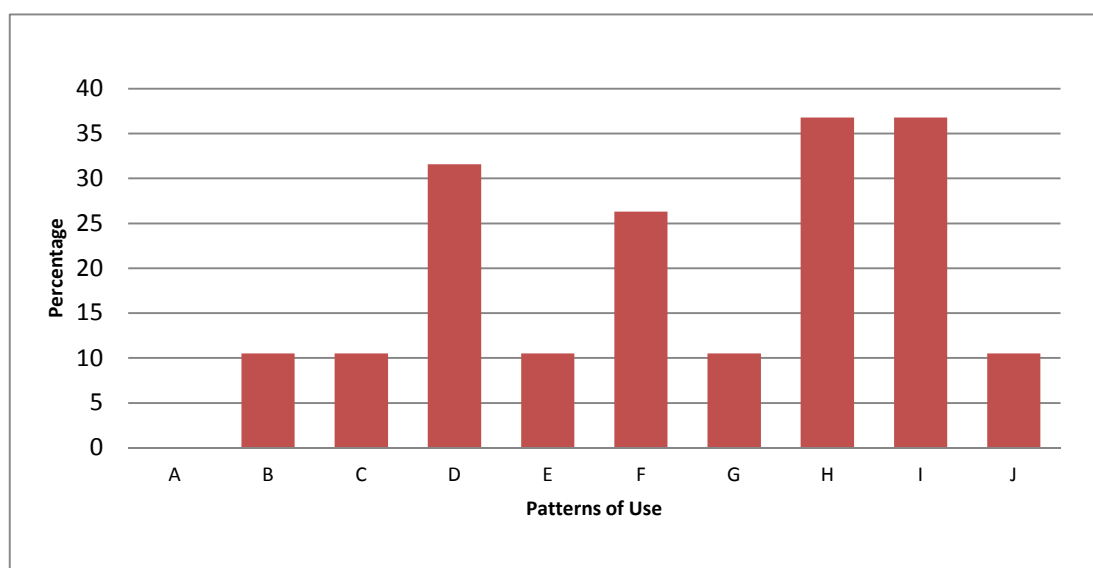


FIGURE 6:1 THE BAR CHART SHOWS PATTERNS OF CANNABIS USE AMONG YOUNG PEOPLE AT UNIVERSITY IN STUDY 2 SAMPLE.

NOTE THAT:

- A- I have never tried cannabis
- B- I have tried cannabis but don't use it anymore
- C- I use cannabis less than a few times a year at most and rarely go looking for it or buy it myself
- D- I buy or get some for special occasions but otherwise just use it if someone else offers
- E- I often buy or get some if i can but only use it a few days a month at most
- F- I often buy or get some, use it all in a few days, then go without for a while
- G- I often buy or get some and use it on a couple of regular days a week
- H- I often buy or get some and have a bit most evenings
- I- I often buy or get some and sometimes take it during the day as well as most evenings
- J- I take cannabis most of the time if I can

Fewer users were able to use cannabis in a more controlled manner. This could be due to the context of being at university which makes it easy to access cannabis resulting in less controlled use. A similar line of reasoning was cited by Terry et al. (2007) whose study on factors contributing to changes in frequency of cannabis consumption by cannabis users in England showed that among the reasons for change in frequency of use was a change in circumstances that provided more opportunities to use the drug as well as increased use by others.

6.5.2 THEMATIC ANALYSIS

Responses to open-ended questions provided insight into students' perspectives on cannabis use. A content analysis identified higher order themes. Table 6.2 presents the stages of the thematic analysis based on the Braun and Clarke (2006) paper. Table 6.3 presents the main themes developed while Table 6.4 demonstrates the TA conducted showing sub-themes and higher-order themes. Figure 6.2 depicts how these main themes are submerged within and explicitly linked to the TPB framework.

TABLE 6:2 STAGES OF THEMATIC ANALYSIS PROCESS BASED ON BRAUN & CLARKE (2006)

Stages	Description of process
1.Familiarising with data	Data was collected, then transcribed and read. Data was re-read while noting down initial ideas by hand on the transcript.
2.Creating initial codes	Initial codes were generated using a systematic approach across the entire dataset and were hand coded. Data was then re-read relevant to each code and new codes were added to the list and, if necessary, existing codes were amended.
3.Searching for themes	Codes were then computer listed and a table was created using Microsoft word within which codes were collated into potential themes by drawing arrows that corresponded to each theme. Data continued to be re-read relevant to each potential theme. The table was constantly updated according to whether the codes and themes were representative of the overall dataset. Themes were open to change depending on whether new codes were developed.
4.Reviewing themes	Themes were checked to evaluate how far they were relative and captured essence of data. A discussion with research team enabled confirmation that themes worked in relation to the coded extracts and the entire dataset. This helped generate a thematic 'map' of the analysis using a Microsoft word table.
5.Defining and naming themes	Ongoing analysis was conducted to ensure the specifics of each theme and its overall narrative story. Clear definitions and names were given for each theme, which were open to change until the final stages.

Stages	Description of process
6. Producing the thematic analysis report	Extracts were selected to relate back to the themes. Final analysis was developed in relation to the research questions and literature producing a thematic analysis report.

TABLE 6:3 MAIN THEMES IDENTIFIED FROM HIGHER-ORDER THEMES

MAIN THEMES (with the higher-order themes included in each).

I.	INDIVIDUAL DISPOSITION TOWARDS CANNABIS USE (BB) (DD) (JJ)
II.	PERSONAL RELATIONSHIP WITH SUBSTANCE (B) (D) (P) (S) (W) (X) (EE) (FF) (II)
III.	PEERS VS. SOCIETAL INFLUENCE (E) (F) (K) (L) (M) (R) (T) (V) (GG)
IV.	EFFECTS OF PARENTAL STYLE (I)(Y) (Z) (AA) (CC)
V.	SELF-REGULATORY APPROACH (A) (G) (H) (O) (Q) (LL)
VI.	MOMENT-CENTRED ACTION (J) (N) (HH) (II) (U)
VII.	POLICY-CHANGE (KK) (MM) (NN) (OO)

Note: The capital letters in the brackets indicate which higher order themes have been allocated to the main themes. Please refer to Table 6.4 for further specification.

Table 6:4 Thematic Analysis showing Sub-Themes and Higher Order themes

Question	Sub-themes	Which focus group mentioned <i>Groups 1, 2, 3, 4</i>	Higher-order themes
What is your general opinion on cannabis use?	- (1) lack of objectivity around issue	2	
	- (2) 'case by case' approach	2, 4	A. Self-Governing approach (1) (2) (3) (4) (5)
	- (3) self-boundaries	2	
	- (4) self-judgment	2	B. Mis-representation of cannabis (6)
	- (5) self-regulation	2, 4, 3	C. Comparative definition (7) (8)
	- (6) removal of 'good/bad' evaluation	2	D. Individual definition (9) (10) (11) (12)
	- (7) positive comparison to other drugs	2, 4	
	- (8) negative health risk (tobacco)	2	
	- (9) more apt for introspection	3,2	
	- (10) way of life	3	
	- (11) addicted to lifestyle	3	
	- (12) habitual compulsive nature of use	3	
Does interacting with others affect your own	- (1) community norms	2	E. Norms & associations (1) (2)
			F. Intra-group Communication (3) (4) (6) (7) (9)

decision as to whether to use or not?	-	(2) letting go of stereotypical associations	2, 4	G. Age factor (8)
	-	(3) having trust in others who use it	2, 3	H. Personal decision (5)
	-	(4) proactive interaction with other users	2, 4	
	-	(5) personal decision	4	
	-	(6) presence of “accepting” peers	4	
	-	(7) “share a spliff...you have a connection”	4	
	-	(8) peer larger influence when younger	3, 1	
	-	(9) benefits of non-solitary use	3	
Do you think the way society views this behaviour has any influence on your own decision as to whether to use cannabis or not?	-	(1) bigger influence of parents	2, 4	I. Parents overrule society (1)
	-	(2) rebellious motive	2, 4	J. Knowing BUT doing approach (2) (3) (4) (8) (9)
	-	(3) knowledge of society’s view	4	K. Lack of societal influence (5) (6) (7) (14) (15)
	-	(4) Judging cannabis use behaviour YET participating	2	L. Society’s misinformed view (11) (12) (13)
	-	(5) not much importance placed on society	2, 4	M. Society’s influence on dealing- smoking (10)
	-	(6) no obligatory norms	2, 4	
	-	(7) personal choice	2, 4, 3	
	-	(8) becoming part of ‘edgy’ personality types	3	
	-	(9) perception openness vs. society taboo	3,1	
	-	(10) Society affects whole process (dealing to smoking)	1	

	-	(11) Knowledge of society's lack of information	1	
	-	(12) multiple views in society	1,2	
	-	(13) society's views based on illegality	1,2	
	-	(14) personal indifference to illegality	1,2	
	-	(15) societal influence when younger	1,4	
Do you feel that you have a sense of self-control over this behaviour?	-	(1) Easier to justify oneself	2	N. "Why not?" approach (1) (5) O. Diversity in application of self-control (2) (3) (4) (17) P. "Zen" addiction (6) (9) (12) Q. Individual mental strength (8) (14) (15) (18) R. Influence of social exposure (10) (11) (16) S. Habit of smoking something (7) (13)
	-	(2) lack of control over stopping	2	
	-	(3) control over reducing	2, 3	
	-	(4) control over situations when smoking it	2	
	-	(5) "why not" approach	2	
	-	(6) no reference to addiction	2	
	-	(7) tobacco addiction	4	
	-	(8) 'case by case' notion	4	
	-	(9) 'zen' addiction	4	
	-	(10) opportunity factor	4	

	-	(11) social gathering	3,4	
	-	(12) mood regulation	4	
	-	(13) habit of smoking something	4	
	-	(14) conditioning of body and mind	3	
	-	(15) mental strength	3	
	-	(16) exposure affects control	1	
	-	(17) control when “ seeking it out”	1	
	-	(18) character strength	4,3	
Research on intentions and behaviour show that when an individual forms an intention, it almost always translates into behaviour. Is this the case with your own decision as to whether or not to use cannabis? What may be something that affects the intention-behaviour link?	-	(1) money	4	T. External factors (1) (14)
				U. Mental coherence (2) (3) (8) (10) (15) (16)
				V. Social opportunities (4) (9) (11) (18)
	-	(2) mental strength	4,1	W. Personal need vs. want (5) (6) (7) (17)
	-	(3) tolerance levels	4	X. Belief strength (12) (13)
	-	(4) social situation	4	
	-	(5) lack of personal motivation	4	
	-	(6) need vs. want	4	
	-	(7) individual differences	4	

	- (8)'empty' intentions	2	
	- (9) social exposure	2	
	- (10) role of habit	2	
	- (11) situational opportunity	2,3	
	- (12) role of beliefs	3	
	- (13) importance of belief-intention-behaviour link	3	
	- (14) lack of supply	3	
	- (15) willpower over intention	3,1	
	- (16) awareness of real vs. perceived health consequences	1	
	- (17) psychology behind it rather than the physical release	1	
	- (18) life situation-student context	1	
Do you feel that the way your parents brought you up influenced/ or influences your decision as to whether or not to use cannabis?	- (1) liberal parents-> more independence	2, 3, 4	Y. Parents' liberal mindedness & adolescent independence (1) (3) (10)
	- (2) narrow-minded parents-> curiosity to explore	2, 4	Z. Parents' repressive style & adolescent curiosity (2) (11) (14)
	- (3) parental exposure-> curiosity to explore	2, 3, 4	AA. Social influence overrides parental influence (5) (6)
	- (4) parents' openness -> more education	2, 3, 4	BB. Personal decision (7) (8)
	- (5) larger influence of friends	2, 4	CC. Indirect effect of parental drug education (4) (9) (12) (13)

	- (6) lack of DIRECT influence	1, 2	
	- (7) avoidance of social stigma FOR parents rather than self	3	
	- (8) personal perception shift	3	
	- (9) parents' education -> increase in self-control	3	
	- (10) lower interest if parents' too liberal	1	
	- (11) repression then rebellion	1	
	- (12) parents' influence on right & wrong	2,3	
	- (13) indirect parental bearing on own decision	1	
	- (14) role of parents personality	1,2	
Do you think that cannabis use is a personal thing? Does it depend on a personality type?	- (1) spectrum of various personalities	2,3,4	DD. It's on an individual spectrum (1) (2) (3) (4) (7) (10) (12) (13) EE. Variation according to gender (5) (6) FF. Individual benefits of cannabis (8) (9) GG. Misconception of people associated with cannabis (11) (14) (15)
	- (2) difference in effect on each individual	4	
	- (3) individual alterations in after effects	3	
	- (4) life situation	4	

	- (5) difference in control btw men & women	3	
	- (6) difference in effect btw men & women	3	
	- (7) no dependence on 'peer pressure'	2,3	
	- (8) Reduces anxiety	3	
	- (9) Cannabis "has a use for everyone"	3	
	- (10) increased regularity of use- introverted personality	3	
	- (11) misconception of lazy people	2,3	
	- (12) no set type of person	4	
	- (13)'case by case'	4	
	- (14) recklessness	1,2	
	- (15) recklessness due to illegality of drug vs. nature of drug	1,2	
Is it a planned-behaviour or something that happens spontaneously?	- (1) "It's just there"	4	HH. Moment-centred action (1) (7) (9) (10)
			II. Impulsivity required (2) (6) (11) (12) (13)
			JJ. Personal identity; Ideology breakthrough (3) (4) (5) (8)
	- (2) spontaneous nature	4	
	- (3) breaking away from parental influence	2,4	
	- (4) adopting new ideologies		
	- (5) more accepting personality		

	-	(6) curiosity	3	
	-	(7) plan towards buying vs. using	2	
	-	(9) moment-centred action	1,4	
What is the message you would direct to Government regarding policies on young people and cannabis use?	-			
	-	(1) ineffectiveness of prohibition	2	
	-	(2) illegality: cost > benefits	1,2	KK. De-tag criminality label (1) (2) (3) (15) (16) (19) (24)
	-	(3) criminality associated with illegality	2	LL. Self-regulation (5) (6) (8) (11) (26)
	-	(4) alcohol more dangerous	2	MM. Better provision of accurate drug-related information (4) (20) (22) (23)
	-	(5) human need to intoxicate	2	NN. Societal preparation towards legalisation (10) (12) (17) (21)
	-	(6) availability of choice	2	OO. Methods for changing drug-related schemes (7) (9) (13) (14) (18) (25) (27) (28)
	-	(7) vague current legal system	2	
	-	(8) self-responsibility	2	
	-	(9) legalisation & regulation	2	
	-	(10) cultural adjustment towards legalisation	2,3	
	-		2,3	
	-	(11) decriminalisation & self-responsibility		
	-	(12) more education	1,4	
	-	(13) change of focus (help vs. stop)	4	
	-	(14) privatisation and taxation	4	

-	(15) Change stigma	2,3,4
-	(16) change attitude	4
-	(17) education THEN decriminalisation	1,3
-	(18) creation of database list	3,4
-	(19) de-tag of 'criminal' label	2,3
-	(20) re-establishment of accurate information	2,3,4
-	(21) preparation for society	2,3,4
-	(22) more information	4
-	(23) better accessibility of information	1,1
-	(24) legalisation to reduce criminality	4
-	(25) moderation vs. prevention	2,3
-	(26) self-moderation	4
-	(27) regulate prosecution proportionality	2,4
-	(28) 'no policy' approach	4

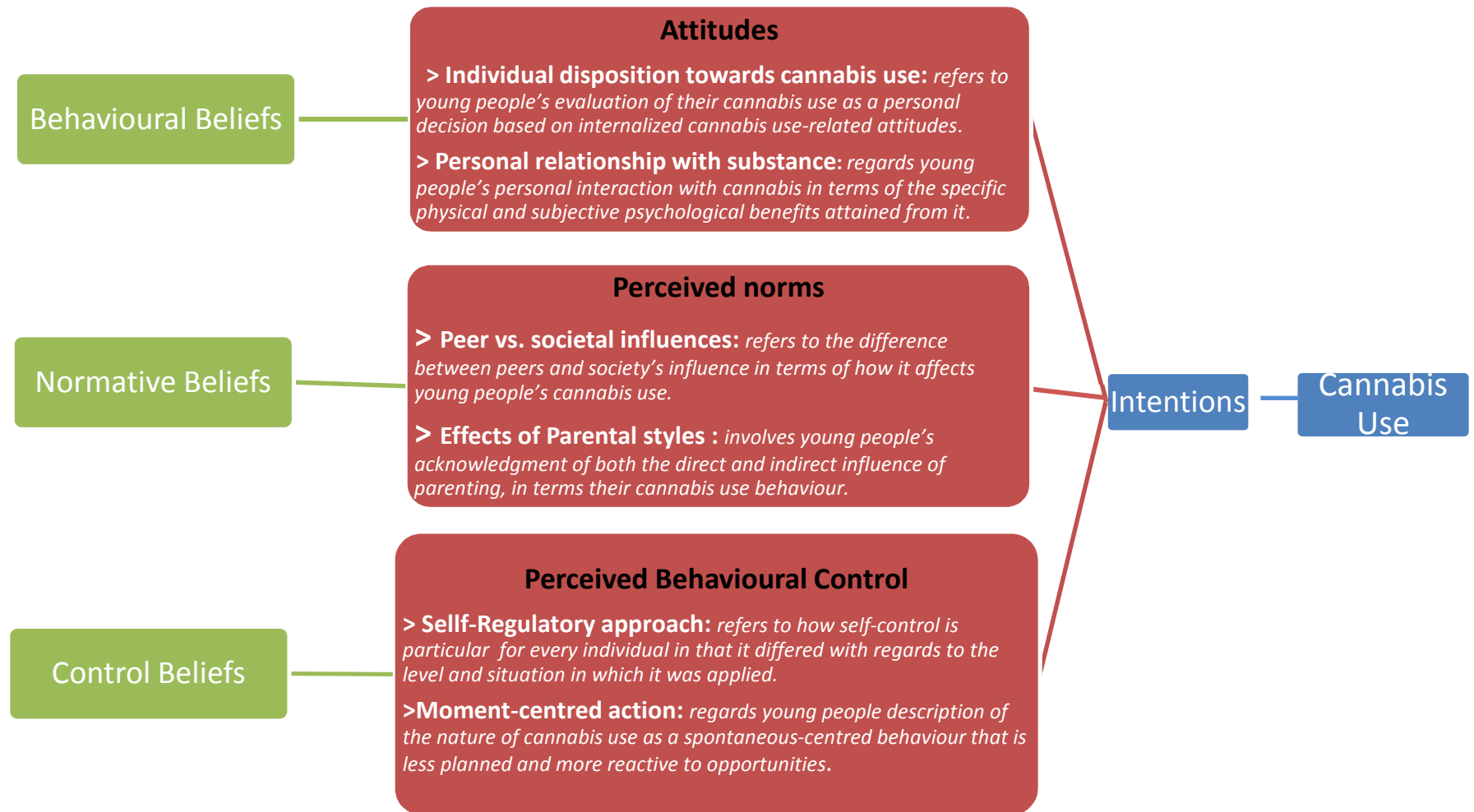


FIGURE 6:2 MAIN THEMES DEPICTED WITHIN TPB FRAMEWORK

6.6 DISCUSSION

This section will discuss the main themes that were extracted from the data and explain how they are related to and positioned within the TPB framework (see Figure 6.2). It is important to note that despite being submerged within the TPB constructs, these main themes do not serve to re-compose the TPB constructs but rather to be considered as complementary concepts. ‘Sub-themes’ will be referred to throughout the discussion, so as to elaborate the description of the main themes’ content. Finally, ‘Policy change’ will be discussed as an additional descriptive input from the focus groups but which is not positioned as part of the TPB constructs.

6.6.1 ATTITUDES: ‘INDIVIDUAL DISPOSITION TOWARDS CANNABIS USE’ & ‘PERSONAL RELATIONSHIP WITH SUBSTANCE’

Participants’ evaluation of cannabis use was assimilated to the TPB construct of Attitude. The difference was that rather than maintaining a general good/bad evaluation of cannabis use, participants referred to a more personalised approach in that there was an ‘*Individual disposition toward cannabis use*’ as well as a ‘*Personal relationship with cannabis*’ (see Figure 6.2 for themes’ definitions).

When forming evaluations towards cannabis use young people had a particular perspective in terms of what cannabis specifically means to them. This creates a disparity between having a general attitude and a more personalised subjective evaluation regarding the behaviour. Increasing our awareness towards ‘cannabis use-tailored’ attitudes could improve the way attitudes are evaluated within the TPB framework in relation to predicting and explaining cannabis use.

6.6.1.1 ‘INDIVIDUAL DISPOSITION TOWARDS CANNABIS USE’

Although there is wide acknowledgment in the influence of peers in cannabis use (Creemers et al., 2010) none of the participants referred to peers when giving general evaluations of cannabis use. Instead, participants experienced consensus that cannabis use was largely an ‘individual thing’ acknowledging how it was a very personal choice, sometimes even independent of peer pressure:

“There were people at school I didn’t like who smoked it and there were gangs in my school of not very nice people and I gathered there were guys who wanted to be part of this group and it kind of led me to believe that they got into smoking weed because

of these people as opposed to a balanced choice (...) but I like to think because I waited until I was 17 before I tried it that it was more a balanced choice I made independently” (Aaron, 22).

Another participant referred to the diverse types of people that would generally use it, emphasizing the ‘misconception of people associated with cannabis’:

“One of our friends is one of the most sociable persons ever and she smokes and I don’t think that it’s a personality thing and you do get laid back introverted people and also you get the hyper active sociable people, so I think there is a misconception that only introverted people smoke and are lazy blah, blah, blah.” (Jonathan, 20)

The evaluative nature of beliefs was considered to shape one’s individual disposition towards cannabis use. Particularly, it was mentioned that maintaining positive beliefs about using cannabis acts as the backbone of intentions:

“For me, more important than intentions are your beliefs, to have a belief that it won’t hurt you and you will still be able to do everything in your day, then that becomes your intention (...) the problem with intentions is that you may have a really good intention but the intention has to be backed by your beliefs” (Roberto, 20).

This goes in accordance with research which has stressed that the uniqueness of each behaviour is partly reflected by considering underlying beliefs of a behaviour (Yzer, et al., 2004). For instance, the beliefs one may have about the consequences of using cannabis may be quite different from the beliefs one has about the consequences of using ecstasy. Understanding this observation is important because, ultimately, a change in behaviour is the result of changes in beliefs about performing a behaviour (Yzer, et al., 2004). As noted in this study, the role of beliefs is considered to enhance the intention-behaviour link indicating that interventions should be designed at the level of changing specific beliefs about certain behaviour.

Moreover, participants drew on a discourse around the role of identity in terms of breaking through parental ideologies and adopting new perspectives:

“ It’s more personal and how social you are and how open-minded (...) after teenage stage you are able to do your own things and break through the parenting, the ideologies (...) and then if you get offered it, it depends what you want to adopt or bring into what they (parents) gave you and other stuff on top of that (...) if you are

someone who joins different groups of people and accepts people for who they are, it's more likely you will smoke it" (Albert, 21).

In a study conducted to examine the role of self-identity from a planned behaviour perspective it was indicated that self-identity acted as a significant predictor of intentions (Fekadu & Kraft, 2001). Rise et al. (2006) explain how a major component of people's motivation to formulate their behavioural intentions (and eventually engage in acting upon these intentions) is to reinforce, support and confirm their sense of self. In this sense, the role of self-identity, within the TPB framework provides an account of the weak influence that perceived norms/ social norms (such as parents, friends, significant others) have in predicting intentions, placing more weight on internalized aspects, such as how cannabis reflects part of their identity. Self-identity has been characterised as a salient part of an actor's self which relates to a particular behaviour (Sparks, 2000). For instance, cannabis users may use cannabis because being a cannabis user is an important part of their self-identity. Conner and McMillan (1999) demonstrated how self-identity significantly predicted intentions to use cannabis in a population of students. The authors explain that the impact of self-identity, although moderated by habit, was an important variable to consider when examining young people's behaviour. Identity theorists claim that people tend to retain and affirm the sense of self and identity and so act in consistency with this identity standard. It should be noted that although attitudes, norms and self-identity have been claimed to be conceptually overlapping (Eagly & Chaiken, 1998), others have argued that these three constructs share different motivational roots. For instance, individuals conform to attitudes for instrumental reasons and to norms for fear of being rejected by significant others, whereas maintaining one's self-identity occurs for self-verification reasons (Rise, Sheeran, & Skalle, 2010).

It can be assumed that young people in this study decide to use cannabis as part of affirming a sense of self-identity and acting in consistency with this identity standard.

6.6.1.2 'PERSONAL RELATIONSHIP WITH THE SUBSTANCE'

Throughout the discussions young people removed 'good/bad' evaluations of cannabis as they felt it misrepresented their evaluations of cannabis use. Rather, cannabis was described as an introspective drug which can have different physical and psychological benefits for every individual:

"...cannabis is a really introspective drug, more than others, and the big question is 'is everyone ready to do this kind of introspection to understand how this kind of

substance can be used in a good way with also benefits or just to have fun?'. I don't think everyone is ready, I see different effects on people" (Roberto, 20).

Furthermore, they referred to very personal approaches of interacting with the substance to the extent that they developed their own terminology in order to describe their relationship with cannabis, known as 'Zen addiction':

"There's not a chemical addiction that you get with tobacco, but there's somewhat of an emotional or mental addiction, it's very different for every single person (...) it's just smoking a little weed you are a little more Zen... its Zen addiction" (Isaac, 22).

Although young people have reported positive benefits of cannabis use in other studies such as being creative and feeling happy and relaxed (Duffy, et al., 2008; Hammersley & Leon, 2006), reporting cannabis use as a form of psychological addiction has not been noted before. The notion of 'Zen addiction' refers to the relaxed psychological and mental functioning when using cannabis which encourages young people to use it.

The lifestyle behind using cannabis was also one of the reasons of choosing to use it:

"I think it's not the substance, you just get addicted to the lifestyle" (Greg, 20).

Another young person explained that he would change his intentions easily as a result of striving to obtain the psychological benefits of smoking cannabis:

"If you decided 'I am not going to smoke for a while because I smoked too much in the weekend I will not smoke for two weeks' and then you had a particularly bad day, that would obviously make you want to do something to make you feel better about your day (...) it's the psychology behind it rather than the release" (Aaron, 22).

Menghrajani et al. (2005) include similar accounts by older adolescents who define cannabis use in terms of the relationship that the individual establishes with the substance such as to what extent one consumes cannabis to control stress levels or bad moods.

On a similar line of reasoning another theme that was identified was that of 'Personal need vs. want'. Young people reported feeling a strong desire to smoke cannabis not as a result of a physical need but rather based on their own willingness:

"I don't consider it as a need, it's a want. I never felt like I need weed, it's actually that I just want to get the benefits of smoking; not so much a need but a want" (David, 19).

One of the theories that is worthwhile exploring here is the Willingness/Prototype (Gibbons & Gerrard, 1995) model which essentially proposes a second path to health risk behaviour that does not involve either planning or intentions; this is known as the 'social reaction' path. This model suggests that young people find themselves in situations which facilitate (but do not demand) risky behaviours such as drinking, smoking or unprotected sex. When in these situations, for some young people it is not their intentions but their willingness to take a risk that determines behaviour. This makes behavioural willingness an indication of a person's openness to opportunity which unlike intentions involves much less pre-contemplation of behaviour (Gerrard, Gibbons, Stock, Lune, & Cleveland, 2005; Gibbons, et al., 1998). In relation to understanding why young people engage in cannabis use it would be beneficial to distinguish between intentions and willingness. In a study examining smoking, drinking and drug use among adolescents, measures of intention, expectation and willingness were combined to yield a single construct (Gibbons, et al., 2004). This study confirmed that willingness was not part of a separate construct to intentions as both represented aspects of 'behavioural readiness'.

It seems that internal factors such as individual's composition of personality traits, moods and personal tendencies rather than external factors (e.g. peer use, poor neighbourhood, parental influence) act as better determinants to young people's decision-making about whether or not to use cannabis. "Individual dispositions towards cannabis use" and "personal relationships developed with the substance" are concepts which could be integrated in the TPB framework and increase its predictive ability regarding young people's cannabis use.

6.6.2 PERCEIVED NORMS: 'PEER VS.SOCIETAL INFLUENCE' & 'EFFECTS OF PARENTAL STYLES'

Young people explicitly differentiated between the levels of influence exerted from peers within their social groups and from general society. Also both the direct and indirect 'effects of parental styles' were discussed in relation to their perceived norms of cannabis use. "Peer vs. Societal influence" and "Effects of parental styles" were themes positioned within perceived norms.

6.6.2.1 'PEER VS.SOCIETAL INFLUENCE'

This theme referred to difference between peers and societal influence as reported by young people. Although TPB's perceived norms refers to the influence from significant others

including both peers and society, young people seem to differentiate the influence of these two parties on their decisions to use cannabis.

In relation to peer influence young people stressed the importance of understanding others in the same group, which resembled the notion of 'Inter-group communication':

"I think it's a lot easier to relate to someone who's high, if you're high and you're speaking to some who's high then it's easy to relate to, if you're high and someone else is drunk, you can't have a proper conversation, if you're high and someone's sober, it's like yeah it's not easy to relate to, yeah... a lot of my friends are cannabis users, it's like yeah everyone's just chilled out, listen to chilled out music, eat delicious snacks" (Charlie, 20)

This not only indicates the lack of peer pressure regarding cannabis use but instead indicates how a relatively encouraging peer environment within which young people feel comfortable to use cannabis. This contradicts the widespread emphasis of peer pressure in terms of young people's cannabis use (Menghrajani, Klaue, Dubois-Arber, & Michaud, 2005). It seems that university students choose to use cannabis under different social environments than do younger adolescents during school. Perhaps the former group place emphasis on whether significant others use cannabis (descriptive norms) rather than whether significant others approve of cannabis use (injunctive norms). This goes in accordance with the Joseph Rowntree Foundation report which examined young people's views on cannabis claiming that cannabis use is 'a social thing' (Duffy, et al., 2008). Although young people reported that cannabis can be used alone, it is common to want to use it in a group among friends as it makes the experience a more positive one.

Moreover, the importance of 'trust in others who use it' was also discussed. Trust has been characterised as both a determinant and an outcome of social interaction whereby while on the one hand an individual's consistency and sincerity attracts others trustworthiness, on the other hand, having consensual norms encourages trust and dependence on one another (Hartup, 1993). A male participant reported that although he previously maintained a negative stereotype with other cannabis using peers at school, when he began using it himself it was due to peers who he trusted:

"I made an association with marijuana and people I didn't like but when I left school I found out from friends that they had actually been smoking it for years and so I learnt that people I liked and respected had also been smoking, so I was like if you guys have

tried it, I want to try it and that's how it started. It's an introduction from people you like and trust, that's really important I think" (Albert, 21).

This indicates the complex interplay involved in the role of others in young people's decision regarding whether or not to use cannabis. It seems that having mutual 'consensual norms', largely determined by trust in one another, could explain young people's cannabis use better than merely associating peer use and individual use. On the basis of 'consensual norms' it was explained that friendship groups have been structured and developed on the basis of cannabis use:

"I have probably structured my friendship groups to accommodate it, who also smoke it because if it is a daily habit for you then people around you have to tolerate it and it's even better to enjoy it" (Natalie, 19).

This depicts a two-way causal relationship between peer use and own personal use in that a young individual will proactively choose to interact with other users in order to use cannabis, as well as choose to use cannabis as a result of his/her exposure to other users. The influence of others also affected the intention-behaviour relationship:

"Other people is a massive influence, 'I am not going to smoke tonight', 'Hey, you want a spliff?', 'Oh yeah, okay!' If I was on my own maybe I wouldn't but when you're interacting with other people it's different" (Eva, 20).

Similarly, the social context of being at university represented a major factor in terms of peer influence:

"You may have the intention (to not smoke) relating to your own emotions, but (...) if you are a student, like for me especially, everything is new, new ideas, like if you haven't smoked before maybe you would (...) it's the whole culture you surround yourself with (...) especially as a student when you're at your most impressionable stage" (Judy, 19).

Research has found that young people's effective adaptation at university relates to differences in identity style and identity status. Those with a passive/avoidant style are most apt to encounter academic and social difficulties while those with an active/self-exploring identity style are better prepared to effectively adapt within a university context (Berzonsky & Kuk, 2000). One of the indications of successful adaption was the extent to which mature interpersonal relationships were formed. It can be assumed that young people choose to form

social relationships in an attempt to successfully negotiate their transition to university and in doing so, are more likely to interact with cannabis users in order to adapt to their social surroundings. It seems that young people choose their peers on the basis of integrating them as part of their lifestyle. A study examining the role of peer substance use as a mediator of the link between music preferences and adolescent substance use, explained that adolescents tend to choose friends that fit into their lifestyle, and these friends may either enhance or discourage substance use (Mulder, et al., 2010). The role of peers can therefore be conceived of as entailing selection, social learning or both. In other words, individuals may select peers to befriend based on shared characteristics such as music taste (Selfhout, Branje, & Meeus, 2009) and substance use (Simons-Morton, Abroms, & Haynie, 2004), as well as socially learn from their peers, leading to their own cannabis use as a result of imitating behaviour (Aseltine, 1995).

In terms of society's influence young people reported that although there was a general understanding of society's perception of cannabis use, there was equally an acknowledgment that this perception was misinformed. In particular, it was explained that society held a view that was not based on accurate information but rather:

“...the fact that cannabis is illegal stops society almost from coming up with any opinion rather than ‘its illegal’ because it’s the prevalent thing (...) I think society’s views are based on the illegality” (Jack, 19).

He then continued to add that, despite society holding this view he personally became unaffected by it:

“ I did get a bit affected when I was younger, I knew it was wrong and then once I got older and knew other people who did it, I became indifferent to the illegality of it” (Jack, 19).

This related with another theme; that of ‘lack of societal influence’ whereby young people reported not only that there were no obligatory norms to society but also that cannabis use was much more a personal choice:

“ I think that each person can represent something against it if they want to but (...) I don’t think that smoking weed is fighting back or showing off, I just think it’s a decision one takes because it’s there and if you want to take it, take it, if you don’t, then don’t. I

have never met someone who says you have to smoke a spliff (...) it's almost a personal decision to embark on a route that they think will suit them" (Charlie, 20).

Moreover, although young people reported their complete understanding of society's fearful views they chose to engage in this behaviour nonetheless:

"For me it has been a little bit of both (...) the parents I am working for say it is wrong in society and they are scared for the kids and stuff, so I feel I am coming from a separate view (...) judging it and also taking part in it" (Natalie, 19).

Some chose to do it for a "rebellious motive" in order to deliberately go against society:

"I did it because it was such a forbidden thing. I have always been dead bent on doing forbidden things" (Eva, 20).

Others chose to prioritise their own individual "perception openness vs. society's taboo":

"I know a lot of people who smoke it because it is a taboo (...) personally I don't (...). I have a ritual in a way, a perception shift which is why I like it so much actually because it gives me a different perception of everything" (Albert, 21).

The sub-theme that 'parents overrule society' also demonstrates that society's perceptions are not influential to their decisions to use cannabis. Young people reported that parental influence plays a much bigger role in their decision to use cannabis than did the society's view:

"My parents were quite different about it (...) they preferred that I smoked it where they could see instead of going off and worrying that I was getting into trouble" (Aaron, 22).

The data demonstrates how young people place more weight on proximal social norms (or on specific others) such as parents, school peers and friends, rather than on distal social norms (or general others) such as communities and society. Although an association between social norms and cannabis use has been found (Conner & McMillan, 1999), more focus needs to be placed on understanding how these social norms function for young people so as to implement effective prohibition or drug-reduction strategies. Maintaining the 'illegality' label of cannabis use within society has proven to be an ineffective strategy given that young people seem indifferent to the wider societal norms. Christiansen (2010) refers to the schism between social norms of use and cannabis prohibition in the US contradicting the assumption that societal customs influence both individual behaviour and the law. Other research explains that social

norms are stronger determinants of behaviour than societal formal sanctions (Depoorter & Vanneste, 2005).

6.6.2.2 'EFFECTS OF PARENTAL STYLES'

The role of parents in influencing young people and cannabis use has been widely documented illustrating how parental aspects are closely linked to adolescent health risk behaviour and substance use (Fergusson & Howard, 1997).

Parents' style on young people's own experimentation levels was demonstrated. Young people reported that if parents had been pre-exposed to cannabis or were more liberal towards it the young person would feel more inclined and confident to try it:

"When I was growing up (my parents) were liberal, even my dad when I was growing up, we were walking through this park and there was a smell and I said 'what's the smell' and he said 'it's weed why don't you know this' so he's like 'I tried it when I was in uni (university) and then I was like when I go to uni maybe I should try it, just because of the casual way of talking about it has influenced me, I don't frown upon it' (David, 19).

It is clear that parents' liberal approach results in adolescents feeling more confident to experiment and engage in behaviours that would otherwise have been scrutinized if the parents were more strict. Research has suggested that open lines of communication between parents and children are important in reducing high risk-taking behaviour (Borawski, levers-Landis, Lovegreen, & Trapl, 2003).

However, young people reported that sometimes their parents' restrictiveness made them want to be rebellious and more curious than they would normally become:

" they (parents) are really narrow-minded, and I guess curiosity got the better of me, I started not telling them where I was going (...) not the best option on reflection, but when you are younger you are like, fuck it I will do it anyway. It was curiosity for me" (Eva, 20).

'Parents' personality' also played a role in terms of shaping young people's decisions to use cannabis:

"Definitely for me, it's more than how they brought you up, it's their personality, for example my parents are both heavy drinkers both pretend to have never smoked in

their life, I can't be sure, but I don't drink anything and I, in my turn, have been a heavy smoker for years so I don't know if its genetic but you do get something from your parents" (Steve, 21).

Young people also reported that parents' perspectives did not influence their decisions as much as peer's perspectives did:

" I don't think that my getting involved in having a first spliff or even smoking now has any relation to my parenthood, it's more towards a social thing and something I wanted to make possible (...) it was a decision I took" (Isaac, 22).

This notion of cannabis use being a behaviour less influenced by parents was also represented by it being characterised as a 'personal decision'. For instance, one young person explains that using cannabis was as a result of his own decision, putting aside his parents' rules:

"There was always this hard social stigma about smoking (...) they (parents) would see these kids smoking and would say 'are you one of them?' and this is what I mean by social stigma...and the burden my family would have to carry If I were to hang out with them (...). So I was very sceptical at the beginning, but then I got to know the drug a lot better and I respect it a lot in a way, when you discover it you know it, you realise what it's all about and your perception shifts, so you can become anti-weed to a stoner overnight if you understand it" (Albert, 20).

However, young people also reported that parents' influence although not directly relevant to their cannabis use, did have a clear indirect influence. For instance, young people suggested that the 'indirect effect of parental drug education' influenced their decision to use cannabis:

"My parents consider it to be as bad as cocaine and they also consider it to be the gateway drug so I was scared about it until I found out what it was (...) and saw how it really is. But they are the primary reason why I control it, I don't want to get too much into it and drop out of school, and have low grades because I would be, that would be shit" (Michael, 18).

Similarly, others were fully aware of their parents' influence on their character and decisions:

"To an extent your parents always play a role, whether its subconsciously or conscious even if it was in your personality, whatever your intention was in taking it, you would still from your parents know what's right or wrong, and I know that my parents

definitely did engrain it into me at the same time my personality may be at fault, but I do know it's my decision" (Steve, 21).

Researchers explain that parents act as their child's most influential teachers, exerting tremendous influence on their child's risk-taking behaviours, either by way of example (e.g. smoking, drinking, poor eating and drug use) or via their values and expectations for their child (Newman, Harrison, Dashiff, & Davies, 2008). For instance, adolescent perception of their parents' disapproval of early sex has been positively correlated with delayed initiation and decreased future sexually transmitted infections (Dittus & Jaccard, 2000). It can be assumed that young people may be more inclined to exercise control over using cannabis as a result of their parents' cautious approach.

Similarly, another student explained how he recognised his parents' indirect influence in his own decisions, even though he did not specifically link it to his decision to use cannabis:

"You would be foolish to think that we are not products of our parents in some way, so it must have some bearing on what we decide to do later in life but I don't know whether having strict parents saying it's illegal, don't do it, had any more bearing on whether you would actually do it. Whether it has an influence on the type of people we like and what we want to do with our lives, yes, but I don't know if there's anything there that's specific to any type of drug use" (Roberto, 20).

Research shows that parents recognise when to stop relying on their own discipline, control and responsibility and instead begin relying on their children's responsibility and integrity (Borawski, et al., 2003). This seems to be the case here, given that young people refer to their own sense of responsibility as influenced by their parents' values. Although young people express an articulate understanding of parental influence demonstrating the particularity of this sample, this also acts as a limitation given that conclusions based on these findings are constrained to some point reducing their generalizability among young people.

6.6.3 PERCEIVED BEHAVIOURAL CONTROL (PBC): ‘SELF-REGULATORY APPROACH’ & ‘MOMENT-CENTRED ACTION’

Perceived Behavioural Control (PBC; Ajzen, 2002) is a concept which has generally been associated with adolescent substance use and which has particularly shown variations in explaining cannabis use intentions and/or behaviour among young people (Conner & McMillan, 1999). The focus groups indicated that cannabis use was controlled using a “Self-Regulatory Approach” and that it was a “Moment-centred action”.

6.6.3.1 ‘SELF-REGULATORY APPROACH’

In the focus groups it became clear that the level and the situation in which self-control was applied was different for every individual, demonstrating that cannabis use is a self-regulated behaviour. For instance, while some reported a level of control over reducing cannabis they also reported a lack of self-control over stopping:

“It’s really strange, although I smoke every day I would never smoke before university (...) I don’t have any self control if I wanted to cut down I probably wouldn’t or couldn’t and If I wanted to stop completely, no way, but in terms of picking the right situations you can exercise control” (Emily, 19).

This goes in accordance with research that has suggested the importance of distinguishing between control over taking substances versus control over obtaining substances (Orbell, et al., 2001). It has been demonstrated that young people’s PBC over taking substances, such as ecstasy, was distinctively different to PBC over obtaining substances. Supporting the consideration of two distinctive sets of control beliefs may help to improve explanation of cannabis use-intentions and/or behaviour. Young people at university may also hold distinct types of self-control in that self-control is regulated only under particular situations. Fishbein and Ajzen (2010) refer to the importance of representing separate aspects of PBC, such as ‘perceived capacity’ and ‘perceived autonomy’ while at the same time maintaining the unitary PBC measure. Re-establishing the components of PBC by including ‘perceived capacity’ (e.g. the ability one feels capable of performing the behaviour) and ‘perceived autonomy’ (e.g. the degree of control over performing the behaviour) could help encapsulate a better understanding of how PBC is regulated by young people.

Particularly, most participants referred to how an individual should know their own self-boundaries by which self-regulation can occur:

“... I think it’s essentially about knowing your own limits and knowing what you are capable of dealing with yourself. As to whether it’s good or bad is a judgment one can only make for one’s self” (Emily, 19).

Another student referred to willingness to use cannabis sometimes overtook their self-regulation capacity:

“... even If I have an intention to not smoke, I am going to meet a girl who smokes or I am going to be drunk and someone is going to give it to me, the intention is not enough, you need to have the power of will, so I don’t will to stop right now, so I don’t have the intention either” (Greg, 20).

The concept of self-regulation is considered to be an individual-difference dimension which includes goal setting, planning, task persistence and environmental management leading to better modulation of behavioural, emotional and attentional reactivity (Rothbart & Posner, 2005). Self-regulation draws heavily upon the temperamental construct of effortful control, which involves the ability to inhibit a dominant response in order to engage in a subdominant response; a key function that creates a delay in responding to the immediate context and creates temporal space for volitional, goal-directed actions (Barkley, 2001). It seems that for young people this level of self-regulation is sometimes overtaken by their levels of willingness to engage in cannabis use. The Prototype/ Willingness model explains that risk-taking occurs as a result of risky situations (e.g. being around a group of people all smoking cannabis), along with behavioural willingness to use cannabis and situation-dependent retrieval of risk-avoidant values.

Furthermore, there was a tendency to refer to aspects of ‘individual mental strength’ in terms of regulating cannabis use:

“I would say it’s a mental process, I am so used to have it as food or water that I don’t really feel good, I miss it when I don’t have it but at the same time its really easy for me to say no when I have it and to want it when I don’t have it, but as long as I have a tiny bit in my room I can stay days even weeks without the need to have it” (Albert, 21).

Furthermore, tolerance levels and self-regulation largely determined how consistent cannabis use intentions would be:

“I guess it depends what your mental strength is (...) I can go days without smoking or I can smoke every single day regardless if I say to myself I am not going to smoke and then say I will take a week off, a tolerance break because I am smoking far more than I should to get high” (Simon, 23).

