Exploring relationships between moral reasoning, distorted cognitions and problem solving in male offenders with intellectual disabilities

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Abstract

Background: The study explored the relationship between moral reasoning, distorted cognitions and problem solving in male offenders and non-offenders with intellectual disabilities (IDs). The psychometric properties for an adapted measure of distorted cognitions for people with IDs were explored. The difference in cognitive distortions, moral reasoning and problem solving between offenders and non-offenders were explored. Very few published studies explored these constructs in this way. **Methods:** A between-groups design and additional correlations were used to explore the hypotheses. Two groups were recruited: ID offenders (n=34) and ID non-offenders (n=38). Both groups completed the Socio-Moral Reflection Measure-Short Form (SRM-SF), How I Think Questionnaire (HIT) and the Social Problem Solving Inventory Short-Form (SPSI-R-SF). **Results:** The results indicated that offenders with IDs demonstrated Stage 2(3) reasoning when compared to non-offenders with IDs who demonstrated Stage 2 reasoning. The difference in some of the moral reasoning constructs was significant. A modified version of the HIT demonstrated good internal consistency and test-retest reliability. Significant positive relationships were identified between moral reasoning and problem solving, and moral reasoning and cognitive distortions for men with IDs. **Conclusions:** There was a relationship between moral development, cognitive distortions and problem solving and that these constructs were interdependent. The results supported Gibbs Sociomoral Stages and tentative support for Garrigan and Langdon's Developmental Social Information Processing Model of Moral Judgement and Behaviour. An adequately powered sample size was used. Social desirability, recruitment and treatment implications were limitations. Further studies should replicate the findings, using a longitudinal design along with the adapted measures.

Keywords: Intellectual disabilities; moral reasoning; moral development; cognitive distortions; problem solving

CHAPTER ONE

1. Introduction

This study aimed to investigate whether there was a relationship between moral reasoning, cognitive distortions and problem solving in adult male offenders with intellectual disabilities (ID). There were very few published studies that explored this relationship in detail.

1.1 Overview of the Chapter

Initially, a definition of IDs using the diagnostic criteria within the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-V; APA 2013) and the International Classification of Diseases (ICD-10; WHO, 2010) is presented. A review of the current literature relating to offenders with IDs is undertaken. The key studies that are reviewed focused on studies that explored moral development, problem solving or distorted cognitions. A theoretical framework that integrated moral reasoning, problem solving and cognitive distortions is presented, and the key theoretical constructs and limitations are highlighted and discussed. This chapter concludes with a proposal for the current study, supported by a theoretical, clinical and methodological rationale. The specific hypotheses are presented.

1.2 Intellectual Disabilities

1