A ‘self-regulatory approach’ was also discussed in relation to the possibility of legalisation or moderation of cannabis use such that young people felt they had the responsibility for regulating their own use:

“I would aim for moderation rather than prevention because I think people will do it regardless of the Government stance, so yeah... give people information to self-moderate so they have a level of understanding and are aware of the risks (...) and would be more likely to regulate their own use” (Albert, 21).

6.6.3.2 ‘MOMENT-CENTRED ACTION’

Among this theme it became evident that young people recognised that cannabis use was usually ‘moment-driven’ and only planned out if they had to buy the drug:

“I don’t plan to, I don’t think about it like I am going to go home and have a spliff, it depends on the moment, who I am with. Sometimes it gets to the point when you think it out, I guess when you are going to buy some, it’s then like you’re thinking about when you are going to use that (...) I didn’t have an overall plan the first time, I didn’t think this is my first spliff we’ll track this one, I’ll have one a day for the next five years” (Eva, 20).

“...self-control gets less, it becomes OK, yes, why not just have one? Just one is a common scenario” (Judy, 19).

Both these quotes depict cannabis use a spontaneous-centred behaviour within which self-control is neither represented by the level of perceived capacity nor perceived autonomy, but instead by an opportunistic momentary reaction to engage in a behaviour that is pleasurable to them. Although this ‘non-intentional’ intuitive reaction to a situation may seem to be going against the assumptions postulated by TPB, Fishbein and Ajzen (2010) argue that this is not the case. They argue that people may intend to perform a certain behaviour, yet performance of the behaviour may only occur if they are in a favourable situation. When deciding as to whether or not to use cannabis, certain beliefs and attitudes become automatically activated resulting in the spontaneous formation of an intention, which eventually accounts for the

behaviour. Habit seems to play an important role here as it represents a behaviour that is automatically activated without cognitive intervention. Habits have been characterised as actions that become automatic responses to specific situational cues and which are performed relatively unconsciously (Verplanken & Aarts, 1999). According to the TPB, cannabis use may be governed by an individual's attitude to the substance, as well as by the extent to which the individual perceives cannabis use to be socially approved and how much control the individual perceives to have over cannabis use. However, the habitual aspect of this behaviour is not taken into consideration. Since university students in these focus groups documented having a relatively routinized social life it seems possible that the use of cannabis becomes part of this routine and is performed relatively automatically:

"It depends on which sort of environment you find yourself in, it depends who you are hanging out with and who's there and the vibe of the night (...) from my point of view if I was to smoke it's not like I have to but more like yeah... some people came along, going to chill, listen to music etc." (Isaac, 22).

Regardless of their own levels of self-control, when exposed to cannabis in a social situation young people's self-control diminishes and becomes dominated by social temptations. Muraven and Baumeister (2000) explain that self-control tends to become weaker around situations where the temptation is too high or situations which require a lot of self-control, such as the ones reported above where the environment becomes a highly tempting situation encouraging the use of cannabis.

In the TPB model, intentions act as the most proximal determinant of behaviour and in most studies examining cannabis use, or illicit drug use in general, intentions have been shown to be the most significant predictor of behaviour (Conner & McMillan, 1999; Mcmillan & Conner, 2003). However young people in this study report cannabis use as a spontaneous-driven behaviour. The relation between intention and behaviour has been found to be relatively low in adolescence (a period during which many risk behaviours are initiated) and then it increases with age (Albarracin, Johnson, Fishbein, & Muellerleile, 2001). Although our sample did not consist of adolescents but young adults at university this low intention-behaviour link can be somewhat applied here given that there was an emphasis of cannabis use being a 'moment-centred action':

"It's like a cigarette, you know, a cigarette just goes in your mouth and you smoke it you know. It's just there and then you get your fix, that's it" (Steve, 21).

Moreover, the only level of planning reported by young people was in relation to buying cannabis:

“I don’t plan to, I don’t think like ‘I am about to go home and have a spliff’. It depends on the moment (...). Sometimes it gets to the point when you think it out (...) when you are going to buy some (...) I guess that’s the planning” (Eva, 20).

The type of mood one was in also played a role in determining whether or not one would choose to use cannabis:

“It’s mostly spontaneous, its not planned but it depends on the mood” (Albert, 21).

This can be explained on the basis that general affect can influence the kinds of behavioural beliefs that are readily accessible in memory (McKee, Wall, Hinson, Goldstein, & Bissonnette, 2003). For example, in a study examining the effects of mood on beliefs about smoking cigarettes among female college students who were smokers, positive and negative moods were produced by exposing participants to pleasant or unpleasant music. Participants in the positive mood condition were more likely to express favourable beliefs about smoking and less likely to express unfavourable beliefs (McKee, et al., 2003). Research has found university students to have higher levels of positive moods than the rest of the population (Veenhoven, 1995), which could be an explanation for why this particular group is more prone to using cannabis. It could be that when experiencing positive moods, young people’s behavioural, normative and control beliefs become influenced (Fishbein & Ajzen, 2010) which thereby affects cannabis use decision-making.

Impulsivity was reported as a major influencing factor:

“You have to have a level of impulsiveness as opposed to being a straight laced person. It’s very rarely that your first time use, you plot out, if me and you have never had it before I doubt we would sit down and say ‘let’s find a dealer’. Like if you pass a cannabis shop, there has to be some impulsive spark to get in” (Jonathan, 20).

One participant assimilated impulsivity of cannabis use to impulsivity regarding food:

“it’s kind of like food though, sometimes you plan it in advance depending on what you want to have, sometimes you plan it ages in advance, you know i am going to have this, and then someone offers some for free, oh yeah! “ (Isaac, 22).

It is apparent that the dominant trait surrounding cannabis use behaviour is that of 'impulsivity'. Impulsivity has been characterised as a trait that involves an inability to wait, a failure to avoid temptations, a tendency to act without forethought, judgment or planning resulting in an insensitivity to the long-term consequences of action and a need for excitement and risk-taking (Whiteside & Lynam, 2001; Zuckerman, et al., 1978). It seems that in terms of cannabis use young people at University form decisions based on a voluntary impulse largely driven by a need to experience novel stimulation or a willingness to use a drug that benefits them, regardless of long-term consequences.

6.6.4 'POLICY CHANGE'

The majority of young people supported legalisation and suggested alternative ways of regulating policies. The importance of changing stigma or attitude towards cannabis was mentioned:

"Start with the idea that it's not a crime- it's as bad or as dangerous as alcohol '(David, 19).

The current prohibition policy was described as ineffective given that it led to young people having to deal with crime due to cannabis illegal status:

"Even if you are not a person who deals with crime, just want to smoke, you are forced to deal with that outside the law" (David, 19).

The Mengharajani et al. (2005) study demonstrated that although young people were against decriminalisation, the older adolescents were in favour of decriminalisation as it would result in reducing the number of illicit dealers. There was also the recognition that the current law was ineffective anyway, therefore decriminalisation would seem as the most obvious effective alternative.

Re-establishing the right information was explicitly stated as one of the major steps the government should take towards a better approach of dealing with young people and cannabis use:

" I think that more lessons and more information about drugs can help people with the different behaviour and can also help people to understand if they really need it or not (...) I don't think a person can really understand if he is not explained the good things and bad things" (Jonathan, 20).

On a similar line of reasoning, societal preparation towards legalisation was discussed which referred to aspects such as ‘cultural adjustments towards legalisation’, ‘more education’ and a general ‘preparation for society’. One participant thoroughly described this:

“I think our whole culture would have to change for it to be legalised, the whole of British society would have to be a very different place for that to come up and legalise it (...) it would create a massive cultural change and I think it’s very unlikely they will legalise simply because of the way our society works” (Natalie, 19).

Finally, explicit techniques towards improving the current governmental system were provided. Simple governmental processes such as ‘privatisation and taxation’ were referred to:

“If you were to tax it, you would have ridiculous amounts of money it would ensure that people are not buying horrible mix chemical stuff, it would ensure everyone is treated accordingly, it would reduce crime!” (Charlie, 20).

Young people described that in some states of the US, people have the right to legally claim to use cannabis and place their name on a database list, ensuring better governmental regulation of the level and frequency of use:

“Whoever wants to consume it and not be prosecuted, come and list yourself on a database and you will be given a card and you can avoid the whole issue (...) so you provide people the chance of telling the Government ‘yes I am here because I don’t want to be called a criminal’ (...) that’s why medical cannabis is working very well” (Caroline, 21).

Therefore, rather than aiming to completely eradicate cannabis the main message revolved around legalisation and regulation, by which it became clear that young people recognise the adverse effects of cannabis, yet prefer that it is not criminalised and is instead self-regulated. The general information provided by young people in our study seems to go in accordance with a Drugs Policy review by Pudney (2010). He claims that, given the failure of policy to prevent large scale consumption of cannabis, complete prohibition needs to be replaced by legalisation of cannabis with harms controlled by regulation and taxation.

6.6.5 STRENGTHS & LIMITATIONS

Working with focus groups that are comprised of participants who are familiar with one another reduces the possibility of social desirability bias (Bergin, Talley, & Hamer, 2003). Moreover, this study managed to comprise mixed-gender focus groups as well as mixed-

university year focus groups which allowed for multiple explanations of the behaviour to be articulated (Lankshear, 1993).

The benefits of this focus group research to the participants involved should not be undervalued. University students were given the opportunity to express their opinions, to be valued as experts and to share their perspectives collaboratively with researchers. Some young people in particular were able to reduce their cannabis use after taking part in the study, as a result of thoroughly evaluating their decision-making process with regards to cannabis use. Although these benefits cannot be guaranteed for all participants, this study managed to actively involve university students in expressing their opinions about a topic that is relatively taboo.

One of the limitations of this study involved the extent to which participants provided honest responses. By nature, focus groups require group-based discussion which could have discouraged certain people from reporting their honest opinions about cannabis use. Also some people who are shy or who don't like social discussions may have refrained from participating making this sample slightly unrepresentative.

Nonetheless, this study was able to promote detailed discussions about cannabis use amongst several focus groups. It was able to overcome the difficulties faced when using focus groups such as whether they should be heterogeneous or homogeneous. If a group is heterogeneous whether in terms of gender, age or in terms of perspectives, the differences between participants could result in multi-faceted contributions, while if a group is homogeneous with regards to specific characteristics opinions may be expressed more comfortably (Morgan, 1988). The mixed-gender and mixed-year focus groups within this study enabled identification of themes that took collaboratively accounted for the diverse experiences and opinions of young people.

Discussions based on the wider theoretical implications as well as policy implications of these findings and suggestions for future research will be discussed in more detail in Chapter 8.

6.7 ACCOUNT LINKING STUDY 1, STUDY 2 AND STUDY 3

Table 6.5 presents a brief account that aims to give an informative and descriptive interim summary linking studies 1, 2 and 3.

TABLE 6:5 BRIEF ACCOUNT LINKING THREE STUDIES

<p><i>Findings from Study 1</i> (<i>n=199, ages 16-18; Sixth Form College; quantitative study</i>).</p>	<ul style="list-style-type: none"> • Logistic regression analysis showed that Attitudes, Perceived Norms and PBC significantly predicted Intentions to use cannabis. None of the additional variables predicted cannabis use intentions. • Among the cognitive antecedents, behavioural beliefs and normative beliefs predicted intentions to use cannabis. • Behaviour to use cannabis was predicted by Intentions, while PBC significant contribution was inconsistent throughout the regression analysis. Among the additional variables, <i>Moral Norms</i> and <i>Impulsivity</i>: Lack of premeditation independently predicted cannabis use behaviour.
<p><i>Findings from Study 2</i> (<i>n=20, ages 18+, University students; qualitative study</i>).</p>	<ul style="list-style-type: none"> • Participants' evaluation of cannabis use was assimilated to the TPB construct of Attitude. The difference was that rather than maintaining a general good/bad evaluation of cannabis use, participants referred to a more personalised approach in that there was an 'Individual disposition towards cannabis use' as well as a 'Personal relationship with cannabis'. On the basis of these two themes, students' motivation to engage in cannabis use was largely related to reinforcing their own evaluative disposition and supporting and confirming their relationship with the substance. In this sense, cannabis use being part of their <i>self-identity</i> resulted in it being a variable worthy of consideration for Study 3. • 'Peer influence Vs. societal influence' and 'Effects of parental styles' were the two themes that were identified in relation to others' influences. These were considered alongside the TPB construct of 'Perceived Norms' and contributed to understanding the more complex relationship between social norms and young people's decisions to use cannabis. According to these two themes, including a <i>parenting style</i> dimension in Study 3 was considered important.

	<ul style="list-style-type: none"> • ‘Self-regulatory approach’ referred to how self-control was particular for every individual in that differed with regards to the level and the situation in which it was applied. This implies a careful distinction in the way PBC is measured among young people; a note worthy of consideration for Study 3. Moreover cannabis being largely discussed as a spontaneous act resulted in the other theme of ‘Moment-centred action’. Within these two themes, aspects such as <i>habit</i>, <i>willingness</i> to use cannabis and being <i>impulsive</i> were reflected upon, all of which were considered as important additions to the Study 3 TPB framework. • ‘Policy change’ was the only theme discussed irrespective of TPB and with the aim of expressing young people’s opinions with regards to governmental policies.
<p>Study 3 (n= 200 approx., ages 18+, University students; quantitative study).</p>	<ul style="list-style-type: none"> • An extended TPB model is applied, but this time with university students. The differences in findings between Study 1 and Study 3, could inform our understanding with regards to the transitional experience of young people from College to University. • The variables found to be significant in Study 1 were <i>Impulsivity</i> and <i>Moral Norms</i>, and while the latter was not referred to in Study 2, the former was emphasised by young people in terms of their decisions to use cannabis. Therefore although Moral Norms was a significant predictor of Behaviour in Study 1 it will not be examined in Study 3, as the university students in Study 2 did not consider cannabis use to be an ethically driven behaviour. • In Study 2 young people stressed the importance of individual regulation of their levels of self-control such that

	<p>PBC differed in terms of level and situation in which it was applied. Hence, PBC will be measured in a more cautious manner in Study 3. In order to strengthen the internal measurement of PBC while also taking into consideration the emphasis placed on it being diverse, the items measuring PBC in Study 3 will be different to those in Study 1. Specifically PBC will be measured in terms of both taking vs. obtaining cannabis based on the Orbell et al. study (2001) which found a distinction of PBC in explaining Intentions and Behaviour when referring to PBC of taking vs. obtaining substances.</p> <ul style="list-style-type: none"> • As mentioned previously, other concepts which derived from the themes of Study 2 included <i>Habit</i>, <i>Self-identity</i> and <i>Willingness</i> all of which will be investigated as to the their predictive ability in Study 3.
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6.8 CHAPTER SUMMARY

- Among the 16-24 age group cannabis is considered to be the most commonly used drug in the UK (BCS, 2009). Largely missing from the literature has been an in-depth exploration of young people's perspectives with regards to the social-psychological determinants of cannabis use.
- This was a qualitative study conducted using university students (n=20). There were four focus groups within which a set of questions were focused and framed around the TPB theoretical framework.
- The themes identified were sub-merged within and discussed in relation to the TPB constructs: attitudes, perceived norms and PBC.
- Participants' evaluation of cannabis use deviated away from a general good/bad evaluation. Instead young people explained that their attitudes were tailored to cannabis use such that they had an '*Individual disposition towards cannabis use*' as well as a '*Personal relationship with cannabis*'.
- '*Peer influence vs. societal influence*' and '*Effects of parental styles*' were the two themes that emerged in relation to social norms. These were considered alongside the TPB construct of perceived norms and contributed to understanding the more complex relationship between social norms and young people's decisions to use cannabis.
- '*Self-regulatory approach*' referred to how PBC was different for every individual depending on the situation in which it was applied and whether it referred to buying vs. using cannabis. This implies a careful distinction in the way PBC is measured among young people; a note worthy of consideration for Study 3.
- Moreover cannabis was emphasised as a '*Moment-centred action*' emphasising the role of impulsivity with regards to this behaviour; a variable to be considered in Study 3.

- *'Policy change'* was discussed irrespective of the TPB but demonstrated young people's opinions with regards to governmental policies.
- Although this study used heterogeneous focus groups which could have hindered individual differences, it provided university students the opportunity to have their opinions expressed and discussed within a research context.
- The theoretical and policy implications of this study's findings are discussed in Chapter 8.

7 CHAPTER 7: STUDY 3- YOUNG PEOPLE AND CANNABIS USE: AN EXTENDED THEORY OF PLANNED BEHAVIOUR STUDY WITH UNIVERSITY STUDENTS

7.1 CHAPTER OVERVIEW

As part of this research project that examines young people and cannabis use, Study 3 focuses on identifying which factors help to explain and predict university students' cannabis use behaviour. This study is based on accumulating the findings from Study 1 which in itself helped inform the framework of Study 2. Study 2 then acted as an exploratory study that helped complement and qualitatively enhance the quantitative results of Study 1 as well as create a more informed foundation for Study 3. Explicit references to both Study 1 and Study 2 are made throughout this chapter to demonstrate the linking processes between the studies overall.

This study examines university students' cannabis use using an extended version of the Theory of Planned Behaviour (TPB). While Study 1 investigated young people's (aged 16-18) cannabis use, with an extended version of the TPB, Study 3 applies an extended version of the TPB but investigates university students (aged 18+) decision to use cannabis. The differences in findings between Study 1 and Study 3 could inform our understanding regarding the transitional experience of young people from college to university.

Integrating several variables (impulsivity, parenting styles, willingness, self-identity, habit, need satisfaction, past behaviour and perceived risk) that have been found to be important in either Study 1 and/or Study 2, form the basis of Study 3. A series of regression analyses helps determine which of these variables separately predict intentions and/or cannabis use behaviour as well as which play a role within a unitary framework. As already discussed in Chapter 5, these variables are examined '**separately**' (each additional variable is inserted in the model using different steps every time) and under a '**unitary framework**' (the additional variables are inserted in the model using one step to determine which was the most significant out of all of them).

Mediation analyses helps to understand the influence of intentions between any of the significant variables and behaviour.

The results are discussed in relation to research that either complies or contradicts the current findings. Critical evaluations form a large part of the discussion, with a final section commenting on the strengths and limitations of the current study. The policy implications are discussed in Chapter 8.

7.2 LITERATURE OVERVIEW

7.2.1 YOUNG PEOPLE'S CANNABIS USE

Attempting to better understand the determinants of use among university student population, O'Callaghan and Joyce (2006) investigated students' motivations for using or not using cannabis. Compared to non-users, cannabis users believed more strongly that cannabis would help them fit in with their friends, feel relaxed, forget their worries and enjoy themselves. They also had the perception that their close friends, siblings and workmates as well as partners would approve of their behaviour. Other factors such as the 'force of habit', feeling stressed and being around other cannabis users also encouraged them to use cannabis while studying acted as a strong reason to not engage in such behaviour.

The present study aims to understand which factors serve to predict and explain university students' cannabis use behaviour.

7.2.2 THEORY OF PLANNED BEHAVIOUR (TPB)

An extended version of the TPB is used for this study. Although attitudes and perceived norms are measured in the same way as in Study 1, PBC is measured differently. In Study 1 PBC predicted intentions and behaviour in an inconsistent manner, and in Study 2 PBC was considered to change according to the level and situation in which it was applied. Therefore, Study 3 measures PBC differently in order to strengthen its internal measurement. Specifically based on the Orbell et al. study (2001), PBC is measured in terms of using vs. obtaining cannabis.

Besides these components the TPB is open to further expansion, provided that the supplementary construct of interest can capture a significant portion in the explained variance of intention and/or behaviour (Ajzen,1991).

7.2.3 ADDITIONAL VARIABLES TO BE INCLUDED IN TPB FRAMEWORK

7.2.3.1 IMPULSIVITY

The impulsivity sub-dimension of lack of premeditation predicted behaviour among young people in Study 1. It seems worthy to investigate which sub-dimensions of impulsivity (urgency, lack of premeditation, sensation-seeking, lack of perseverance) significantly contribute to explaining and predicting cannabis use behaviour with university students (aged 18+).

7.2.3.2 PARENTING STYLES

Based on a very recent empirical review on parental styles and drug use, the role of the family plays a fundamental role in the prevention and treatment of young people's substance use (Becona, et al., 2012). The motivational model of parenting (Skinner, et al., 2005) is used in Study 3, as it was used in Study 1. This represents a multi-dimensional structure resulting in six dimensions; parental warmth vs. rejection, structure vs. chaos, and autonomy support vs. coercion. The importance of parental influence discussed in Study 2 among university students promoted the inclusion of measuring parenting styles in this TPB study.

7.2.3.3 BEHAVIOURAL WILLINGNESS

The social reaction pathway in the Prototype Willingness Model (PWM) accounts for behaviours that are usually characterised by an element of risk and spontaneous decision-making and are largely dependent on situational factors (Gibbons, et al., 1998). The PWM emphasizes that especially drug-taking behaviour may be better understood as a reaction to a social stimuli or situation, such as being offered a rolled cigarette with cannabis.

Study 2 demonstrated that university students discussed 'willingness' as being a much more important determinant than intentions in terms of influencing their behaviour. Specifically they reported how maintaining a strong desire to smoke cannabis created the intrinsic willingness to do so, regardless of any intentions set previously. Behavioural willingness represents a person's openness to opportunity which unlike intentions involves much less pre-contemplation of behaviour (Gerrard, et al., 2005; Gibbons, et al., 1998). Despite research suggesting a conceptual overlap between willingness and intentions (one of TPB basic constructs), Gibbons et al. (1998) indicated that these two constructs, although closely related serve as independent constructs when examining young people's health risk behaviours. They argue that willingness is not likely to add much predictive power with behaviours that are rational and involve premeditation (e.g. socially desirable behaviours such as volunteering). Rather, with behaviours that are more reactive in nature, the willingness component becomes

more explicit in that these actions are often not intended or planned but instead are reactions to fortuitous opportunities.

However a study on smoking, drinking and drug use among adolescents, found that measures of intention, expectation and willingness were combined to yield a single construct (Gibbons, et al., 2004). This implied that willingness was not part of a separate construct to intentions as both represented aspects of 'behavioural readiness'. Nevertheless, applying these two constructs within a context of university students could help towards obtaining a better explanation of what better predicts cannabis use behaviour among this sample.

Thus in an attempt to cover the less reasoned approach to cannabis use, as described by university students in Study 2, the TPB model in Study 3 is extended to include behavioural willingness.

7.2.3.4 SELF-IDENTITY

Another concept that emerged from Study 2 findings was that of 'self-identity'. Participants described cannabis use as a personalised decision that played an important part of their identity.

Self-identity has been characterised as a perspective one takes toward oneself when incorporating the meanings and expectations associated with a relevant categorization of the self (Sparks & Shepherd, 1992). This eventually creates a set of identity standards that determine identity-relevant behaviours (Stets & Burke, 2003) such that a salient part of the self acts in relation to particular behaviour (Sparks, 2000) (e.g. cannabis users smoking cannabis because being a cannabis user is an important part of their self-identity).

Social identities, on the other hand, are cognitively represented as group prototypes which maintain a minimization of in-group differences and maximization of out-group differences through the imposing of certain beliefs, attitudes, feelings and behaviours. In other words, people who identify with a certain role or social category are more inclined to behave in consistency with the behaviours within that role or social category than individuals whose self-concepts identify them less with the role or social category (Terry, Hogg, & White, 1999).

Therefore, in terms of the relation between perceived norms and behavioural intention, self-identity can serve as a moderator such that the normative construct gains more importance as the identity with the group is enhanced. However, rather than having a moderating effect, research has revealed a direct influence of self-identity on intentions, similar to attitudes,

perceived norms and PBC (Armitage & Conner, 1999b; Conner & Armitage, 1998; Conner & McMillan, 1999). A meta-analysis looking at the role of self-identity in the TPB, revealed that self-identity increased the explained variance of intentions by 13% (Rise, et al., 2010).

Identity theorists suggest that identity processes should be taken into account when predicting specific behaviours (Sparks & Shepherd, 1992). Conner and McMillan (1999) demonstrated that self-identity significantly predicted intentions to use cannabis in a population of university students. Identity theorists claim that people tend to retain and affirm their sense of self-identity and so act in consistency with this identity standard. It should be noted that although attitudes, norms and self-identity have been claimed to be conceptually overlapping (Eagly & Chaiken, 1998), others have argued that these three constructs share separate motivational roots. For instance, individuals conform to attitudes for instrumental reasons and to norms for fear of being rejected by significant others, whereas maintaining one's self-identity occurs for self-verification reasons (Rise, et al., 2010).

The developmental dimension of role-identity refers to the extent to which a role is internalized as part of the self. Fekadu and Kraft (2001) explain that the longer people have occupied a specific role as part of their 'self', the higher the tendency to have an intention to engage in this behaviour, reflecting the salience of role-identity.

7.2.3.5 HABIT

Habits have been characterised as actions that become automatic responses to specific situational cues and which are performed relatively unconsciously (Verplanken & Aarts, 1999). Drawing from the findings of Study 2, the role of habit was emphasised on cannabis use behaviour.

Conner and McMillan (1999) demonstrated that habit significantly predicted young people's intentions to use cannabis but that it moderated the impact of self-identity on intentions. The addition of a 'habit strength' measure took into account both past behaviour and behaviour that was influenced by habitual factors which the authors claimed were not readily encompassed by the basic TPB constructs (Conner & McMillan, 1999). Habit reflects how a behaviour that is frequently repeated becomes less controlled by cognitive processing and more influenced by situational cues that activate automatic processing, leading to a habitual response (Sutton, 1994). A recent study by Orbell and Verplanken (2010) demonstrated the importance of cues in the automatic operation of habits. For instance habitual automaticity in relation to smoking when drinking alcohol in a licensed pub predicted the likelihood of

cigarette-related action slips, 2 months later after smoking in pubs had become illegal. These findings imply that habit automaticity assessed by self-report captured aspects of habit that go beyond frequency or consistency of the behaviour.

Since young people documented having a relatively 'routinized' social life in Study 2 it seems possible that the use of cannabis is part of this routine and is performed relatively automatically. For instance, when repeatedly exposed to a situation where the same group of people use cannabis, one may decide to use cannabis based on a habitual response to the situation.

In this present study, habit will be examined in terms of its strength to predict cannabis use intentions and behaviour.

7.2.3.6 PSYCHOLOGICAL NEED SATISFACTION

Self-determination theory (SDT) suggests that individuals strive to satisfy the basic psychological needs of autonomy, relatedness and competence (Deci & Ryan, 2002). An individual's desire to be a causal agent in his or her world represents an individual's autonomy in that if a behaviour satisfies this need the individual feels a sense of personal choice, free will and ownership of his/her actions. Alternatively, relatedness refers to the innate desire to be supported by others and be supportive of others when engaging in behaviours (Deci & Ryan, 2002). Finally the need for competence refers to the pursuit of autonomously motivated behaviours that will increase the perception of success and control of outcomes. SDT places these needs not as separate constructs but rather as complementary to one another such that autonomy does not reflect the desire to be independent but rather to be interdependent through choice and cooperation as implied by the need for relatedness (Sheldon & Bettencourt, 2002). These basic psychological needs are considered to be trait-like individual-difference construct which however have the tendency to fluctuate. Inter-individual and intra-individual variation in need satisfaction is considered to be most critical for one's motivation, well-being and performance, regardless of whether the individual reports a strong or weak desire to satisfy the needs of autonomy, competence and relatedness (Sheldon, Elliot, Youngmee, & Kasser, 2001).

Based on the SDT satisfaction of these needs is essential for individuals to actualize their potentials and be protected from maladaptive functioning. Research suggests that individuals with high psychological need satisfaction base their intentions on perceived norms to a greater extent compared with individuals with lower psychological need satisfaction (Harris & Hagger,

2007). Deci and Flaste (1995) explain that the satisfaction of basic psychological needs encourages people to be motivated to become part of a group and to accept the group's values. This is because people are more likely to internalise the views of others and place more importance to these when forming decisions about performing behaviour. Alternatively, individuals with lower need satisfaction may be less likely to internalize the views of others especially if their basic psychological needs are hindered resulting in feelings of isolation. If an individual's basic psychological needs are not being met, he/she may perceive the views of others as external to the self and controlling, thereby displacing their importance in the decision-making process. Consequently our study will demonstrate the extent to which a young person's decision to engage in cannabis use is as a result of feeling alienated from others and thereby having low psychological need satisfaction.

7.2.3.7 PAST BEHAVIOUR

Research based evidence suggests that past behaviour is used as a predictor of future behaviour (Ouellete & Wood, 1998; Sutton, 1994). Past behaviour however does not meet the criterion of causality nor does it replace or conceptually substitute future behaviour. For instance, an individual may have smoked cannabis in the past two weeks but then due to an unexpected occurrence decided to change his/her mind, changing at the same time the attitudes, perceived norms and PBC as well. Therefore these constructs would predict and explain future behaviour more accurately than the past behaviour measure (Fishbein & Ajzen, 2010). On a similar line of reasoning, if in the course of executing an intended behaviour an individual encounters unanticipated difficulties this could lead to him/her reverting to their original pattern of behaviour, thus lending predictive validity to past behaviour. Consider a person who has not smoked cannabis regularly in the past and decides to form the intention to do so in the future. Initial attempts to carry out this intention however, may reveal that this behaviour is more difficult or less beneficial than anticipated. Therefore, it could be the case that intentions will not predict the behaviour, but past behaviour will.

It should be emphasised that when examining past behaviour it is not with the purpose of conceptually replacing a measure of future behaviour, but rather with the purpose of understanding the frequency, if any, of the behaviour in the past. Fishbein and Ajzen (2010) argue that unlike attitude, perceived norms, PBC and intention, frequency of past behaviour cannot be used to explain performance of later action. "To argue that we behave the way we do now because we performed the behaviour in the past begs the question as to why we previously behaved that way" (Fishbein & Ajzen, 2010, p.286). In other words deciding as to

whether or not to perform certain behaviours cannot solely be explained by the fact that this behaviour has been enacted in the past. The extent to which past behaviour is a stronger predictor of future behaviour than intentions has been questioned. Alternative propositions have emphasized the importance of distinguishing between behaviours that are under intentional control and other behaviours that are under habitual control (Sheeran, Orbell, & Trafimow, 1999).

Although past behaviour refers to the frequency with which a behaviour has been performed in the past some argue that it can be used as a complementary indicator to 'habit strength'. By repeating a certain action, the behaviour is said to habituate resulting in the 'habit strength' which ultimately has a bigger influence on future behaviour than past performance of action (Ouellete & Wood, 1998; Verplanken & Aarts, 1999). However, as Mittal (1988, p.997) argues "repeated occurrence is necessary for the formation of habit, but is not habit itself". Ajzen (2002b) explains that using frequency of past behaviour as an indicator of habit strength, weakens the ability to capture the defining features of a habitual response. While behaviours performed infrequently are best predicted by intentions, and those performed frequently are predicted by past behaviour, characterizing certain behaviours as habitual can be viewed as "a theoretical cul-de-sac that describes rather than explains the data" (Sheeran, et al., 1999, p. 731). Verplanken and Aarts (1999) explain that habitual behaviours tend to occur frequently (and therefore have a history of repetition) but are also performed automatically in response to stable environmental cues. What is more habits also reflect a person's sense of identity given the importance placed on repeatedly performing a behaviour (Trafimow & Wyer, 1993).

Nonetheless, research has shown there to be a residual effect of past behaviour on future behaviour; Conner and Armitage (1998) estimated that past behaviour explains on average an additional 13% of the variance in future behaviour over and above the influence of the TPB.

7.2.3.8 PERCEIVED RISK

A series of drug prevention programmes have generally found lecture-oriented programmes which involve informing adolescents about the dangers of cannabis use seem to have much less influence than small-scale interactive programmes that foster social competencies (Streke, 2004; Tabler, Lessard, Marshall, Ochsorn & Roona, 1999).

While drug-related surveys indicate young people's perceived risk of cannabis use, the individual-level dynamic between attitudes and behaviour is not simple (Bjarnason, Steriu, & Kokkevi, 2008). Although favourable attitudes toward drug use have been associated with a

greater risk of initiation, it has been found that the use of drugs has actually changed the perception of risk among users in that perception of risk is low among users and high among non-users (Adalbjarnardottir, Dofradottir, Thorolfsson, & Gardarsdottir, 2003).

It is important to understand not only how those who use substances perceived the risks associated with the substance, but also to understand the perceived risk of the substance among the non-users. Indeed several authors have argued that acceptance among non-users has been known to be a crucial component of normalisation of cannabis (Parker, Aldridge, & Measham, 1998; Roy, Wibberley, & Lamn, 2005). This has the potential of creating a shift not only in young peoples' perceived normative structure, but also in terms of their risk perception as a result of others' normalisation.

Measuring the mental, physical and social risks (Bjarnason, et al., 2008) perceived by individuals with regards to cannabis use will help to understand the impact this has in terms of university student's decision-making.

7.3 STUDY 3 AIMS & OBJECTIVES

7.3.1 STUDY 3 AIMS

The aim of this study was to examine the effectiveness of an extended version of the Theory of Planned Behaviour (TPB) in understanding university students' decisions about whether or not to engage in cannabis use. It was anticipated that incorporating a series of additional variables to the TPB framework would improve our understanding of cannabis use.

Study 3 examined the predictive power of each additional variable (impulsivity, parenting style, behavioural willingness, self-identity, habit, psychological need satisfaction and past behaviour). It investigated how far each variable predicted cannabis use intentions and/or self-reported behaviour beyond the basic TPB variables (attitude, perceived norms, perceived behavioural control).

7.3.2 RESEARCH HYPOTHESES

7.3.2.1 HYPOTHESES

1. The basic TPB variables will have associations with intentions to use cannabis and with behaviour¹⁰

¹⁰ The term 'behaviour' refers to self-reported behaviour and not actual behaviour.

- a) Young people with stronger intentions to use cannabis will have higher levels of cannabis use behaviour.
 - b) Young people with more favourable attitudes towards cannabis use will have higher levels of intention to use cannabis and self-report higher levels of cannabis use behaviour.
 - c) Young people who have positive perceived norms towards cannabis use will have higher levels of intention to use cannabis and self-report higher levels of cannabis use behaviour.
 - d) Young people with higher levels of PBC over using cannabis and higher levels of PBC over obtaining cannabis will have lower levels of intention to use cannabis and will have lower levels of cannabis use behaviour.
2. The basic TPB variables will predict cannabis use intentions.
- d) Favourable attitudes will predict higher intentions to use cannabis.
 - e) Positive perceived norms will predict higher intentions to use cannabis.
 - f) Lower levels of PBC over obtaining cannabis and lower levels of PBC over using cannabis will predict higher intentions to use cannabis.
3. The additional variables will **separately** predict cannabis use intentions:
- f) High impulsivity levels (sensation-seeking, urgency, lack of premeditation, lack of perseverance) will independently¹¹ predict positive cannabis use intentions.
 - g) Negative parenting styles (rejection, chaos, and coercion) will independently predict positive cannabis use intentions.
 - h) Higher levels of behavioural willingness will independently predict positive cannabis use intentions.
 - i) Higher levels of self-identity will independently predict positive cannabis use intentions.
 - j) High levels of 'habit' reported will independently predict positive cannabis use intentions.
 - k) Lower levels of psychological need satisfaction will independently predict positive cannabis use intentions.

¹¹ The term 'independently' refers to the extent to which each variable can separately predict intentions, independently to the basic TPB variables.

- l) Higher levels of past behaviour will independently predict positive cannabis use intentions.
 - m) Higher perceived risk will independently predict positive cannabis use intentions.
4. Using the **unitary framework** will indicate which additional variables can positively predict cannabis use intentions amongst all additional variables.
 5. The basic TPB variables will independently¹² predict positive self-reported cannabis use behaviour:
 - a) Higher intentions will independently predict positive cannabis use.
 - b) Lower PBC over obtaining cannabis and lower PBC over using cannabis will independently predict positive cannabis use.
 6. The additional variables will **separately** predict cannabis use self-reported behaviour:
 - a) High impulsivity levels (sensation-seeking, urgency, lack of premeditation, lack of perseverance) will independently predict positive cannabis use.
 - b) Negative parenting styles (rejection, chaos, and coercion) will independently predict positive cannabis use.
 - c) Higher levels of behavioural willingness will independently predict positive cannabis use.
 - d) Higher levels of self-identity will independently predict positive cannabis use.
 - e) High levels of 'habit' reported will independently predict positive cannabis use.
 - f) Lower levels of psychological need satisfaction will independently predict positive cannabis use.
 - g) Higher levels of past behaviour will independently predict positive cannabis use.
 - h) Higher perceived risk will independently predict positive cannabis use.
 7. Using the **unitary framework** will indicate which additional variable can positively predict cannabis use behaviour amongst all additional variables.

¹² The term 'independently' refers to the extent to which each variable can separately predict behaviour, independently to the basic TPB variables.

8. There will be a difference between the predictive power of PBC over obtaining cannabis vs. PBC over using cannabis in terms of predicting cannabis use intentions and self-reported behaviour.
9. Mediation analyses will indicate the extent to which intentions act as a partial/full mediator between any of the significant additional variables and behaviour.
10. The TPB cognitive beliefs (behavioural beliefs, normative beliefs, control beliefs) will positively predict intentions to use cannabis.

7.4 METHOD

7.4.1 PARTICIPANTS

The sample consisted of 204 students (66 males, 138 females) recruited at a university in East of England. The second phase of data collection resulted in an attrition rate of 17.6% leaving a total of 168 participants (54 males, 114 females). However missing data was dealt with resulting in using the initial total of 204 students (66 males, 138 females).

There were 157 first year undergraduates across several Schools (80 from School of Psychology, 30 from School of Economics, 34 from School of Political, Social and International Studies and 13 from School of Film and TV) and 47 second year undergraduates all from School of Psychology. Although systematic sampling required that only first year undergraduates were recruited, the recruitment pool from the first year students was exhausted resulting in a much lower sample than intended. This led to the recruitment of Year 2 Psychology students in order to increase sample size.

7.4.2 DESIGN

The design of the study involved a longitudinal questionnaire (2 week follow-up) distributed at two time points (Time 1 and Time 2). The independent predictors consisted of the additional variables listed below and the outcome variable was the self-reported cannabis use behaviour.

The questionnaire regarding young people's reports on (1) intentions, (2) attitudes, (3) perceived norms, (4) perceived behavioural control, (5) impulsivity, (6) parenting styles, (7) behavioural willingness, (8) role-identity, (9) habit, (10) psychological need satisfaction and (11) past behaviour, was distributed at Time 1. A follow-up questionnaire (Time 2) measuring

'self-reported cannabis use behaviour' was conducted two weeks after the first questionnaire was administered.

Prior to this questionnaire, a belief-elicitation questionnaire was used to obtain the salient beliefs regarding the TPB constructs. This examined Behavioural Beliefs, Normative Beliefs, Control Beliefs about obtaining (buying) cannabis, and Control Beliefs about using cannabis (see *Appendix 3A*) (Fishbein & Ajzen, 1975, 2010).

Student consent forms as well as debrief forms were attached to the questionnaire. These informed students of the study's confidentiality and of their right to withdraw from the study, as well as provided them with a range of support centres they could refer to in case of a question or substance-use related problem.

7.4.3 MEASURES

Participants' **AGE** was measured (in years).

GENDER was coded as 1= male and 2 =female.

NATIONALITY was coded as 1= English/British, 2= European, 3= American, 4= Asian.

SCHOOL OF STUDY was coded as 1= Year 1; School of Psychology, 2= Year 1; School of Economics, 3 = Year 1; School of Political, Social and International Studies, 4= Year 1; School of Film and TV and 5= Year 2; School of Psychology.

7.4.3.1 BELIEF-BASED VARIABLES

Three belief-based variables were included in Study 3. All three were measured using the already existing TPB measures reported in Fishbein & Ajzen (1975, 2010), apart from dividing the control beliefs into two separate measures of obtaining versus using cannabis. Both the behavioural beliefs and normative beliefs were measured using the items described in Study 1 (see Chapter 5, section 5.3.3.2).

The resulting product of 'belief strength' by 'outcome evaluation' items are summed to create an overall **BEHAVIOURAL BELIEF** ($\alpha=.58$) score. The resulting product of 'belief strength' by 'motivation to comply' are summed to create an overall **NORMATIVE BELIEF** ($\alpha=.38$) score.

The control beliefs were measured in correspondence to the separation of PBC over obtaining cannabis vs. PBC over using cannabis such that two separate measures of control beliefs were examined: 'control beliefs over using/smoking cannabis' vs. 'control beliefs over obtaining/buying cannabis'.

The multiplicative composite for control beliefs over using cannabis was composed of ‘control belief strength over using’ (e.g. “Smoking cannabis will make it hard to keep up with my studies” on a 7 point bipolar scale (-3: disagree – 3: agree) by ‘control belief power over using’ (e.g. “keeping up with my studies in the next two weeks would make it much more difficult/much easier to smoke cannabis”) on a 7 point Likert scale (1: more difficult – 7: more easy). The resulting products are summed to create an overall **CONTROL BELIEF over using** ($\alpha = .43$) score.

Similarly the multiplicative composite for control beliefs over obtaining cannabis was composed of ‘control belief strength over obtaining’ (e.g. “If I want to obtain cannabis I contact friends/peers who use it themselves” on a 7 point bipolar scale (-3: disagree – 3: agree) by ‘control belief power over obtaining’ (e.g. “Knowing other friends/peers who smoke cannabis would make it much more difficult/ much easier to smoke cannabis”) on a 7 point Likert scale (1: more difficult- 7:more easy). The resulting products are summed to create an overall **CONTROL BELIEF over obtaining** ($\alpha = .20$) score.

The Cronbach’s alpha was relatively high apart from **CONTROL BELIEF over obtaining** ($\alpha = .20$). However, internal consistency is not a requirement of the behavioural, normative, and control belief composites because different accessible beliefs may well be inconsistent with each other (Fishbein & Ajzen, 2010).

The multiplicative assumptions of having a bipolar and unipolar scale are discussed in more detail in Chapter 5 (section 5.3.3.2).

7.4.3.2 BASIC TPB AND ADDITIONAL VARIABLES¹³

INTENTIONS was assessed by two items ($\alpha = 0.98$; e.g. ‘Please indicate how often you intend to use cannabis in the next two weeks’ scored 1: Never to 7: most days, higher scores indicating an intention to take cannabis more frequently) and averaged.

ATTITUDE was assessed by a pair of semantic differentials (two items, $\alpha = 0.89$). The statement “Using cannabis over the next two weeks would be...” was completed with the semantic differential choices of *bad-good* and *unpleasant-pleasant*. The items were scored on a 7 –point scale ranging from -3 to +3 (higher scores indicating more positive attitude to cannabis use) and averaged.

¹³ The full list of items measuring each construct is available in Appendix 3C

PERCEIVED NORMS was assessed using two items ($\alpha = 0.29$; e.g. “Most friends who are important to me think that I should not take cannabis” (R)).The items were scored on a 7 point scale 1: disagree to 7: agree (higher scores indicating others’ positive perceptions of smoking cannabis) and averaged.

PERCEIVED BEHAVIOURAL CONTROL was assessed based on Orbell et al (2001) who assessed two forms of PBC: PBC over obtaining a substance and PBC over taking the substance was measured using separate set of items. PBC over obtaining cannabis was assessed using three items; $\alpha = 0.92$; e.g. “How confident are you that you could get some cannabis if you wanted to?” (1- very confident to 7- not at all confident). Four items then measured PBC over taking/smoking cannabis; $\alpha = 0.63$ e.g. “If a friend offered me cannabis and I wanted to refuse it, it would be 1-difficult to refuse to 7-easy to refuse”. The scores of the items were averaged for each PBC dimension; obtaining vs. taking.

IMPULSIVITY was assessed using a measure created by Whiteside & Lynam (2001). As in Study 1 the four sub dimensions measured were *urgency* ($\alpha = 0.85$), *lack of premeditation* ($\alpha = 0.84$), *lack of perseverance* ($\alpha = 0.79$) and *sensation-seeking* ($\alpha = 0.86$). The scoring ranged from 1: Agree strongly - 4: Disagree strongly. Each of these sub-dimensions were summed and averaged.

PARENTING STYLE was measured using a 24-item scale adapted from the Parents as Social Context Questionnaire (Adolescent Report) (PASCQ) (Skinner, et al., 1986). As in Study 1, the six dimensions measured were Warmth ($\alpha = 0.84$), Rejection ($\alpha = 0.81$) Structure ($\alpha = 0.85$) Chaos ($\alpha = 0.79$) Autonomy Support ($\alpha = 0.84$) Coercion ($\alpha = 0.82$). Each item’s scores ranged from 1 (not at all true) to 7 (very true) which were different to the 1 to 4 range in Study 1, for the purpose of obtaining a more distinct measurement of the scores.

BEHAVIOURAL WILLINGNESS to use cannabis was assessed with three items ($\alpha = 0.86$) adopted from previous work (Gerrard, et al., 2005; Gibbons, Helweg-Larsen, & Gerrard, 1995). Using a 7 –point scale, participants were asked how likely or unlikely they would react in a particular way in a situation when cannabis is offered to them. Three reactions proposed were: “I would not take it”, “I would say no ‘thank you and refuse it’, and “I would leave the situation”. The scores were averaged and higher scores indicated a higher willingness to use cannabis.

SELF-IDENTITY was measured using four items ($\alpha = 0.60$) from Sparks and Shepherd’s self-identity measure as well as Charng, Piliavin and Calero (1988) role person merger. The

respondents rated statements such as “Using cannabis is an important part of who I am” on a 7-point scale (1-strongly disagree to 7- strongly agree) indicating a greater self-identity as a cannabis user with higher scores.

HABIT STRENGTH was measured on the basis of the Self-Report Habit Index constructed by Verplanken and Orbell (2003) study. This comprised twelve items ($\alpha = 0.93$) that involved the opening statement of “Cannabis use is something...” followed by items such as ‘I do frequently’. The items were scored on a 7-point scale (1: agree to 7: disagree), which were then summed and averaged to create a total score. Lower habit strength scores indicated cannabis use being a habitual behaviour.

PSYCHOLOGICAL NEED SATISFACTION was based on Sheldon et al.’s (2001) validated measures of the three psychological needs from self-determination theory; autonomy, competence and relatedness. Three items were used to measure the satisfaction of the needs for autonomy ($\alpha = 0.23$; e.g. “I feel that my choices are based on my true interests and values”), three items were used for competence ($\alpha = 0.86$, e.g. “I feel that I can successfully complete difficult tasks and projects”), and three items for relatedness ($\alpha = 0.86$, e.g. “I feel a sense of contact with people who care for me, and whom I care for”). These were each measured on a 7-point Likert-type scales scored 1- not true at all to 7- very true. Higher scores on each construct indicate a higher sense of satisfaction for each need. This would imply a lower need to use cannabis as a result of basic needs being satisfied.

PAST BEHAVIOUR was measured based on items used in a study by Xiao (2011). Three items measured the frequency of past behaviour by asking participants to indicate the number of times they used cannabis in the past week, past month, and past three months ($\alpha = 0.94$) using a 7-point scale of 1: never to 7: most days. These were then summed and averaged with higher scores indicating higher cannabis use past behaviour.

BEHAVIOUR was assessed in the follow-up questionnaire using similar items as those used by Conner & McMillan (1999). This consisted of four items ($\alpha = 0.95$; e.g. ‘Over the past two weeks how often have you used cannabis?’ scored from 1: never to 7: most days) which were then averaged.

PERCEIVED RISK adopted from Bjarnason, Steriu and Kokkevi (2008) was used to measure the mental, physical and social risk perceived by individuals with regards to cannabis use (1: No risk to 4: Great risk). The three summed components formed a reliable short scale of perceived risk of cannabis use ($\alpha = 0.85$).

OTHER items included four questions on how far cannabis use among university students is considered (1) a normal behaviour, (2) something they do to have fun, (3) something that is part of the university experience and (4) something that most students will stop doing when they leave university. These were all measured on a 7-point Likert scale (1: agree – 7: disagree).

7.4.4 PROCEDURE

Permission from different Schools or Faculties at the University was obtained in order to administer the questionnaire at the end of lectures. Permissions had been negotiated via e-mail and telephone correspondence.

After having contacted twenty-five lecturers across a range of Schools within the University, four Lecturers within the School of Psychology, School of Economics, School of Political, Social and International Media, and School of Film and Television agreed to collaborate. The researcher arranged dates and time for data administration according to convenience of the lecturers, ensuring that data administration would not interfere with the lecture in any way (i.e. questionnaires were administered at the end of every lecture).

Data administration occurred after a brief verbal introduction from the lecturer who then left the room. The students were then verbally informed of the research purpose and that the lecturer would have no involvement with, or access to, the data. Students were then informed of their participant rights such as confidentiality and right of withdrawal. After explaining that participation was not mandatory the researcher then proceeded to administer the questionnaires to the students who remained, while kindly asking those who chose to not participate to leave the room.

Students were provided with pre-packed envelopes containing a consent form (*Appendix 3B*), the questionnaire (*Appendix 3C*) and a Debrief form (*Appendix 3D*). In order to avoid name identification, students were asked to write a code at the top of the questionnaire which was

comprised of a specific format and structure: the participant's birthplace; the date of birth and month of birth such that it follows the same structure for all (i.e. Norwich17/04). This would then help to match the questionnaires with a follow-up questionnaire two weeks later.

On completion of the questionnaire, the participants were required to place the questionnaire back in the envelope and seal it, before placing it in a drop-box at the back of the room.

Two weeks later the students received a follow-up questionnaire, together with an explanatory debrief (*Appendix 3D*). The questionnaire was administered under the same conditions as two weeks earlier.

All data was stored and filed in a locked cabinet that only the researcher had access to. Upon matching the questionnaires, the front page showing the initials and date of birth information was destroyed.

7.5 RESULTS

This section analyses the findings in relation to the variables predicting intention and behaviour. Prior to conducting any analysis it was necessary to carry out preliminary analysis to account for missing data and any significant differences between participants across the schools within the university using one-way ANOVA.

Correlation analyses indicated which variables shared significant and non-significant variance. Then, a series of logistic regression analyses was carried out examining the predictive utility of the basic TPB (attitudes, perceived norms, PBC over obtaining and PBC over using) and additional variables (impulsivity, parenting styles, willingness, self-identity, habit, psychological need satisfaction, past behaviour and perceived risk) in relation to intentions and behaviour. Given that both intentions and behaviour were non-normally distributed they were transformed into dichotomous variables (Berry, 1993). Therefore, a series of logistic regression analyses on intention and behaviour were conducted to examine the **separate** contribution of each variable, as well as under **one unitary framework**. A series of mediation analyses was undertaken, demonstrating the extent to which intentions acted as a full or partial mediator.

7.5.1 BELIEF –ELICITATION STUDY

A frequency analysis was conducted using a sample of twenty university undergraduate students in Norwich, UK.

TABLE 7:1 BELIEF ELICITATION FREQUENCY ANALYSIS

Questions in belief-elicitation study	Responses with highest frequencies
Advantages of smoking cannabis	- 'feeling relaxed'
Disadvantages of smoking cannabis	- 'feeling paranoia'
Groups/individuals who approve of smoking cannabis	- 'friends'
Groups/individuals who disapprove of smoking cannabis	- 'parents'
What would make it easier to smoke cannabis	- 'easier availability of cannabis'
What would make it difficult to smoke cannabis	- 'shortage of money'
What would make it easier to obtain (buy) cannabis	- 'knowing others who use it'
What would make it difficult to obtain (buy) cannabis	- 'not knowing drug dealers'
Other aspects associated with using cannabis	- 'socialisation - 'academic failure' - 'university student life' - 'associated criminality'

This indicated the most commonly reported answers in the belief-elicitation study which were then used to frame the 'behavioural belief', 'normative belief' and 'control belief' items used in the questionnaire.

7.5.2 PRELIMINARY ANALYSES

The required sample size was determined by power analysis which according to Cohen (1988) is reasonable to assume for a moderate effect size (multiple R of 0.3) for TPB studies using multiple regression. This suggests a sample size of 80, but because response rates tend to be around 50%, it was necessary to target for recruitment at least 160/200 participants to have an ideal sample size. Initially a total of 400 students were invited to take part, but the response rate resulted in a total of 204 students.

The data was firstly checked for normal distribution using visual aids (e.g. histograms), and skewness and kurtosis values. No outliers were found and all variables were sufficiently normally distributed according to the mentioned indicators, with the exception of intentions and the outcome variable; behaviour (*see Appendix 3E*).

7.5.2.1 COLLINEARITY DIAGNOSTICS

Convergent validity of measures was determined by examining inter-correlations of items measuring the same variable (see 7.3.3. for Cronbach's alpha of all variables).

As in Study 1, discriminant validity of variables was confirmed by ensuring that the correlations between the variables did not exceed $r=.85$, as some researchers suggest that correlations above this level signal definitional overlap of concepts (Borsboom, et al., 2004). As previously justified in Study 1, a mean centering approach will not be used in our analysis (see section 5.4.3.1).

The collinearity diagnostics conducted ensure that our data did not present multicollinearity. None of our variables had a tolerance value less than .1 (Menard, 2002), and also none of our variables had a VIF value greater than 10 (Myers, 1990). Multicollinearity was therefore not investigated further by assessing the eigenvalues and condition index (Field, 2005) (see *Appendix 3F* for collinearity statistics)

7.5.2.2 MISSING DATA

Although at Time 1 the sample consisted of 204 students, at Time 2 (after the second phase of data collection) there was an attrition rate of 17.6% leaving a total of 168 participants.

As in Study 1, Expectation Maximization (EM) was the technique used in data analysis to manage missing data. It was necessary to establish if the data was completely missing at random, missing at random or not missing at random. So for each variable it was assessed whether data differed between individuals who responded to some variable and individuals who did not respond to some variable. This is determined by the Little MCAR test; which if non-significant it means that the data is completely missing at random and therefore it is possible to apply expectation maximization– which justifies using the EM to impute data.

Because the level of missing data for most variables was small and/or did not appear to be systematic, the assumption that it is missing at random was considered plausible (Little & Rubin, 2002).

TABLE 7:2 RESULTS OF LITTLE MCAR TEST

Little MCAR χ^2	df	P
114.813	370	.1000

Having conducted regression analysis using both the imputed and non-imputed data it was decided to present the analysis using the imputed data (please see *Appendix 3G* for statistical analysis conducted with the non EM- imputed data)¹⁴. Due to the cumulative loss of participants that would have occurred due to listwise deletion biases estimates (Schafer & Graham, 2002), the maximum likelihood estimation was used so as to include all cases (Dempster, et al., 1977). Although ZResid scores indicated two cases outside the range of -2 and +2, regression analysis conducted without these cases only improved the correctly classified cases by 1%. These cases were therefore included in the model as they did not dramatically alter the improvement of the model.

7.5.2.3 DIFFERENCES BETWEEN FACULTY GROUPS

A one-way ANOVA was employed to explore differences across all variables among the 5 different faculty groups (group1; Year 1 Psychology, group 2; Year 1 Economics; group 3; Year 1 Politics, Social and International Studies, group 4; Year 1 Film & TV, group5; Year 2 Psychology). No statistically significant differences were found between the groups on any variables apart from urgency, $F(4, 199) = 2.998, p < .05$. Post-hoc Games Howell comparisons identified a significant difference on urgency between group 3; Year 1 Economics ($M = 2.85, SD = .55$) and group 5; Year 2 Psychology ($M = 2.44, SD = .52$).

¹⁴ Regression analysis conducted with the EM-imputed data and regression analysis conducted with the original non-imputed data did not differ in terms of which variables were significant. For this reason it was decided to present the analysis from the EM-imputed data.

TABLE 7:3 MEANS, STANDARD DEVIATIONS AND ZERO-ORDER CORRELATIONS BETWEEN ALL VARIABLES

	Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	Age	19.31	1.48																								
1	Intention	1.42	1.06	1																							
2	Attitude	-.1.18	1.77	.625**	1																						
3	Perceived Norms	1.33	.89	.410**	.409**	1																					
4	PBCobt	3.31	2.02	-.418**	-.452**	.317**	1																				
5	PBCuse	6.66	.72	-.177**	-.218**	-.366**	-.005	1																			
6	Urgency	2.64	.55	-.123	-.171*	-.050	.097	.043	1																		
7	Sensation Seeking	2.30	.65	-.338**	-.363**	-.133	.286**	.097	-.040	1																	
8	Lack of Premeditation	2.07	.46	.252**	.257**	.047	-.240**	.012	-.306**	-.346**	1																
9	Lack of Perseverance	2.14	.42	.211**	.188**	.061	-.120	.003	-.179*	-.020	.361**	1															
10	PS: Warmth	5.90	1.03	.038	.031	-.124	-.004	.135	.152*	-.193**	.016	-.020	1														
11	PS: Structure	5.24	1.32	-.027	-.147*	-.147*	.034	.187**	.073	-.045	.033	-.028	.703**	1													
12	PS: Autonomy Support	5.97	1.04	-.041	.013	-.110	.040	.079	.196**	-.103	-.067	-.058	.747**	.650**	1												
13	PS: Rejection	1.85	1.19	-.004	-.099	.134	.119	-.215**	-.169*	.149*	-.056	.005	-.667**	-.503**	-.664**	1											
14	PS: Chaos	2.61	1.39	.010	-.004	.075	-.048	-.077	-.153*	.187**	-.074	.027	-.597**	-.540**	-.655**	.624**	1										
15	PS: Coercion	2.38	1.14	-.013	-.117	-.100	.089	-.071	-.100	.079	-.007	.001	-.465**	-.371**	-.599**	.504**	.519**	1									
16	Willingness	3.50	1.93	.593**	.822**	.363**	-.442**	-.280	-.206**	-.375**	.236**	.150*	-.118	-.132	-.083	.043	.133	-.034	1								
17	Self-Identity	1.59	.88	.489**	.435**	.364**	-.246**	-.277**	-.088	-.163*	.092	.145*	-.129	-.306**	-.079	.093	.104	.032	.479**	1							
18	Habit	6.65	.79	-.638**	-.469**	-.462**	.272**	.388**	.174*	.224**	-.207**	-.096	.090	.233**	.084	-.116	-.034	-.090	-.517**	-.697**	1						
19	Need Satisfaction: Autonomy	6.03	1.88	-.099	.127	-.035	-.065	.006	.064	.020	-.120	-.118	.203**	.161*	.234**	-.054	-.104	-.151*	-.142*	-.059	.073	1					

1. Intention scored 1 to 7 (higher scores indicating higher intentions to use cannabis); 2. Attitude scored -3 to +3 (higher scores indicating favourable attitudes); 3. Perceived Norms scored 1 to 7 (higher scores indicating others' positive perceptions of cannabis use); 4. PBCobt scored 1 to 7 (higher scores indicating higher perceived control over obtaining cannabis); 5. PBCuse scored 1 to 7 (higher scores indicating higher perceived control over using cannabis); Impulsivity with sub-dimensions of 6. Urgency, 7. Lack of Premeditation, 8. Lack of Perseverance and 9. Sensation-seeking all scored 1 to 4 (higher scores indicating a higher degree of impulsive tendency); Parenting Styles (PS) scored from 1 to 7 on sub-dimension of 10. Warmth, 11. Structure, 12. Autonomy Support, 13. Rejection, 14. Chaos, 15. Coercion (higher scores indicating a higher level of this dimension as reported by young people); 16. Willingness scored 1 to 7 (higher scores indicating higher willingness to use cannabis); 17. Self-identity scored 1 to 7 (higher scores indicating greater self-identity as a cannabis user); 18. Habit scored 1 to 7 (higher scores indicating cannabis as a non-habitual behavior); Need Satisfaction construct scored from 1 to 7 with sub-dimensions of 19. Need Satisfaction: Autonomy, 20. Need Satisfaction: Competence and 21. Need Satisfaction: Relatedness (higher scores indicating a higher sense of satisfaction for each need); 23. Past Behaviour scored 1 to 7 (higher scores indicating higher cannabis use past behaviour); 24. Perceived Risk scored 1 to 4 (higher scores indicating higher perceived mental, physical and social risk of cannabis use) and 25. Behaviour scored 1 to 7 (higher scores indicating higher levels of self-reported cannabis use).

3. Correlations with Behaviour were analysed using Point Biserial Correlations (preferred correlation between a dichotomous and continuous variable)

7.5.3 DESCRIPTIVE DATA ANALYSIS

The young people in this study generally had slightly unfavourable attitudes to cannabis use ($M=-1.18$, $SD=1.87$) and reported that significant others would perceive their behaviour negatively ($M=1.33$, $SD=1.30$). While they reported having somewhat moderate levels of PBC over obtaining (buying) cannabis ($M=3.31$, $SD=2.02$) they reported, on average, higher PBC over using cannabis ($M=6.66$, $SD=.2$).

Given that intentions and behaviour were dichotomised as a result of not meeting the normal distribution assumption, their frequencies will be reported rather than the means and standard deviations. Out of the 206 participants that completed Time 1 questionnaire (including the intentions measure) 168 participants were matched to the Time 2 questionnaire (including the behaviour measure). Given that missing data was dealt with using the EM procedure, we will report the frequencies of 206 participants. Out of these 206 respondents, 160 did not intend to use cannabis while 46 did intend to do so, while in terms of self-reported cannabis use, 146 did not use cannabis in the previous two weeks while 58 did.

It can be noted that within a two-week period 10.8% of sixth form students reported cannabis use in Study 1, while 27.9% of university students reported cannabis use in Study 3.

7.5.4 CORRELATIONS OF VARIABLES WITH INTENTION AND BEHAVIOUR- TESTING HYPOTHESIS 1

Table 7.3 gives the bivariate correlations (Pearson's r) and Point Biserial Correlations between the components of the model. Attitude ($r=.62$, $p<.01$), perceived norm ($r=.41$, $p<.01$) and PBC over obtaining ($r=-.41$, $p<.01$) as well as PBC over using ($r=-.17$, $p<.01$) all correlated strongly and reliably with intention, as the theory postulates.

In terms of correlations with behaviour, PBC over obtaining cannabis was found to be negatively correlated ($r=-.20$, $p<.01$) and so was PBC over using cannabis ($r=-.14$, $p<.01$). Intention and behaviour were also strongly correlated ($r=.71$, $p<.01$).

These findings provide support for hypothesis (1).

7.5.4.1 OTHER CORRELATIONS

In an attempt to provide a holistic picture of university students' characteristics other significant correlations between the variables are worthy of report.

For example, the willingness to use cannabis was found to be strongly positively correlated with attitudes ($r=.82$, $p<.01$) indicating that favourable attitudes towards cannabis use were associated with higher levels of willingness to use cannabis.

Alternatively self-identity was negatively associated with habit ($r=-.70$, $p<.01$) demonstrating how the more cannabis formed part of their identity, the lower the scores on habit strength (indicating higher habitual behavior towards cannabis). Interestingly, past behaviour was associated with higher levels of willingness ($r=.53$, $p<.01$), higher levels of self-identity ($r=.64$, $p<.01$) and lower levels of habit scores ($r=-.78$, $p<.01$).

7.5.5 SOCIAL–COGNITIVE PREDICTORS OF CANNABIS USE INTENTIONS-TESTING HYPOTHESES 2, 3 & 4

Given that a large proportion of the sample scored on the lower end of the scale, intentions was a non-normally distributed variable as indicated by the Kolmogorov-Smirnov test, $p<.05$, and Shapiro-Wilk test, $p<.05$. This violated the assumptions for a multiple regression and so a logistic regression analysis was therefore utilized to examine predictors of those who intended to use cannabis and those who did not intend to use cannabis.

Since the aim of this study was to examine the **separate** contribution of each additional variable as well as how they all fit under one **unitary framework** a series of separate logistic regressions were conducted for each additional variable (see Table 7.4 & Table 7.5) and for additional variables using a **unitary framework** (see Table 7.6 & Table 7.7). The basic TPB variables were always controlled for in order to determine which of the additional variables explained and predicted intentions and behaviour independently of the basic TPB variables.

The finding that the Constant-only model was significant indicates that this null model should be rejected ($p<.001$).

7.5.5.1 TESTING **HYPOTHESIS 2**: THE BASIC TPB VARIABLES (ATTITUDES, PERCEIVED NORMS, PBC OVER OBTAINING, PBC OVER USING) WILL PREDICT CANNABIS USE INTENTIONS.

In the first Block (1) attitudes, perceived norms and PBC were inserted as the predictors of intention, with the model being significant as χ^2 (4, $N=204$) = 115.563, $p<.01$. The Cox & Snell R square = .432 and Nagelkerke R Square = .668, suggesting that between 43.2 % and 66.8 % of the variability in intentions is explained by attitudes and PBC over obtaining while PBC over using cannabis and perceived norms were not significant, therefore supporting hypothesis (2a), and partially (2c) but not (2b).

This model correctly classified 88.7 % of cases overall, an improvement over the 78.4 % in Block 0.

7.5.5.2 TESTING **HYPOTHESIS 3**: THE ADDITIONAL VARIABLES (IMPULSIVITY, PARENTING STYLES, WILLINGNESS, SELF-IDENTITY, HABIT, PSYCHOLOGICAL NEED SATISFACTION, PAST BEHAVIOUR AND PERCEIVED RISK) WILL SEPARATELY PREDICT CANNABIS USE INTENTIONS.

The rest of the steps were conducted in a way so as to show the improvement of the model always in reference to Block (1), essentially presenting how each additional variable **separately** contributed to the model while controlling for the basic TPB variables.

In the second block (2), the impulsivity dimensions could reliably distinguish those who had intentions to use cannabis and those who hadn't as $\chi^2 (8, N= 204) = 122.756, p<.01$. Only attitudes (Wald $\chi^2= 19.60, p<.01$) and PBC over obtaining cannabis use (Wald $\chi^2= 10.142, p<.01$) reliably predicted intentions. The Cox & Snell R square Nagelkerke R square suggest that between 45.2 % and 69.8% of the variability in intentions is explained by these predictors. The overall percentage of correctly classified cases increased to 89.7%. This does not support hypothesis (3a) in that none of the impulsivity dimensions predicted intentions.

The third block (3) examined the separate contribution of the parenting style dimensions whereby the model was significant $\chi^2 (10, N= 204) = 121.058, p<.01$. This model shows that none of the parenting style dimensions were found to be significant, not supporting hypothesis (3b).

Block (4) examining the separate contribution of willingness could reliably distinguish between those who used cannabis and those who hadn't (Wald $\chi^2= 7.45, p<.01$). The model as a whole was significant $\chi^2 (5, N= 204) = 125.165, p<.01$, while R-squares demonstrate that this model containing willingness could explain between 45.9% and 70.8% of the variance in intentions in support of hypothesis (3c).

In Block (5) the construct of self-identity was also found to separately distinguish between those who intended to use cannabis and those who didn't given that Wald $\chi^2= 5.31, p<.01$, with the model for this block being significant as $\chi^2 (5, N= 204) = 121.628, p<.01$. Similarly, Block (6) found habit to significantly distinguish between those with and without intentions to use cannabis, as Wald $\chi^2= 16.41, p<.01$, with the pseudo R-squares suggesting that this model explained between 44.9 % and 69.4 % of the variance in intentions. These findings support hypotheses (3d) and (3e), respectively.

Moreover, in Block (7), among the need satisfaction dimensions, only the construct of autonomy was found to reliably distinguish between those with and without intentions to use cannabis given that

Wald $\chi^2 = 4.97$, $p < .01$, with the pseudo R-squares of this model explaining between 45.2% and 69.8% of the variance in intentions. This partially supports hypothesis (3f) as the other dimensions did not significantly predict intentions to use cannabis.

Finally Block (8) found past behaviour to reliably distinguish between those with and without intentions to use cannabis given that Wald $\chi^2 = 16.061$, $p < .01$. In this Block, PBC over obtaining cannabis became non-significant. The model as a whole was significant as $\chi^2 (5, N = 204) = 153.05$, $p < .01$ while pseudo R-squares explaining between 52.8% and 81.5% of the variance in intentions. The log-likelihood decrease from 97.166 to 59.679 in this Block is an indication of how this model fits the data better than Block (1) with just the basic TPB variables. This goes in support with hypothesis (3g).

Block (9) demonstrates how perceived risk was not found to significantly distinguish between those with and without intentions to use cannabis as Wald $\chi^2 = 2.106$, $p < .05$.

7.5.5.3 TESTING **HYPOTHESIS 4** USING UNITARY FRAMEWORK

Tables 7.6 & 7.7 present the analysis of logistic regression on intention using one unitary framework with all TPB and additional variables that were found to significantly predict intentions.

Table 7.6 shows how the Constant-only model was significant indicating that this null model should be rejected ($p < .001$).

In Block (1) only attitudes and PBC over obtaining cannabis use were the most significant predictors as Wald $\chi^2 = 24.003$, $p < .01$ and Wald $\chi^2 = 12.758$, $p < .01$, respectively. Block (2) showed only habit and past behaviour reliably distinguished between those with and without intentions to use cannabis. The construct of habit with Exp (B) = .154, indicated that with every one unit increase in intentions to use cannabis, there was a .154 decrease in the odds of the individual reporting higher on the habit score (which indicates a higher level of habitual use). Alternatively, past behaviour with Exp (B) of 8.972 demonstrates that with every one unit increase in intentions to use cannabis, the odds of reporting past behaviour of cannabis use increased by 8.972.

This unified framework, correctly classified 94.1% cases overall which is an improvement over 88.7 % in Block 0. The Hosmer and Lemeshow test supports this model as being a good fit given that $p > .05$, and Cox & Snell R square = .540 while Nagelkerke R square = .834, suggesting that between 54% and 83.4% of the variability in intentions is explained by these predictors. The -2 Log Likelihood decreased from 97.166 to 54.394, indicating how this model represents a better fit to the data than Block (1) with just the basic TPB variables. Given that the -2 Log Likelihood in this **unitary framework** was smaller than any of the -2 Log Likelihood values presented in the analysis conducted using variables

TABLE 7:4 LOGISTIC REGRESSION AS A FUNCTION OF INTENTIONS USING TPB VARIABLES AND SEPERATE STEPS FOR EACH ADDITIONAL VARIABLE

				<u>95 % Confidence Interval for Odds Ratio</u>	
	Predictors	B	Wald Chi-square	Odds ratio	Lower Upper
	(Constant)	-1.291	57.515**	.275	
1	Attitude	1.392	24.003**	4.022	2.305 7.018
	Perceived Norms	.317	.889	1.372	.711 2.650
	PBCobt	-.840	12.758**	.432	.272 .684
	PBCuse	-.200	.268	.819	.384 1.745
	(Constant)	1.845	.397	6.327	
2	<i>Attitude</i>	1.306	19.604**	3.692	2.071 6.582
	<i>Perceived Norms</i>	.606	2.427	1.834	.855 3.931
	<i>PBCobt</i>	-.816	10.142**	.442	.268 .731
	<i>PBCuse</i>	.010	.001	1.010	.440 2.322
	Impulsivity: Lack of Premeditation	-.109	.022	.897	.216 3.727
	Impulsivity: Urgency	-.305	.365	.737	.274 1.982
	Impulsivity: Sensation-seeking	-.888	3.499	.411	.162 1.043
	Impulsivity: Lack of Perseverance	1.307	3.182	3.695	.879 15.534
	(Constant)	-.067	.000	.935	
3	<i>Attitude</i>	1.436	24.258**	4.205	2.374 7.447
	<i>Perceived Norms</i>	.480	1.635	1.616	.774 3.371
	<i>PBCobt</i>	-.917	12.890**	.400	.242 .660
	<i>PBCuse</i>	-.036	.008	.965	.432 2.154
	PS: Warmth	.798	1.926	2.220	.720 6.850
	PS: Rejection	.587	2.399	1.799	.856 3.784
	PS: Structure	-.133	.194	.875	.484 1.584
	PS: Chaos	-.221	.625	.801	.463 1.388
	PS: Autonomy Support	-.090	.047	.914	.405 2.059
	PS: Coercion	.475	1.833	1.608	.808 3.198
	(Constant)	-4.353	.641	.013	
4	<i>Attitude</i>	.807	5.941*	2.240	1.171 4.285
	<i>Perceived Norms</i>	.509	1.866	1.664	.801 3.455
	<i>PBCobt</i>	-.824	11.724**	.439	.274 .703
	<i>PBCuse</i>	.120	.086	1.127	.506 2.513
	Willingness	.839	7.452**	2.314	1.267 4.226
	(Constant)	-4.580	1.456	.010	
5	<i>Attitude</i>	1.308	19.337**	3.699	2.065 6.626
	<i>Perceived Norms</i>	.370	1.058	1.448	.715 2.929

			<u>95 % Confidence Interval for Odds Ratio</u>		
	Predictors	B	Wald Chi-square	Odds ratio	Lower Upper
	<i>PBCobt</i>	-.698	8.916**	.498	.315 .787
	<i>PBCuse</i>	.078	.031	1.081	.456 2.561
	Self-Identity	.893	5.311*	2.444	1.143 5.224
	(Constant)	-1.879	.284	.153	
6	<i>Attitude</i>	1.386	14.888**	3.998	1.978 8.082
	<i>Perceived Norms</i>	.198	.225	1.219	.538 2.760
	<i>PBCobt</i>	-.992	11.079**	.371	.207 .665
	<i>PBCuse</i>	.678	1.484	1.969	.662 5.857
	Habit	-2.967	16.413**	.051	.012 .216
	(Constant)	16.092	7.791*	9.765	
7	<i>Attitude</i>	1.414	22.207**	4.114	2.284 7.409
	<i>Perceived Norms</i>	.292	.663	1.339	.663 2.702
	<i>PBCobt</i>	-1.072	14.450**	.342	.197 .595
	<i>PBCuse</i>	-.120	.080	.887	.385 2.039
	Need Satisfaction: Autonomy	-.789	4.966*	.454	.227 .909
	Need Satisfaction: Competence	.012	.002	1.012	.592 1.730
	Need Satisfaction: Relatedness	-.059	.031	.943	.489 1.817
	(Constant)	6.675	3.006	792.387	
8	<i>Attitude</i>	1.327	11.003**	3.771	1.721 8.263
	<i>Perceived Norms</i>	.044	.009	1.045	.420 2.600
	<i>PBCobt</i>	-.387	1.725	.679	.381 1.210
	<i>PBCuse</i>	.233	.182	1.262	.433 3.682
	Past Behaviour	2.790	16.061**	16.275	4.159 63.681
	(Constant)	-6.143	2.156	.002	
9	<i>Attitude</i>	1.594	24.384**	4.925	2.616 9.274
	<i>Perceived Norms</i>	.293	.766	1.340	.696 2.583
	<i>PBCobt</i>	-.900	13.370**	.406	.251 .659
	<i>PBCuse</i>	-.162	.179	.850	.402 1.800
	Perceived Risk	.919	2.106	2.508	.724 8.679
	(Constant)	-.216	.004	.806	

** = p<.01, * = p<.05.

separately at each step, indicates that a model including more than one additional variable, explains cannabis use intentions better than a model including just one variable at a time (Menard, 2002).

TABLE 7:5 CHI SQUARE AND R SQUARES OF LOGISTIC REGRESSION RUN USING DIFFERENT STEPS

Model	Predictors	Chi-square	Hosmer & Lemeshow	Cox & Snell R square	Nagelkerke R square	-2 Log Likelihood
1	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i>	115.563**	p=.820	.432	.668	97.166
2	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i> Impulsivity: Lack of Premeditation Impulsivity: Urgency Impulsivity: Sensation-seeking Impulsivity: Lack of Perseverance	122.756**	p=.446	.452	.698	89.973
3	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i> PS: Warmth PS: Rejection PS: Structure PS: Chaos PS: Autonomy Support PS: Coercion	121.058**	p=.464	.448	.691	91.671
4	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i> Willingness	125.165**	p=.999	.459	.708	87.564
5	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i> Self-Identity	121.682**	P=.917	.449	.694	91.047
6	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i> Habit	144.495**	p=.990	.508	.784	68.234
7	<i>Attitude</i>	122.610**	p=.834	.452	.698	90.119

Model	Predictors	Chi-square	Hosmer Lemeshow	& Cox & Snell R square	Nagekerke R square	-2 Log Likelihood
	<i>PBCobt</i>					
	<i>PBCuse</i>					
	Need Satisfaction:					
	Autonomy					
	Need Satisfaction:					
	Competence					
	Need Satisfaction:					
	Relatedness					
8	<i>Attitude</i>	153.050**	p=.982	.528	.815	59.679
	<i>Perceived Norms</i>					
	<i>PBCobt</i>					
	<i>PBCuse</i>					
	Past Behaviour					
	(Constant)					
9	<i>Attitude</i>	117.583**	p=.986	.438	.677	95.146
	<i>Perceived Norms</i>					
	<i>PBCobt</i>					
	<i>PBCuse</i>					
	Perceived Risk					

** = p<.01, * = p<.05.

TABLE 7:6 LOGISTIC REGRESSION ON INTENTIONS USING ONE UNITARY FRAMEWORK.

		<u>95 % Confidence Interval for Odds ratio</u>				
	Variables	B	Wald square	Chi- square	Odds ratio	Lower Upper
	Constant	-1.291	57.515**		.275	
1	<i>Attitude</i>	1.392	24.003**		4.022	2.305 7.018
	<i>Perceived Norms</i>	.317	.889		1.372	.711 2.650
	<i>PBCobt</i>	-.840	12.758**		.432	.272 .684
	<i>PBCuse</i>	-.200	.268		.819	.384 1.745
	(Constant)	1.845	.397		6.327	
2	<i>Attitude</i>	1.478	9.536**		4.386	1.716 11.208
	<i>Perceived Norms</i>	.099	.041		1.104	.423 2.884
	<i>PBCobt</i>	-.464	2.118*		.629	.337 1.175
	<i>PBCuse</i>	.413	.472		1.539	.450 5.265
	Habit	-1.869	4.609*		.154	.028 .850
	Past Behaviour	2.194	8.964**		8.972	2.134 37.726
	(Constant)	5.949	.749		383.385	

** = p<.01, * = p<.05.

TABLE 7:7 CHI SQUARES AND R-SQUARES OF LOGISTIC REGRESSION USING UNITARY FRAMEWORK

Model	Predictors	Chi-square	Hosmer & Lemeshow	Cox & Snell R square	Nagelkerke R square	-2 Log Likelihood
1	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i>	115.563**	p=.820	.432	.668	97.166
2	<i>Attitude</i> <i>Perceived Norms</i> <i>PBCobt</i> <i>PBCuse</i> Habit Past Behaviour	158.3355**	p=.997	.540	.834	54.394

** = p<.01, * = p<.05.

7.5.6 PREDICTING BEHAVIOUR OF CANNABIS USE –TESTING HYPOTHESES 5, 6, 7 & 8.

Since a proportion of the sample did not use cannabis during the two-week follow up, the dependent variable was dichotomised (users/non-users) and a logistic regression analysis was utilized to examine predictors of cannabis use versus non-use.

Although at Time 2 there was an attrition rate of 17.6%, missing values were imputed using the EM algorithm through SPSS Missing Values Analysis, after finding no statistically significant deviation from randomness using Little's MCAR test, $p = .1000$. In order to avoid participant loss, the EM-imputed data was used with a sample of 204 participants.

Table 7.8 is depicted in a way that presents the effect of each variable when intentions are not accounted for, and when intentions are accounted for in the model. This helps to understand which variables are potentially mediated by intentions.

7.5.6.1 TESTING **HYPOTHESIS 5**: THE BASIC TPB VARIABLES (INTENTIONS AND PBC OVER OBTAINING, PBC OVER USING) WILL PREDICT CANNABIS USE SELF-REPORTED BEHAVIOUR.

The finding that the Constant-only model was significant indicates that this null model should be rejected ($p < .001$).

In the first Block (1) PBC over obtaining and PBC over using cannabis could reliably distinguish between those who had smoked cannabis and those who did not as $\chi^2 (2, N = 204) = 13.410$, $p < .01$. From Table 7.9 it is clear that the Cox & Snell R square = .064, while Nagelkerke R Square = .092, suggesting that between 6.3% and 9.2% of the variability in behaviour is explained by these variables. This model correctly classified 74.9 % of cases overall, an improvement over the 71.9% in Block 0. Intention was a significant predictor throughout supporting hypothesis (5a) while PBC was not consistent, thereby only partially supporting hypothesis (5b).

7.5.6.2 TESTING **HYPOTHESIS 6**: THE ADDITIONAL VARIABLES (IMPULSIVITY, PARENTING STYLES, WILLINGNESS, SELF-IDENTITY, HABIT, PSYCHOLOGICAL NEED SATISFACTION, PAST BEHAVIOUR, PERCEIVED RISK) WILL SEPARATELY PREDICT CANNABIS USE SELF-REPORTED BEHAVIOUR.

In the second Block (2), the impulsivity dimensions of sensation-seeking (Wald $\chi^2 = 4.749$, $p < .05$) and lack of perseverance (Wald $\chi^2 = 10.109$, $p < .01$) reliably distinguished between cannabis users and non-users. Sensation-seeking negatively predicted behaviour with an Exp (B) = .753, and lack of perseverance positively predicted behaviour with an Exp (B) = 4.044,

$p < .01$. When intentions was inserted in the model with a significant contribution (Wald $\chi^2 = 30.529$, $p < .01$), PBC over using cannabis became non-significant implying that the effect of PBC use could have been fully mediated by intentions (see *Mediation A* for the PBC use-behaviour relationship). The fact that lack of perseverance remained significant even when intentions was inserted in the model demonstrates that its relationship with behaviour may only be partially mediated by intentions, or not mediated at all (see *Mediation B*). The Cox & Snell R square = .305 and Nagelkerke R square = .438, suggesting that between 30.5% and 43.8% of the variability in behaviour is explained by these variables. The overall percentage of correctly classified cases increased to 83.3 % from 71.9% in Block 0 with the model as a whole being significant as $\chi^2 (7, N = 204) = 73.729$, $p < .01$. Only some of the impulsivity dimensions predicted behaviour which means hypothesis (6a) is only partially supported.

In the third block (3) the dimensions of PS: warmth (Wald $\chi^2 = 5.850$, $p < .05$) and PS: structure (Wald $\chi^2 = 4.911$, $p < .05$) reliably distinguished those who used cannabis and those who didn't. Even when intentions was inserted in the model at the end PS: warmth (Wald $\chi^2 = 3.642$, $p < .05$) and PS: structure (Wald $\chi^2 = 7.232$, $p < .05$) remained significant, while intentions demonstrated a significant contribution (Wald $\chi^2 = 38.872$, $p < .01$). *Mediation C* and *Mediation D* demonstrate the extent to which intentions act as a partial or full mediator of the relationship between PS: warmth- behaviour, and PS: structure-behaviour, respectively. PS: Warmth and PS: structure form part of the positive parenting style dimensions which means our hypothesis (6b) is not supported as none of the negative parenting style dimensions were significant.

In Block (4) after intentions were accounted for, willingness did not share significant contribution (Wald $\chi^2 = 2.644$, $p < .01$). Hypothesis (6c) is not supported.

In Block (5), self-identity was added in the model and although it was significant before intentions was added in the model (Wald $\chi^2 = 12.323$, $p < .01$) it became non-significant (Wald $\chi^2 = 1.364$, $p > .05$) when intentions were accounted for. Hypothesis (6d) is therefore not supported.

Block (6) added habit as a predictor in the TPB model, and was found to be significant even when intentions were accounted for in the model (Wald $\chi^2 = 3.800$, $p < .05$). This goes in support with hypothesis (6e). Intentions significantly distinguished between users and non-users (Wald $\chi^2 = 20.502$, $p < .01$) (see *Mediation E* for habit-behaviour relationship). The Cox & Snell R square = .283 and Nagelkerke R square = .408, indicate that this model explained between 28.3 % and 40.8% of the variability in behaviour.

In Block (7) none of the need satisfaction constructs reliably distinguished between cannabis users and non-cannabis users, with or without intentions in the model not supporting hypothesis (6f). Block (8) on the other hand found past behaviour to significantly contribute to explaining cannabis use behaviour, both without intentions in the model as Wald $\chi^2 = 21.532$, $p < .01$ and with intentions in the model as Wald $\chi^2 = 5.147$, $p < .05$, therefore supporting hypothesis (6g). Mediation F depicts the relationship between past behaviour and behaviour, through intentions even further. The model as a whole was significant as $\chi^2 (4, N = 204) = 70.805$, $p < .01$, with the log likelihood decreasing from 227.631 (Block 1) to 170.235 in this block, showing an improvement of this model in terms of fitting the data.

Finally, Block (9) shows that when intentions were inserted in the model perceived risk became non-significant as $\text{Exp (B)} = .733$, $p > .05$. Hypothesis (6h) is therefore not supported.

TABLE 7:8 LOGISTIC REGRESSION ON BEHAVIOUR USING SEPERATE STEPS FOR EACH ADDITIONAL VARIABLE

				<u>95 % Confidence Interval for Odds Ratio</u>	
	Predictors	B	Wald Chi-square	Odds Ratio	Lower Upper
	(Constant)	-.941	36.266**	.390	
1	<i>PBCobt</i>	-.258	8.435**	.773	.649 .920
	<i>PBCuse</i>	-.447	4.545**	.639	.424 .965
	(Constant)	2.810	3.814	16.609	
2	<i>PBCobt</i>	-.152/.115	2.484/1.003	.859/1.121	.711/.896 1.038/1.404
	<i>PBCuse</i>	-.450/-.235	3.988*/.802	.638/.791	.410/.473 .992/1.322
	Lack of Premeditation	.350/.299	.620/.353	1.419/1.348	.594/.503 3.392/3.610
	Urgency	-.223/-.120	.448/.094	.800/.887	.416/.412 1.538/1.912
	Sensation-seeking	-.656/-.283	4.749*/.653	.519/.753	.288/.379 .936/1.497
	Lack of Perseverance	1.544/1.397	10.109**/6.089*	4.684/4.044	1.808/1.333 12.133/12.268
	Intentions	2.872	30.529**	9.783	3.170 30.197
	(Constant)	-6.205	4.546*	.002	
3	<i>PBCobt</i>	-.264/.099	7.847**/.706	.768/1.104	.639/.876 .924/1.392
	<i>PBCuse</i>	-.380/-.114	2.815/.179	.684/.892	.438/.526 1.066/1.514
	PS: Warmth	.751/.672	5.850*/3.642*	2.119/1.959	1.153/.982 3.894/3.908
	PS: Rejection	.182/.094	.704/.142	1.199/1.099	.784/.673 1.834/1.794
	PS: Structure	-.424/-.602	4.911*/7.232*	.654/.548	.450/.353 .952/.849
	PS: Chaos	.191/.342	1.241/2.867	1.210/1.408	.865/.948 1.694/2.092
	PS: Autonomy	.080/.344	.075/.986	1.083/1.411	.613/.715 1.913/2.784
	Support				
	PS: Coercion	-.001/-.035	.000/.026	.999/.965	.693/.630 1.441/1.478
	Intentions	3.407	38.872**	30.179	10.341 88.079
	(Constant)	-8.787	6.821**	.000	
4	<i>PBCobt</i>	-.076/.124	.544/1.128	.927/1.133	.757/.900 1.134/1.425
	<i>PBCuse</i>	-.132/-.072	.338/.079	.876/.930	.561/.563 1.368/1.537
	Willingness	.498/.215	20.428**/2.644	1.646/1.240	1.326/.957 2.042/1.608
	Intentions	2.707	24.560**	14.987	5.147 43.638
	(Constant)	-5.147	5.787*	.006	
5	<i>PBCobt</i>	-.178/.078	3.715*/.520	.837/.471	.699/.874 1.003/1.339
	<i>PBCuse</i>	-.222/-.114	.871/.183	.801/.699	.503/.529 1.276/1.504
	Self-Identity	.739/.285	12.323**/1.364	2.093/1.330	1.386/.824 3.161/2.144
	Intentions	2.892	30.927**	18.022	6.504 49.933
	(Constant)	-4.605	4.634*	.010	
6	<i>PBCobt</i>	-.117/.078	1.434/.503	.890/1.081	.735/.872 1.077/1.340
	<i>PBCuse</i>	.077/.016	.066/.003	1.080/1.016	.600/.559 1.942/1.847
	Habit	-1.457/-.678	20.222**/3.800*	.233/.508	.123/.257 .439/1.004
	Intentions	2.522	20.502**	12.453	4.180 37.102
	(Constant)	-.038	.000	.963	
7	<i>PBCobt</i>	-.256/.086	8.042**/.620	.774/1.090	.648/.879 264 .924/1.352

				<u>95% Confidence Intervals for Odds Ratio</u>	
Predictors	B	Wald Chi-square	Odds Ratio	Lower	Upper
<i>PBCuse</i>	-.471/ -.212	5.005*/ .710	.624/ .809	.413/ .494	.943/ 1.325
Need Satisfaction:	-.173/ -.012	.750/ .011	.841/ 1.012	.569/ .807	1.244/ 1.268
Autonomy					
Need Satisfaction:	-.142/ -.251	.689/ 1.624	.867/ .778	.620/ .529	1.214/ 1.145
Competence					
Need Satisfaction:	.273/ .361	2.126/ 3.019	1.314/ 1.434	.910/ .955	1.896/ 2.154
Relatedness					
Intentions	3.218	38.435**	24.981	9.031	69.096
(Constant)	-4.854	3.875*	.008		
8					
<i>PBCobt</i>	.041/ .124	.151/ 1.234	1.041/ 1.132	.849/ .910	1.278/ 1.408
<i>PBCuse</i>	.049/ .129	.027/ .009	1.050/ 1.030	.586/ .568	1.884/ 1.868
Past Behaviour	1.560/ .792	21.532**/ 5.147*	4.758/ 2.207	2.462/ 1.114	9.196/ 4.375
Intentions	2.059	11.335**	7.837	2.364	25.981
(Constant)	-5.379	5.257*	.005		
9					
<i>PBCobt</i>	-.164/ .101	2.886/ .767	.848/ 1.107	.702/ .882	1.026/ 1.388
<i>PBCuse</i>	-.417/ -.177	3.923*/ .516	.659/ .838	.436/ .518	.996/ 1.357
Perceived Risk	-.814/ -.311	6.466*/ .719	.443/ .733	.237/ .357	.830/ 1.503
Intentions	3.008	35.201**	20.247	7.496	54.692
(Constant)	-3.198	2.222	.041		

** = p<.01, * = p<.05.

TABLE 7:9 CHI-SQUARE AND R-SQUARE FOR LOGISTIC REGRESSION ON BEHAVIOUR USING SEPERATE STEPS

Model	Step/Predictors	Chi-square	Hosmer Lemeshow	& Cox & Snell R square	Nagelkerke square	R	-2Log Likelihood
1	<i>PBCobt</i> <i>PBCuse</i>	13.410**	p=.794	.064	.092		227.631
2	<i>PBCobt</i> <i>PBCuse</i> Lack of Premeditation Urgency Sensation-seeking Lack of Perseverance Intentions	73.729**	p=.364	.305	.438		167.312
3	<i>PBCobt</i> <i>PBCuse</i> PS: Warmth PS: Rejection PS: Structure PS: Chaos PS: Autonomy Support PS: Coercion Intentions	75.920**	p =.897	.312	.449		165.121
4	<i>PBCobt</i> <i>PBCuse</i> Willingness Intentions	66.080**	p =.776	.278	.400		174.961
5	<i>PBCobt</i> <i>PBCuse</i> Self-Identity Intentions	64.830**	p =.327	.273	.393		176.211
6	<i>PBCobt</i> <i>PBCuse</i> Habit Intentions	67.664**	p =.998	.283	.408		173.377
7	<i>PBCobt</i> <i>PBCuse</i> Need Satisfaction: Autonomy Need Satisfaction: Competence Need Satisfaction: Relatedness Intentions	67.298**	p =.472	.282	.406		173.742
8	<i>PBCobt</i> <i>PBCuse</i> Past Behaviour Intentions	70.805**	p =.975	.294	.424		170.235
9	<i>PBCobt</i> <i>PBCuse</i> Perceived Risk Intentions	64.183**	p =.606	.271	.390		176.858

** = p<.01, * = p<.05.

7.5.6.3 TESTING **HYPOTHESIS 7** USING 'UNITARY FRAMEWORK':

Another logistic regression was conducted to examine how well the data fits in one unitary framework, using the variables found to be significant in the previous series of regression analyses.

It should be noted that the stepwise logistic regression did not produce results for all variables. This is because this method of regression produces results only for the variables found to reliably distinguish between those who had and hadn't smoked cannabis. This resulted in the analysis producing only two blocks which contained variables that significantly predicted behaviour.

Table 7.10 shows how the Constant-only model was significant indicating that this null model should be rejected ($p < .01$).

After controlling for PBC the only two variables which significantly predicted behaviour were lack of perseverance (Wald $\chi^2 = 12.527$, $p < .01$) and past behaviour (Wald $\chi^2 = 20.845$, $p < .01$).

Block (2) is represented in a way which shows the change that occurs in the model when intentions are inserted in the model. Intentions reliably distinguished cannabis users from non-users as Wald $\chi^2 = 7.717$, $p < .01$. When intentions were inserted in the model, lack of perseverance remained significant (Wald $\chi^2 = 9.569$, $p < .01$) and so did past behaviour (Wald $\chi^2 = 6.142$, $p < .05$).

This unified framework, correctly classified 81.8% cases overall which is an improvement over 74.9 % in Block 1. The -2 Log Likelihood decreased from 227.631 to 159.512 indicating how this model represents a better fit to the data than Block (1). The -2 Log Likelihood in this **unitary framework** was smaller than any of the -2 Log Likelihood values found in the analysis examining variables **separately**. This indicates that a model including more than one additional variable, explains cannabis use behaviour better than a model including just one variable at a time (Menard, 2002).

TABLE 7:10: LOGISTIC REGRESSION USING UNITARY FRAMEWORK

			<u>95 % Confidence Interval for Odds Ratio</u>		
Predictors	B	Wald Chi-square	Odds ratio	Lower	Upper
(Constant)	-.941	36.266**	.390		
1 <i>PBCobt</i>	-.258	8.435**	.773	.649	.920
<i>PBCuse</i>	-.447	4.545**	.639	.424	.965
(Constant)	2.810	3.814	16.609		
2 <i>PBCobt</i>	.081/.151	.550/1.708	1.085/1.163	.875/.927	1.345/1.458
<i>PBCuse</i>	.058/.048	.028/.019	1.059/1.049	.540/.531	2.078/2.073
Lack of Perseverance	1.849/1.699	12.527**/9.569**	6.355/5.466	2.282/1.863	17.695/16.035
Past Behaviour	1.566/.909	20.845**/6.142*	4.785/2.481	2.444/1.209	9.370/5.091
<i>Intentions</i>	1.769	7.717**	5.866	1.684	20.439
(Constant)	-9.173	9.561**	.000		

Note: Forward Conditional is a stepwise selection method with entry testing based on the significance of the score statistic, and removal testing based on the probability of a likelihood-ratio statistic based on conditional parameter estimates. Variables that were significant in the previous series of regression analysis were also entered in the model (sensation-seeking, PS: warmth, PS: structure, willingness, self-identity, habit, perceived risk). Forward conditional regression omitted these variables from their model due to the fact that they were not significant.

** = $p < .01$, * = $p < .05$.

TABLE 7:11 CHI-SQUARE AND R-SQUARE FOR LOGISTIC REGRESSION ON BEHAVIOUR

Model	Step/Predictors	Chi-square	Hosmer Lemeshow	& Cox & Snell R square	Nagelkerke square	R -2 Likelihood	Log
1	<i>PBCobt</i> <i>PBCuse</i>	13.410**	P=.794	.064	.092	227.631	
2	<i>PBCobt</i> <i>PBCuse</i> Lack of Perseverance Past Behaviour <i>Intentions</i>	81.528**	P=.478	.331	.476	159.512	

** = $p < .01$, * = $p < .05$.

7.5.7 MEDIATION ANALYSIS FOR TESTING HYPOTHESIS 9

A series of mediation analyses were conducted to further examine the nature of the relationships between the variables. The criteria necessary to establish mediation were first

tested before conducting the Sobel test, used to assess whether the impact of the mediator is statistically significant (Preacher & Leonardelli, 2001; Sobel, 1982).

7.5.7.1 MEDIATION A: MEDIATION ANALYSIS TESTING THE INFLUENCE OF INTENTIONS ON PBC OVER USING-BEHAVIOUR.

Figure 7.1 shows the relationship examined using mediation analysis. PBC over using was found to be a significant predictor of behaviour, when examined without intentions in the model, however became non-significant when intentions were accounted for.

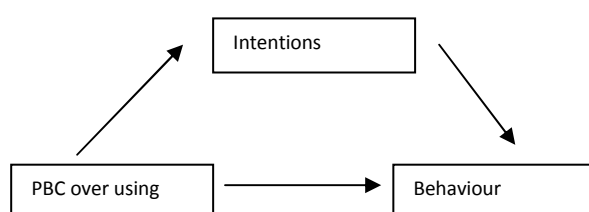


FIGURE 7:1 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN PBC OVER USING AND BEHAVIOUR.

Stage 1: PBC over using predict Intentions given that Exp (B) is .607 ($p < .05$)

Stage 2: PBC over using predict behaviour given that Exp (B) is .662 ($p < .05$).

Stage 3: Intentions predict behaviour, when controlling for PBC over using given that Exp (B) is 19.174 ($p < .01$).

The above relationships needed to be established so as to proceed with mediation analysis. Stage 4 required that a logistic regression analysis was conducted with PBC over using and intention predicting behaviour.

TABLE 7:12 MEDIATION A- LOGISTIC REGRESSION ANALYSIS OF PBCUSE AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	PBC use	.246	.646	.421	.821
	Intentions	1.776	47.752**	.000	19.174

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions was a significant full mediator of PBC use-behaviour relationship as the Sobel statistic = -2.24, $p < .05$. This would imply that intentions act as a significant full mediator of PBC use- behaviour, given that upon controlling for the mediator (intentions), the relationship between PBC use and behaviour became non-significant.

7.5.7.2 MEDIATION B: MEDIATION ANALYSIS TESTING THE INFLUENCE OF INTENTIONS ON IMPULSIVITY: LACK OF PREMEDITATION-BEHAVIOUR.

To further examine the relationship between impulsivity: lack of perseverance and behaviour as found in logistic regression analysis a mediation analysis was carried out in order to determine whether the effect on behaviour was direct or indirect (as in influenced by intentions).

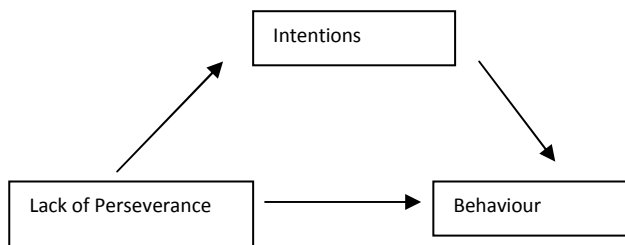


FIGURE 7:2 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN IMPULSIVITY: LACK OF PERSEVERANCE AND BEHAVIOUR.

Stage 1: Impulsivity: lack of perseverance predict intentions given that Exp (B) is 3.808 ($p < .01$).

Stage 2: Impulsivity: lack of perseverance predict behaviour given that Exp (B) is 5.171 ($p < .01$).

Stage 3: Intentions predict behaviour, while controlling for impulsivity: lack of perseverance, given that Exp (B) is 17.935 ($p < .01$).

TABLE 7:13 MEDIATION B- LOGISTIC REGRESSION ANALYSIS OF IMPULSIVITY: LACK OF PERSEVERANCE AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	Impulsivity: Lack of Perseverance	.523	7.515**	.006	4.193
	Intentions	.434	44.232**	.000	17.935

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions were a significant partial mediator of impulsivity: lack of perseverance on behaviour as the Sobel statistic = 2.70, $p < .01$. This implies that there is a significant partial mediation of impulsivity: lack of perseverance on behaviour through intentions.

7.5.7.3 MEDIATION C: MEDIATION ANALYSIS EXAMINING THE INFLUENCE OF INTENTIONS ON PS: WARMTH-BEHAVIOUR.

To further examine the relationship between PS: Warmth and behaviour as found in logistic regression a mediation analysis was necessary in order to determine whether the effect on behaviour was direct or indirect (as in influenced by intentions).

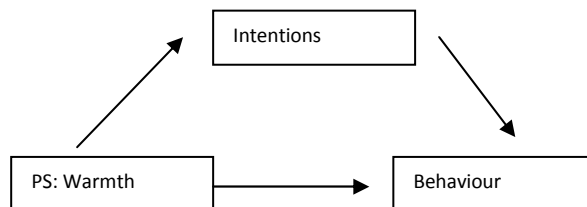


FIGURE 7:3 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN PS: WARMTH AND BEHAVIOUR

Stage 1: PS: Warmth does not predict intentions given that Exp (B) is 1.099 ($p > .05$).

Stage 2: PS: Warmth does not predict behaviour given that Exp (B) is .264 ($p > .05$).

Stage 3: Intentions predict behaviour, while controlling for PS: warmth, given that Exp (B) is 20.064 ($p < .01$).

Due to the fact that two of the above assumptions have not been met, a mediation analysis could not follow through. This implies that intentions do not mediate the relationship between PS: warmth and behaviour.

7.5.7.4 MEDIATION D: MEDIATION ANALYSIS EXAMINING THE INFLUENCE OF INTENTIONS ON PS: STRUCTURE-BEHAVIOUR.

To further examine the relationship between PS: structure and behaviour as found in logistic regression a mediation analysis was necessary in order to determine whether the effect on behaviour was direct or indirect (as in influenced by intentions).

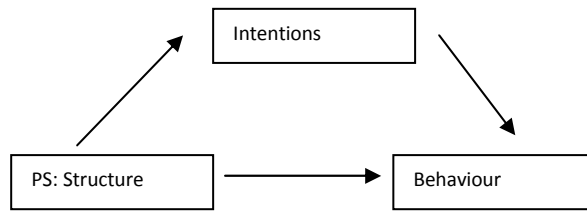


FIGURE 7:4 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN PS: STRUCTURE AND BEHAVIOUR.

Stage 1: PS: Structure does not predict intentions given that Exp (B) is .953 ($p > .05$).

Stage 2: PS: Structure does not predict behaviour given that Exp (B) is .810 ($p > .05$).

Stage 3: Intentions predict behaviour, while controlling for PS: structure, given that Exp (B) is .758 ($p < .05$).

Due to the fact that two of the above assumptions have not been met, a mediation analysis could not follow through. This implies that intentions do not mediate the relationship between PS: Structure and behaviour.

7.5.7.5 MEDIATION E: MEDIATION ANALYSIS TESTING THE INFLUENCE OF INTENTIONS ON HABIT-BEHAVIOUR.

Figure 7.5 shows the relationship to be examined using mediation analysis. Habit was found to be significant predictors of behaviour, when examined without intentions and remained significant when examined with intentions.

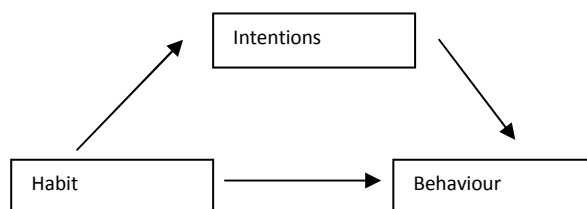


FIGURE 7:5 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN HABIT AND BEHAVIOUR.

Stage 1: Habit predict intentions given that Exp (B) is .070 ($p < .01$).

Stage 2: Habit predict behaviour given that Exp (B) is .214 ($p < .01$).

Stage 3: Intentions predict behaviour, when controlling for habit given that Exp (B) is 10.553 ($p < .01$).

TABLE 7:14 MEDIATION C- LOGISTIC REGRESSION ANALYSIS OF HABIT AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	Habit	.329	4.185*	.041	.511
	Intentions	.497	22.441**	.000	10.553

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions was a significant partial mediator of habit on behaviour as the Sobel statistic = -3.64, $p < .01$, given that upon controlling for the mediator (intentions), the relationship between habit and behaviour was still significant.

7.5.7.6 MEDIATION F: MEDIATION ANALYSIS TESTING THE INFLUENCE OF INTENTIONS ON PAST BEHAVIOUR-BEHAVIOUR.

Figure 7.6 shows the relationship to be examined using mediation analysis. Past behaviour was found to be a significant predictor of behaviour, when examined without and with intentions in the model.

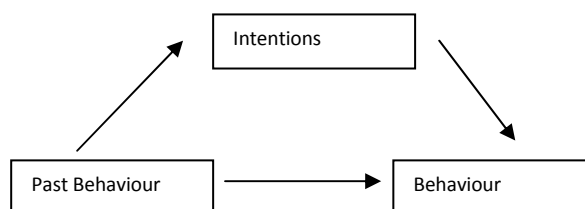


FIGURE 7:6 DEMONSTRATING THE ROLE INTENTIONS COULD HAVE AS A MEDIATING VARIABLE BETWEEN PAST BEHAVIOUR AND BEHAVIOUR.

Stage 1: Past behaviour predict intentions given that Exp (B) is 43.012 ($p < .01$).

Stage 2: Past behaviour predict behaviour given that Exp (B) is 4.488 ($p < .01$).

Stage 3: Intentions predict behaviour, when controlling for past behaviour given that Exp (B) is 6.583 ($p < .01$).

TABLE 7:15 MEDIATION D- LOGISTIC REGRESSION ANALYSIS OF PAST BEHAVIOUR AND INTENTION PREDICTING BEHAVIOUR

Step	Variables in model	S.E.	Wald	Sig	Exp(B)
1	Past behaviour	.322	4.968*	.026	2.051
	Intentions	.581	10.538**	.001	6.583

** = $p < .01$, * = $p < .05$.

The Sobel Mediation test for the significance of the mediation showed that intentions was a significant partial mediator of past behaviour on behaviour as the Sobel statistic = 2.88, $p < .01$, given that upon controlling for the mediator (intentions), the relationship between past behaviour and behaviour was still significant.

7.5.8 COGNITIVE- BASED BELIEFS PREDICTING INTENTIONS – TESTING HYPOTHESIS 10

Intention was regressed on behavioural beliefs, normative beliefs and control beliefs that had been used to produce the scales of attitude, perceived norms and PBC. The variables were entered together and Table 7.16 demonstrates the results. The finding that the constant only model was significant ($p < .01$), indicates that this model can be rejected. As seen, when examined using logistic regression, behavioural beliefs (Wald $\chi^2 = 15.6222$, $p < .01$) and control beliefs (over using cannabis) (Wald $\chi^2 = 23.016$, $p < .01$) could reliably distinguish between those who had intentions to use cannabis and those who hadn't.

TABLE 7:16 REGRESSING COGNITIVE BELIEFS ON INTENTIONS

					95 % Confidence Interval for Odds ratio	
	Variables	B	Wald square	Chi- Odds Ratio	Lower	Upper
	Constant	-1.291	57.515**	.275		
1	Behavioural Beliefs	.083	15.622**	1.087	1.043	1.133
	Normative Beliefs	-.008	.246	.992	.960	1.024
	Control Beliefs (over obtaining)	-.014	1.529	1.014	.992	1.036
	Control Beliefs (over using)	-.098	23.016**	.906	.871	.944
	(Constant)	-1.977	16.615**	.139		

** = $p < .01$, * = $p < .05$.

7.5.9 ADDITIONAL DESCRIPTIVE ANALYSIS

An additional descriptive analysis was conducted with regards to a series of phrases on cannabis use among university students as seen in Table 7.17.

TABLE 7:17 MEANS AND STANDARD DEVIATIONS OF A SERIES OF PHRASES ON CANNABIS USE AMONG UNIVERSITY STUDENTS.

Cannabis use among university students is:	M	SD
(1) Considered normal behaviour (1: Agree- 7: Disagree)	3.86	1.69
(2) Something they do to have fun (1: Agree- 7: Disagree)	3.14	1.52
(3) Something that is part of the university experience(1: Agree- 7: Disagree)	4.80	1.78
(4) Something that most students will stop doing when they leave University (1: Agree- 7: Disagree)	3.59	1.37

7.6 DISCUSSION

7.6.1 PREDICTING INTENTION AND BEHAVIOUR

7.6.1.1 PREDICTION OF INTENTION

The present findings provide further support for the TPB in predicting cannabis use intentions and partially support our hypothesis (1). While attitude acted as a significant predictor of intentions, perceived norm did not, in the majority of the regression analyses, which goes against our hypothesis (1c). Moreover PBC did predict intentions, however there was a distinction between the sub-constructs such that PBC over obtaining cannabis predicted intentions while PBC over using did not, which complies with our hypothesis (8) that these two constructs are distinct and have different predicting powers.

Moreover, a series of regression analyses conducted to examine the predictive power of the additional variables while controlling for the basic TPB variables, showed how willingness, self-identity, habit, psychological need satisfaction: autonomy and past behaviour could reliably distinguish between those who had intentions to use cannabis and those who didn't.

Using a unitary framework, habit and past behaviour stood as significant predictors of intentions among all variables.

The effects of the component beliefs on Intention were also examined. Among all cognitive beliefs, behavioural beliefs and control beliefs over using cannabis were found to be significant predictors that reliably distinguished between those who had intentions to use cannabis and those who hadn't (Table 7.16). These findings support hypothesis (10) and stress the importance of young people's own beliefs about cannabis use (Chabrol, et al., 2004). In relation to university students, the findings show that normative beliefs play almost no role in terms of forming their intentions to use cannabis, but rather the beliefs relating to the individual's evaluation and own self-control levels in terms of using cannabis act as more influential factors.

7.6.1.2 PREDICTION OF BEHAVIOUR

Throughout the regression analyses on behaviour, the steps were taken in a way whereas PBC was accounted for and then intentions were inserted at the end of the model to examine whether intention acted as a mediator for any of the variables.

PBC significantly predicted behaviour, in support of hypothesis (5d), but the significance of the PBC dimension was alternating between PBC over using and PBC over obtaining cannabis throughout the regression analysis. This supports hypothesis (8) that there will be a difference in the predicting power of PBC over using vs. PBC over obtaining cannabis.

Moreover, a series of regression analyses conducted to examine the predictive power of the additional variables while controlling for PBC, showed how impulsivity: lack of perseverance, PS: warmth, PS: structure, habit and past behaviour could reliably distinguish between those who had had used cannabis and those who had not, when intentions were accounted for in the model.

Using a unitary framework, lack of perseverance and past behaviour stood as significant predictors of behaviour when inserted in a model including all variables found to be significant in the previous series of regression analyses. These models that integrated more than one additional variable within one model were found to represent a better fit to the data than the models examining each variable separately. This implies that cannabis use is a behaviour that can be explained better when considered using an integrated approach.

The extent to which intentions acted as a significant full or partial mediator between any of the aforementioned significant variables and behaviour, is discussed in the following section.

7.6.2 FINDINGS: BASIC TPB VARIABLES

7.6.2.1 ATTITUDES

On average, the respondents' attitudes to cannabis were slightly negative. Supporting our hypotheses (1b) & (2a), attitudes strongly correlated with intentions and were a significant predictor of intention.

As discussed previously in Study 1, this finding strongly supports previous findings of TPB studies which have examined the use of two illicit drugs: cannabis (Armitage, et al., 1999; Conner & McMillan, 1999) and ecstasy (Orbell, et al., 2001). Across these studies, attitudes were found to be the strongest predictor of intentions. The dispositional tendencies that university students tend to attach during intention formation support the notion of cannabis use being an attitudinally-controlled versus normatively controlled behaviour (Sheeran, et al., 2002). As with the 16-18 year olds in Study 1, the 18+ year olds in this study were attitudinally controlled in that when forming intentions of whether or not to use cannabis greater

importance was placed on the likely outcomes of the behaviour (e.g. “Using cannabis would be desirable”) than the normative beliefs (e.g. “My parents would not approve of this behaviour”).

Attitudes were more strongly positively associated with willingness to engage in cannabis use than with intentions to use cannabis. This reflects findings from other studies whereby willingness has been found to be strongly positively linked to attitudes towards health-related behaviour (Hyde & White, 2010). Past behaviour was also strongly positively correlated with attitudes such that those with higher frequency of past cannabis use also shared favourable attitudes to cannabis use. Although past behaviour cannot be used as a replacement of what the future behaviour indicates (Fishbein & Ajzen, 2010) the findings from this study show that it can be used as an indication to inform understanding of one’s attitude towards cannabis use. Finally, perceived risk was found to be negatively correlated with attitudes in that the higher the perceived risk of using cannabis in terms of mental, physical and social consequences, the less favourable were the evaluations on using cannabis. This supports the O’Callaghan, Reid and Copeland (2006) study which demonstrated that although university students used cannabis they also reported high levels of perceived personal risk.

With relation to the cognitive antecedents of attitudes, it was found that behavioural beliefs significantly predicted intentions to use cannabis supporting our hypothesis (10). Therefore, university students in this study (as in Study 1) demonstrated the importance of having favourable beliefs towards cannabis use in terms of creating intentions to use cannabis. In a study conducted by O’Callaghan and Joyce (2006) cannabis users, compared to non-users, believed more strongly that cannabis would help them feel relaxed, forget their worries and enjoy themselves. This emphasizes the importance of perceived benefits in using cannabis in comparison to the perceived costs, suggesting that interventions focusing on the negative aspects of cannabis may have little effect on altering intentions to use cannabis. “Rather, fostering positive attitudes towards drug –free experiences that involve social benefits as well as the provision of alternative means to achieve the anticipated benefits of using cannabis are more likely to be effective in changing cannabis use behaviour or providing a protective factor for those who have not yet initiated use” (O’Callaghan & Joyce, 2006, p.111).

7.6.2.2 PERCEIVED NORMS

University students reported that others’ perceptions on their cannabis use would be discouraging.

Perceived norms shared somewhat moderate positive correlations with intentions which supported hypotheses (1c). Yet, in terms of predicting intentions, perceived norms were not found to share any significance thereby not supporting hypothesis (2b). This was not the case in Study 1, where perceived norms were found to predict sixth form college students' intentions to use cannabis. It seems that university students do not place importance on significant others' opinions of cannabis use when forming intentions to use cannabis. Despite evidence showing normative influences to play an important role in determining drug use intentions and/or behaviour (Kam, et al., 2009), some authors have suggested that the manner in which the normative component is conceptualised in the TPB does not represent all the ways in which social influence is exerted (Conner & Armitage, 1998; Terry, et al., 1999). Based on the Norm Focus Theory (Cialdini, et al., 1990) and the idea that norms are multidimensional, future work on cannabis use with university students could apply this construct by examining parental injunctive, peer injunctive, descriptive and personal substance use norms in more detail.

Both in Chapter 4 and Chapter 5, the notion of injunctive norms versus descriptive norms has been extensively discussed. Although empirically distinguishing the two has been theoretically emphasized (Cialdini, et al., 1990; Manning, 2009) this construct was not measured distinctively in this study. This was mainly as a result of Study 2 findings demonstrating that university students were not concerned with others' perceptions about their cannabis use. Perhaps our understanding of cannabis use intentions needs to be shifted. Perhaps, cannabis use intentions are turning away from the influence of significant others' positive/negative perceptions towards a behaviour that is instead determined on the basis of an autonomous/independent-related intention formation.

Finally, the cognitive antecedent of normative beliefs did not predict intentions to use cannabis. Once again, university students place less emphasis on their social world or their beliefs with regards to their significant others, when forming intentions to use cannabis. This contrasts the findings of Study 1, where young people's normative beliefs played a role in determining their intentions to use cannabis. It seems that in the social context of a university, the level of peer influence, although seemingly strong, is not as powerful in terms of influencing one's intention to use cannabis. Although this goes against the findings from the O'Callaghan and Joyce (2006) study which found normative beliefs to be important in terms of predicting university students' decisions to engage in cannabis use, it could be that university

students in this sample place the importance of 'approving groups' as a consequential factor of their drug use rather than as a predicting factor.

7.6.2.3 PERCEIVED BEHAVIOURAL CONTROL (PBC)

Following the weakness of PBC to predict cannabis use in Study 1 as well as the ambiguous perception of what constitutes 'perceived control' in Study 2 this Study 3 used a more refined PBC dimension. Orbell et al.'s (2001) distinction between PBC 'over using' ecstasy versus PBC 'over obtaining (buying)' ecstasy was replicated in the context of cannabis use for this study, in an attempt to overcome and refine its conceptual ambiguity.

Both of these dimensions negatively correlated with intentions and behaviour supporting hypothesis (1d), and also differed in terms of which variables they were associated with. For instance, PBC 'over obtaining' cannabis shared positive associations with the impulsivity dimension of sensation-seeking while PBC 'over using' cannabis did not.

In terms of predicting intentions to use cannabis, PBC 'over obtaining' cannabis was significant while PBC 'over using' cannabis was not. This supported hypothesis (8) that there will be a difference between the predictive powers of these two dimensions. This indicates that when young people form intention to use cannabis they refer to their perceived control 'over obtaining' cannabis which involves external factors such as availability and access. Beliefs about these factors become more readily salient when a young person is thinking about whether the behaviour is under their control, rather than as to whether they have the capacity to perform the behaviour (Fishbein & Ajzen, 2010). So when young people form intentions to use cannabis, beliefs about whether the behaviour is under their control become readily accessible. Mediation analysis showed that intentions acted as a significant full mediator of the relationship between PBC over using cannabis and behaviour.

The negative relationship between PBC and behaviour was found present in both correlation and regression analyses suggesting that it is not merely a statistical artefact (e.g. suppressor effect; Tabachnick & Fidell, 2001). While this negative relationship goes against that assumed by the TPB and found in many other reviews (Armitage & Conner, 2000) it could be due to the behaviour being non-socially desirable in that although young people may feel they have the required resources and opportunities (e.g. availability, time, money) to use cannabis they lack the confidence in their ability to perform this non-socially desirable behaviour. Otherwise, young people may report low levels of PBC in that they don't they have the required resources

to perform the behaviour, but due to facilitating factors (e.g. other cannabis user friends) eventually are able to perform the behaviour.

In relation to the distinction between PBC 'over using' versus PBC 'over obtaining' cannabis use based on the Orbell et al. (2001) measure, this present study further supports the call for specifying the context in which perceived control is applied. The direction of the relationships found in this study go against those found by Orbell et al (2001) given that the university students in this study report lower PBC 'over obtaining' cannabis while they report high levels of intention to do so. This could be due to the fact that although young people acknowledge the presence of factors such as low availability which reduces the amount of perceived control they have 'over obtaining' cannabis, their intentions to use cannabis are not interfered with. Refining these underlying dimensions of PBC- behaviour relationship could strengthen our understanding of young people's decisions to engage in cannabis use.

What is more, control beliefs 'over using' cannabis predicted intentions to use while control beliefs 'over obtaining' did not. This indicates that compared to students who did not have intentions to use cannabis, those who did believed that having to keep up with their studies was not an inhibiting factor. Although this goes in accordance with the O'Callaghan and Joyce (2006) study in which Australian university students' control beliefs predicted their intentions to use cannabis, the present study demonstrates a difference in terms of the context within which control beliefs are placed.

7.6.3 FINDINGS: ADDITIONAL VARIABLES

7.6.3.1 IMPULSIVITY

In terms of predicting intentions, none of the impulsivity dimensions demonstrated any predictive power. Rather, when predicting behaviour, sensation-seeking and lack of perseverance shared significant contributions partially supporting hypothesis (6a). However, sensation-seeking negatively predicted behaviour which was not in the expected direction and became non significant when intentions and PBC were accounted for, while lack of perseverance remained as a positive significant predictor of behaviour throughout. Mediation analysis demonstrated that intentions partially mediated the relationship between lack of perseverance and behaviour indicating that individuals' lack of perseverance exerted an influence on cannabis use, when intentions to use cannabis were present.

Not only do these findings support previous research which stress the importance of impulsivity in TPB framework (Churchill, et al., 2008) they also contribute to understanding which impulsivity traits exert an influence on using cannabis. Lack of perseverance remained as the strongest variable when used in the unitary framework among all other significant additional variables, meaning that cannabis use can be predicted from individuals' ease of distraction. Although this was not the case with Study 1 findings, whereby lack of premeditation predicted behaviour among sixth form college students, the findings here accord more strongly with Study 2. This is because university students described cannabis use as a moment-centred action revolved around the 'knowing but doing' approach. Therefore, although students acknowledge the negative consequences of using cannabis they still choose to engage in the behaviour. This accurately reflects the concept of distraction that lack of perseverance accounts for, and the other impulsivity dimensions do not. University students engage in cannabis use less so as a result of looking for new experiences and sensations, but rather as a result of getting distracted from external stimuli (such as being surrounded by other users or having less of a reason to stay focused). This sample mainly consisted of first year students, assuming that the majority were in the process of adjusting to university life. Research investigating social support in terms of university transition have indicated that social support is crucial for successful adjustment to university life (Lamonthe et al., 1995). In particular it has been argued that students' adjustment experience has little to do with the university and that making compatible friends is essential to the overall experience (Wilcox, Winn, & Fyvie - Gauld, 2005). It could be the case that students prioritise making friends (who may be cannabis users), in place of focusing on university work. It therefore, could be speculated that this lack of focus in university work translates into lack of focus in other areas as well. This is one potential explanation for understanding the relation between lack of perseverance and cannabis use.

While taking into consideration the degree of caution required in terms of including additional predictors in the TPB model (Fishbein & Ajzen, 2010) the view that cannabis use behaviour is based on volitional control and is reasoned is somewhat challenged in this present study. In support of Churchill, Jessop and Sparks (2008) the data here presents further support for including impulsivity as an important factor in explaining and predicting cannabis use among university students.

7.6.3.2 PARENTING STYLES

None of the parenting style dimensions correlated with intentions or behaviour to use cannabis. However, PS: structure and need satisfaction construct of relatedness were strongly correlated. The positive correlation indicated that as higher levels of perceived parental structure were reported there was also a higher level of relatedness being reported. Given that the construct of relatedness refers to feeling a sense of contact with significant others, this positive association is somewhat expected.

Moreover in terms of predicting intentions none of the parenting style dimensions shared significant contribution. This was in contrast to the findings of Study 1, where perceived parental rejection was found to predict intentions to use cannabis. Recent empirical review emphasize the role of the family in the prevention and treatment of substance use (Becona, et al., 2012), whereby authoritative styles act as a protective factor against substance use amongst young people, while neglectful styles increase the risk of young people's drug use. However, it seems that amongst university students parenting styles have little influence on intentions and more influence on actual behaviour. Perceived parental structure and perceived parental warmth were found to predict cannabis use behaviour partially supporting hypothesis (6b). Most importantly, intention did not mediate the relationship between parenting styles and behaviour.

According to the odds ratio, while perceived parental structure shared a negative relationship with behaviour, perceived parental warmth shared a positive relationship with behaviour. This means that where young people perceive parenting styles as warm and supportive, this creates a higher likelihood of using cannabis. Despite this seeming somewhat contradictory in that a positive perceived parenting style is expected to share a negative relationship with young people's cannabis use, it could be explained according to the notion of 'over-protection' by Palmer and Hollin (2000). In the same way that young people may perceive supportive parenting style as meddling and intervening, so could university students in our study have perceived parental warmth as overruling, creating an inclination to engage in risky decision-making. Noller and Callan (1986) explain that young people want their family to be high in cohesion and chaotic in terms of adaptability so as to provide them with the support of their parents while having complete freedom in doing whatever they wanted to do. This goes in accordance with the findings from Study 2, whereby parental supervision was largely associated with the need to escape and experience independence.

What is important to note here is that adolescents are often portrayed as passive recipients to circumstances (Feldman & Elliott, 1990) yet there is definitely scope for beginning to understand that young people are their own constructive agents, especially so within a university context, whereby the transition creates a sense of autonomy and independence. According to Bray and Bom (2004) young people's transition to university represents a process largely reflected by change, ambiguity, and adjustment across a range of previously salient life domains. Coleman and Hagell (2008) explain that young people form their own jurisdictions about what to disclose or share with the parents, either out of shame, or of fear of the consequences or merely to keep their own privacy. Therefore, when examining the relationship between parenting styles and young people one should treat both the findings and the implications that can be made with caution. Similarly, although the findings of this study highlight the importance of parental warmth and structure in terms of cannabis use, more detailed investigations are required to understand how young people are influenced by these parenting styles in terms of their decision-making.

7.6.3.3 BEHAVIOURAL WILLINGNESS

Although willingness has been conceptually assimilated to intentions, the present study provides some evidence to show that it acts as an independent construct.

The regression analysis that examined the separate predictive power of willingness in relation to the basic TPB variables indicates that willingness could reliably distinguish between students who had intentions to use cannabis and those who didn't, which supports hypothesis (3c). It did not stand as a significant predictive variable when examined in the 'unitary framework' predicting intentions nor did it independently predict behaviour given that it was reduced to non-significance when intentions were accounted for going against hypothesis (6c). This finding is important as not only does it reiterate the importance of willingness as emphasized by university students in Study 2, it also provides an indication that decision-making to use cannabis is due to a reaction of social circumstances. This means that cannabis use is a decision that is not only based on intentional planning but also on a reactive approach to certain situations.

The PWM model explains that drug-taking behaviour may be understood as a reaction to a social stimuli or situation (Gibbons, et al., 1998) (e.g. using drugs as a result of being in the same room with others users). A study examining the shift from willingness to intention explains how factors such as age and experience moderate the shift from reactive to reasoned

behaviour (Pomery, Gibbons, Reis-Bergan, & Gerrard, 2009). The authors explain that the decision-making process becomes very different for adults who will have already experienced risky behaviour than for young people. They explain that individuals with less experience are less likely to anticipate future problems and therefore will engage in behaviour that is more reactive in nature and less planned, in opposition to individuals with experience who become increasingly aware of the circumstances that typically precede the behaviour. Pomery et al. (2009) suggests that with experience comes an increased knowledge of what is likely happen if the behaviour is to be enacted and along with that an increased contemplation of the behaviour's consequences. This could explain the influence of willingness on cannabis use behaviour in our findings, whereby 18-24 year olds are less likely to anticipate problems and more likely to engage in decision-making using a social reaction pathway (Gibbons, et al. 1998).

Although it is not the aim of this study to compare the PWM model with the TPB model, the finding that willingness positively predicted behaviour makes way for understanding cannabis use as a rather socially reactive behaviour. Despite the assumption posited by Pomery et al. (2009) that experience shifts behaviour from reactive to reasoned, university students' cannabis use could be a behaviour that captures both elements of a reasoned and reactive behaviour, such that intentions to use cannabis shapes the decision and social opportunities promote a positive reaction to this decision. Placing this behaviour on two separate endpoints of reasoned or reactive could limit our understanding. Rather, cannabis use may lie on a continuum in that it is at the same time both deliberate (i.e. the desire creates an intention to engage in the behaviour) and reactive (i.e. social opportunities encourage willingness to do so).

7.6.3.4 SELF-IDENTITY

As expected, considering cannabis use an important part of one's identity correlated positively both with intentions to use cannabis and behaviour of cannabis use. Self-identity was found to correlate positively with past behaviour, and willingness and correlate negatively with habit. This indicates that the more cannabis use formed an important part of one's identity the higher the likelihood that one would have used cannabis in the past and that one would not refuse cannabis upon offer, as well as use cannabis more frequently as a habitual act.

In terms of predicting intention, self-identity was found to reliably distinguish between those who had intentions to use cannabis and those who did not. This supports findings from other studies which integrated the self-identity component as part of the TPB model and found it to

predict intention (Conner & McMillan, 1999; Fekadu & Kraft, 2001; Moan & Rise, 2006). In particular, Conner and McMillan (1999) emphasized the predictive role of self-identity in predicting cannabis use intentions but not in predicting cannabis use behaviour. The findings from our study showed a similar pattern in that although self-identity predicted intention (supporting hypothesis 3d), it did not predict behaviour when intentions were accounted for (not supporting hypothesis 6d). This means that cannabis use forming an important part of one's identity is predictive of intentions to use cannabis.

Although self-identity did not predict intentions over and above the basic TPB variables, it did independently contribute to the prediction of intentions. This finding challenges the notion that self-identity and attitudes should conceptually overlap. Self-identity has been represented as a set of behavioural outcomes that are equivalent to utilitarian and affective outcomes expected to arise from performing a behaviour (Eagly & Chaiken, 1998) which have been assimilated to attitudes. Rather, our findings are in line with identity theorists who claim that attitudes, norms and self-identity have different motivational foundations (Biddle, Bank, & Slavings, 1987). It seems that university students conform to favourable cannabis use attitudes for instrumental reasons and to norms for fear of being rejected by significant others, while acting in accordance with one's cannabis user self-identity for self-verification reasons. This conceptual distinction has also been demonstrated by Rise et al. (2010) who warranted the strong conclusion that self-identity needs to be incorporated in the TPB as a separate component. It can therefore be argued that a key feature of university students' motivation to formulate cannabis use behavioural intentions (and to subsequently enact those intentions) is to reinforce, support and comply with their sense of self.

7.6.3.5 HABIT

The role of habit strength in cannabis use has been examined before, yet on most occasions using measures of 'past behaviour' as a means to understand the frequency of habit. Verplanken (2006), however, argues that habit should be considered as a mental construct that involves features of automaticity, lack of awareness and mental efficiency.

On the basis of the aforementioned, measuring habit strength using the Verplanken and Orbell (2003) index provides strong reason to assume that it is not conceptually overlapping with the 'past behaviour' measure which was also used in this study.

Habit was found to negatively correlate with intentions and behaviour which essentially means that habitual tendencies to use cannabis are associated with higher intentions to use cannabis and self-reported cannabis use behaviour.

When used in a **separate** regression model and **unified framework**, habit independently predicted intentions and behaviour (supporting hypotheses 3e & 6e). This demonstrates the importance of habit among other constructs used in this study with regards to explaining and predicting cannabis use intentions. The findings from this study go in accordance with other studies' conclusions whereby habit significantly predicted the consumption of illicit substance use within the TPB framework (Conner & McMillan, 1999; Orbell, et al., 2001). Mediation analysis showed that intentions acted as a significant partial mediator between habit and behaviour indicating that habit has an indirect positive effect on behaviour when influenced by intentions to use cannabis. Therefore young people habitually engage in cannabis use when they have the intentions to do so. Although habitual behaviours are considered to occur without much cognitive effort and therefore should not be mediated by intentions (which imply cognitive planning) Fishbein and Ajzen (2010) argue that this is not necessarily the case. Behaviour can become routine with repeated performance and there is no evidence to suggest that intentions are irrelevant when behaviour becomes routine. Evidence demonstrates that intentions can predict both novel behaviours and behaviours that are routine-based (Ouellete & Wood, 1998).

The importance of habit in terms of university students' consumption of cannabis is emphasized not only in this study but also in Study 2 whereby university students describe the process of cannabis use as an automated part of their daily routine, and as a behaviour conducted without much cognitive effort. Ajzen (2002b) states that the residual effects of past behaviour on later behaviour per se are not sufficient evidence of habit and rather alternative explanations of the residual variance are necessary. What is more, the complete mediation of the relationship between past and later behaviour by habit as found in the Verplanken (2006) study supports for the distinction between habit and past behaviour frequency.

7.6.3.6 PSYCHOLOGICAL NEED SATISFACTION

Including this construct was reasoned on the basis of understanding individuals' level of psychological need satisfaction which could directly or indirectly explain behaviour through contextual and situational-level motivation (Hagger, Chatzisarantis, & Harris, 2006).

The descriptive statistics show that need satisfaction levels are mainly on the higher end of the scale indicating that this university student sample felt the needs of autonomy, competence and relatedness to be relatively satisfied.

None of the three sub constructs were correlated with intentions and/or behaviour. Among the additional variables the construct of relatedness was positively correlated with perceived parental warmth, which could be somewhat expected given that relatedness refers to the level a person feels connected with significant others (Deci & Ryan, 2002).

In terms of predicting intentions the need satisfaction construct of autonomy (the extent to which one's choices are based on one's true interests and values) significantly predicted intentions to use cannabis (partially supporting hypothesis 3f). None of the need satisfaction constructs predicted cannabis use behaviour (not supporting hypothesis 6f). The need for autonomy reflects an individual's desire to be a causal agent in his/her world and the extent to which an individual feels a sense of personal choice and ownership of his/her actions (Deci & Ryan, 2002). In this case, with every increase in intentions the odds of higher need satisfaction of autonomy decreased. According to SDT, if the basic psychological needs are not satisfied the individual becomes less likely to internalize the views of others (as a result of alienation) and instead form their own decisions (Harris & Hagger, 2007). It is speculated that cannabis use among university students could be the type of behaviour that is based on very individual, independent decision-making, regardless of its prominent nature to occur socially.

That the construct of relatedness did not predict intentions to use cannabis implies that the desire to be supported by significant others does not explain and predict cannabis use intentions (Hagger, et al., 2006). Rather, what this finding confirms is the individual –oriented approach to engaging in cannabis use, as found in Study (2) through the '*Individual disposition towards cannabis use*' and '*Self-Regulatory Approach*' themes.

7.6.3.7 PAST BEHAVIOUR

Past behaviour was found to be the strongest additional variable in terms of predicting intentions and behaviour (supporting hypotheses 3g and 6g). Mediation analysis showed that the relationship between past behaviour and behaviour was mediated through intentions, showing that past behaviour's effect on future behaviour is influenced by intentions to use cannabis. The findings from this present study support research which has shown there to be a

residual effect of past behaviour on future behaviour (Norman & Conner, 2006). Conner and Armitage (1998) estimated that past behaviour explains on average an additional 13% of the variance in future behaviour over and above the influence of the TPB. Our findings demonstrate that having engaged in cannabis use in the past is a strong predictor of performing the behaviour in the future.

The increments of intentions to use cannabis and self-reported behaviour as a result of increased odds of higher past behaviour may be taken as evidence that the TPB is not sufficient and that it could benefit from the inclusion of other social cognitive variables (Ajzen, 2002a). Such suggestions, however, should be made with caution and the parsimony of the TPB model needs to be considered. It is likely that part of the increased odds ratio could be due to the common method variance between the measures of past and future behaviour (Ajzen, 2002b).

Although our findings show that past behaviour can predict future cannabis use behaviour, it is not perceived as a conceptual replacement of the future behaviour measure given that factors such as temporal stability could influence this relationship. For instance, a study conducted by Sheeran, Orbell and Trafimow (2002) explained that intention stability moderated the relationship between past behaviour and future behaviour such that when intentions were stable, past behaviour related to subsequent performance, while when intentions were unstable past behaviour was not the best predictor of future behaviour. Although it is not the scope of this study to examine the moderating role of intention stability, understanding what factors could connect past and future behaviour seems imperative when attempting to understand the social cognitive mechanisms involved in cannabis use among young people.

7.6.3.8 PERCEIVED RISK

The mean score on the perceived risk measure was on the lower end of the scale indicating that university students did not consider cannabis use to be a risk for their mental, physical and social well-being. Yet this was found to correlate negatively with both intentions and behaviour indicating that as individuals perceived lower risk of cannabis, intentions to use cannabis and self-reported behaviour increased.

Perceived risk did not predict intentions to use cannabis (not supporting hypothesis 3f) and although initially had a significant relationship with behaviour, it was reduced to non-significance when intentions were accounted for going against hypothesis (6f). This means that

the perceived risks of using cannabis are not significant in terms of explaining cannabis use behaviour.

Previous research concerning perceived risk and cannabis use has shown that perceived societal risk had significant effects on cannabis use, but less so than perceived personal risk (Beaudoin & Hong, 2012). The implications for this go in line with those argued by Bjarnason et al. (2008) whereby lower perceived risk predicted increased cannabis use. In our study, the mean score of the perceived risk was very low indicating that in a university setting both users and non-users generally do not perceive cannabis as a risk-related behaviour. Moreover the university students in this sample also reported how cannabis use was generally considered a normal behaviour at university ($M=3.86$, $SD= 1.69$) and something done for the purpose of having fun ($M=3.14$, $SD= 1.52$) (see Table 7.17). The reason for this could be that earlier safe cannabis-related experiences, either observing others or personal experience when at university, led to perceiving its risks as non-detrimental (Lynskey et al., 2003). Moreover, given the high prevalence of simultaneous poly-substance drug use in university settings (Barrett, Darredeau, & Pihl, 2006), the risks of using cannabis could be perceived as lower due to an inevitable comparison made to the risks of using other harder drugs at universities (e.g. cocaine methylphenidate, ecstasy).

7.6.4 STRENGTHS & LIMITATIONS

Previous research has suggested the importance of inter-faculty difference in terms of student demographics and withdrawal rates (Johnson, 1996). Among the strongest features of this study is the inclusion of university students across different schools, in an attempt to include any socio-cultural differences that may occur between students of several faculties.

Surveys of substance use amongst young people usually target socially deprived areas (Flood-Page, Campbell, Harrington, & Miller, 2000), those offending or those characterised as 'problematic' cannabis users (Hammersley, et al., 2003). The sample recruited here compliments studies of vulnerable groups and provides social-psychological information about cannabis users at university, a group that may over-represent rather than under-represent users without problems (Hammersley & Leon, 2006).

One of the limitations of this study was that the prediction of behaviour was done over a relatively short period (two weeks). Although this period has been acknowledged as having

value in terms of promoting health outcomes (Hagger, et al., 2002), future studies could focus on longer range prediction so as to assess the temporal stability of intentions and other social cognitive variables.

Furthermore, although this study was a good attempt at recruiting a large number of participants, future work could concentrate on using online methods to collect this type of data. This would encourage students' participation and honest reports, and they could do this from a more private setting of their own choice.

The fact that many university students approached the researcher post-questionnaire completion in order to express their interest in discussing the topic even further, demonstrates a strong feature of this study. Giving young people the opportunity to complete a questionnaire on a topic which is a sensitive social issue removes a sense of precaution and acts as an encouraging trigger for young people to 'legitimately' express their views. This is a very important consideration to take into account in terms of health-promoting interventions targeting young people at university.

The theoretical and policy implications of this study's findings are discussed in more detail in Chapter 8.

7.7 CHAPTER SUMMARY

- An extended model of TPB is applied in this study, aiming to understand cannabis use behaviour among university students.
- A range of additional variables (impulsivity, parenting styles, willingness, self-identity, habit, past behaviour and perceived risk) found to be significant predictors in Study 1 and important factors in Study 2, are incorporated.
- After a Belief-elicitation study, extended TPB questionnaires were administered using two time points: Time 1 and after a two week follow-up, Time 2.
- 204 university students were recruited across a range of different Schools to obtain variety in terms of student academic characteristics.
- Attitudes and the two PBC dimensions separately predicted intentions to use cannabis but perceived norms did not. Among the additional variables, willingness, self-identity, habit, need satisfaction: autonomy and past behaviour predicted cannabis use intentions.
- Behaviour to use cannabis was predicted by intentions and the two PBC dimensions. Among the additional variables, impulsivity: lack of perseverance, parenting style: warmth, parenting style: structure, habit and past behaviour predicted cannabis use behaviour.
- Intentions were found to fully mediate the PBCuse-behaviour relationship, but were only a partial mediator of lack of perseverance-behaviour, habit-behaviour and past behaviour-behaviour relationships.
- Among the cognitive antecedents, behavioural beliefs and control beliefs predicted intentions to use cannabis.
- The distinction of using two PBC dimensions is supported, while the weak role of perceived norms was discussed.

- The role of each additional variable was elaborated in relation to understanding university students' cannabis use in more depth.
- Although this study used a relatively short two-week follow up period, it was still able to investigate university students' opinions regarding cannabis use, which is a sample that over-represents the cannabis use population.
- Theoretical and policy implications of this study's findings are discussed in detail in Chapter 8.

8 CHAPTER 8: GENERAL DISCUSSION: IMPLICATIONS FOR THEORY, METHOD, PRACTICE AND POLICY

8.1 CHAPTER OVERVIEW

The underlying aim of this research project was to obtain a better understanding of why some young people choose to use cannabis and some do not, so as to inform the design of future education and health promotion interventions in relation to cannabis. This chapter begins with a brief overview of the findings from Studies 1, 2 & 3. The extent to which the basic TPB framework predicts young people's cannabis use is discussed. The extended TPB frameworks, which incorporated a range of additional variables (e.g. moral norms, impulsivity, parenting styles, willingness, etc.), are considered with regards to how they have enabled prediction of cannabis use intentions and behaviour. Several theoretical and policy implications are discussed on the basis of specific findings or general pattern of results. These are discussed in relation to the design of future health promotion materials. Finally, suggestions are made to future health-promotion programmes and drug-related education work in relation to cannabis use amongst young people.

8.2 SUMMARISING FINDINGS FROM STUDIES 1, 2 & 3

8.2.1 STUDY (1)

A longitudinal test (two week follow-up) of an expanded TPB showed that in terms of predicting cannabis use intentions among 16-18 year old sixth form college students, the basic variables within the TPB model (attitudes, perceived norms and PBC) had a significant contribution. None of the additional variables (moral norms, impulsivity, parenting styles, strengths & difficulties and delinquency) predicted cannabis use intentions. The only exception was the perceived parenting style dimension of rejection but this was found not to be a reliable result (see 5.6.1.1 for detailed explanation). Cannabis use self-reported behaviour was strongly predicted by intentions but PBC's predictive utility was inconsistent throughout. The PBC measure was further explored and refined in both Studies 2 and 3. A series of logistic regression analyses and mediation analyses showed that among the additional variables, moral

norms were an independent predictor¹⁵ of behaviour although intention acted as a significant partial mediator. Additionally, impulsivity: lack of premeditation was found to be an independent predictor of behaviour, with no mediation by intention. In relation to cognitive-based beliefs, behavioural beliefs and normative beliefs predicted intentions to use cannabis while control beliefs did not.

The panel element of this study investigating parents' perspectives demonstrated that there were few significant associations between young people's and parents' reports on parenting styles. Furthermore, a thematic analysis of the parents' responses regarding cannabis use among young people demonstrated that parents had an '*Understanding of young people's socio-experimental culture*' and an '*Awareness of cannabis impact*'.

8.2.2 STUDY (2)

Study 2 involved a qualitative exploration of the perspectives on cannabis use of young people at university (aged 18-24 years). An analytic framework derived from the TPB was implemented to focus and frame the questions. Findings from Study 1 also helped inform the content of the interview specifically discussing parenting styles (e.g. the perceived level of influence) and impulsivity in relation to cannabis use.

Thematic analysis themes were extracted according to the patterns of the data. These themes were then positioned within the TPB framework, not as substitutes of the TPB variables but rather as complementary concepts. Participants' evaluation of cannabis use was positioned in the TPB construct of attitude. So, rather than maintaining a general good/bad evaluation of cannabis use, young people referred to a more personalised approach in that there was an '*Individual disposition towards cannabis use*' as well as a '*Personalised relationship with cannabis*'. These two themes reflect young people's individual evaluations of cannabis use, irrespective of society's evaluation, and the personal relationship they have with cannabis. Cannabis use is therefore considered as an important aspect to their identity, which led to the consideration of self-identity as an extra variable to be considered in Study 3.

In relation to influences from other people, young people distinguished between '*Peer vs. Societal Influence*' and had an articulate awareness of the '*Effects of Parental styles*'. These themes were considered alongside the TPB construct of perceived norms and contributed to

¹⁵ By independent predictor it is assumed that the variable explained significant unique additional variance, other than that explained by the basic TPB variables.

understanding the complex relationship between social norms and young people's decisions to use cannabis. Parenting styles were included in Study 3, on the basis of it being an important theme in Study 2. In discussion of PBC over cannabis use, young people explained that PBC differed with regards to the level and situation in which it was applied. The theme of '*Self-regulatory approach*' implied a careful distinction in the way that PBC is measured among young people. In Study 3, therefore, PBC was measured similarly to Orbell et al. (2001) by distinguishing PBC over using cannabis vs. PBC over obtaining cannabis. Moreover, cannabis use was widely discussed as '*Moment-centred action*'. In relation to these two themes it became apparent that aspects such as habit, behavioural willingness and impulsivity were important aspects to examine further in Study 3 in relation to university student's cannabis use.

8.2.3 STUDY (3)

Study 3 involved a longitudinal test (two week follow-up) of an expanded TPB among university students. The PBC dimension was replaced with two dimensions measuring PBC over using vs. PBC over obtaining, as in the Orbell et al. (2001) study. It was found that attitudes, perceived norms and PBC over using (but not PBC over obtaining) cannabis predicted intentions to use cannabis. Among the additional variables, behavioural willingness, self-identity, habit, psychological need satisfaction: autonomy and past behaviour independently predicted intentions to use cannabis. Impulsivity and parenting styles were not significant. The variables that made the most substantial contribution, both independently of the basic TPB variables and when examined all at once, were habit and past behaviour.

Furthermore, although intentions, PBC over using and PBC over obtaining cannabis were significant predictors of self-reported behaviour, the PBC dimensions were not consistent predictors throughout the analysis. This could reflect either the weak internal consistency of PBC or an overall conceptual ambiguity involving this variable (see section 7.5.2.3. for detailed discussion). Among the additional variables, the following independently predicted self-reported behaviour: impulsivity: lack of perseverance; parenting style: warmth; parenting style: structure; habit; and past behaviour. When examined under one **unitary framework** (where all variables were examined in one model), impulsivity: lack of perseverance and past behaviour were found to make the most substantial contribution to explaining behaviour among all other additional variables. Mediation analyses showed that the relationship between PBC, impulsivity: lack of perseverance, habit and past behaviour with behaviour were mediated by intentions. Among the cognitive-based beliefs, behavioural beliefs and control

beliefs over using cannabis predicted intentions to use cannabis while normative beliefs did not. Overall these findings indicate that there is room for expansion of the TPB in terms of university students' cannabis use such that individual-related variables need to be considered.

8.3 IMPLICATIONS OF STUDIES 1, 2 & 3 FOR THEORY AND POLICY

Overall the quantitative and qualitative programme of Studies 1, 2 & 3 clarifies the different roles that the existing TPB variables and additional variables play in the TPB. The need to consider alternative constructs, such as impulsivity, in relation to cannabis use behaviour has also been highlighted. Although there should be continued investment and support for broader interventions delivered both in schools and communities, as well as family-based initiatives, the approach by which this is undertaken should be open to change and adapt to new viewpoints in an attempt to reach out to young people. In order to successfully address young people's health behaviour, intervention and prevention programmes should share a common set of inputs "nearly identical to the basic list of inputs necessary to development and engagement: opportunities for membership, social skill building, participation, clear norms, adult-youth relationships and relevant information and services" (Pittman, Irby, Thoman, Yohalem, & Ferber, 2003, p20).

This section provides a brief overview of current policy on cannabis use with explicit references to the Drug Strategy (Home Office, 2010) and the Department for Education Drug Advice. Policy recommendations on the basis of an increased understanding of young people's cannabis use resulting from the findings of this research will be suggested. Moreover, the extent to which the TPB has proven to be a useful model with which to predict young people's cannabis use intentions and behaviour will be discussed. Within this discussion, reference will be made to how the TPB components can be considered alongside complementary constructs found to be important in young people's reports in the qualitative Study 2.

Initially, the predictive utility of the basic model for cannabis use intentions and behaviour is discussed. Then, the expansion and re-formulation of TPB is analysed with reference to the additional variables included in Study 1 and Study 3 as well as those reflecting the findings from the thematic analysis in Study 2. A series of theoretical and policy implications are discussed throughout.

8.3.1 BACKGROUND ON POLICY REGARDING CANNABIS USE

Cannabis use is a behaviour that has been researched from many different perspectives and across different populations. Although this behaviour is generated by multiple individual, social and environmental factors, there is no single policy that considers these factors simultaneously. With cannabis having been reclassified from Class C to Class B in 2008, despite advice from the Independent Advisory on Misuse of Drugs to keep it as Class C, it seems that strict anti-cannabis policies are the preferred method of dealing with the problem. The obvious question is: Which policy would be most effective in countering the adverse effects of cannabis among young people? The following section will provide a summary on the current policy and legislation surrounding drug use among young people.

8.3.2 CURRENT POLICY

Although governmental policies over the years have shown some progress in tackling drug dependence, the Drug Strategy 2010 (Home Office, 2010b) provided a more integrated approach to support people to overcome drug or alcohol dependence. The Drugs Strategy (Home Office, 2010) and White Paper, 'Healthy Lives, Healthy People' (2010) set out new goals to create a locally-led, recovery-centred system under which most drug and alcohol services would be commissioned by local authorities through Directors of Public Health, while supported by Health & Wellbeing Boards.

Despite a general decline of drug use amongst young people in the UK by around a third in the last decade, cannabis (and alcohol) are the most common substances used (Fuller & Sanchez, 2010). The 2010 Drug Strategy therefore calls for a reconfiguration of services directed at young people in order to respond more effectively to the distinct needs of drug users (see Table 8.1).

An Annual Review on the 2010 Drug Strategy (Home Office, 2012) stressed that dealing with symptoms of drug use is not enough and that it is necessary to address the risk factors that lead to substance misuse. While this represents a useful turning point in dealing with drug use, the review only refers to vulnerable groups and drug-dependent adults who are committing crimes, for whom risk factors of drug use are largely different from the risk factors of a less-vulnerable young population (Lloyd, 1998) such as 16-24 year olds attending schools and universities.

TABLE 8:1 THE DRUG STRATEGY 2010 (HOME OFFICE, 2010) PRIORITIES FOR REDUCING DRUG USE DEMAND AMONG YOUNG PEOPLE

Aim	Action
- Break inter-generational influences	- By supporting vulnerable families
- Provide young people and parents credible information to actively resist substance misuse	- By providing good quality education; accurate information on drugs and alcohol through drug education via FRANK service (a national drugs awareness campaign raising awareness amongst young people of the risks of illegal drugs and providing information and advice, as well as support to parents/carers for better communication with their children about drugs).
- Encourage individual health responsibility	- Create Public Health England (PHE) scheme that encourages well-being by promoting awareness of behavioural consequences.
- Tackle drug-related problem behaviour in schools	- Permit schools to develop a drugs policy framework which sets out their role in relation to drug use.
	- Assign wider powers of search and confiscation, by making it easier for head teachers to take action against pupils found to be using or dealing drugs in school.
	- Establish relationship with young people's services to ensure drug-related support to those who need it.

8.3.3 DEPARTMENT FOR EDUCATION (DfE) - DRUG ADVICE

The use of controlled drugs as defined in the Misuse of Drugs Act (Home Office, 1971) is a criminal offence and so both schools and universities do not permit this behaviour on their premises (e.g. University of Kent; www.kent.ac.uk/censec/documents/Alcohol+DrugsPolicy). The 'Drugs and the Law' document explicitly refers to the penalties associated with possession and dealing of Class A, B and C drugs (see Chapter 1, section 1.4.2., Table 1.1).

The DfE and Association of Chief Police Officers' most recent document was the 'Drug Advice for Schools' (2012). This is non-statutory and instead has been produced to promote

understanding of the schools' duties in relation to drug use among students. The key features of this document are as follows: (a) the schools should provide access to students affected by their own or others' drug misuse through early access to support (b) schools are advised to have a written drugs policy that acts as a central reference point for all school staff and (c) a senior member of staff should be appointed for responsibility and negotiations with local police and support services.

Across universities, policies on drug taking on university premises differ in several aspects but all share the common policy that misuse of drugs is not permitted. Overall, universities provide information about the subject of drug misuse, as well as offer support for individuals seeking access to help/treatment for drug-related problems. By appointing 'Hall Community Support Officers' (e.g. University of Leicester) universities aim to address drug-related incidents where they are known to take place more frequently. Moreover, universities inform students of procedures related to drug-related offences in the 'Handbook of Student Regulations' (e.g. University of Northumbria).

8.3.3.1 THE DRUG EDUCATION FORUM

The Department for Education funded the Drug Education Forum (DEF) (a forum of national organisations) between 1995 and 2012 with the purpose of informing and improving drug education in England. The DEF since then has established a strong reputation for its best policy and practice through extensive analysis of complex data, expert advice and guidelines for smaller, non-specialist organisations, as well as national members.

With the aim of addressing issues that are important to meeting the needs of children and young people in drug education, the DEF produced a series of six papers to help those engaged in teaching drug education whether in school or other settings. Table 8.2 presents an executive summary of these papers main features and recommendations (for more detailed information visit www.drugeducationforum.com).

Overall these six papers provide sufficient guidance on drug education for parents, schools, teachers and young people. Given that these papers are based on up-to-date empirical evidence it is somewhat expected that the recommendations will coincide with the findings from Studies 1-3. Notwithstanding the guidance provided by these papers, the aim of this thesis is to suggest where policies could focus further effort with regards to young people's cannabis use based on the present findings, while also re-iterating and emphasizing the importance of maintaining drug education practices already established by the DEF.

TABLE 8:2 SUMMARY OF DRUG EDUCATION FORUM PAPERS (2012)

Guidance paper	Key features
The principles of good drug education (2012f)	<p>Teaching good drug education via:</p> <ul style="list-style-type: none"> - An integrated school & family-based programme. - Planning the curriculum according to the developmental stages and circumstances of young people, supported by appropriate training and evidence-based work. - Ensuring the educator is responsive and flexible by using interactive teaching styles. - Using credible recent sources to explore, contrast and support or challenge attitudes to drugs, drug use and non-use.
Principles for supporting school drug education (2012e)	Partnership working should ensure effective drug education such that visitors use evidence-based strategies and up-to-date resources. Schools should ensure relevance with their own drug education policy and teachers follow up on building skills and pro-health attitudes.
Beyond the lesson plan (2012a)	Ensuring schools have the responsibility of promoting wellbeing of their pupils and helping them manage risk such as reducing the likelihood of drug use through evidence-based prevention, effective early intervention and support. Effective classroom management which fosters positive learning and sets expectations for high performance minimising pupil disengagement and truancy.
Engaging parents in drug education (2012b)	<p>Parents are encouraged to be involved in young people's drug education by:</p> <ul style="list-style-type: none"> - Engaging in a continuous conversation about substance use, rather than making it a 'big talk', and initiate these conversations from a young age. - Setting rules and presenting good examples of sensible decision-making.

- Becoming aware of their friends' parents and becoming knowledgeable about substances.
- Getting parents to engage in parenting courses that combine drug awareness with parenting skills, as well as ensuring they attend events wherein parents and children do activities together so as to enhance parents' attendance.

Learning from life skills programme (2012c)

Specific programmes such as Life Skills Training and Unplugged have been set out that aim to develop children and young people's life skills. Among the main skills developed are:

- Decision-making and critical thinking skills (e.g. young people reconsider their own assumptions about the norms of behaviour amongst peers).
- Communication and interpersonal skills (e.g. building effective communication, assertiveness about own values and decisions).
- Coping and self-management skills (e.g. raise motivation to work towards long-term goals increasing their sense of agency in their lives, increasing young people's awareness of own strengths & weaknesses to enable learning of coping strategies)
- Interactive learning (e.g. enabling drug-related information to be learnt in realistic contexts by using role play and group discussion).

Legal Highs (2012d)

Informing drug educators about a number of new drugs often known as 'legal highs' designed to mimic the effects of illegal drugs. Educators are advised to challenge misconceptions that these drugs are legal, safe and commonly used.

8.3.4 INTERIM SUMMARY

The Drug Strategy (2010) is at the forefront of governmental policy and provides an integrated approach in terms of drug use. Encouraging individual health responsibility by promoting awareness of behavioural health consequences is one of the few actions taken by this strategy. The DEF has extensively and analytically provided advice on teaching drug education whether in schools or other settings, through a series of six fully detailed and informative guidance papers (see Table 8.2). The following section will discuss the research findings from Studies 1, 2, and 3, while analysing the theoretical and policy implications.

8.3.5 THE BASIC TPB MODEL

To review the extent to which the basic TPB model is a good predictor of cannabis use intentions and behaviour among sixth form college students and university students, findings from our studies will be compared and contrasted with those of previous research.

8.3.5.1 PREDICTING CANNABIS USE BEHAVIOUR

Intention, as the TPB postulates, was the strongest predictor of behaviour in Studies 1 and 3, which complies with previous work on substance use. The predictive validity of intentions has been found to account for a significant proportion of variance in substance use behaviour. Armitage et al.'s (1999) meta-analyses indicated that intentions are the most proximal determinants of substance use behaviour. Another study by Conner and McMillan (1999) on cannabis use among students also reported intentions to be the most significant predictors of behaviour.

However the relationship between intention and behaviour is not always perfect. It is established that when people intend to perform a behaviour they most commonly actually do, yet it has also been argued that some people have intentions but do not perform the behaviour. A comprehensive review of the literature on health-related behaviours demonstrated that intentions were weakly correlated to behaviour ($r=.43$; McEachan, Conner, Taylor, & Lawton, 2011). More recently, research has shown that individuals who base their intentions strongly on affect have more stable intentions than those who base their intentions on cognitions (Keer, Conner, Van den Putte, & Neijens, 2013). In other words, if a behaviour is considered to be pleasurable intentions to perform this behaviour will be stronger than if the behaviour is considered to be useful. This is because affective consequences are experienced immediately after the behaviour whereas the cognitive processes of evaluating the usefulness of a behaviour take longer.

Reporting the intention frequency (e.g. 'how frequently do you intend to...') limits the ability to measure the strength of an intention (e.g. 'I strongly intend to ...'). So although individuals might report an intention to perform a behaviour frequently, this does not mean that these intentions are strong and will remain consistent over time (Conner, et al, 2000). This implies that asking participants to report how many times they intend to use cannabis only refers to the intended frequency but not how strong this intention is (Conner et al, 2000). If someone intends to use cannabis seven times over the forthcoming week and someone else intends to use it only twice this does not mean that the former person will have stronger intentions; it just means that the frequency of those intentions is higher than the latter. Nevertheless such intention frequency measures may show strong correspondence with frequency measures of behaviour. The problem is that this does not represent the relationship between intention strength and behaviour. Future studies might usefully follow the advice of Ajzen and Fishbein (1980) to measure the strength of intentions to use cannabis with a particular frequency (e.g., I strongly intend to use cannabis at least twice in the next week) and an appropriate corresponding measure of behaviour (e.g., I used cannabis twice or more in the last week) (Conner, personal communication, 5 June 2013).

According to Keer et al., (2013) individual differences need to be considered in health interventions by taking into account the degree to which intentions are based on affect. Specifically, strategies aimed at strengthening the intention-behaviour relationship should focus on creating intentions that have a higher likelihood to be carried out. For example, health messages targeting cognition (e.g. by informing people about the advantages and disadvantages of a behaviour) may only be beneficial in changing people's intentions but not in translating these intentions into actual behaviour (Keer, et al., 2013). Instead messages associating health behaviours with positive affect may change intentions but also increase the likelihood that these intentions are translated into behaviour. This implies that when distinguishing between those who intend to use cannabis and those who do not it is important to acknowledge the mediating role of affect. This will enable better prediction between those who will be more likely to engage in those intentions than those who will not.

According to the TPB, the construct of PBC acts as a predictor of intentions and as a direct predictor of behaviour. There has been an array of studies showing how PBC has additional predictive power in explaining behavioural intention and behaviour, yet PBC was found to

be an inconsistent predictor of behaviour in both Study (1) and Study (3). Although reformulated in Study (3), the PBC dimension did not consistently predict behaviour and the two types of PBC constructs, as based on the Orbell et al. (2001) study, (PBC over using vs. PBC over obtaining) differed in terms of their predictive power. This suggests that the way PBC is measured and its theoretical underpinning may be questionable. It has been argued that Ajzen's conceptualization of PBC is overly simplistic (Kraft et al., 2005). However, a distinction between self-efficacy and perceived control is unnecessary given that perceived difficulty captures both facets. Armitage & Conner (2001) counter this argument by explaining that firstly, perceptions of difficulty do not relate explicitly to perceived control given that individuals can understand 'difficulty' in terms of personal control over a behaviour, and secondly, treating PBC as a unitary construct reduces the sensitivity of the TPB. The weak influence of PBC in explaining cannabis use, as found in Studies 1 & 3, can be explained on the basis that "perceptions of control were not sufficiently accurate to serve as good proxy for actual control"(Ajzen, 2011, p.1115). In other words, PBC over using cannabis may be greater than actual control and so PBC's power to predict intentions is reduced.

The quantitative Study 1 showed that the PBC-behaviour relationship was inconsistent but did not provide information on reasons for young people's reports on this inconsistency. The qualitative Study 2 helped to understand this in greater depth. Young people discussed a '*Self-Regulatory approach*' by which self-control was particular for every individual in that it differed according to the level and type of situation in which it was applied. The implications of the inconsistent PBC-behaviour relationship (Study 1), as well as the documentation of a much needed better understanding of how PBC is applied to cannabis use among young people (Study 2) calls for a re-consideration of the way that the PBC construct is measured within the TPB. Tailoring the PBC component to fit more specifically with cannabis use social contexts and situations could augment the predictive validity of PBC in terms of behaviour. However it may be difficult to find a common social context within which cannabis is used given that it is expected to differ between groups. The fact that levels of PBC had little or nothing to do with explaining intentions to use cannabis or self-reported cannabis use could imply that cannabis use is an 'attitudinally-controlled' or 'normatively-controlled behaviour (Trafimow & Duran, 1998). This means that young people place greater weight on the outcome evaluations of cannabis use and the social pressures perceived, rather than on their PBC, when forming decisions as to whether or not

to use cannabis. Therefore prevention schemes should be aware that factors such as the desirable features of cannabis, and having cannabis using friends place young people more at risk of cannabis use than factors that influence perceived control such as easy accessibility of cannabis.

8.3.5.2 PREDICTING CANNABIS USE INTENTIONS

The regression models testing the predictive ability of the basic TPB variables in predicting intentions showed that in Study 1, the model was significant as $\chi^2 (3, N= 198) = 120.866$, $p < .001$ and in terms of Study 3, the model was also significant as $\chi^2 (4, N= 204) = 115.563$, $p < .01$. Taken as a whole, this indicates that attitudes, perceived norms and PBC were predictive of intentions in our studies. Study 1 showed that positive attitudes towards cannabis use, positive perceived social norms as well as low PBC appear to be proximal determinants of cannabis use intentions.

In Study 3 where the PBC construct was changed to include two dimensions (PBC over using vs. PBC over obtaining), only PBC over obtaining cannabis predicted intentions to use while PBC over using did not. These findings support the Orbell et al., (2001) study wherein the two PBC constructs were distinct constructs as they made different contributions to the prediction of ecstasy use intentions. On the basis of our findings the sufficiency of the TPB could be improved by consideration of distinct constructs of PBC.

In Study 3 university students' perceived social norms did not significantly predict intentions, while young people's perceived norms in Study 1 did predict intentions. The weak influence of perceived norms in the TPB has been previously demonstrated by lower beta weight in regression analysis (as compared to attitudes) and a very low correlation with intention as found in a meta-analysis of 185 planned behaviour studies (Armitage & Conner, 2001). Manning (2009) explains that the magnitude of the perceived norms-behaviour relationship can sometimes be influenced by social approval in that the relation between these two constructs will be stronger for behaviours that are not socially approved. So it can be assumed in Study 1 that 16-18 year olds' perceived cannabis use as a socially disapproving behaviour, therefore increasing the predictive validity of perceived norms in predicting intentions. On the other hand, in Study 3, university students did not perceive the behaviour as socially disapproving thereby explaining the weak influence of perceived social norms in explaining intentions. This was somewhat reiterated in Study 2 in which it was found that young people referred to a distinct difference in '*Peer vs. Societal*

influence', which is a distinction that a unitary construct of perceived norms is not able to capture. This suggests that the TPB's sufficiency in predicting cannabis use intentions among the university student population could be improved by applying other complementary norm-related constructs such as 'peer descriptive norms'. University students' cannabis use is the type of behaviour that is influenced more by descriptive norms (i.e. what others do) (Rivis & Sheeran, 2003) than by injunctive norms (i.e. others' approval or disapproval of their own behaviour). Therefore, adding descriptive norms to the TPB could eventually improve the prediction of cannabis use intention among the university student population.

Moreover the cognitive-based beliefs which predicted intentions differed between those of the 16-18 year old group and the 18+ university student group. Regarding the former group, it was found that behavioural beliefs and normative beliefs, but not control beliefs predicted intentions to use cannabis, while for the latter behavioural beliefs and control beliefs over using cannabis predicted intentions but normative beliefs did not. Taken overall, these results support findings which have stressed the importance of young people's cognitive beliefs about cannabis use (Chabrol et al., 2004). What the TPB should consider, however, is the different weight given to these beliefs according to young people's age range. Beliefs relating to the evaluation of cannabis use and beliefs concerning significant others were more influential factors in explaining cannabis use intentions than the control beliefs. In contrast, the 18+ year old university students once again placed less emphasis on beliefs about significant others, and instead were more influenced by their own evaluations and self-control in terms of using cannabis.

These findings have implications for both theory and practice. The cognitive antecedents in the TPB framework can have direct explanatory power in predicting intentions. This suggests that, although the cognitive salient beliefs (behavioural beliefs, normative beliefs and control beliefs) are situated as distal variables in the TPB, they have a much more proximal predictive utility in explaining young people's cannabis use (Conner & Norman, 2005). It is suggested that education-based interventions emphasize these beliefs to influence young people's cannabis use intentions. This could be applied via Motivational Interviewing (MI) treatment-based (Burke et al., 2003) programmes that have attempted to prevent early involvement in drug use by informing choice. The content of this counselling could focus on changing belief-based perceptions using cognitive-based techniques, as well as using attitude-based interventions. In a systematic review of TPB-based interventions to

change behaviour, it was suggested that more cognitive-based interventions were promoted given that TPB is primarily a cognitive theory (Hobbis & Sutton, 2005). The importance of this approach is augmented by the fact that in Study 2 a participant reported reducing her cannabis intake after understanding her individual decision-making with regards to her cannabis use. This demonstrates the importance of young people discussing and identifying the psychological processes with regards to their decisions to use cannabis. University Counselling Services could therefore set up discursive drug-focused groups to enable students to understand the processes by which they decide to use cannabis. Given that this could be a time-consuming procedure, an alternative option could involve establishing a university website where young people discuss drug use with on-line university counsellors and other drug-users to promote a better understanding of the psychological processes involved in this behaviour.

8.3.6 EXTENDING THE TPB MODEL

This section will refer to variables found to be significant in predicting intentions and or behaviour within the TPB model. The re-formulation of the TPB model will also be considered on the basis of the themes identified in Study 2 which could serve as complementary constructs to the basic TPB variables.

8.3.6.1 AN EXTENDED TPB MODEL EXAMINING CANNABIS USE AMONG SIXTH FORM COLLEGE STUDENTS (16-18 YEAR OLD): THEORETICAL & POLICY IMPLICATIONS OF STUDY 1

Study 1 examined additional constructs such as moral norms, impulsivity, parenting styles, strengths and difficulties and delinquency alongside the basic TPB variables. Figure 8:1 shows which variables were significant in terms of predicting intentions and behaviour. Only the variables found to independently predict intentions and/or behaviour will be discussed in terms of theoretical implications. For instance, parenting styles, strengths and difficulties as well as delinquency were not found to independently predict cannabis use intentions and/or behaviour. This simply suggests that the TPB's sufficiency will not improve if these variables are considered in relation to young people's cannabis use.

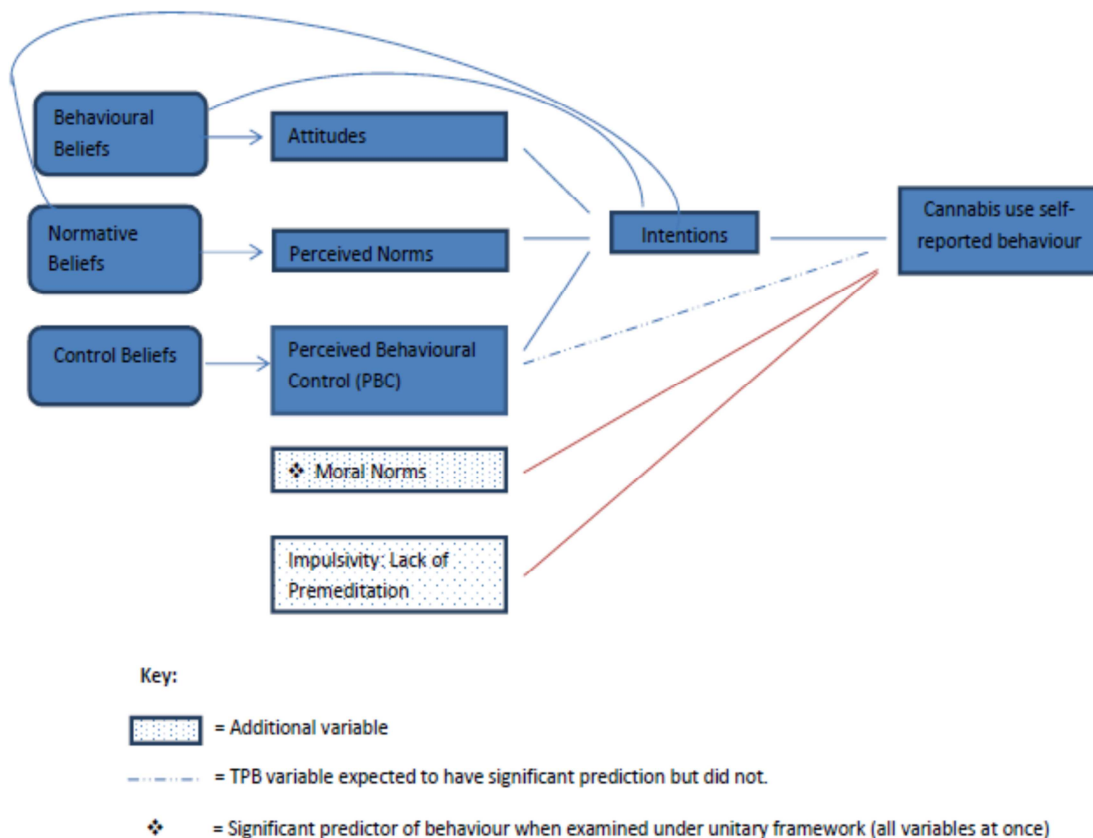


FIGURE 8:1 SCHEMATIC DIAGRAM SHOWING TPB MODEL AND SIGNIFICANT PREDICTIONS IN STUDY 1

8.3.6.1.1 MORAL NORMS

Moral norms independently predicted cannabis use behaviour among 16-18 year olds. In particular, young people's weak moral norms were important in explaining cannabis use behaviour. This means that young people who had strong moral norms to not use cannabis (e.g. agreeing that cannabis use goes against their moral principles) did not report cannabis use, while young people who had weak moral norms (e.g. disagreeing that cannabis use goes against their moral principles) did report cannabis use. This supports other drug-related research of illicit drug use and cannabis use work in particular (Conner & McMillan, 1999). Although theoretically it is assumed that moral norms are important predictors to be considered in a TPB model when examining behaviours with a moral dimension (Manstead, 2000), it is important first to understand whether for these young people (16-18 year olds) cannabis use can be characterised as such. Kuther and Higgins D'Alessandro (2000) found that in a sample of 70 high-school students the decision to engage in substance use and/or risky behaviour in general was more often viewed as a personal decision than as either a moral or conventional decision. Nonetheless, given the contribution made by moral norms

in Study 1 this construct could be considered alongside the perceived norms component within the TPB. In addition it is important to consider that moral norms are rather arbitrary in the extent to which they reflect general societal principles or personal ethical guidelines (Smetana, 1999). By measuring ‘personal norms’ (e.g. Kiriakides et al. 1999) in combination with ‘moral norms’ this distinction can be clarified, promoting further understanding of how these norms influence young people’s decision-making regarding cannabis use.

8.3.6.1.2 IMPULSIVITY

Although none of the impulsivity dimensions predicted intentions to use cannabis, it was found that lack of premeditation acted as an independent predictor of behaviour. This is consistent with other studies which have emphasized the role of impulsivity in relation to risky sexual behaviour among young people (Fishbein et al., in preparation) and risky behaviour initiation (Romer et al., 2009). It has been suggested that the strong influence of impulsivity in relation to these types of behaviours are characteristics of deficits in control (Romer et al., 2009). According to our findings, young people aged 16-18 years old base their decisions to engage in cannabis use on spontaneous self-serving impulses characterised by a lack of thinking about the consequences of the behaviour. Churchill et al. (2008) explain that although the TPB focuses on the rational thought processes of human behaviour such that people make systematic and rational use of information available to them there is support for integrating the impulsivity dimension within the TPB in explaining behaviour where total personal control is not apparent.

Moreover, it could be speculated that the contribution of impulsivity to explaining cannabis use behaviour could also have been the reason behind PBC acting as a non-significant contributor to explaining behaviour throughout the regression models, in that impulsivity could have offset any effects of PBC on intentions and behaviour (see 5.5.4.2. for detailed discussion). Therefore, before proposing an addition of impulsivity to expand and clarify the nature of spontaneous behaviours in the TPB, future work needs to clarify any conceptual overlap between impulsivity and PBC. Ajzen (1991) explains that proposed additions to the TPB model should be conceptually independent of the theory’s existing predictors.

While the inclusion of additional predictors in the TPB requires a great deal of caution, it could be suggested that, in the case of 16-18-year-olds’ cannabis use, behaviour is not sufficiently “reasoned”, “rational” and as under “volitional control” (Ajzen & Fishbein, 1980, p.5). Instead people don’t always consider the implications of their actions before they

decide to engage or not engage in a given behaviour. So while on one level, the notion of impulsivity needs to be seriously considered when explaining behaviours where total personal control is not apparent, on another level impulsivity may be subsumed within the PBC construct. The TPB could benefit from incorporating personality tendencies (e.g. impulsivity) within the PBC construct to increase the TPB's predictive validity in explaining these behaviours.

In terms of policy guidance, it would be advisable to develop and evaluate innovative approaches to the ways in which community support counselling centres work as well as to consider how social media networks develop cannabis use prevention information programmes. The DfE and Association of Chief Police Officers' most recent document 'Drug Advice for Schools' (2012) emphasizes support to drug using students by advising schools and community groups to pay more attention to the individual dispositions of young people. On the basis of the present findings, identifying which individuals have higher impulsivity traits than others could be one way to identify the ones more prone to engaging in risky behaviours such as cannabis use. This could then translate into applying effective in-classroom interventions which are focused on teaching young people self-instruction training. These would constructively adjust impulsivity levels and so help students learn to guide themselves through tasks by asking and answering a series of questions (Meichenbaum & Goodman, 1971). This would help an impulsive student to size up the demands of a task, cognitively rehearse the task, guide their performance through self-instruction and give self-reinforcements where appropriate. Although using such a technique in the context of reducing cannabis use has not been used before, and could be expensive, it is worth considering when attempting to teach impulsive young students to think before acting.

8.3.6.1.3 THE PARENTING COMPONENT

The Skinner et al. (1986) parenting styles measure had not been used before within the TPB framework. Although the constructs are somewhat general and may not comply with the TACT 'principle of compatibility' it has been argued that global-level constructs should be considered within any full decision-making analyses (Elliot, McGregor and Thrash, 2002). Nonetheless, as a result of the non-adherence of TACT principle the correlations observed could be lower than expected due to lack of operational homogeneity between the variables (Francis et al., 2002). None of its constructs independently predicted cannabis use intentions and/or behaviour among this population. This is inconsistent with other work

which has found the parenting dimension to influence young people's behaviour, either directly (e.g. parents smoking causes young people's smoking) or indirectly (parents smoking explains young people's approval of this behaviour) (Harakeh et al., 2004).

However, the panel element of this study investigating parents' perspectives showed there to be very few significant associations between young people's and parents' reports of parenting styles. These findings are indicative of miscommunication between these two parties to the extent that parent's report of parental warmth is not perceived by young people as such and maybe even as over-involvement (Noller et al., 1992). This suggests an integration of parental injunctive as well as parental descriptive norms in order to enhance the normative component of the TPB and improve the parsimony of the model in terms of predicting 16-18 year olds' cannabis use intentions. In other words, examining young people's perceptions of what their parents think they ought to do, as well as what their parents actually do, would more accurately represent the not-so-straightforward relationship between young people and their parents. In fact the qualitative component of this study showed that the parents of this group referred to an open '*Understanding of young people's socio-experimental culture*' and an '*Awareness of cannabis impact*'.

In this study, however, young people reported perceived parenting styles and not actual parenting styles. Future work examining young people's behaviour using the TPB framework is advised to gain an additional qualitative insight into parents' perspectives to obtain a more accurate representation of the parenting styles. This in turn, could help improve the efficacy of the TPB such that discursive accounts can complement the quantitative findings within the TPB.

Family-based interventions, such as family communication strategies, should emphasise the importance of establishing open parent-child communication. The fact that there were few associations between young people's and parents' reports on parenting styles could mean that programmes need to be tailored separately for parents and young people. Hamilton (2010) advises that it is important for parents to become aware of the different developmental temperamental changes that teenagers go through from the early years to later years so as to be able to provide appropriate support. While current drug-based policies include family-based interventions, our findings highlight the need to exercise caution in this regard, by accounting for differences in perceptions and understanding between parents and young people.

8.3.6.2 A QUALITATIVE TPB-BASED APPROACH EXPLORING CANNABIS USE AMONG UNIVERSITY STUDENTS (18-24 YEAR OLD): THEORETICAL & POLICY IMPLICATIONS OF STUDY 2

Study 2 was an in-depth qualitative investigation of the perspectives of university students. This section refers first to the theoretical implications of the themes revealed by the data in relation to how they complement the TPB constructs (see Figure 8.2), and then to relevant policy recommendations accordingly.

8.3.6.2.1 STUDY (2) – ATTITUDES

In relation to evaluating cannabis use, young people reported that it was much more an *'Individual disposition towards cannabis use'* as well as a *'Personal relationship with cannabis'* that determined their attitudes (see Figure 8.2 for the themes' definitions). This indicates a deviation away from a general 'good/bad' evaluation as posited within the TPB towards a more specific understanding of the behaviour's unique meaning to them.

A closer analysis of these themes revealed the importance of including self-identity and behavioural willingness in the subsequent TPB-based Study 3. Self-identity refers to the idea that cannabis is an important aspect of some of these young people's lives to the extent that their identity is largely defined by it. Willingness concerns the voluntary desire to use cannabis, which unlike intentions involves less pre-contemplation of behaviour (Gerrard et al., 2005).

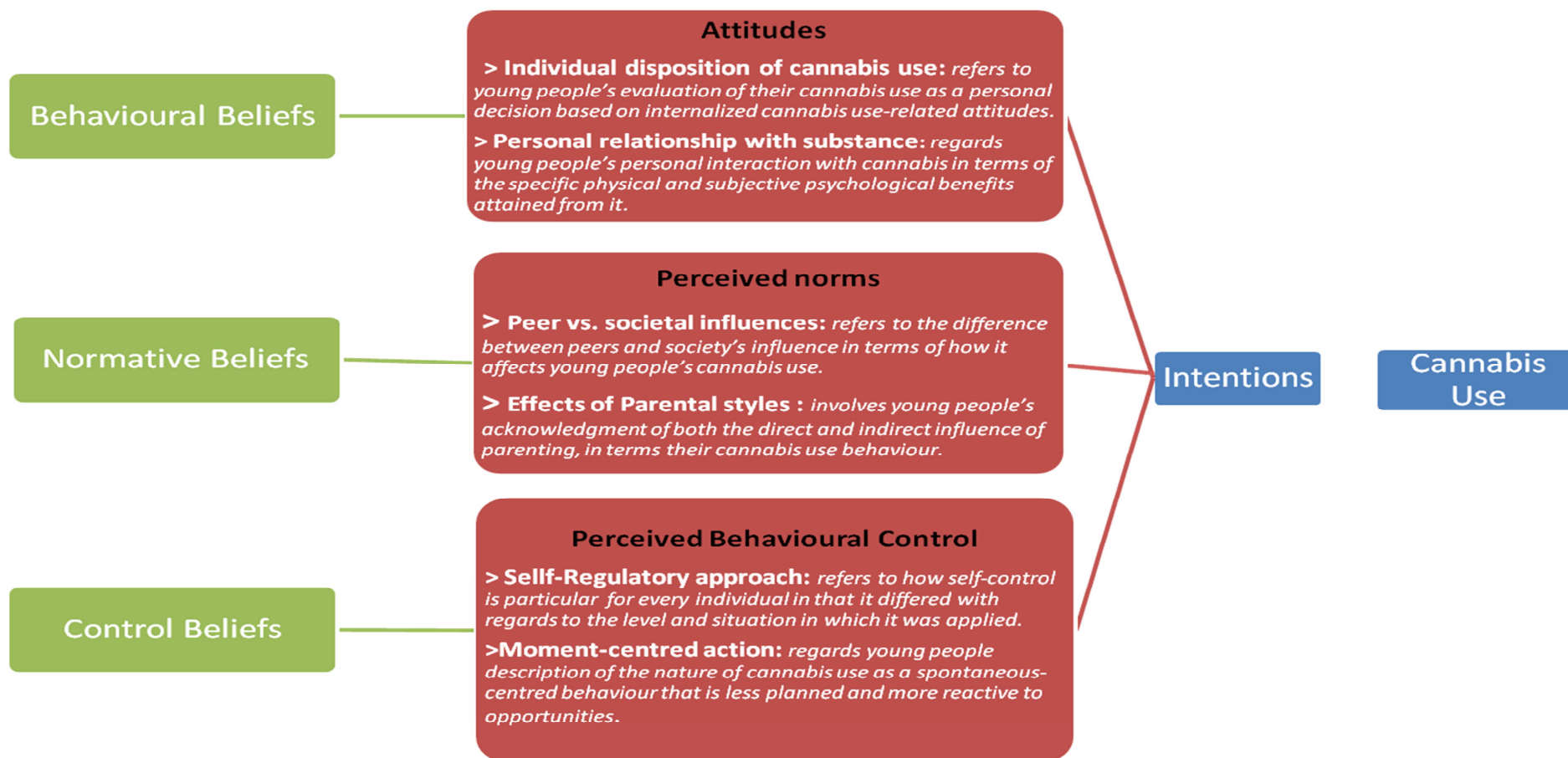


FIGURE 8:2 MAIN THEMES AS FOUND IN STUDY 2 DEPICTED WITHIN THE TPB FRAMEWORK

8.3.6.2.2 STUDY (2) – PERCEIVED NORMS

Young people in this group referred to a distinct difference between '*Peer vs. Societal influence*' as well as the indirect and direct '*Effects of Parental styles*' (see Figure 8.2). The identification of these themes has important implications in understanding how social norms are perceived. Although perceived norms in the TPB refers solely to the influence of significant others, young people in this study explained that it was not only the influence of significant others that shaped their decisions to use cannabis but also the degree to which they trusted these significant others. Trust has been described as a determinant and an outcome of social interaction whereby while on the one hand an individual's consistency and sincerity attracts others' trust, on the other hand, trust emerges when two individuals discover through cooperation that they can depend and rely on each other according to consensual norms (Hartup, 1993). By considering aspects such as peer trustworthiness alongside the perceived norms, TPB's predictive power regarding cannabis use could be augmented.

The TPB construct of perceived norms makes reference to parents' approval or disapproval of the behaviour. It is evident from Study 2 that young people do not shape their decisions to use cannabis simply on the basis of approval/disapproval, but rather on a more detailed understanding and awareness of how direct and indirect parental influence is. For instance, young people discussed the role of parents' personality and how that shaped their own decisions to use cannabis. They were even highly aware of the inevitable influence that parents have on their general personality, such that some believed they became more rebellious as a result of their parents' narrow-mindedness, or became knowledgeable on drugs as a result of their parents' liberal parenting styles. This indicates that the normative component within the TPB could be largely refined by accommodating these parental-specific constructs. Some young people even explained that parents' misinformed education about cannabis use encouraged their own experimentation with cannabis. Although current health promotion interventions emphasize the role of parents' drug education these findings highlight the need to exercise caution in this regard such that parents become aware of their influential role as well as ensure they obtain accurate drug-related information.

8.3.6.2.3 STUDY (2) - PERCEIVED BEHAVIOURAL CONTROL (PBC)

Young people's responses in reference to PBC reiterated the presence of conceptual ambiguity with regards to this TPB construct. The identified themes demonstrate that young people maintain a rather reactive approach partly determined by the availability of external sources of

control as well as their own levels of self-control. The themes revealed young people's '*Self-Regulatory approach*' towards cannabis use as well as their perception of this behaviour as a '*Moment-centred action*' (see Figure 8.1). While the former lends support to re-conceptualising how PBC is measured, the latter suggests that cannabis use is a spontaneously-driven behaviour. The implications based on these findings were to further examine PBC using two sub-dimensions (PBC over using vs. PBC over obtaining). This was done in Study 3 in order to reduce the conceptual ambiguity surrounding PBC and capture the particularity of this construct as reported by young people.

Furthermore, the re-formulation of TPB to include an impulsivity measure in terms of young people's cannabis use is supported. Young people's descriptive accounts of the behaviour being largely habitual and opportunistic lend support to integrating a habit and impulsivity measure in the TPB framework. Once again, this does not imply that the PBC measure of TPB should be substituted, but by incorporating impulsivity and habit TPB's sufficiency in explaining this behaviour the TPB can be improved.

The policy implications made on the basis of these findings focus on harm reduction rather than prevention. The creation of Public Health England (PHE) as developed by the Department of Health (2012) encouraging young individuals to take responsibility for their own health therefore is an effective turning point in that it covers the idea that self-control although paramount to reducing drug use is very different to every individual. The 'Your Life, Your Body, Your Choice' advertising slogan adopted by the PHE in the Northern Ireland campaign resembles the '*Self-Regulatory Approach*' as described by young people themselves in Study 2. This shows an increased awareness that a generic self-control scheme will not work as effectively as allowing young people to individually tailor their own levels of self-control.

The fact that this behaviour was characterised as a '*Moment-centred action*' means that alongside reducing drug-demand among young people, governmental policies need to consider a way for young people to express their impulsive nature. By recognising and accepting young people's experimentation period with cannabis, drug-intervention policies are advised to place more emphasis on methods to prevent long term and/or problematic use. Working around a policy that understands young people's impulsive behaviour at university rather than trying to prevent it, could prove to be more appreciated by young people themselves altogether. In a policy review on cannabis in the UK, Pudney (2010) argues that existing theoretical insights as well as empirical evidence give little reason to prefer prohibition

to the alternative of legalisation of cannabis with harms controlled by regulation and taxation. This emphasizes the need of a harm-reduction approach rather than a prohibition or prevention-centred approach.

8.3.6.3 AN EXTENDED TPB MODEL EXAMINING CANNABIS USE AMONG UNIVERSITY STUDENTS (18-24 YEAR OLD): THEORETICAL & POLICY IMPLICATIONS

The findings of an extended TPB study 3 including variables such as impulsivity, parenting styles, behavioural willingness, self-identity, habit, psychological need satisfaction and past behaviour will be discussed in relation to their prediction of intentions and/or behaviour in the TPB and the theoretical underlying implications. Figure 8:3 shows which variables were significant in terms of predicting intentions and behaviour¹⁶. Using variables that did not conform to the principle of compatibility (that they should follow the TACT elements) is not considered sufficient enough to remove a potentially strong additional predictor from the TPB model. Fishbein and Ajzen (2010) explain that any proposed additional variables must also meet other criteria such as being widely applicable to a wide range of behaviours as well as improving prediction of intentions or behaviour. Elliot, McGregor and Thrash (2002) explain that within any full decision-making analysis model, global-level constructs are necessary to provide more holistic explanations of any health-related behaviour. It is important to note that the variables that did not adhere to the principle of compatibility could have shared low correlations with the variables that did. Francis et al. (2002) explained that by using variables that do not follow the TACT principle, the overall operationalisation of the TPB constructs may be weakened. This would present itself in lower correlation levels between the variables as an outcome of incoherent variable measurement. The interpretation of correlations between these variables was therefore made with caution in this regard.

8.3.6.3.1 IMPULSIVITY

Similar to Study 1 findings, impulsivity did not predict intentions to use cannabis but did predict behaviour. The sub-dimensions found to predict behaviour among this sample were different in that in Study 1 lack of premeditation predicted behaviour while in this study 3, lack of perseverance predicted behaviour. Not only does this re-emphasize the role of impulsivity in predicting cannabis use behaviour and supports Churchill et al. (2008) proposition to add impulsivity within the TPB framework, it also demonstrates that young people's impulsive

¹⁶ 'Unitary framework' refers to when the variables were measured against the basic TPB variables, all at once to determine which makes the most substantial contribution between them.

tendencies differ with age. While the younger age group (16-18) use cannabis as a result of giving little attention to the potential outcomes of a behaviour, the older age group (18-24) use cannabis as a result of being easily distracted from completing a task or project. The relationship between lack of perseverance and cannabis use was partially mediated by intentions, demonstrating that lack of perseverance exerted an influence on reported cannabis use based on their intentions to use cannabis. The difference in impulsivity between these age groups provide support for the contention that impulsive acts are best understood by investigating impulsivity as a multidimensional construct (Whiteside & Lyman, 2001).

The DEF paper on Life Skills Learning (2012c) (see Table 8.2) explains that if a young person's personality is stressful, risk-taking and/or impulsive he or she is more likely to develop harmful drug use. Therefore the authors recommend that programmes designed to teach life skills should focus on assertiveness and teach young people how to focus on long-term goals and aspirations while avoiding behaviours that could compromise their goals. The findings from Study 3 emphasize and reiterate that focusing on young people's internal values and motivation as well as coping skills can help reduce young people's cannabis use. Universities are therefore encouraged to implement the DEF's Life Skills Programmes on a level that can apply to university students to reduce the risk associated with impulsive personalities and cannabis use.

8.3.6.3.1 PARENTING STYLES

Research shows that positive parenting styles (e.g. warm, supportive, authoritative) inhibits young people's problem behaviour (Fletcher, Steinberg, & Williams-Wheeler, 2004; Vieno, 2009). However, findings from Study 3 demonstrate that parental structure shared a negative relationship with cannabis use and parental warmth shared a positive relationship with cannabis use. The latter evidently demonstrates a relationship that is not in the expected direction.

If we assume the reason why parental warmth leads to cannabis use is due to young people at university perceiving parental warmth as over-intrusive and meddling, rather than supportive (Palmer & Hollin 2000), then we can also speculate whether examining parenting styles as a direct predictor of cannabis use is worthwhile. It is clear that there is more to this relationship than a parenting style measure can explain. According to Bray and Bom (2004) young people's transition to university represents a process characterised by change, ambiguity, and adjustment across a range of previously salient life domains. Coleman and Hagell (2008)

explain how young people form their own judgments about what to disclose or share with the parents, either out of shame, fear of the consequences or merely to protect their own privacy. On a theoretical level, examining the role of parenting in young people's (18-24 yrs. old) cannabis use would require further investigation to understand the complexities of this relationship.

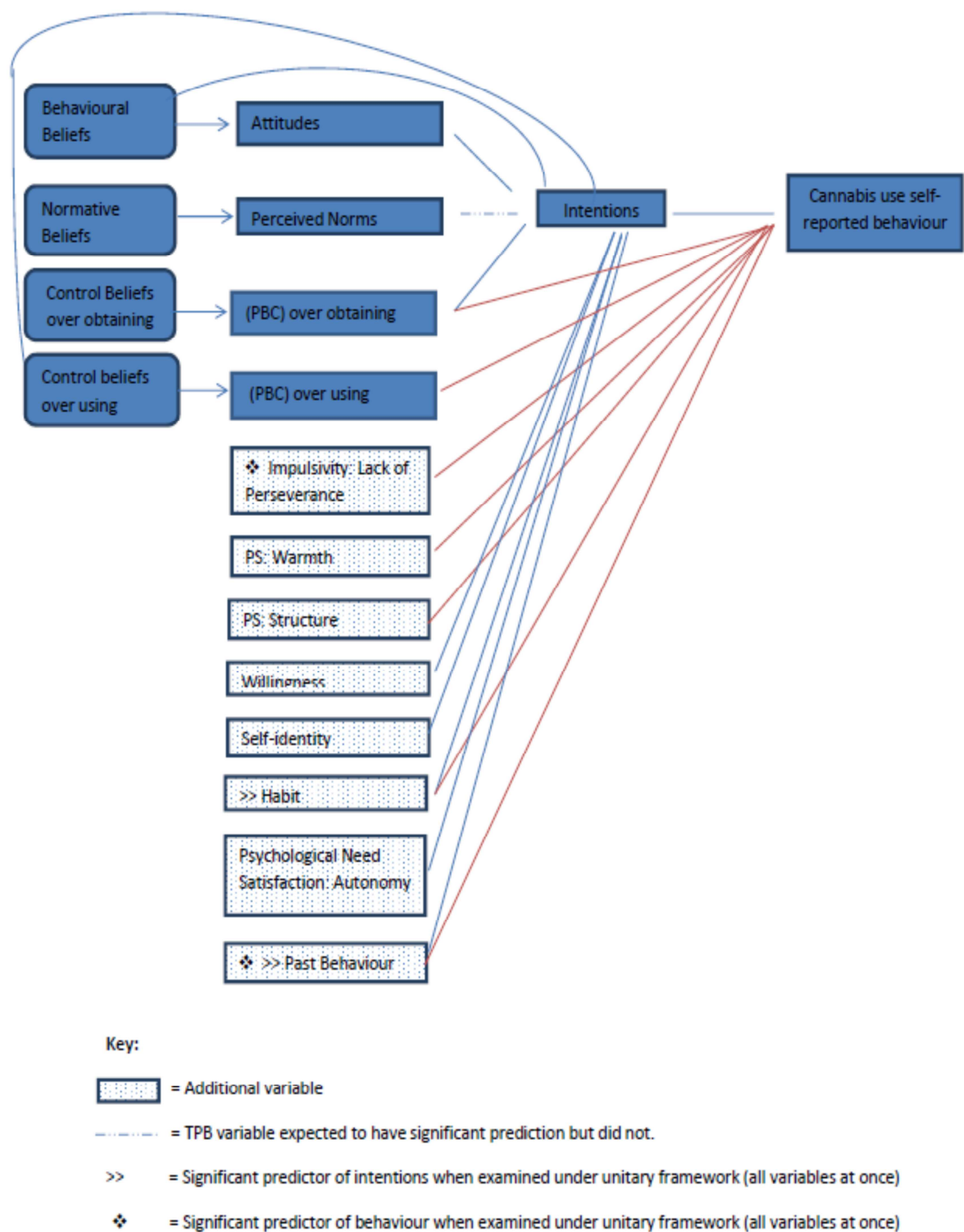


FIGURE 8:3 SCHEMATIC DIAGRAM SHOWING EXTENDED TPB AND SIGNIFICANT PREDICTIONS IN STUDY 3

8.3.6.3.2 WILLINGNESS

Behavioural willingness was found to positively predict intentions but not behaviour. Comparing the PWM model with the TPB model is beyond the scope of this research. Nonetheless, this finding indicates that cannabis use becomes a rather socially reactive behaviour dependent on situational factors (Gibbons et al., 1998).

In an attempt to explain the shift from willingness to intention, Pomery et al., (2009) explains that with age and experience, behaviour is shifted from reactive to reasoned. However, university students' cannabis use could be a behaviour that captures both elements of a reasoned and reactive behaviour. In other words, intentions to use cannabis shape the decision to use cannabis and social opportunities promote a positive reaction to this decision. A paper investigating the role of a dual-process approach to health risk decision-making explains that young people are enticed by risk behaviours and this temptation increases the willingness to try them (Gerrard, Gibbons, Houlihan, Stock, & Pomery, 2008). However, it was suggested that young people underestimate the extent to which their behaviour is willingness-based rather than intentional, and they therefore fail to think about potential negative consequences. Based on this understanding, interventions should aim to make this distinction clear. In doing so, young people will be able to contemplate possible negative consequences of being in a risk-conducive situation and at the same time adopt planned strategies to avoid these situations (e.g. going to a party where cannabis will be available). As a young person's willingness and experience with risk-conducive situations increases, health promotion interventions are more likely to be effective. By promoting a heuristic and reasoned processing approach young people will acquire "acceptance of responsibility and ownership of their behaviour" (Gerrard et al., 2008, p. 57). Accordingly, clinicians are advised to use a 'strength-based' approach in terms of dealing with young people's cannabis use. This would include raising young people's awareness of their developing strengths, and of the role they can play in their own health and well-being, as well as motivating and encouraging them to take on responsibility (Duncan, et al., 2007).

8.3.6.3.3 SELF-IDENTITY

Self-identity was found to predict intentions independently of the basic TPB variables, but did not predict behaviour directly.

Theoretically these findings imply that there is a conceptual distinction between attitudes, norms and self-identity. This supports Biddle et al.'s (1987) argument that they are based on different motivational foundations. Our findings also provide good reason to suggest that self-identity is incorporated in the TPB as a separate component, as also suggested by Rise et al. (2010).

It has been suggested that, based on its distinctive role in the TPB model, behavioural health interventions need to consider the importance of self-identity when putting forth a drug-

intervention programme (Rise et al., 2010). In other words, the inevitability of constructing new identities to replace the old ones must be accepted when attempting to change or stop unhealthy behavioural patterns. In order to change the identification with the old self-identity, new meanings, expectations and activities need to emerge in order to influence and construct the new self-identity and eventually create a new pattern of behaviour. However, becoming a certain type of person or adjusting to a novel social category (i.e. non-cannabis user) is a process that must be incorporated in the self to fulfil the behavioural change. Behaviour needs to adjust to the new meanings of the identity standard, while at the same time the identity standard adjusts the new meanings to the behaviour (Rise et al., 2010).

8.3.6.3.4 HABIT

Habit was found to independently predict intentions to use cannabis while its relationship with behaviour was partially mediated by intentions. This is consistent with other studies which have demonstrated the importance of habit in explaining drug use such as ecstasy use (Orbell et al., 2001) and cannabis use in particular (Conner & McMillan, 1999). Complementing the TPB framework with the habit construct could serve to represent the automatic nature of the behaviour, therefore enhancing the model's predictability of university students' cannabis use.

Using implementation intentions could be a sufficient way to promote the formation of new habits provided that habits and implementation intentions share similar mechanisms of automatically causing a particular response upon encountering a specific cue (Brickell, et al., 2006). Health promotion interventions need to acknowledge that cannabis use occurs on the basis of cue-response links, based on a history of satisfactory repetition, which could be altered if deliberate planning to alter the response to that specific cue were to take place.

8.3.6.3.5 PSYCHOLOGICAL NEED SATISFACTION

In terms of predicting intentions autonomy (the extent to which one's choices are based on one's true interests and values) significantly predicted intentions to use cannabis but none of the need satisfaction constructs predicted cannabis use behaviour. With every increase in intentions to use cannabis, the odds of reporting higher satisfaction of autonomy decreased. This means that individuals with a low sense of ownership of their actions predicted cannabis use intentions. As the need for autonomy decreases (on the basis that one reports high satisfaction of this need) internalising others' views is avoided and instead one engages in personal decision-making. On a theoretical level, generalized motivational constructs such as

psychological need satisfaction could serve to enhance the TPB in terms of its ability to predict young people's cannabis use.

This supports the addition of globalized motivational constructs such as psychological need satisfaction (Hagger et al., 2006) in explaining young people's cannabis use intentions. Although these constructs are somewhat general and may not comply with the TACT 'principle of compatibility', they could augment the TPB given their influence of social cognitions at the situational level. This is a theoretical implication also supported by Elliot, McGregor and Thrash (2002) who argued that global-level constructs should be considered within any full decision-making analyses.

Interventions aiming to reduce cannabis use among young people should focus on engaging them in challenging activities, promoting positive life events and encouraging high-quality interactions with significant others which can contribute to the development of psychological and life satisfaction (Park, 2004).

8.3.6.3.6 PAST BEHAVIOUR

Past behaviour was found to predict intentions and behaviour independently of the basic TPB variables. In relation to all other variables included, this was the most influential in explaining and predicting cannabis use. Although this finding supports previous work which has documented the importance of past behaviour in explaining future behaviour the theoretical implications must be made with caution.

Ajzen (2011) explains that one possible reason for findings of this kind is that methodological issues such as the scale compatibility between measures of past behaviour and behaviour is greater than between intentions and behaviour. This greater shared method variance between measures of past and future behaviour could therefore be responsible for this relatively strong relationship between them. Nonetheless Fishbein and Ajzen (2010) accept that including past behaviour as part of the TPB can account for variance in intentions not explained by the basic TPB constructs.

In terms of policy implications, one cannot assume that by measuring past cannabis use behaviour of young people it will be possible to predict and therefore prevent future cannabis use behaviour. To argue that young people use cannabis because of their past cannabis use begs the question why they previously behaved in that way. Also, interventions need to consider that intentions to use cannabis may change over time (Sheeran, 2002), so despite a

high level of past cannabis use there could be some individuals who decide to stop using cannabis use in the future.

Drug interventions tend to employ random drug tests within schools to measure young people's past drug use. However, 'school connectedness' has been found to be a protective factor against drug use. In fact, random drug tests induce a negative feeling from young people about the school, and those who have never used could suddenly find themselves treated as such (Drug Education Forum, 2012c).

Therefore, although past cannabis use significantly explains future cannabis use, schools and universities are advised not to identify past behaviour of cannabis use but rather to provide drug education and support as well as counselling services for those who may require it.

8.3.6.3.7 PERCEIVED RISK

Perceived risk did not predict intentions to use cannabis and was reduced to non-significance in predicting behaviour when intentions were controlled for. The mean score of perceived risk was very low indicating that in a university setting both users and non-users generally do not perceive cannabis as a risk-related behaviour.

Given the high prevalence of simultaneous poly-substance drug use in university settings, young people may perceive cannabis use as lower risk due to inevitably comparing it with the higher risks of using harder drugs at universities (e.g. cocaine methylphenidate, ecstasy). On this assumption, future drug education programmes targeted at university students need to emphasise the risks posed by misusing cannabis (e.g. mixing it with other substances) and the negative effects it can have on physical and mental health.

8.3.7 SUMMARY OF THEORETICAL, METHOD, PRACTICE & POLICY IMPLICATIONS OF STUDIES 1, 2 & 3

Overall, these studies advanced our understanding of young people's decisions to use cannabis. In the context of the TPB explaining cannabis use among young people the following considerations are noted: (1) a re-formulation of the normative component in line with specific parental and peer-related constructs (2) a refined measure of PBC that reduces conceptual ambiguity (3) the inclusion of some additional variables. None of the additional variables demonstrated an improvement in the predictive utility of the model for intentions among 16-18 year olds, while for behaviour (a) moral norms and (b) impulsivity: lack of premeditation indicated an improvement. The importance of conducting qualitative studies to obtain parents'

perspectives with regards to young people's cannabis use is emphasised. Among the university student population, additional variables that could enhance the predictive utility of the model for intentions are (a) willingness, (b) self-identity, (c) habit, (d) psychological need satisfaction: autonomy and (e) past behaviour. Additional variables that could be included to enhance the predictive utility of behaviour are: (a) impulsivity: lack of perseverance (b) perceived parental warmth (c) perceived parental structure, (d) habit and (e) past behaviour. A qualitative in-depth analysis of young people's perspectives with regards to cannabis use stressed the importance of an individual-oriented approach to be taken by policy-makers and practitioners. Identifying young people's '*Individual disposition towards cannabis use*', their distinguishing between '*Peer vs. Societal Influence*' and the importance of a '*Self-Regulatory Approach*' implied that on a theoretical level these themes are considered within the TPB variables of attitudes, perceived norms and PBC respectively.

Policy and drug-education recommendations are made on the basis of these findings. The main ones include: (1) Encouraging intervention programmes to take cognitive beliefs into consideration through the use of cognitive-based techniques; (2) applying effective in-classroom interventions that promote self-instruction skills to help with decision-making wherein young people learn to adjust and regulate their impulsivity levels; (3) becoming aware of potential mismatch between parents and young people's perspectives in order to enhance effective communication; (4) promoting both a heuristic and reasoned processing approach such that young people take responsibility and ownership of their actions; and (5) advising professionals working with young people to support and encourage discussion of cannabis use as it promotes better understanding of the underlying behavioural motivations and therefore better self-regulation.

8.4 CHAPTER SUMMARY

- Although current policy on cannabis use has shown progress in tackling dependence, the Drugs Strategy (2010) recommends a more integrated approach.
- The Department of Education published a series of six papers through the Drug Education forum within which extensive analysis and advice on teaching drug education whether in school or other settings was provided.
- Study 1 of this research project emphasised the importance of moral norms and impulsivity in relation to 16-18 year olds cannabis use. The panel element of this study investigating parents' perspectives demonstrated a qualitative account of parents' understanding of young people's socio-experimental culture regarding cannabis use.
- A qualitative study 2 revealed themes (e.g. 'individual disposition towards cannabis use) that theoretically complemented the TPB constructs (e.g. attitude) in relation to university students' cannabis use.
- Study 3 indicated the influence of a series of socio-psychological variables in relation to cannabis use such as impulsivity, behavioural willingness, self-identity, psychological need satisfaction and past behaviour.
- The present findings emphasise the refining of PBC. This was due to the PBC making inconsistent contributions to behaviour throughout the TPB models. A somewhat individual-oriented approach as referred to within the qualitative theme of '*Self-Regulatory Approach*', is recommended.
- Other qualitative themes such as '*Individual disposition towards cannabis use*' and '*Peers vs. Societal influence*' are considered in relation to theoretically complementing the TPB constructs of attitude and perceived norms, respectively.
- Since cognitive beliefs predicted cannabis use intentions, the implementation of cognitive-based techniques as well as attitude-based interventions to target young people's beliefs about cannabis use was advised.
- Other recommendations are based on the variables found to independently predict cannabis use intentions and behaviour, other than the basic TPB variables (e.g. Moral norms, impulsivity, parenting styles, willingness, self-identity, habit and past behaviour).

- A theoretical implication is that young people take responsibility of their actions on the basis of understanding that their reasons for cannabis use are related to their underlying behavioural motivations and self-regulation.

9 CHAPTER 9: CONCLUSIONS & FUTURE DIRECTIONS

9.1 CHAPTER OVERVIEW

In this final chapter, this thesis is brought to a conclusion and future directions are discussed. This chapter describes the overall progress made by this research in terms of understanding the decision-making process of why some young people choose to use cannabis and some others don't using the TPB model. A final comment brings this chapter, and this research, to a reflective conclusion.

9.2 CONCLUSIONS

The aim of this thesis has been to develop a better understanding of young people's cannabis use decision-making process. The TPB model has been used as a framework through which both a quantitative and qualitative approach enabled an effective investigation of the range of environmental, social and individual variables explaining young people's cannabis use.

In terms of the basic TPB variables favourable attitudes predicted intentions to use cannabis, while perceived norms was important among the 16-18 year old age group but not the 18-24 year old age group. The latter group may have needed a much more detailed measure of perceived norms given that young people distinguished between '*Peers vs. Society*' influence on their cannabis use. The inconsistency with which PBC predicted cannabis use within the TPB framework demonstrates the already existing debate surrounding this construct in terms of its conceptual ambiguity. Young people's explanation of cannabis use via a '*Self-Regulatory Approach*' emphasizes the particular individual-oriented self-control applied by young people with regards to this behaviour. This was re-iterated when two sub-dimensions of PBC (PBC over using vs. PBC over obtaining), as based on Orbell et al. (2001), separately predicted cannabis use, emphasizing the importance of specifying this construct.

On the basis of study (1), it was possible to understand that attitudes, perceived norms and PBC explained young people's cannabis use intentions. Cannabis use behaviour was explained by moral norms and impulsivity: lack of premeditation, independently of intentions. It is therefore concluded that for this younger age group (16-18) cannabis use can be explained on the basis of moral principles. However the extent to which belonging within a school context should be considered; the moral construction of the good pupil is embedded, creating a school conduct principle that taps into the moral perception of adopting health-risk behaviours (Thornberg, 2009). This could explain also explain why young people at university did not refer to cannabis use on the basis of a moral or ethical dimension.

Moreover, the importance of individual, personality-related variables the role of impulsivity was examined throughout Studies 1 to 3. This proved to be a strong predictor of cannabis use behaviour both among the 16-18 year old group (Study 1) and the 18-24 year old group (Study 3). However, impulsivity dimensions predicting cannabis use differently for each of these groups: lack of premeditation predicted cannabis use amongst the younger group, while sensation-seeking and lack of perseverance predicted cannabis use amongst the older group. Moreover, young people in Study 2 described cannabis use as a '*Moment-Centred action*', emphasising the role of impulsivity even further. Therefore, not only was the importance of this variable stressed in terms of explaining cannabis use among young people, but the role of the specific sub-dimensions are worthy of further exploration.

Including a panel element by investigating parents' perspectives on cannabis use as well as obtaining parents' reports on parenting styles in Study 1 provided interesting findings. The significant differences noted between young people's and parents' perceptions with regards to parenting styles helped to understand the particularities of parent-child relationship. A brief thematic analysis on parents' responses with regards to young people's cannabis use demonstrated parents' '*Understanding of young people's socio-experimental culture*'. Interestingly, in Study 2 young people at university documented an increasing awareness of the '*Effects of parenting styles*', not only in terms of shaping their behaviour but also in terms of their cannabis use. Young people acknowledged that parents' personalities and the level to which parents talked with them about cannabis, influenced them both directly and indirectly. The fact that young people acknowledge the importance of parental influence, and parents understand young people's need to experiment is an important realisation that needs to be practically applied. Informing parents of young people's perspectives and informing young people of parents' perspectives could be the way forward to bridging the communication gap between them. Young people that maintain high quality interaction with significant others can lead to positive youth development (Park, 2004) which could eventually act as a protective factor in preventing cannabis use.

The importance of individual variables was emphasized in terms of understanding why some young people choose to use cannabis and some others don't. Study 2 in particular demonstrated how young people referred to an '*Individual disposition towards cannabis use*' and a '*Personal relationship with the substance*'. This indicated the importance of complementing the more generic attitude variable as measured in the TPB with other individual-related variables such as self-identity and willingness. Although these individual-centred themes may seem a bit troubling in that young people may have perceptions of unique invulnerability, young people were fully aware of the negative effects the substance had on them but chose to use it regardless. Indeed in Study 3 the extent to which cannabis use formed an important part of a young person's identity helped explain cannabis use behaviour.

Understanding that this behaviour forms an important part of one's individual identity demonstrates that cannabis use forms an integral part of young people's lives. Drug-related policies should consider the importance of young people's cannabis-identity so as to implement effective strategies. Moreover, willingness to use cannabis explained cannabis use implying that cannabis use is a behaviour that occurs as a voluntary reaction to situational and social opportunities. While drug-intervention programmes are called to consider the reactive nature of this behaviour, they are advised to understand cannabis use as a behaviour that lies on a continuum of both a reasoned and a reactive behaviour. Intentions to use cannabis shapes the reasoned decision to use cannabis and social opportunities promote a positive reaction to this decision.

Examining the role of other variables such as habit, psychological need satisfaction and past behaviour also proved to enhance our understanding of young people's cannabis use. The significance of these variables highlighted that cannabis use can occur as a result of automatic response to stimulus cues (habit) and the previous occurrence of this behaviour (past behaviour). These findings are not indicative of the TPB being insufficient but rather that they can improve the TPB's predictive ability in terms of predicting cannabis use behaviour among university students.

9.3 FUTURE DIRECTIONS

Recommendations for future research have already been made throughout the discussion sections of chapters 5, 6 and 7. This section will provide an overall consideration of our findings throughout Studies 1, 2 & 3 and suggest future directions for research and policy.

There was a noted inconsistent predictive ability of PBC throughout Studies 1 and 3. Moreover young people in Study 2 referred to a '*Self-Regulatory Approach*' within which self-control is applied depending on the situation and the individual's mental strength. Future work is encouraged to refine the PBC measure and conceptually align the construct according to what behaviour is being measured. On the basis that cannabis use was described as a '*Moment-centred action*' which implies a much more impulsive-related behaviour, it is suggested that future work examining cannabis use, also measure impulsivity as a complementary construct sub-merged within the PBC. Similarly, working towards a more specified measure of perceived norms within the TPB when examining young people's cannabis use could help capture the different forms of influence as commented upon by young people (e.g. '*Peer vs. Societal influence*'). Research should also focus on understanding the mismatch between young peoples' and parents' accounts of parenting styles as found in Study 1.

Moreover, given that willingness was found to predict cannabis use intentions it is assumed that cannabis use is a reaction to social circumstances and social opportunities. Future work could conduct

detailed case studies regarding cannabis use in order to obtain a better understanding of when, where and how these social occurrences happen in the first place and how the willingness to use cannabis is triggered.

The relationship between self-identity, norms, attitudes and intentions requires further investigation such that the moderating or interaction effects between these constructs are clarified in relation to cannabis use. Self-identity has been represented as a set of behavioural outcomes that are equivalent to utilitarian and affective outcomes expected to arise from performing a behaviour, which has been considered as conceptually overlapping with attitudes (Eagly & Chaiken, 1998). Therefore, ensuring a conceptual distinction between these constructs prior to adding self-identity within a TPB framework could help clarify the role of self-identity in relation to this cannabis use. It would also be interesting to conduct qualitative investigations in order to explore how and why cannabis use becomes such an important part of young people's identities.

Furthermore, due to the long-standing debate around the conceptual distinction between habit and past behaviour a clear distinction between these measures is required. Although some argue that repeated behaviour is known to habituate resulting in 'habit strength' others have explained that repeated occurrence is necessary for the formation of habit but cannot be characterised as habit itself. Ajzen (2002b) explains that using frequency of past behaviour as an indicator of habit strength, weakens the ability to capture the defining features of a habitual response. While behaviours performed infrequently are best predicted by intentions, and those performed frequently are predicted by past behaviour, characterizing certain behaviours as habitual can be viewed as "a theoretical cul-de-sac that describes rather than explains the data" (p.731). Future work could concentrate on the different conceptual implications that habit and past behaviour have on young people's cannabis use.

Moreover in terms of methodology, it is recommended that more qualitative work is conducted in relation to young people's cannabis use. Given that some young people reported decreased levels of cannabis use as a result of contemplating reasons behind their own behaviour (during the focus groups) provides substantial reason to suggest further investigation. The extent to which detailed discussion and self-reflection helps young people clarify and identify the reasons for cannabis use needs to be further explored. This could provide interesting insights as to the benefits of using a discursive approach in terms of helping young people understand their own reasons of cannabis use and eventually prevent it or at least regulate it.

In terms of practice, it is highly recommended that researchers use mixed-methodology approaches when attempting to understand young people's cannabis use. In investigating cannabis use among young adults "future work could benefit by including a multi-method approach with larger sample sizes that would allow for subjective as well as objective ratings of the primary predictor and dependent variables under study" (Buckner, et al., 2007, p.2252). In doing so the researcher capitalises the strengths of each approach and offsets their weaknesses, enabling a more reliable interpretation of the research topic.

9.4 FINAL COMMENT

The purpose of this research has been to examine the socio-psychological decision-making processes regarding cannabis use behaviour among young people. The quantitative and qualitative programme of work conducted through studies 1, 2, and 3 has managed to provide an informed descriptive and exploratory account of young people's reasons to use or not use cannabis. Extending the TPB model helped identify that variables such as moral norms and impulsivity dimension of lack of premeditation contribute to explaining young people's cannabis use behaviour between the ages of 16-18, while variables such as impulsivity dimension of lack of perseverance, perceived parental structure, perceived parental warmth, habit and past behaviour explain young people's cannabis use at university between the ages of 18-24. These are factors that could augment the TPB's predictive validity when examining young people's cannabis use. Moreover, the panel element of this study helped us understand the potential miscommunication between parents and young people in terms of parenting styles, which should be taken into consideration by health education programmes that attempt to integrate the role of parents when informing young people about cannabis use. What is more, the qualitative exploration identified themes which could exemplify and complement the already existing TPB constructs (e.g. '*Individual disposition towards cannabis use*' to be considered alongside Attitudes, '*Peers vs. Societal Influence*' to be considered alongside Perceived Norms and '*Self-Regulatory Approach*' to be considered alongside PBC).

The findings of this research take us closer to understanding cannabis use among young people using a descriptive and analytical approach. Future health education interventions regarding cannabis use should consider promoting self-instruction skills to help with decision-making wherein young people learn to adjust and regulate their impulsivity levels. Research examining the role of parents in young people's cannabis use, or health-risk behaviour, should account for potential miscommunication between parents and young people's perspectives. Professionals working with young people should promote young people taking responsibility and ownership of their actions as well as encouraging discussion of cannabis to develop better self-regulation.

10 REFERENCES

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APPENDIX LIST

1. STUDY 1 APPENDIX

Appendix 1A: Study 1 Belief Elicitation Study

Appendix 1B: Student Consent form

Appendix 1C: Study 1 Questionnaire (Time 1 & Time 2)

Appendix 1D: Debrief Form

Appendix 1E: Parents Questionnaires:

E1: Information form regarding students' participation

E2: Information form regarding parents' participation

E3: Parents' questionnaire

Appendix 1F: Normality tests & percentage of missing cases using non EM-imputed data

Appendix 1G: Testing for multi-collinearity.

Appendix 1H: Regression analyses using EM-imputed data

2. STUDY 2 APPENDIX

Appendix 2A: Flier

Appendix 2B: Information sheet

Appendix 2C: Consent form

Appendix 2D: Verbal Summary

Appendix 2E: Set of Focus Group questions

Appendix 2F: Closing statement

Appendix 2G: Debrief

3. STUDY 3 APPENDIX

Appendix 3A: Study 3 Belief Elicitation Study

Appendix 3B: Student Consent form

Appendix 3C: Study 3 Questionnaire (Time 1 & Time 2)

Appendix 3D: Debrief Form

- Appendix 3E: Normality tests & missing data analysis
- Appendix 3F: Testing for multi-collinearity
- Appendix 3G: Regression analysis using non EM-imputed data

Appendix 1A: Study 1 Belief Elicitation Study

Young people and cannabis: research study at sixth form

Note: Please do not write your names. We are only interested in your opinions.

The College will have no involvement with the data. This information will remain confidential.

❖ Cannabis is a drug made from parts of the cannabis plant and can cause mild feelings of calmness or drowsiness. It can also cause hallucinations (meaning that you feel or you see things in a distorted way).

- *The questions below are trying to find out what people aged 16-18 think about cannabis use. It does not matter whether or not you use cannabis, you can still answer the questions.*
 - *For each question, we are asking that you list 2 or 3 things that come to your mind, so don't spend too long on them. Please read each question carefully and list your responses in the spaces provided.*
 - *Do not worry if you get stuck onto one question, you can just move onto the next one. There are no right or wrong answers.*
-

1) What do you believe are the **advantages** of smoking cannabis?

2) What do you believe are the **disadvantages** of smoking cannabis?

3) Is there anything else you associate with you smoking cannabis?

4) Are there any individuals or groups who you think would **approve** of you smoking cannabis?

5) Are there any individuals or groups who you think would **disapprove** of you smoking cannabis?

6) Are there other individuals or groups that come to your mind when you think about smoking cannabis?

7) Is there anything that would make it easier for you to smoke cannabis?

8) Is there anything that would make it difficult for you to smoke cannabis?

9) Are there any other issues that come to your mind when you think about how easy or how difficult it would be for you to smoke cannabis ?

Thank you for taking part in this study!

Appendix 1B: Student Consent form

University of East Anglia PhD student research

Young people and cannabis: research study at Sixth Form

Dear Student,

I am a research student at the University of East Anglia. The aim of my study is to obtain young peoples' general views and perspectives regarding whether or not to use cannabis.

- Any information obtained in this study will remain confidential, in that no names will be identified. Instead you will be asked to write a code (see below).
- Your answers will only be used and seen by the researcher and will have no further use by your School.
- Please report your answers as accurately and as honestly as you can.
- At the beginning of the questionnaire you are requested to write down a code. This will be your:

First Name initial, **Surname** initial and **date of birth** (dd/mm/yyyy)

i.e. if your name is **Mark Cowell** born on 17th April 1993 , you would write out the code as follows:

MC17/04/1993

Please feel free to ask the researcher any questions. Once again your participation is highly appreciated and will be of high value to this research.

Thank you for your participation!

Eliza Patouris

PhD Researcher

School of Social Work and Psychology

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Norwich

NR47TJ

Appendix 1 C: Study 1 Questionnaire (Time 1 & Time 2)

Young people and cannabis: research study at sixth form

Please read the following carefully

- You are **not** asked to write down your name but instead insert a code.
- **This code will be removed** as soon as the questionnaire is matched up with a follow-up questionnaire that will take place 2 weeks from now.
- This code must be created in the following order:

e.g.

your **first name** initial, your **surname** initial and your **date of birth** (dd/mm/yyyy)

i.e. if your name is **Mark Cowell** born on 17th April 1993 the code to write would be:

MC17/04/1993

Please complete the following:

Your code: ____/____/____/____

Initials/ day/ month/ year

Time 1 Study

❖ Cannabis is a drug made from parts of the cannabis plant and can cause mild feelings of calmness or drowsiness. It can also cause hallucinations (meaning that you feel or you see things in a distorted way).

- The questions below are trying to find out what people aged 16-18 think about cannabis use. It does not matter whether or not you use cannabis, you can still answer the questions.
- For each question, we are asking that you circle the number that best describes your opinion. You need to circle only one of the numbers in each question.

e.g. If you agree that 'Travelling is enjoyable' you would circle '7' as shown below.

Travelling is enjoyable

Disagree 1 2 3 4 5 6 7 Agree

Please be as honest as possible and remember that your individual answers will not be shown to anyone but the Research team.

Section A

1. Smoking cannabis in the next two weeks would make me feel relaxed:

Disagree 1 2 3 4 5 6 7 Agree

2. In the next two weeks feeling relaxed when smoking cannabis would be:

Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable

3. Smoking cannabis in the next two weeks would give me a sense of social bonding with other cannabis users:

Disagree 1 2 3 4 5 6 7 Agree

4. In the next two weeks feeling more socially bonded with other cannabis users would be:

Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable

5. Smoking cannabis in the next two weeks would lead me to having mental health problems:

Disagree 1 2 3 4 5 6 7 Agree

6. In the next two weeks having mental health problems because of my smoking cannabis would be:

Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable

7. Smoking cannabis in the next two weeks would result in my becoming addicted to it:

Disagree 1 2 3 4 5 6 7 Agree

8. My becoming addicted to cannabis in the next two weeks would be:

Extremely undesirable -3 -2 -1 0 +1 +2 +3 Extremely desirable

9. My friends approve of me smoking cannabis in the next two weeks:

Disagree 1 2 3 4 5 6 7 Agree

10. Regarding smoking cannabis in the next two weeks I want to do what my friends want me to do:

Not at all -3 -2 -1 0 +1 +2 +3 Very much

11. The 'cool' kids at school approve of me smoking cannabis in the next 2 weeks:

Disagree 1 2 3 4 5 6 7 Agree

12. Regarding smoking cannabis in the next two weeks I want to do what the 'cool' kids at school want me to do:

Not at all -3 -2 -1 0 +1 +2 +3 Very much

13. My parents/guardians approve of me smoking cannabis in the next two weeks:

Disagree 1 2 3 4 5 6 7 Agree

14. Regarding smoking cannabis in the next two weeks I want to do what my parents/guardians want me to do:

Not at all -3 -2 -1 0 +1 +2 +3 Very much

15. My school / teachers approve of me smoking cannabis in the next two weeks:

Disagree 1 2 3 4 5 6 7 Agree

16. Regarding smoking cannabis in the next two weeks I want to do what my school / teachers want me to do:

Not at all -3 -2 -1 0 +1 +2 +3 Very much

17. I expect that it will be difficult to get hold of cannabis in the next two weeks:

Disagree -3 -2 -1 0 +1 +2 +3 Agree

18. Easy availability of cannabis in the next two weeks would make it

Much more difficult 1 2 3 4 5 6 7 Much easier
to smoke cannabis

19. For me to smoke cannabis in the next two weeks would be against the law:

Disagree 1 2 3 4 5 6 7 Agree

20. In the next two weeks cannabis being illegal would make it:

Much more difficult 1 2 3 4 5 6 7 Much easier
to smoke cannabis

21. If I smoke cannabis in the next two weeks I will be caught and punished:

Disagree -3 -2 -1 0 +1 +2 +3 Agree

22. Getting caught and punished in the next two weeks for smoking cannabis would make it:

Much more difficult 1 2 3 4 5 6 7 Much easier
to smoke cannabis

23. I expect that I will disappoint family and friends with my smoking cannabis in the next two weeks:

Disagree -3 -2 -1 0 +1 +2 +3 Agree

24. Disappointing family and friends because of my smoking cannabis in the next two weeks would make it:

Much more difficult 1 2 3 4 5 6 7 Much easier
to smoke cannabis

Section B

1. Please indicate how often you intend to use cannabis in the next two weeks:

1 2 3 4 5 6 7

Never

Most days

2. How often will you use cannabis in the next two weeks :

1 2 3 4 5 6 7

Never

Most days

3. Using cannabis in the next two weeks would be:

-3 -2 -1 0 +1 +2 +3

Bad

Good

4. Using cannabis in the next two weeks would be:

-3 -2 -1 0 +1 +2 +3

Unpleasant

Pleasant

5. Most friends who are important to me think that I should smoke cannabis in the next two weeks:

1 2 3 4 5 6 7

Disagree

Agree

6. My parents/guardians think I should not smoke cannabis in the next two weeks:

1 2 3 4 5 6 7

Disagree

Agree

7. Using cannabis in the next two weeks would go against my principles

1 2 3 4 5 6 7

Disagree

Agree

8. I would feel guilty about using cannabis in the next two weeks

1 2 3 4 5 6 7

Disagree

Agree

9. It would be morally wrong for me to use cannabis in the next 2 weeks

1 2 3 4 5 6 7

Disagree

Agree

10. How much control do you have over whether or not you use cannabis in the next two weeks?

1 2 3 4 5 6 7

Very little

Complete

control

control

11. How much do you feel that whether you use cannabis in the next two weeks is beyond your control:

1 2 3 4 5 6 7

Not at all

Very much so

12. If I wanted to I could easily use cannabis in the next two weeks:

1 2 3 4 5 6 7

Extremely

Extremely

unlikely

likely

13. For me using cannabis in the next two weeks would be:

1 2 3 4 5 6 7

Difficult

Easy

14. Most people who are important to me think that I should smoke cannabis in the next two weeks:

1 2 3 4 5 6 7

Disagree

Agree

Section C

- *The questions below ask about general aspects of your behaviour*
- *For each question, we are asking that you circle the number that best describes your opinion.*
- *Please circle only one number for each question.*

	Agree strongly	Slightly agree	Slightly disagree	Disagree Strongly
1. I have a reserved and cautious attitude toward life	1	2	3	4
2. My thinking is usually careful and purposeful	1	2	3	4
3. I am not one of those people who blurt out things without thinking	1	2	3	4
4. I like to stop and think things over before I do them	1	2	3	4
5. I don't like to start a project until I know exactly how to proceed	1	2	3	4
6. I tend to value and follow a rational, "sensible" approach to things	1	2	3	4
7. I usually make up my mind through careful reasoning	1	2	3	4
8. I am a cautious person	1	2	3	4
9. Before I get into a new situation I like to find out what to expect from it	1	2	3	4
10. I usually think carefully before doing anything	1	2	3	4
11. Before making up my mind, I consider all the advantages and disadvantages	1	2	3	4
12. I have trouble controlling my impulses	1	2	3	4
13. I have trouble resisting my cravings (for food, cigarettes, etc.)	1	2	3	4

14. I often get involved in things I later wish I could get out of	1	2	3	4
15. When I feel bad I will often do things I later regret in order to make myself feel better now	1	2	3	4
16. Sometimes when I feel bad I cant seem to stop what I am doing even though it is making me feel worse	1	2	3	4
17. When I am upset I often act without thinking	1	2	3	4
18. When I feel rejected I will often say things that I later regret	1	2	3	4
19. It is hard for me to resist acting on my feelings	1	2	3	4
20. I often make matters worse because I act without thinking when I am upset	1	2	3	4
21. In the heat of an argument I will often say things that I later regret.	1	2	3	4
	Agree strongly	Slightly agree	Slightly disagree	Disagree Strongly
22. I am always able to keep my feelings under control (R)	1	2	3	4
23. Sometimes I do things on impulse that I later regret	1	2	3	4
24. I generally seek new and exciting experiences and sensations	1	2	3	4
25. I'll try anything once	1	2	3	4
26. I like sports and games in which you have to choose your next move very quickly	1	2	3	4
27. I would enjoy water skiing	1	2	3	4
28. I quite enjoy taking risks	1	2	3	4
29. I would enjoy parachute jumping	1	2	3	4
30. I welcome new and exciting experiences and sensations, even if they are a little frightening and	1	2	3	4

unconventional				
31. I would like to learn to fly an airplane	1	2	3	4
32. I sometimes like doing things that are a bit frightening	1	2	3	4
33. I would enjoy the sensation of skiing very fast down a high mountain slope	1	2	3	4
34. I would like to go scuba diving	1	2	3	4
35. I would enjoy fast driving	1	2	3	4
36. I generally like to see things through to the end	1	2	3	4
37. I tend to give up easily (R)	1	2	3	4
38. Unfinished tasks really bother me	1	2	3	4
39. Once I get going on something I hate to stop	1	2	3	4
40. I concentrate easily	1	2	3	4
41. I finish what I start	1	2	3	4
42. I'm pretty good about pacing myself so as to get things done on time	1	2	3	4
43. I am a productive person who always gets the job done	1	2	3	4
44. Once I start a project I almost always finish it	1	2	3	4
45. There are so many little jobs that need to be done that I sometimes just ignore them all (R)	1	2	3	4

Section D

- Please answer the questions considering your parents/guardians.
- For each question, we are asking that you circle the number that best describes your opinion.
- Circle only one of the numbers in each question.

1. My parents let me know they love me

1 2 3 4
Not at Very
all true true

2. Nothing I do is good enough for my parents

1 2 3 4
Not at Very
all true true

3. My parents say "no" to everything.

1 2 3 4
Not at Very
all true true

4. When I want to understand
how something works, my parents
explain it to me

1 2 3 4
Not at Very
all true true

5. Sometimes I wonder if my
parents like me.

1 2 3 4
Not at Very
all true true

6. My parents think I'm always in the way.	1	2	3	4
	Not at		Very	
	all true		true	

7. My parents make me feel like I'm not wanted.	1	2	3	4
	Not at		Very	
	all true		true	

8. My parents enjoy being with me.	1	2	3	4
	Not at		Very	
	all true		true	

9. When I want to do something, my parents show me how	1	2	3	4
	Not at		Very	
	all true		true	

10. My parents think I'm great.	1	2	3	4
	Not at		Very	
	all true		true	

11. If I ever have a problem, my parents help me to figure out what to do about it.	1	2	3	4
	Not at		Very	
	all true		true	

12. My parents explain the reasons

for our family rules.

1	2	3	4
Not at			Very
all true			true

13. When my parents make a promise,

I don't know if they will keep it.

1	2	3	4
Not at			Very
all true			true

14. My parents trust me.

1	2	3	4
Not at			Very
all true			true

15. My parents keep changing

the rules on me.

1	2	3	4
Not at			Very
all true			true

16. My parents get angry at me

with no warning.

1	2	3	4
Not at			Very
all true			true

17. When my parents say they will do

something sometimes they don't really

do it.

1	2	3	4
Not at			Very
all true			true

18. My parents accept me for myself.

1	2	3	4
Not at			Very
all true			true

19. My parents let me do the things that I think are important.	1	2	3	4
	Not at		Very	
	all true		true	

20. My parents try to understand my point of view.	1	2	3	4
	Not at		Very	
	all true		true	

21. My parents are always telling me what to do.	1	2	3	4
	Not at		Very	
	all true		true	

22. My parents boss me.	1	2	3	4
	Not at		Very	
	all true		true	

23. My parents think there is only one right way to do things- their way.	1	2	3	4
	Not at		Very	
	all true		true	

24. My parents are always glad to see me.	1	2	3	4
	Not at		Very	
	all true		true	

Section E

- *The questions below are asking about your general behaviour*
- *For each question, we are asking that you circle the number that best describes your opinion.*
- *You need to circle only one of the numbers in each question.*

	Not True	Somewhat True	Certainly true
1. I try to be nice to other people. I care about their feelings	1	2	3
2. I am restless, I cannot stay still for long	1	2	3
3. I get a lot of headaches, stomach-aches or sickness	1	2	3
4. I usually share with others (food, games, pens etc.)	1	2	3
5. I get very angry and often lose my temper	1	2	3
6. I am usually on my own. I generally play alone to keep to myself.	1	2	3
7. I usually do as I am told.	1	2	3
8. I worry a lot.	1	2	3
9. I am helpful if someone is hurt, upset or feeling ill.	1	2	3
10. I am constantly fidgeting or squirming	1	2	3
11. I have one good friend or more	1	2	3
12. I fight a lot. I can make other people do what I want.	1	2	3
13. I am often unhappy, down-hearted and tearful	1	2	3
14. Other people my age generally like me.	1	2	3
15. I am easily distracted, I find it difficult to concentrate	1	2	3
16. I am nervous in new situations. I easily lose confidence	1	2	3

17. I am kind to younger children	1	2	3
18. I am often accused of lying or cheating	1	2	3
19. Other children or young people pick on me or bully me	1	2	3
20. I often volunteer to help others (parents, teachers, children)	1	2	3
21. I think before I do things	1	2	3
22. I take things that are not mine from home, school or elsewhere	1	2	3
23. I get on better with adults than with people my own age	1	2	3
24. I have many fears, I am easily scared.	1	2	3
25. I usually finish the work I'm doing. My attention is good.	1	2	3

Section F

- *The questions below are asking about certain acts you may have done.*
- *Please remember that no one will see these answers apart from the Researcher. The School will have no involvement.*
- *For each question, we are asking that you circle the number that best describes your opinion.*
- *Circle only one of the numbers in each question.*

	Never	Once or twice	A few times	Several times
1) Thrown stones at cars, trains, buses or other vehicles	1	2	3	4
2. Purposely destroyed, damaged or defaced people's private property or belongings	1	2	3	4
3. Smashed, slashed or damaged things in public places, eg. in streets, cinemas, pubs, clubs, trains, buses, etc.	1	2	3	4
4. Sold illegal drugs to other people	1	2	3	4
5. Purposely annoyed, insulted or taunted	1	2	3	4

strangers in the street				
6. Thrown things, such as stones, at other people	1	2	3	4
7. Struggled or fought to get away from a police officer	1	2	3	4
8. Written on walls in public places with spray paint	1	2	3	4
9. Drunk alcohol whilst not at home and not in a pub, eg. in a park	1	2	3	4
10. Trespassed in places you were not supposed to go, eg. Railway lines, goods yards, private gardens, empty houses, factories	1	2	3	4
11. Broken the windows of empty houses	1	2	3	4
12. Stolen school property worth more than about £1.00	1	2	3	4
13. Driven a car on the roads when under the age of seventeen, or driven a motor bike or motor scooter on the roads when under the age of 16	1	2	3	4
14. Stolen money from slot machines, juke boxes, public telephones, etc	1	2	3	4
15. Deliberately littered the street or pavement by smashing bottles, tipping over dustbins, etc	1	2	3	4
16. Stolen property from a deserted house or flat	1	2	3	4
	Never	Once or twice	A few times	Several times
17. Purposely annoyed, insulted or taunted one of your teachers	1	2	3	4
18. Found property belonging to other people and failed to return it.	1	2	3	4
19. Been involved in a group fight	1	2	3	4

20. Got money by lying	1	2	3	4
21. Purposely annoyed, insulted or defied a police officer	1	2	3	4
22. Set fire on purpose to something not belonging to you	1	2	3	4
23. Threatened someone with a weapon	1	2	3	4
24. Refused to tell a police officer or other official what you knew about crime	1	2	3	4

Thank you for taking part in this study!

If there is anything else you would want to say about cannabis or anything you want to comment with regard to this study please use the space provided below.

Please put the questionnaire back in the envelope and place it in the box when leaving the room.

You may keep the Debrief Form.

Once again, thank you for your participation!

Time 2: Young people and cannabis: research study at sixth form

Please read the following carefully

- You are **not** asked to write down your name but instead insert a code.
- **This code will be removed** as soon as the questionnaire has been matched up with your previous questionnaire.
- This code must be created in the following order:

e.g.

your **first name** initial, your **surname** initial and your **date of birth** (dd/mm/yyyy)

i.e. if your name is **Mark Cowell** born on 17th April 1993 the code to write would be:

MC17/04/1993

Please complete the following:

Your code: : ____/____/____/____

Initials/ day/ month/ year

Time2 Study

- ❖ Cannabis is a drug made from parts of the cannabis plant and can cause mild feelings of calmness or drowsiness. It can also cause hallucinations (meaning that you feel or you see things in a distorted way).

- Please answer each of the following questions by circling the number that best describes your opinion.
- Please be honest and remember that your individual answers will not be shown to anyone but the Research team.
- The School will have no involvement with the data.
- Please circle only one number for each question

1. Over the past two weeks how often have you used cannabis/marijuana?

1	2	3	4	5	6	7
Never			Most days			

2. How would you rate the amount of cannabis you used over the past two weeks?

0	1	2	3	4	5
Non-existent			Very High		

3. How much cannabis/marijuana would you say you have used over the past two weeks?

0	1	2	3	4	5
None			A lot		

Thank you for taking part in this study!

Please refer to the **Debrief form** found inside your envelope for more information and contacts on Support Centres if you require any help.

Please place this questionnaire back in the envelope.

You may keep the Debrief Form.

Thank you !

Appendix 1D: Participant Debrief Form

Young People and Cannabis: research study at CNS Sixth Form

Thank you for taking part in this study which was trying to find out what young people think about cannabis use.

Please note that:

You have the right to withdraw your data from this study up to two weeks after the study (until 19/01/11).

If you wish to do this, please e-mail the researcher, giving your code number and/or name and your data will be destroyed

A range of useful sources of information/support in relation to substance use is provided at the back of this sheet.

Thank you once again for taking part in this research.

Researcher: Eliza Patouris

e-mail: E.Patouris@uea.ac.uk

Office telephone: 01603 591817

Research supervisor: Dr. Vicky Scaife

e-mail: V.Scaife@uea.ac.uk

Support Centres	Service provided	Telephone	E-mail / Website
The Matthew Project	➤ <i>Provides counselling, advice, information and support services for those with problems relating to drug misuse or alcohol abuse.</i>	01603764754	Support@matthewproject.org
NORCAS Norwich	➤ <i>Helps people make positive changes, improve their coping skills and change their lives around. Anyone concerned about their, or someone else's, use of alcohol, drugs or gambling can contact this service.</i>	01603 767 093	www.norcas.org.uk
The Samaritans (Norwich)	➤ <i>Provides confidential, emotional and non-judgmental support to those who may be in despair or distress.</i> <i>Available 24/7</i>	08457 90 90 90	jo@samaritans.org
Connexions at Norwich	➤ <i>Offers information, practical help and advice to 13-19 year olds about a wide range of issues such as housing, money, drug problems, health and relationships</i>	01603 215300 (Option 1)	www.talkaboutyou.org
FRANK	➤ <i>A very useful website providing a lot of information on all types of drugs.</i>	0800776600	http://www.talktofrank.com

Appendix 1E: Parents questionnaires

Within these pre-packed envelopes were included:

- A letter informing parents of the study procedures to return only if they refused their child to participate. These forms were labelled 'opt-out' forms so as to enable a better understanding between the researcher and the parents (E1)
- A consent form regarding the parents' own participation (E2)
- Questionnaire for parents to complete (E3)
- Free-post envelope to send materials back to the Researcher.

Appendix 1E (1)



University of East Anglia PhD student research

Young People and Cannabis use: research study at Sixth Form

Dear Parent/Guardian,

I am a PhD research student at the University of East Anglia. My research investigates how young people make decisions about whether or not to use cannabis.

According to an NHS report (Statistics on Drug Misuse, NHS Information Centre, 2007) 38% of 15 and 16 year olds in the UK have tried cannabis- this is one of the highest rates among the European countries.

- ❖ We need to know more about the reasons behind these figures. Finding out more about how young people decide whether or not to use cannabis use will help to inform the design of future health communications.

I am conducting a research study with students aged 16-18 at Sixth Form College. **I am writing to ask if you will give your permission for your child to participate in this research.**

- The questionnaires will be distributed in the school during assembly and will involve short questions on young people's views regarding whether or not to use cannabis (duration: 40 minutes)
- The University's Ethical Committee has approved this research. All information will remain confidential and the School will have no involvement with the data.
- If you would prefer your son/daughter not to take part please contact me, stating his/her name by the 20th December on 01603 592 068 or e-mail me at E.Patouris@uea.ac.uk, or use the free-post envelope provided. **There is no need to reply to this letter if you are happy for your child to participate.**

Part of this study is also interested in finding out **your own** views with regards to young people and cannabis use (please see the letter attached for your own participation).

Thanking you in advance for your help,

Eliza Patouris

PhD Researcher

School of Social Work and Psychology

University of East Anglia

Norwich

Appendix 1E (2)

We also want to hear your views about cannabis use.

Interested in participating?

Part of this study's aim is to understand the parental perspective on young people and cannabis use. You are also kindly requested to participate. The parent/guardian that has most responsibility for the young person is requested to fill in the questionnaire.

- Any information obtained in this study shall remain confidential. Your answers will only be used by the researcher and the School will have no involvement.
- The questionnaire is in the back of this envelope . Please send this back via free-post (envelope provided) directly to the Researcher.
- You are **not asked to write down your son/daughter's name but instead insert a code**. Please be aware that this code will **only** serve to match your questionnaire with that of your son/daughter and will **not be used** any further.
- **This code will be removed** as soon as the questionnaires have been matched up and before any data is entered in the computer and/or used in the analysis.
- If you have one or more 16-18 year olds at CNS Sixth Form please complete this questionnaire by taking into consideration the oldest child.
- If you do not wish to participate there is no need to return this consent form.

Please feel free to e-mail the researcher for any questions at E.Patouris@uea.ac.uk. Once again your participation is highly appreciated.

Thank you for your participation!

Eliza Patouris

PhD Researcher

School of Social Work and Psychology

University of East Anglia

Norwich

NR47TJ

Appendix 1E (3)



Young people and cannabis: research study

Parental Questionnaires

If you have two or more children aged 16-18 participating in the study could you please answer this questionnaire considering only the oldest of your children

- You are **not** asked to write down your son/ daughter's name but instead insert a code.
- **This code will be removed** as soon as the questionnaire has been matched up with that of your child and will not be used any further.
- This code must be created in the following order:

e.g.

child's first name initial, **child's** surname initial and **child's** date of birth (dd/mm/yyyy)

i.e. if the name of your child participating in the study is **Mark Cowell** born on 17th April 1993 the code to write would be:

MC/17/04/1993

Please fill in with regards to your son/daughter:

Child's code: ____/____/____/____

Initials/ day/ month/ year

Please fill in with regards to yourself

Your Gender :

Your Age (years) :

Your Nationality:

Employment Status:

Unemployed

Part-time employment

Full-time employment

Other

☐☐☐

Section A

The questions in **Section A** are trying to find out about the general styles parents use towards their children.

- If you have two or more children aged 16-18 participating in the study please answer this questionnaire considering only the oldest of your children.
- Please answer each of the following questions by circling the number that best describes your opinion.
- Circle only one of the numbers on each question

For example, if you believe the following statement to be 'very true' you would circle '4' as shown below:

Travelling is enjoyable	1	2	3	4
	Not at	Quite	Slightly	Very
	all true	untrue	true	true

Please complete the following

1. I know a lot about what goes

on with my child

1	2	3	4
Not at			Very
all true			true

2. Sometimes I feel like I can't be

there for my child when he/she needs me.

1	2	3	4
Not at			Very
all true			true

3. I do special activities with my child	1	2	3	4
	Not at			Very
	all true			true

4. I set aside time to talk to my child about what is important to him/her	1	2	3	4
	Not at			Very
	all true			true

5. I can always find time for my child	1	2	3	4
	Not at			Very
	all true			true

6. I don't understand my child very well	1	2	3	4
	Not at			Very
	all true			true

7. Sometimes my child is hard to like	1	2	3	4
	Not at			Very
	all true			true

8. At times, the demands that my child makes feel like a burden	1	2	3	4
	Not at			Very
	all true			true

9. My child needs more than I have time to give him/her	1	2	3	4
	Not at			Very
	all true			true

10. I really know how my child feels
about things

1

2

3

4

Not at
all true

Very
true

11. I make it clear what will happen
if my child does not follow our rules

1

2

3

4

Not at
all true

Very
true

12. My child fights with me very often

1

2

3

4

Not at
all true

Very
true

13. When I tell my child I'll
do something, I do it

1

2

3

4

Not at
all true

Very
true

14. If my child has a problem

I help him/her figure out what to do about it

1

2

3

4

Not at
all true

Very
true

15. I expect my child to
follow our family rules

1

2

3

4

Not at
all true

Very
true

16. I let my child get away with things

I really shouldn't allow

1

2

3

4

Not at
all true

Very
true

17. When my child gets in trouble

my reaction is not very predictable

1

2

3

4

Not at

Very

all true

true

18. I make it clear to my child

what I expect from him/her

1

2

3

4

Not at

Very

all true

true

19. I change the rules a lot at home

1

2

3

4

Not at

Very

all true

true

20. I can get angry at my child

with no warning

1

2

3

4

Not at

Very

all true

true

21. I encourage my child to express his/her

feelings when they're hard to express

1

2

3

4

Not at

Very

all true

true

22. I find myself getting into

power struggles with my child

1

2

3

4

Not at

Very

all true

true

23. I trust my child

1

2

3

4

Not at

Very

all true

true

24. I encourage my child to be true

to her/himself

1

2

3

4

Not at

Very

all true

true

25. I expect my child to say what

he/she really thinks

1

2

3

4

Not at

Very

all true

true

26. My child doesn't seem to

know what I expect from him/her.

1

2

3

4

Not at

Very

all true

true

27. To get my child to do

something, I have to shout at him/her

1

2

3

4

Not at

Very

all true

true

28. I can't afford to let my child

decide too many things on his/her own

1

2

3

4

Not at

Very

all true

true

29. I sometimes feel I have to

push my child to do things

1

2

3

4

Not at

Very

all true

true

30. I encourage my child to express his/her

opinions even when I don't agree with them

1

2

3

4

Not at

Very

all true

true

Section B

These questions are asking for your general views and opinions regarding cannabis use.

Please fill in the boxes where appropriate and use the spaces provided.

1) Who do you feel should be most responsible for educating/talking to your child about drugs?

2) What would make it easier for you to talk to your child about cannabis use?

3) What would make it more difficult for you to talk to your child about cannabis use?

4) a) In your lifetime have you ever used cannabis?

Yes ☐

No ☐

b) If you have ever used cannabis, can you provide a brief description of the situation you were in when you tried it? (e.g. who with, where, how). If you have never used it before please write N/A.

5) What, in your opinion, are the main reasons why young people sometimes try cannabis?

6) What, in your opinion, are the main reasons why young people sometimes try alcohol?

7) Do you speak to your child about cannabis use?

1	2	3	4	5	6	7
Never						Very frequently

8) Do you speak to your child about alcohol use?

1	2	3	4	5	6	7
Never						Very frequently

9) *Please state how far you agree or disagree with the following statements:*

a) Cannabis use is a normal part of young people's culture:

1	2	3	4	5	6	7
Agree						Disagree

b) Any young person caught using cannabis should be prosecuted by the police:

1	2	3	4	5	6	7
Agree						Disagree

c) Any young person caught using cannabis should be cautioned by the police:

1	2	3	4	5	6	7
Agree						Disagree

d) Cannabis use amongst young people is **not** an issue for parents to over-react

1	2	3	4	5	6	7
Agree						Disagree

e) Most young people want to experiment with cannabis use and will not necessarily become long-term users/ problem- users.

1	2	3	4	5	6	7
Agree						Disagree

10) a) How dangerous do you think it is for your child to use cannabis?

1	2	3	4	5
Not at all dangerous				Extremely dangerous

b) How dangerous do you think it is for your child to use alcohol?

1	2	3	4	5
Not at all				Extremely dangerous
dangerous				

c) How dangerous do you think it is for your child to smoke cigarettes?

1	2	3	4	5
Not at all				Extremely dangerous
dangerous				

11)

a) What are your tolerance levels towards your child using cannabis?

1	2	3	4	5
Very tolerant				Not at all tolerant

b) What are your tolerance levels towards your child using alcohol?

1	2	3	4	5
Very tolerant				Not at all tolerant

c) What are your tolerance levels towards your child smoking cigarettes?

1	2	3	4	5
Very tolerant				Not at all tolerant

12) How knowledgeable do you feel on the issue of cannabis use?

1	2	3	4	5
Not at all				Very knowledgeable
knowledgeable				

13) Please tick as many as appropriate:

If you find out your 16-18 year old child was using cannabis what would you do:

Deal with it myself	
Ask for advice from School teachers	
Ask for advice from relatives	
Ask for advice from friends	
Report him/her to the police	
Get support from a nearby youth drug treatment service	
Ask for advice from GP	
Use the internet to find out more information	

14) Please tick in the appropriate column to show your use/ non-use of any of the following drugs. You can tick in more than one column if appropriate.

Type of drugs	Used in the past month	Used in the past year	Never
Amphetamines			
Cannabis			
Cocaine			
Crack			
Kopamol			
Ecstasy			
Heroin			
Methadone			
LSD			
Magic Mushrooms			
Any other illicit drug/s (write the name/s in the space provided below)			

<div style="border-bottom: 1px dashed black; height: 15px; margin-bottom: 5px;"></div> <div style="border-bottom: 1px dashed black; height: 15px;"></div>			
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15) Please choose the first response that comes into mind with the following question.

How is cannabis classified as a drug?

Class A

Class B

Class C

☐
☐
☐

16)

a) How often do you have a drink containing alcohol?

0	1	2	3	4
Never	Monthly or less	2 or 4 times per month	2 or 3 times per week	4 or more times per week

b) How many drinks containing alcohol do you have on a typical day when you are drinking?

0	1	2	3	4
1 or 2	3 or 4	5 or 6	7 to 9	10 or more

c) How often do you have six or more drinks on one occasion?

0	1	2	3	4
Never	Less than monthly	Monthly	Weekly	Daily or almost daily

Thank you for taking part in this study!

If you have any comments you would like to share with regards to the study please use the space provided below.

A large, empty rectangular box with a thin black border, intended for participants to write any comments or feedback they have regarding the study.

Please refer to the Debrief form for more information.

Please place the Questionnaire in the pre-paid envelope provided and send back to the Researcher.

Once again, thank you for your participation!

Elisavet Patouris PhD student

E.Patouris@uea.ac.uk

Appendix 1F: Normality tests & missing data using non EM-imputed data

Table 1 demonstrates that the normality tests were significant for both intentions and behaviour, meaning that the distribution is significantly different from a normal distribution. Although some of the independent predictors show non-normal distributions, this does not violate the assumptions of logistic regression in that only the outcome variables in a regression analysis (e.g. intentions and behaviour) need to be normally distributed.

Table 1: Normality tests for variables

variable	Kolmogorov-Smirnov	Shapiro-Wilk	Percentage of missing data (%)
Intention	.442, $p < .001$	.473, $p < .001$	0
Behaviour	.503, $p < .001$	.322, $p < .001$	25.8
Attitude	.256, $p < .001$	.795, $p < .001$	.5
Perceived Norms	.241, $p < .001$	.826, $p < .001$	1.0
PBC	.104, $p < .001$	.933, $p < .001$	.5
Moral norms	.126, $p < .001$	.902, $p < .001$	.5
Impulsivity: Urgency	.048, $p = .200$	.986, $p = .086$	1.0
Impulsivity: Sensation-seeking	.077, $p = .012$	.971, $p < .001$	.5
Impulsivity: Lack of Premeditation	.065, $p = .061$	.985, $p = .053$	.5
Impulsivity: Lack of Perseverance	.061, $p = .200$	.989, $p = .161$	.5
PS: Warmth	.138, $p < .001$	.912, $p < .001$	4
PS: Structure	.079, $p = .028$	.970, $p > .001$	2.5
PS: Autonomy Support	.144, $p < .001$	.901, $p < .001$	3.5
PS: Rejection	.200, $p < .001$	.831, $p < .001$	2.5
PS: Chaos	.107, $p < .001$	.945, $p < .001$	2.5
PS: Coercion	.134, $p < .001$	.920, $p < .001$	2.5
Strengths & Difficulties	.065, $p = .059$	.982, $p = .019$	7.1
Delinquency	.198, $p < .001$	.933, $p < .001$	7.1

Appendix G: Testing for multicollinearity.

As shown in Table... there are no signs of multicollinearity give that none of our variables have a tolerance value less than .1 (Menard, 2002), and also none of our variables has a VIF value greater than 10 (Myers, 1990).

Table 2: Collinearity statistics presenting tolerance and VIF values
for variables predicting behaviour

Variable	Tolerance	VIF
Intention	.442	2.263
Attitude	.297	3.368
Perceived Norms	.609	1.642
PBC	.573	1.744
Moral norms	.357	2.802
Impulsivity: Urgency	.553	1.809
Impulsivity: Sensation-seeking	.771	1.296
Impulsivity: Lack of Premeditation	.589	1.698
Impulsivity: Lack of Perseverance	.549	1.820
PS: Warmth	.260	3.839
PS: Structure	.413	2.419
PS: Autonomy Support	.277	3.614
PS: Rejection	.344	2.908
PS: Chaos	.499	2.003
PS: Coercion	.402	2.486
Strengths & Difficulties	.498	2.007
Delinquency	.593	1.685

Appendix H: Regression analyses using EM-imputed data

Using EM-imputed data logistic regression found that no additional variables were found to be significant in terms of predicting intentions (Table 1 & 2 below) as found in the original dataset shown in Chapter 5 (section 5.4.5). Tables 3 and 4 demonstrate that the variables found to be significant in Chapter 5 (section 5.4.5) in terms of predicting behaviour were the same when analysed using EM-imputed data. Presenting the chi-square and R-squares for these analyses in the appendices was spared as the purpose was simply to show which variables were significant in terms of their 'separate contribution' in the TPB and using 'unitary framework'.

Table 1: Logistic regression on Intentions using EM-imputed data

				<u>95 % Confidence Interval for Odds Ratio</u>	
	Predictors	B	Wald Chi-square	Odds ratio	Lower Upper
	(Constant)	-1.202	51.081**	.301	
1	<i>Attitude</i>	.997	26.221**	2.709	1.850 3.968
	<i>Perceived norms</i>	.602	7.165**	1.825	1.175 2.835
	<i>PBC</i>	.506	5.239*	1.659	1.075 2.559
	(Constant)	-4.636	9.735	0.010	
2	<i>Attitude</i>	.905	19.721**	2.472	1.658 3.686
	<i>Perceived norms</i>	.592	6.960**	1.808	1.164 2.803
	<i>PBC</i>	.393	2.713	1.482	.928 2.366
	Moral Norms	-.225	1.352	.798	.546 1.167
	(Constant)	-3.284	3.101	.037	
3	<i>Attitude</i>	1.036	23.790**	2.819	1.859 4.274
	<i>Perceived norms</i>	.572	6.119*	1.772	1.126 2.788
	<i>PBC</i>	.536	5.329*	1.709	1.084 2.694
	Impulsivity: Lack of Premeditation	.606	.837	1.833	.500 6.715
	Impulsivity: Urgency	.030	.004	1.030	.418 2.539
	Impulsivity: Sensation-seeking	.314	.357	1.369	.488 3.842
	Impulsivity: Lack of Perseverance	-.651	.888	.521	.134 2.020
	(Constant)	-5.265	2.908	.005	
4	<i>Attitude</i>	1.085	24.632**	2.960	1.982 4.544
	<i>Perceived norms</i>	.545	5.284*	1.725	1.084 2.745
	<i>PBC</i>	.501	4.652*	1.650	1.047 2.601
	PS: Warmth	.133	.030	1.143	.252 5.184
	PS: Rejection	1.018	3.026	2.769	.879 8.724

	PS: Structure	.265	.209	1.304	.418	4.066
	PS: Chaos	-.009	.000	.991	.373	2.629
	PS: Autonomy	.239	.093	1.270	.274	5.882
	Support					
	PS: Coercion	.061	.014	1.063	.383	2.950
	(Constant)	-8.168	5.216*	.000		
5	<i>Attitude</i>	.963	24.416**	2.619	1.788	3.838
	<i>Perceived norms</i>	.551	5.797*	1.734	1.108	2.715
	<i>PBC</i>	.528	5.592	1.696	1.095	3.629
	Strengths &	-.011	.061	.989	.907	1.079
	Difficulties					
	(Constant)	-4.153	8.234**	0.011		
8	<i>Attitude</i>	.990	25.477**	2.690	1.832	3.951
	<i>Perceived norms</i>	.584	6.769**	1.792	1.155	2.782
	<i>PBC</i>	.477	4.469*	1.612	1.035	2.508
	Delinquency	.022	.511	1.022	.963	1.084
	(Constant)	-5.160	9.546**	.006		

Using EM-imputed data logistic regression found that no additional variables were found to be significant in terms of predicting intentions (Table 1 & 2 below) as found in the original dataset shown in Chapter 5 (section 5.4.5). Tables 3 and 4 demonstrate that the variables found to be significant in Chapter 5 (section 5.4.5) in terms of predicting behaviour were the same when analysed using EM-imputed data. Presenting the chi-square and R-squares for these analyses in the appendices was spared as the purpose was simply to show which variables were significant in terms of their 'separate contribution' in the TPB and using 'unitary framework'.

Table 2: Logistic regression on Intention by all variables in one framework using the stepwise method, based on EM-imputed data.

		95 % Confidence Interval for Odds ratio			
		B	Wald Chi- square	Odds ratio	
					Lower Upper
	Constant	-1.165	45.481**	.312	
1	Attitudes	.965	24.500**	2.624	1.791 3.844
	Perceived Norms	.547	5.812*	1.728	1.108 2.695
	PBC	.526	5.550*	1.693	1.092 2.623
	(Constant)	-4.643	9.740	0.010	
2	Attitudes	1.035	23.171**	2.815	1.874 4.230
	Perceived Norms	.456	3.830*	1.578	.999 2.490
	PBC	.534	5.393*	1.706	1.087 2.679
	Parenting style: Rejection	.748	3.882*	2.113	1.004 4.445
	(Constant)	-5.790	12.172	.003**	

Table 3: Regression on Behaviour using separate steps for each additional variable, using EM-imputed data.

					<i>95 % Confidence Interval for Odds Ratio</i>	
	Predictors	B	Wald Chi-square	Odds ratio	<i>Lower</i>	<i>Upper</i>
1	<i>Intention</i>	1.365	24.746**	3.917	2.287	6.707
	(Constant)	-4.600	51.194**	.010		
2	<i>Intention</i>	1.228	19.342**	3.414	1.975	5.900
	<i>PBC</i>	.792	5.575*	2.208	1.144	4.263
	(Constant)	-8.778	16.617	.000		
3	<i>Intention</i>	.908	5.622*	2.478	1.170	5.247
	<i>PBC</i>	.683	3.578*	1.979	.976	4.014
	<i>Attitude</i>	.177	.453	1.193	.713	1.997
	<i>Perceived Norms</i>	.316	1.534	1.371	.832	2.260
	(Constant)	-8.303	10.722**	.000		
4	<i>Intention</i>	1.032	6.470**	2.807	1.267	6.219
	<i>PBC</i>	.350	.786	1.420	.654	3.081
	<i>Attitude</i>	-.117	.135	.889	.476	1.661
	<i>Perceived Norms</i>	.226	.652	1.254	.724	2.173
	Moral Norms	-.777	4.473*	.460	.224	.945
	(Constant)	-4.298	2.072	.014		
5	<i>Intention</i>	1.055	6.115*	2.871	1.244	6.622
	<i>PBC</i>	.705	3.185	2.024	.933	4.390
	<i>Attitude</i>	.086	.076	1.089	.592	2.006
	<i>Perceived Norms</i>	.223	.612	1.249	.715	2.181
	Impulsivity: Lack of Premeditation	1.959	4.766*	7.093	1.222	41.181
	Impulsivity: Urgency	.171	.060	1.187	.301	4.678
	Impulsivity: Sensation-seeking	.019	.001	1.019	.279	3.727
	Impulsivity: Lack of Perseverance	-.310	.005	.734	.112	4.789
	(Constant)	-12.981	6.622	.000		

6	<i>Intention</i>	1.020	4.375*	2.773	1.066	7.214
	<i>PBC</i>	.668	2.438	1.950	.843	4.512
	<i>Attitude</i>	.179	.288	1.196	.622	2.298
<hr/>						
<i>95 % Confidence Interval for Odds Ratio</i>						
	Predictors	B	Wald Chi-square	Odds ratio	<i>Lower</i>	<i>Upper</i>
<hr/>						
	<i>Perceived Norms</i>	.367	1.501	1.444	.802	2.598
	PS: Warmth	-.353	.157	.703	.122	4.036
	PS: Rejection	-.656	.620	.519	.101	2.659
	PS: Structure	-.297	.131	.743	.149	3.707
	PS: Chaos	-.900	1.160	.407	.079	2.090
	PS: Autonomy Support	-1.188	1.193	.305	.036	2.570
	PS: Coercion	-.635	.529	.530	.096	2.933
	(Constant)	1.010	.036	2.747		
7	<i>Intention</i>	1.095	6.781**	2.991	1.311	6.821
	<i>PBC</i>	.483	1.782	1.621	.797	3.297
	<i>Attitude</i>	.186	.491	1.204	.716	2.025
	<i>Perceived Norms</i>	.350	1.739	2.419	.843	2.387
	Strengths & Difficulties	.019	.085	1.019	.899	1.155
	(Constant)	-7.739	8.928	.000		
8	<i>Intention</i>	.926	5.770*	2.526	1.186	5.378
	<i>PBC</i>	.721	3.548	2.056	.971	4.351
	<i>Attitude</i>	.113	.165	1.120	.650	1.929
	<i>Perceived Norms</i>	.310	1.414	1.363	.818	2.271
	Delinquency	.064	2.849	1.066	.990	1.147
	(Constant)	-10.741	10.951	.000		

** = p<.01, * = p<.05.

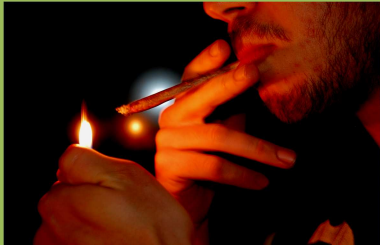
Table 4: Logistic regression on Behaviour by all variables in one framework using the stepwise method, based on EM-imputed data.

					95 % Confidence Interval for Odds ratio	
	Variables	B	Wald Chi- square	Odds ratio	Lower	Upper
1	Attitudes	.585	8.156**	1.795	1.202	2.683
	Perceived Norms	.495	4.307	1.640	1.028	2.617
	PBC	.551	3.153	1.734	.944	3.184
	(Constant)	-6.155	9.575	.000		
2	Attitudes	.418	3.053*	1.516	.950	2.426
	Perceived Norms	.471	3.300*	1.602	.964	2.664
	PBC	.254	.585	1.289	.672	2.474
	Moral Norms	-.616	4.147*	.540	.298	.977
	(Constant)	-2.647	1.208	.071		
3	Attitudes	-.062	.036	.040	.496	1.782
	Perceived Norms	.234	.676	1.263	.724	2.205
	PBC	.148	.131	1.160	.520	2.588
	Moral Norms	-.742	4.543*	.476	.241	.942
	Intentions	1.216	7.185**	3.374	1.387	8.207
	(Constant)	-3.470	4.589	.004		

** = $p < .01$, * = $p < .05$.

Study 2

Appendix 2A- Flier



Come and share your views on Cannabis!

Title of Study: Young people & Cannabis Use: A theory of Planned Behaviour study

What the study is about?

This is part of a PhD research project which is interested in further examining the individual decision making process of choosing whether or not to use cannabis

Although many large scale surveys have been conducted with regards to young people and cannabis, there still is room for exploring a more in-depth perspective of why some young people choose whether or not to use it. Among university students especially this is a common behaviour therefore your individual input would be highly appreciated!

How will the study be conducted?

A series of Focus groups will be set up and you will be able to participate by joining one of these focus groups. You will be required to discuss and share your opinions and views regarding cannabis use.

Appendix 2B- Focus group Information Sheet

FOCUS GROUP PARTICIPANT INFORMATION SHEET

SCHOOL OF SOCIAL WORK & PSYCHOLOGY

UNIVERSITY OF EAST ANGLIA

Title of Project: Young People and Cannabis use: A Theory of Planned Behaviour Study

Study Title: Investigating how Students understand and perceive Cannabis use

RESEARCHER:

Eliza Patouris (E.Patouris@uea.ac.uk, 01603 592068)

Eliza is a PhD Researcher in the School of Social Work & Psychology at the University of East Anglia

PURPOSE: The purpose of this research study is to find out your views on cannabis use. I am interested in your general viewpoints and individual perceptions with regards to this behaviour.

USE OF DATA: Data from this study may appear in the final PHD thesis, journal articles or academic presentations. No original names will be used and no identifying information will appear at dissemination.

LOCATION AND DURATION: Participation in this study will last for approximately 1 hour. The focus group will take place in a seminar or teaching room on the university campus. You will be informed of the specific venue for the focus group when you book a place with the researcher.

WHAT TAKING PART INVOLVES: Taking part in this study will require you to engage in group discussion of cannabis use with regards to your understanding and perceptions of this behaviour. You can choose whether or not you want to share your own personal experiences or simply share your general viewpoints with regards to this behaviour.

If you do not feel comfortable answering some questions you can choose to not contribute in the discussion.

CONFIDENTIALITY/ANONYMITY: You will be asked to introduce yourself in the group (first name only), and you are not expected to give your full name and surname. No names or identifying information will appear at dissemination of findings. However, anything you say during the group discussion is shared with other participants present as well as with the researcher. As such confidentiality cannot be completely guaranteed.

It is asked that as a participant you respect others rights to confidentiality by not repeating anything you hear during the focus groups and not sharing any participant names with individuals outside the group.

RIGHT TO REFUSE OR WITHDRAW: Participation is voluntary and you have the right to refuse participation without giving any reason.

If at any point you feel that you no longer want to participate in the study you can simply leave the area in which the study is being conducted.

Due to the interactive nature of the focus group you will not be able to withdraw your data after the focus group has been conducted. However, if you feel you do not want to participate in certain sections of the discussion you can remain in the focus group and rejoin the discussion when you feel comfortable doing so.

ETHICAL APPROVAL: This study has received ethical approval from the school of Social Work & Psychology Ethics Committee

PLEASE NOTE: This focus group cannot provide you with support to manage cannabis use or deal with a cannabis use problem. Due to the potentially sensitive nature of the discussion if you are currently dealing with a cannabis use/ substance use problem you may wish to reconsider your participation in the focus group. Please remember you are free to withdraw now, or at anytime during the focus group, without giving a reason.

OFFER TO ANSWER QUESTIONS: If you have any questions about this study you can ask the researcher now. If you have any questions at a later time you can contact the researcher by e-mail (E.Patouris@uea.ac.uk) or phone (01603 592068).

If you have any complaints about this study and do not wish to raise them with the researcher please contact the Research Supervisor Dr. Victoria Scaife.

Appendix 2C- Participant Consent Form

Dear Student,

I am a PhD research student at the University of East Anglia, in the School of Social Work and Psychology. The aim of my study is to obtain young people's opinions and perspectives regarding cannabis use.

- Please be aware that any information obtained in this study shall remain confidential, in that there will be no access to the information obtained other than to the researcher. Your answers will only be used and seen by the researcher and will have no further use by the University, therefore you are kindly requested to report your answers as accurately and as honestly as possible.
- Confidentiality is also assured, so that no names will be identified or used during or after this study.

Please feel free to ask the researcher any questions. Once again your participation is highly appreciated and will be of high value to this research.

Thank you for your participation!

Eliza Patouris

PhD Researcher

School of Social Work and Psychology

University of East Anglia

Norwich

NR47TJ

UK

Name of Researchers: Eliza Patouris

Please tick box

1. I have read and understood the information about this study and I have had the opportunity to ask any questions

☐

2. I understand that my participation is voluntary and that I am free to withdraw without giving any reason

☐

3. I agree to take part in this study

☐

Participant Initials

Date

Signature

Appendix 2D- Verbal Introduction

Hi everyone,

My name is Eliza Patouris and before we begin today I would like to thank you for taking the time to participate in this focus group today. I am in my second year of my PhD at the School of Social Work & Psychology here at UEA. My research is about young people and cannabis use, and the aim of this study is to obtain a more in-depth perspective of what undergraduate students think about cannabis. I am looking forward to hearing what you have to share today and this will inform a large amount of my future work. I am sure there will be some interesting viewpoints which will really contribute to my research project.

Topic and discussions to follow:

Although there has been a lot of research looking at cannabis use and particularly among young people, it seems that there are still gaps in our understanding about why some young people choose whether or not to use cannabis. Despite the large scale surveys conducted regarding this matter, there is insufficient research that examines this common behaviour in more detail I hope that today through the discussion you will be able to inform me of your own individual perspectives and opinions regarding cannabis use.

Length of interview

The discussion of this focus group will last between 40-45 minutes so the session will finish at (....) at the latest.

Participant rights, ethical considerations and ground rules

It is important that I inform you of your rights as participants and inform you of a few things you should know before we begin the discussion session.

Firstly I would like to confirm that this study has been approved by the School Ethics Committee.

Second, any contributions you make to the focus group will be shared with other members of the groups as well as with myself. So you are asked to keep this information confidential.

Third, all data recorded today will be anonymised in transcriptions and in dissemination, so that no real names will be used and any possibly identifying information such as places and times will be removed or changed.

Finally, if you find that you feel uncomfortable during the session, you are free to leave at anytime, and if you do choose to leave you do not have to give a reason but can simply leave the room. Similarly, if you feel uncomfortable contributing at any particular point but do not wish to leave the focus group you can still stay and listen until you feel ready to contribute once again or until the focus group ends.

Also, due to the interactive nature of the focus group you will be unable to withdraw your data after the focus group. Once again if you do not feel comfortable answering questions or contributing to certain sections off the discussion you will not be forced to contribute. You are free to remain in the focus group and rejoin the discussion when you feel comfortable in doing so.

Note that there are not wrong or right answers to any of the questions asked or topics that will be discussed, so everyone's input is welcome and encouraged, as everything will be incorporated in to the work. You are not expected to be experts on the topics discussed as it simply your opinions, your ideas and your thoughts that I am interested in.

So I will be asking some questions about cannabis use but it is up to you whether you give examples from your own personal life or just your general opinions and views. Please take care not to mention any names.

And just to remember please respect each other during the discussion and allow one person to speak at a time and refrain from any side conversations with those sitting near you.

Are there any questions at this point?

Appendix 2E- Focus Group Questions

1. What is your general opinion on cannabis use? (is it okay? Not okay? You don't mind?).
2. Does interacting with others affect your own decision as to whether or not you use cannabis?
3. Do you think the way society views this behaviour has any influence on your own decision as to whether to use cannabis or not?
4. Do you feel you have a sense of self-control over whether or not you use cannabis? (e.g. is it a behaviour that is under your control? Whether you are using it or not?)
5. Research on Intentions and behaviour show that when an individual forms an intention it almost always translates into behaviour. When you have the intention of using/not using cannabis do you always end up using it/not using it? Is there something that could prevent your intention turning into behaviour?
6. Do you think that the way your parents brought you up, influences your decision to use or not use cannabis? (if yes, how? If not, why not?)
7. Do you think cannabis use is a personal thing? Does it depend on a personality type?
8. Is cannabis use a planned-out behaviour or something that happens spontaneously?
9. What is the message you would direct to the Government regarding policies on young people and cannabis use?

Appendix 2F- Focus Group Verbal Debrief and Closing Statement

I would like to thank you for all taking part and I hope that you found this session quite interesting and enjoyable.

Does any one have any questions at this point?

I have a Debrief sheet which I hope you will all take the time to read. It includes any relevant contact details you may need and a range of support centres which can provide information with regards to cannabis use/ substance use.

Just to remind you that in interest of maintain confidentiality and anonymity you are asked not to repeat any part of today's discussion or anything that you have heard here today.

I will be around for a little longer if anyone has any questions or comments that they would prefer discussing on a one to one basis.

Thank you and goodbye.

Appendix 2G- Debrief Sheet

Young People and Cannabis:

Thank you for taking part in this study which was trying to find out what young people think about cannabis use.

The aims of this study were:

- To obtain an in-depth individual perspective on the use of cannabis
- To understand and investigate the reasons behind choosing whether or not to use cannabis.
- To implement a more constructive approach in terms of dealing with this issue.

A range of useful sources of information/support in relation to substance use is provided at the back of this sheet.

Thank you once again for taking part in this research.

Researcher: Eliza Patouris

e-mail: E.Patouris@uea.ac.uk

Office telephone: 01603 591817

Research supervisor: Dr. Vicky Scaife

e-mail: V.Scaife@uea.ac.uk

You may also choose to use the University Counselling Services:

e-mail: csn@uea.ac.uk

Telephone: 01603 592651

Support Centres	Service provided	Telephone	E-mail / Website
The Matthew Project	➤ <i>Provides counselling, advice, information and support services for those with problems relating to drug misuse or alcohol abuse.</i>	01603764754	Support@matthewproject.org
NORCAS Norwich	➤ <i>Helps people make positive changes, improve their coping skills and change their lives around. Anyone concerned about their, or someone else's, use of alcohol, drugs or gambling can contact this service.</i>	01603 767 093	www.norcas.org.uk
The Samaritans (Norwich)	➤ <i>Provides confidential, emotional and non-judgmental support to those who may be in despair or distress.</i> <i>Available 24/7</i>	08457 90 90 90	jo@samaritans.org
Connexions at Norwich	➤ <i>Offers information, practical help and advice to 13-19 year olds about a wide range of issues such as housing, money, drug problems, health and relationships</i>	01603 215300 (Option 1)	www.talkaboutyou.org
FRANK	➤ <i>A very useful website providing a lot of information on all types of drugs.</i>	0800776600	http://www.talktofrank.com

Appendix 3A: Study 3 Belief Elicitation Study

Young people and cannabis: research study with university students

Note: Please do not write your names. We are only interested in your opinions.

The University will have no involvement with the data. This information will remain confidential.

- ❖ Cannabis is a drug made from parts of the cannabis plant and can cause mild feelings of calmness or drowsiness. It can also cause hallucinations (meaning that you feel or you see things in a distorted way).

- *The questions below are trying to find out what university students think about cannabis use.*
 - ***It does not matter whether or not you use cannabis, you can still answer the questions.***
 - *For each question, we are asking that you **list 2 or 3 things** that come to your mind, so don't spend too long on them. Please read each question carefully and list your responses in the spaces provided.*
 - *Do not worry if you get stuck onto one question, you can just move onto the next one. There are no right or wrong answers.*
-

1) What do you believe are the **advantages** of smoking cannabis?

2) What do you believe are the **disadvantages** of smoking cannabis?

3) Is there anything else you associate with you smoking cannabis?

4) Are there any individuals or groups who you think would **approve** of you smoking cannabis?

5) Are there any individuals or groups who you think would **disapprove** of you smoking cannabis?

6) Are there other individuals or groups that come to your mind when you think about smoking cannabis?

7) What factors or circumstances would make it easier for you to regularly **use** cannabis?

8) What factors or circumstances would make it difficult for you to regularly **use** cannabis?

9) Are there any other issues that come to your mind when you think about how easy or how difficult it would be for you to use cannabis ?

10) What factors or circumstances would make it easier for you to **obtain (buy)** cannabis?

11) What factors or circumstances would make it more difficult for you to **obtain (buy)** cannabis?

12) Are there any other issues that come to your mind when you think about how easy or how difficult it would be for you to obtain (buy) cannabis ?

Thank you for taking part in this study! 😊

Appendix 3B: Student Consent form

University of East Anglia PhD student research

Young People and Cannabis use: Research with University students

Dear Student,

I am a PhD research student at the University of East Anglia, in the School of Social Work and Psychology. The aim of my study is to obtain University students' general views and perspectives regarding cannabis use. This study has been approved by the School of Ethics Committee.

- Any information obtained in this study shall remain confidential, in that no names will be identified. Instead you will be asked to write a code (see below).
- There will be no access to the information obtained other than to the researcher.
- Your answers will only be used and seen by the researcher and will have **no further use by the University**, therefore you are kindly requested to report your answers as accurately and as honestly as possible.
- No names will be identified or used during or after this study.
- At the beginning of the questionnaire you are requested to write down a code.

This will be your:

Birthplace and **date of birth** (dd/mm)

e.g. if you were born in **Norwich**, UK and your date of birth is **17th April**, 1991 the code you would enter would be : **Norwich/17/04**

THIS CODE WILL BE DELETED once the questionnaires have been matched with the questionnaire took place 2 weeks earlier.

Please feel free to ask the researcher any questions. Once again your participation is highly appreciated and will be of high value to this research.

Thank you for your participation!

Eliza Patouris

PhD Researcher

School of Social Work and Psychology

University of East Anglia

Norwich

NR47TJ

UK

Appendix 3C: Time 1 and Time 2 Questionnaire

Young people and cannabis: Research study with University students

Please read the following carefully

- You are **not** asked to write down your name but instead insert a code.
- **THIS CODE WILL BE DELETED** as soon as the questionnaire is matched up with a (5 minute) follow-up questionnaire that will take place 2 weeks from now.
- This code must be created in the following order:

Your **Birthplace** and your **date & month of birth** (dd/mm)

e.g. if you were born in **Norwich**, UK and your date of birth is **17th April** 1991 the code you would enter would be as follows: Norwich/17/04

Please complete the following:

Your code: _____/____/_____

Birthplace / day/ month

Gender:

Age (years):

Nationality:

Year of study:

School/ Department:

Time 1 Study

- ❖ Cannabis is a drug made from parts of the cannabis plant and can cause mild feelings of calmness or drowsiness. It is also known as *hash*, *marijuana*, *pot*, *skunk*, *weed*, and *sinsemilla*.

- The questions below are trying to find out what University students think about cannabis use. **It does not matter whether or not you use cannabis, you can still answer the questions.**
- For each question, we are asking that you circle the number that best describes your opinion.
- The scales will range from 1 to 7, -3 to +3, or 1 to 4.
- Circle only one of the numbers in each question.

e. g. If you agree that 'Being a University student is satisfying' you would circle '7' as shown below.

Being a University student is satisfying:

Disagree 1 2 3 4 5 6 7 Agree

Please be as honest as possible and remember that your individual answers will not be shown to anyone but the researcher

Section A

1. Please indicate how often you intend to use cannabis in the next two weeks:

1 2 3 4 5 6 7
Never Most days

2. How often will you use cannabis in the next two weeks?

1 2 3 4 5 6 7
Never Most days

3. Using cannabis in the next two weeks would be:

-3 -2 -1 0 +1 +2 +3
Bad Good

4. Using cannabis in the next two weeks would be:

-3	-2	-1	0	+1	+2	+3
Unpleasant				Pleasant		

5. Most friends who are important to me think that I should smoke cannabis in the next two weeks:

1	2	3	4	5	6	7
Disagree			Agree			

6. My parents/guardians think I should smoke cannabis in the next two weeks:

1	2	3	4	5	6	7
Disagree			Agree			

7. How confident are you that you could get some cannabis in the next two weeks if you wanted to?

1	2	3	4	5	6	7
Very confident			Not at all confident			

8. How sure are you that you could obtain cannabis in the next two weeks if you wanted to:

1	2	3	4	5	6	7
Not at all sure			Very sure			

9. For me to get hold of cannabis in the next two weeks is:

1	2	3	4	5	6	7
Very easy			Very difficult			

10. How much control do you have over whether or not you do or do not use cannabis in the next two weeks?

1	2	3	4	5	6	7
Very little control			Complete control			

11. How sure are you that could resist using cannabis in the next two weeks?

1	2	3	4	5	6	7
Very sure			Not at all sure			

12. Not using cannabis in the next two weeks would be difficult for me:

1 2 3 4 5 6 7

Very true

Not at all true

13. If a friend offered me cannabis during the next two weeks and I wanted to refuse it, it would be:

1 2 3 4 5 6 7

Difficult to refuse

Easy to refuse

Section B

- *The questions below ask about general aspects of your behaviour*
- *For each question, we are asking that you circle the number that best describes your behaviour.*
- *Please circle only one number for each question.*

	Agree strongly	Slightly agree	Slightly disagree	Disagr ee Strong ly
1. I have a reserved and cautious attitude toward life	1	2	3	4
2. My thinking is usually careful and purposeful	1	2	3	4
3. I am not one of those people who blurt out things without thinking	1	2	3	4
4. I like to stop and think things over before I do them	1	2	3	4
5. I don't like to start a project until I know exactly how to proceed	1	2	3	4
6. I tend to value and follow a rational, "sensible" approach to things	1	2	3	4
7. I usually make up my mind through careful reasoning	1	2	3	4
8. I am a cautious person	1	2	3	4
9. Before I get into a new situation I like to find out what to expect from it	1	2	3	4
10. I usually think carefully before doing anything	1	2	3	4
11. Before making up my mind, I consider all the advantages and disadvantages	1	2	3	4
12. I have trouble controlling my impulses	1	2	3	4
13. I have trouble resisting my cravings (for food, cigarettes, etc)	1	2	3	4
14. I often get involved in things I later wish I could get out of	1	2	3	4

15. When I feel bad I will often do things I later regret in order to make myself feel better now	1	2	3	4
16. Sometimes when I feel bad I can't seem to stop what I am doing even though it is making me feel worse	1	2	3	4
17. When I am upset I often act without thinking	1	2	3	4
18. When I feel rejected I will often say things that I later regret	1	2	3	4
19. It is hard for me to resist acting on my feelings	1	2	3	4
20. I often make matters worse because I act without thinking when I am upset	1	2	3	4
	Agree strongly	Slightly agree	Slightly disagree	Disagree Strongly
21. In the heat of an argument I will often say things that I later regret.	1	2	3	4
22. I am always able to keep my feelings under control (R)	1	2	3	4
23. Sometimes I do things on impulse that I later regret	1	2	3	4
24. I generally seek new and exciting experiences and sensations	1	2	3	4
25. I'll try anything once	1	2	3	4
26. I like sports and games in which you have to choose your next move very quickly	1	2	3	4
27. I would enjoy water skiing	1	2	3	4
28. I quite enjoy taking risks	1	2	3	4
29. I would enjoy parachute jumping	1	2	3	4

30. I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional	1	2	3	4
31. I would like to learn to fly an airplane	1	2	3	4
32. I sometimes like doing things that are a bit frightening	1	2	3	4
33. I would enjoy the sensation of skiing very fast down a high mountain slope	1	2	3	4
34. I would like to go scuba diving	1	2	3	4
35. I would enjoy fast driving	1	2	3	4
36. I generally like to see things through to the end	1	2	3	4
37. I tend to give up easily (R)	1	2	3	4
38. Unfinished tasks really bother me	1	2	3	4
39. Once I get going on something I hate to stop	1	2	3	4
40. I concentrate easily	1	2	3	4
41. I finish what I start	1	2	3	4
42. I'm pretty good about pacing myself so as to get things done on time	1	2	3	4
43. I am a productive person who always gets the job done	1	2	3	4
44. Once I start a project I almost always finish it	1	2	3	4
45. There are so many little jobs that need to be done that I sometimes just ignore them all (R)	1	2	3	4

Section C

- Please answer the questions considering your parents/guardians.
- For each question, we are asking that you circle the number that best describes your opinion.
- Circle only one of the numbers in each question.

1. My parents let me know they love me	1	2	3	4	5	6	7
	Not at						Very
	all true						true

2. Nothing I do is good enough for my parents	1	2	3	4	5	6	7
	Not at						Very
	all true						true

3. My parents say "no" to everything.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

4. When I want to understand how something works, my parents explain it to me	1	2	3	4	5	6	7
	Not at						Very
	all true						true

5. Sometimes I wonder if my parents like me.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

6. My parents think I'm always in the way.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

7. My parents make me feel like I'm not wanted.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
8. My parents enjoy being with me.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
9. When I want to do something, my parents show me how	1	2	3	4	5	6	7
	Not at						Very
	all true						true
10. My parents think I'm great.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
11. If I ever have a problem, my parents help me to figure out what to do about it.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
12. My parents explain the reasons for our family rules.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
13. When my parents make a promise, I don't know if they will keep it.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

14. My parents trust me.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

15. My parents keep changing the rules on me.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

16. My parents get angry at me with no warning.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

17. When my parents say they will do something sometimes they don't really do it.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

18. My parents accept me for myself.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

19. My parents let me do the things that I think are important	1	2	3	4	5	6	7
	Not at						Very
	all true						true

20. My parents try to understand my point of view.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

21. My parents are always telling me what to do.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
22. My parents boss me.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
23. My parents think there is only one right way to do things- their way.	1	2	3	4	5	6	7
	Not at						Very
	all true						true
24. My parents are always glad to see me.	1	2	3	4	5	6	7
	Not at						Very
	all true						true

Section D

Imagine the following situation:

You are at a party with friends and one of them offers you cannabis. What would you do in this situation? (Please provide an answer for all three situations).

I would take it:

1	2	3	4	5	6	7
Very unlikely					Very likely	

I would say “no, thanks” and refuse it:

1	2	3	4	5	6	7
Very unlikely					Very likely	

I would leave the situation (e.g. go to other friends who do not consume cannabis or go outside)

1	2	3	4	5	6	7
Very unlikely					Very likely	

Section E

I think of myself as a cannabis user:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Strongly disagree

Strongly agree

I would feel at loss if I were forced to give up using cannabis:

1 2 3 4 5 6 7

Strongly disagree

Strongly agree

For me being a cannabis user is about much more than just using cannabis:

1	2	3	4	5	6	7
---	---	---	---	---	---	---

Strongly disagree

Strongly agree

Using cannabis is an important part of who I am:

1 2 3 4 5 6 7

Strongly disagree

Strongly agree

Section F

Using cannabis is :	1	2	3	4	5	6	7
	Agree						Disagree
Something I do frequently							
Something I do automatically							
Something I do without having to consciously remember							
Something I do that makes me feel weird if I do not do it							

I feel that I take on mastering hard challenges:

1	2	3	4	5	6	7
Not true					Very	
at all					true	

I feel capable in what I do:

1	2	3	4	5	6	7
Not true					Very	
at all					true	

I feel there is a sense of contact with people who care for me and whom I care for:

1	2	3	4	5	6	7
Not true					Very	
at all					true	

I feel close and connected with other people who are important to me:

1	2	3	4	5	6	7
Not true					Very	
at all					true	

I feel a strong sense of intimacy with the people I spend time with:

1	2	3	4	5	6	7
Not true					Very	
at all					true	

Section H

How often have you used cannabis in the past week:

1 2 3 4 5 6 7

Never Most days

How often have you used cannabis in the past month:

1 2 3 4 5 6 7

Never Most days

How often have you used cannabis in the past three months:

1 2 3 4 5 6 7

Never Most days

Section I

Smoking cannabis in the next two weeks would make me feel relaxed:

Disagree 1 2 3 4 5 6 7 Agree

Feeling relaxed when smoking cannabis in the next two weeks is:

Extremely undesirable -3 -2 -1 0 1 2 3 Extremely desirable

Smoking cannabis in the next two weeks would make me more sociable at University:

Disagree 1 2 3 4 5 6 7 Agree

Being more sociable at University because of my smoking cannabis in the next two weeks is:

Extremely undesirable -3 -2 -1 0 1 2 3 Extremely desirable

Smoking cannabis in the next two weeks would lead me to having paranoia:

Disagree 1 2 3 4 5 6 7 Agree

Having paranoia because of my smoking cannabis in the next two weeks is:

Extremely undesirable -3 -2 -1 0 1 2 3 Extremely desirable

Smoking cannabis in the next two weeks would result in my becoming dependent on it:

Disagree 1 2 3 4 5 6 7 Agree

Becoming dependent on cannabis in the next two weeks would be:

Extremely undesirable -3 -2 -1 0 1 2 3 Extremely desirable

My close friends approve of me smoking cannabis in the next two weeks:

Unlikely 1 2 3 4 5 6 7 Likely

My close friends' approval of my smoking cannabis in the next two weeks is important to me:

Not at all -3 -2 -1 0 1 2 3 Very much

Other cannabis users approve of me smoking cannabis in the next two weeks:

Unlikely 1 2 3 4 5 6 7 Likely

Other cannabis users' approval of my smoking cannabis in the next two weeks is important to me:

Not at all -3 -2 -1 0 1 2 3 Very much

My parents/guardians approve of me smoking cannabis in the next two weeks:

Unlikely 1 2 3 4 5 6 7 Likely

My parents/guardians' approval of my smoking cannabis in the next two weeks is important to me:

Not at all -3 -2 -1 0 1 2 3 Very much

My University lecturers approve of me smoking cannabis in the next two weeks:

Unlikely 1 2 3 4 5 6 7 Likely

My University lecturers' approval of my smoking cannabis in the next two weeks is important to me:

Not at all -3 -2 -1 0 1 2 3 Very much

I expect that it will be difficult to get cannabis in the next two weeks:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Having cannabis easily available to me in the next two weeks would make it

much more difficult 1 2 3 4 5 6 7 much easier

to smoke cannabis

to smoke cannabis

For me to smoke cannabis in the next two weeks would be socially unacceptable:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

In the next two weeks cannabis being socially unacceptable would make it

much more difficult 1 2 3 4 5 6 7 much easier

to smoke cannabis

to smoke cannabis

If I smoke cannabis in the next two weeks I will risk getting caught by the police:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Getting caught by the police for smoking cannabis in the next two weeks would make it

much more difficult 1 2 3 4 5 6 7 much easier

to smoke cannabis

to smoke cannabis

Smoking cannabis in the next two weeks would make it harder to keep up with my studies:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Keeping up with my studies in the next two weeks would make it

much more difficult 1 2 3 4 5 6 7 much easier

to smoke cannabis

to smoke cannabis

If I want to obtain (buy) cannabis I will contact friends/peers who use it themselves:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Knowing other friends/peers who smoke cannabis would make it

much more difficult 1 2 3 4 5 6 7 much easier

to obtain cannabis

to obtain cannabis

Using cannabis in the next two weeks is financially expensive:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Having extra money in the next two weeks would make it

much more difficult 1 2 3 4 5 6 7 much easier

to obtain cannabis

to obtain cannabis

If I want to obtain (buy) cannabis I must know a dealer (supplier):

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Knowing a dealer (supplier) would make it

much more difficult 1 2 3 4 5 6 7 much easier

to obtain cannabis

to obtain cannabis

If cannabis was raised to a Class A drug in the next two weeks it would increase the criminality risk associated with it:

Strongly disagree -3 -2 -1 0 1 2 3 Strongly Agree

Raising cannabis to a Class A drug would make it:

much more difficult 1 2 3 4 5 6 7 much easier

to obtain cannabis

to obtain cannabis

THANK YOU FOR TAKING PART IN THIS STUDY! 😊

PLEASE KEEP THE DEBRIEF FORM.

Time 2:

Young people and cannabis: Research study with university students

Please read the following carefully

- You are **not** asked to write down your name but instead insert a code.
- **THIS CODE WILL BE DELETED** as soon as this questionnaire is matched up with the previous questionnaire that took place two weeks before.
- This code must be created in the following order:

Your **Birthplace** and your **date & month of birth** (dd/mm)

e.g. if you were born in **Norwich**, UK and your date of birth is **17th April** 1991 the code you would enter would be as follows: Norwich/17/04

Please complete the following:

Your code: _____/____/____

Birthplace / day/ month

Gender:

Age (years):

Nationality:

Year of study:

Time2 Study

- ❖ Cannabis is a drug made from parts of the cannabis plant and can cause mild feelings of calmness or drowsiness. It is also known as *hash*, *marijuana*, *pot*, *skunk*, *weed*, and *sinsemilla*.

- Please answer each of the following questions by circling the number that best describes your behaviour.
- **Your answers will not be shown to anyone but the Researcher.**
- Please circle only one number for each question.
- **Please be honest.**

Section A

1. I have used cannabis in the past two weeks:

1	2	3	4	5	6	7
strongly disagree					strongly agree	

2. How often did you use cannabis in the past two weeks?

1	2	3	4	5	6	7
never					frequently	

3. I tried to use cannabis in the past two weeks:

1	2	3	4	5	6	7
strongly disagree					strongly agree	

4. How would you rate the amount of cannabis you used in the past two weeks:

1	2	3	4	5	6	7
None					very high	

5. How many days in the past two weeks have you used cannabis?

1	2	3	4	5	6	7
never					most days	

Section B

How much do you think students risk harming themselves **physically** by:

	No risk			Great risk
Using cannabis once or twice	1	2	3	4
Using cannabis occasionally (once a month)	1	2	3	4
Using cannabis regularly (once or twice a week)	1	2	3	4
Using cannabis every day	1	2	3	4

How much do you think students risk harming themselves **mentally** by:

	No risk			Great risk
Using cannabis once or twice	1	2	3	4
Using cannabis occasionally (once a month)	1	2	3	4
Using cannabis regularly (once or twice a week)	1	2	3	4
Using cannabis every day	1	2	3	4

How much do you think students risk harming themselves **socially** by:

	No risk			Great risk
Using cannabis once or twice	1	2	3	4
Using cannabis occasionally (once a month)	1	2	3	4
Using cannabis regularly (once or twice a week)	1	2	3	4
Using cannabis every day	1	2	3	4

Section C

What is your opinion on the following statements:

Cannabis use among university students is:

considered normal behaviour

1 2 3 4 5 6 7

Agree

Disagree

something they do to have fun

1 2 3 4 5 6 7

Agree

Disagree

something that is part of the

University experience

1 2 3 4 5 6 7

Agree

Disagree

something that most students will

stop doing when they leave University

1 2 3 4 5 6 7

Agree

Disagree

Thank you for taking part in this study!

Please refer to the **Debrief form** if you would like to access further information and support regarding substance use.

Please place this questionnaire back in the envelope.

You may keep the Debrief Form.

Appendix 3D: Debrief Form

Young People and Cannabis: Research study with University students

Debrief form

Thank you for taking part in this study which was trying to find out what University students' opinion is on cannabis use.

The aims of this study were:

- To understand and investigate the reasons as to how University students choose whether or not to use cannabis.
- To implement a more constructive approach in terms of dealing with this issue.

A range of useful sources of information/support in relation to substance use is provided at the back of this sheet.

Thank you once again for taking part in this research.

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Office telephone: 01603 59 1439

You may also choose to use the University Counselling Services:

e-mail: csn@uea.ac.uk

Telephone: 01603 592651

Support Centres	Service provided	Telephone	E-mail / Website
The Matthew Project	➤ <i>Provides counselling, advice, information and support services for those with problems relating to drug misuse or alcohol abuse.</i>	01603764754	Support@matthewproject.org
NORCAS Norwich	➤ <i>Helps people make positive changes, improve their coping skills and change their lives around. Anyone concerned about their, or someone else's, use of alcohol, drugs or gambling can contact this service.</i>	01603 767 093	www.norcas.org.uk
The Samaritans (Norwich)	➤ <i>Provides confidential, emotional and non-judgmental support to those who may be in despair or distress.</i> <i>Available 24/7</i>	08457 90 90 90	jo@samaritans.org
Connexions at Norwich	➤ <i>Offers information, practical help and advice to 13-19 year olds about a wide range of issues such as housing, money, drug problems, health and relationships</i>	01603 215300 (Option 1)	www.talkaboutyou.org
FRANK	➤ <i>A very useful website providing a lot of information on all types of drugs.</i>	0800776600	http://www.talktofrank.com

Appendix 3E: Normality tests & missing data analysis using EM-imputed data

Table 1 demonstrates that the normality tests were significant for both Intentions and Behaviour, meaning that the distribution is significantly different from a normal distribution. Although some of the independent predictors show non-normal distributions, this does not violate the assumptions of logistic regression in that only the outcome variables in a regression analysis (e.g. intentions and behaviour) need to be normally distributed.

Table 1: Normality tests for Intentions and Behaviour

Variable	Kolmogorov-Smirnov	Shapiro-Wilk	Percentage of missing data (%) before EM was applied
Intention	.437, $p < .001$	.455, $p < .001$	.0
Behaviour	.374, $p < .001$	.522, $p < .001$	17.6
Attitude	.240, $p < .001$	.858, $p < .001$	.0
Perceived Norms	.437, $p < .001$	.537, $p < .001$	.0
PBCobt	.127, $p < .001$	.891, $p < .001$	.0
PBCuse	.358, $p < .001$	.547, $p < .001$	.0
Impulsivity: Urgency	.069, $p = .021$	.988, $p = .077$	.0
Impulsivity: Sensation-seeking	.065, $p = .033$	.987, $p = .067$	.0
Impulsivity: Lack of Premeditation	.079, $p = .004$	.985, $p = .028$	.0
Impulsivity: Lack of Perseverance	.070, $p = .015$	.983, $p = .013$	.0
PS: Warmth	.140, $p < .001$	.883, $p < .001$	1.0
PS: Structure	.109, $p < .001$	.929, $p < .001$	.5
PS: Autonomy Support	.167, $p < .001$	.858, $p < .001$	1.0
PS: Rejection	.248, $p < .001$	.737, $p < .001$	.5
PS: Chaos	.148, $p < .001$	.903, $p < .001$	.5
PS: Coercion	.146, $p < .001$	.913, $p < .001$	1.0
Willingness	.112, $p < .001$	.921, $p < .001$	25.2
Self-Identity	.247, $p < .001$	.722, $p < .001$	.5
Habit	.365, $p < .001$	.517, $p < .001$	.5
Need Satisfaction: Autonomy	.300, $p < .001$	.384, $p < .001$	.0

Need Satisfaction: Competence	.133, $p<.001$	.940, $p<.001$	.0
Need Satisfaction: Relatedness	.198, $p<.001$	.829, $p<.001$	.0
Past Behaviour	.375, $p<.001$	.508, $p<.001$	.0
Perceived Risk	.072, $p<.013$	.981, $p<.001$	17.6

Appendix 3F: Testing for multi-collinearity

As shown in Table... there are no signs of multi-collinearity given that none of our variables have a tolerance value less than .1 (Menard, 2002), and also none of our variables has a VIF value greater than 10 (Myers, 1990).

Table 3: Collinearity statistics presenting tolerance and VIF values for variables predicting behaviour

Variable	Tolerance	VIF
Intention	.330	3.026
Attitude	.210	4.763
Perceived Norms	.594	1.683
PBCobt	.614	1.629
PBCuse	.690	1.449
Impulsivity: Urgency	.735	1.360
Impulsivity: Sensation-seeking	.605	1.652
Impulsivity: Lack of Premeditation	.612	1.634
Impulsivity: Lack of Perseverance	.678	1.475
PS: Warmth	.279	3.589
PS: Structure	.363	2.754
PS: Autonomy Support	.266	3.756
PS: Rejection	.363	2.754
PS: Chaos	.403	2.482
PS: Coercion	.497	2.013
Willingness	.237	4.218
Self-Identity	.408	2.451
Habit	.260	3.849

Need Satisfaction: Autonomy	.813	1.231
Need Satisfaction: Competence	.615	1.625
Need Satisfaction: Relatedness	.546	1.832
Past Behaviour	.244	4.105
Perceived Risk	.421	2.374

Appendix 3G: Regression analysis using non EM-imputed data

Using non EM-imputed data logistic regression found that no additional variables were found to be significant in terms of predicting intentions (Table 2 & 3 below) as found in the original dataset shown in Chapter 7 (section 7.4.4). The only exception is that habit, found to be significant in the stepwise regression using EM-imputed data (section 7.4.4) was not significant here (see Table 3). This could be explained by the fact that there were many missing values on the habit measure, which could have influenced its predictive ability in the analysis using non EM-imputed data. Tables 4 and 5 demonstrate that the variables found to be significant in Chapter 7 (section 7.4.5) in terms of predicting behaviour were the same when analysed using EM-imputed data. Presenting the chi-square and R-squares for these analyses in the appendices was spared as the purpose was simply to show which variables were significant in terms of their 'separate contribution' in the TPB and using 'unitary framework'.

Table 2: Logistic regression as a function of Intention using separate steps based on non EM-imputed data

			<u>95 % Confidence Interval for Odds Ratio</u>		
	Predictors	B	Wald Chi-square	Odds ratio	Lower Upper
	(Constant)	-1.291	57.515**	.275	
1	<i>Attitude</i>	1.394	24.110**	4.032	2.311 7.034
	<i>Perceived Norms</i>	.317	.889	1.372	.711 2.651
	<i>PBCobt</i>	-.843	12.858**	.431	.272 .682
	<i>PBCuse</i>	-.201	.270	.818	.384 1.744
	(Constant)	1.855	.401	6.389	
2	<i>Attitude</i>	1.307	19.651**	3.696	2.074 6.588
	<i>Perceived Norms</i>	.607	2.429	1.834	.855 3.934
	<i>PBCobt</i>	-.817	10.181**	.442	.268 .730
	<i>PBCuse</i>	.010	.001	1.011	.440 2.323
	Impulsivity: Lack of Premeditation	-.109	.022	.897	.216 3.728
	Impulsivity: Urgency	-.305	.365	.737	.274 1.982
	Impulsivity: Sensation-seeking	-.889	3.499	.411	.162 1.043
	Impulsivity: Lack of Perseverance	1.310	3.201	3.706	.882 15.563
	(Constant)	-.072	.000	.930	
3	<i>Attitude</i>	1.442	24.438**	4.229	2.388 7.492
	<i>Perceived Norms</i>	.479	1.627	1.615	.773 3.372
	<i>PBCobt</i>	-.921	13.044**	.398	.241 .656
	<i>PBCuse</i>	-.041	.010	.960	.430 2.143
	PS: Warmth	.798	1.886	2.201	.714 6.783
	PS: Rejection	.581	2.359	1.789	.852 3.756
	PS: Structure	-.128	.179	.880	.487 1.592
	PS: Chaos	-.219	.609	.804	.464 1.392
	PS: Autonomy	-.089	.046	.915	.405 2.064
	Support				
	PS: Coercion	.475	1.841	1.609	.809 3.197
	(Constant)	-4.294	.623	.014	
4	<i>Attitude</i>	.720	5.334*	2.054	1.115 3.784

	<i>Perceived Norms</i>	.418	1.079	1.518	.691	3.339
	<i>PBCobt</i>	-.776	9.850**	.460	.284	.747
	<i>PBCuse</i>	.044	.009	1.045	.414	2.638
	Willingness	.711	5.874**	2.036	1.146	3.618
	(Constant)	-3.151	.556	.043		
5	<i>Attitude</i>	1.312	19.446**	3.715	2.073	6.656
	<i>Perceived Norms</i>	.370	1.057	1.448	.715	2.932
	<i>PBCobt</i>	-.702	9.049**	.496	.314	.783
	<i>PBCuse</i>	.076	.030	1.079	.455	2.559
	Self-Identity	.892	5.280*	2.439	1.140	5.218
	(Constant)	-1.855	.277	.156		
6	<i>Attitude</i>	1.410	14.983**	4.097	2.006	8.369
	<i>Perceived Norms</i>	.166	.156	1.180	.518	2.692
	<i>PBCobt</i>	-1.011	11.436**	.364	.203	.654
	<i>PBCuse</i>	.723	1.634	2.061	.680	6.247
	Habit	-3.077	16.667**	.046	.011	.202
	(Constant)	16.658	8.060*	1.716		
7	<i>Attitude</i>	1.416	22.280**	4.120	2.289	7.417
	<i>Perceived Norms</i>	.292	.662	1.339	.663	2.703
	<i>PBCobt</i>	-1.073	14.523**	.342	.197	.594
	<i>PBCuse</i>	-.121	.080	.886	.385	2.040
	Need Satisfaction: Autonomy	-.790	4.973*	.454	.227	.909
	Need Satisfaction: Competence	.012	.002	1.012	.592	1.729
	Need Satisfaction: Relatedness	-.059	.031	.942	.489	1.817
	(Constant)	6.688	3.019	802.878		
8	<i>Attitude</i>	1.330	11.065**	3.771	1.727	8.284
	<i>Perceived Norms</i>	.043	.009	1.045	.420	2.600
	<i>PBCobt</i>	-.389	1.739	.679	.380	1.208
	<i>PBCuse</i>	.232	.180	1.262	.432	3.680
	Past Behaviour	2.793	16.077**	16.275	4.168	63.914
	(Constant)	-6.139	2.152	.002		
9	<i>Attitude</i>	1.608	19.666**	4.991	2.453	10.158
	<i>Perceived Norms</i>	.162	.197	1.176	.574	2.411
	<i>PBCobt</i>	-.962	10.945**	.382	.216	.676
	<i>PBCuse</i>	-.114	.072	.892	.387	2.055
	Perceived Risk	.615	.821	1.849	.489	6.
	(Constant)	.449	.015	1.566		

Table 3: Logistic Regression on intentions using one unitary framework based on non EM-imputed data.

					<u>95 % Confidence Interval for Odds ratio</u>	
-						
	Variables	B	Wald Chi-square	Odds ratio	Lower	Upper
	Constant	-1.291	57.515**	.275		
1	Attitude	1.394	24.110**	4.032	2.311	7.034
	Perceived Norms	.317	.889	1.372	.711	2.651
	PBCobt	-.843	12.858**	.431	.272	.682
	PBCuse	-.201	.270	.818	.384	1.744
	(Constant)	1.855	.401	6.389		
2	Attitude	1.182	8.818**	3.260	1.494	7.112
	Perceived Norms	.196	.157	1.216	.462	3.203
	PBCobt	-.388	1.586	.678	.371	1.241
	PBCuse	.360	.316	1.434	.409	5.030
	Past Behaviour	2.815	14.632**	16.696	3.946	70.640
	(Constant)	-6.997	2.074	.001		

** = p<.01, * = p<.05.

Table 4: Logistic Regression on behaviour with seperate steps for each additional variable_based on non EM-imputed data

95 % Confidence Interval for Odds Ratio					
	Predictors	B	Wald Chi-square	Odds Ratio	Lower Upper
	(Constant)	-.941	36.266**	.390	
1	<i>PBCobt</i>	-.481	12.536**	.618	.474 .807
	<i>PBCuse</i>	-.592	5.517**	.553	.338 .907
	(Constant)	3.862	4.841	47.584	
2	<i>PBCobt</i>	-.390	6.654	.677	.504 .911
	<i>PBCuse</i>	-.625/-.235	4.770*/.802	.535/.791	.305/.473 .938/1.322
	Lack of Premeditation	.855	2.209	2.350	.762 7.253
	Urgency	-.679	2.589	.507	.222 1.160
	Sensation-seeking	-.727/-.283	3.601*/.653	.483/.753	.228/.379 1.024/1.497
	Lack of Perseverance	1.424/1.397	5.250**/6.089*	4.154/4.044	1.229/1.333 14.047/12.268
	<i>Intentions</i>	3.109	23.492**	22.391	6.370 78.707
	(Constant)	-3.224	.914	.040	
3	<i>PBCobt</i>	-.494/-.006	11.121**/.001	.610/.994	.456/.697 .816/1.418
	<i>PBCuse</i>	-.523	3.239	.593	.335 1.048
	PS: Warmth	.582	2.354	1.790	.851 3.767
	PS: Rejection	.298	1.147	1.347	.781 2.326
	PS: Structure	-.274	1.299	.760	.474 1.218
	PS: Chaos	.209	1.015	1.233	.820 1.853
	PS: Autonomy Support	-.024	.005	.976	.493 1.932
	PS: Coercion	-.125	.257	.883	.545 1.430
	<i>Intentions</i>	3.837	29.507**	46.372	11.616 185.128
	(Constant)	-7.797	3.513	.000	
4	<i>PBCobt</i>	-.219	1.986	.803	.592 1.090
	<i>PBCuse</i>	-.302	.855	.739	.389 1.403
	Willingness	.570/.268	12.083**/1.826	1.769/1.308	1.282/.886 2.440/1.930
	<i>Intentions</i>	2.787	14.349**	16.230	3.838 68.636
	(Constant)	-4.576	2.088	.006	
5	<i>PBCobt</i>	-.413/.078	8.934*/.520	.662/.471	.505/.874 .868/1.353
	<i>PBCuse</i>	-.429	2.162	.651	.368 1.153
	Self-Identity	.704/.066	7.829**/.043	2.021/1.068	1.235/.574 3.310/1.988
	<i>Intentions</i>	3.388	26.697**	29.598	8.188 106.955
	(Constant)	-2.831	1.271	.059	
6	<i>PBCobt</i>	-.395	7.044	.674	.503 .093
	<i>PBCuse</i>	.138	.170	.871	.451 1.680
	Habit	-1.345/-.461	16.618**/1.504*	.261/.631	.136/.302 .497/1.318
	<i>Intentions</i>	2.987	18.749**	19.822	5.129 76.616
	(Constant)	-.276	.007	.759	
7	<i>PBCobt</i>	-.483/-.012	11.940**/.005	.617/.988	.469/.708 .811/1.378
	<i>PBCuse</i>	-.598/-.418	5.653*/1.991	.550/.658	.336/.368 .900/1.177
	Need Satisfaction: Autonomy	-.189	.547	.828	.501 1.366
	Need Satisfaction: Competence	-.194	.842	.824	.545 1.246
	Need Satisfaction: Relatedness	.200	.617	1.221	.742 2.010
	<i>Intentions</i>	-4.599	30.480**	35.031	9.912 123.808
	(Constant)	-4.599	1.978*	.010	
8	<i>PBCobt</i>	-.160	1.060	.852	.682 1.156

	<i>PBCuse</i>	-.207	.382	.813	.422	1.568
	Past Behaviour	1.564/.729	17.430**/3.533*	4.779/2.072	2.293/.969	9.961/4.431
	Intentions	2.456	10.896**	11.657	2.712	50.105
	(Constant)	-4.248	2.485	.014		
9	<i>PBCobt</i>	-.403	8.048	.668	.506	.883
	<i>PBCuse</i>	-.581/-.104	5/369*/2.026	.559/.663	.342/.377	.914/1.167
	Perceived Risk	-.827/-.104	3.957*/.043	.438/.901	.194/.337	.988/2.407
	Intentions	3.389	29.001**	29.622	8.630	101.672
	(Constant)	-2.922	1.228	.054		

** = p<.01, * = p<.05.

Table 5 : Logistic regression using unitary framework based on non- EM imputed data

			<u>95 % Confidence Interval for Odds Ratio</u>		
	Predictors	B	Wald Chi-square	Odds ratio	Lower Upper
	(Constant)	-1.356	49.745**	.258	
1	<i>PBCobt</i>	-.460	11.425**	.773	.649 .920
	<i>PBCuse</i>	-.650	5.831**	.639	.424 .965
	(Constant)	4.213	5.184*	67.543	
2	<i>PBCobt</i>	-.094	.317	.910	.657 1.262
	<i>PBCuse</i>	-.273	.457	.761	.345 1.679
	Lack of Perseverance	1.990/1.688	8.357**/5.101**	7.316/5.410	1.898/1.250 28.201/
	Past Behaviour	1.660/.884	16.873**/4.155*	5.257/2.420	2.381/1.035 11.604/
	Intentions	2.111	7.711**	8.254	1.750 38.943
	(Constant)	-7.338	4.366**	.001	

Note: Forward Conditional is a stepwise selection method with entry testing based on the significance of the score statistic, removal testing based on the probability of a likelihood-ratio statistic based on conditional parameter estimates. Variables were significant in the previous series of regression analysis were also entered in the model (sensation-seeking, PS: warmth structure, willingness, self-identity, habit, perceived risk). Forward conditional regression omitted these variables from their due to the fact that they were not significant.

** = p<.01, * = p<.05.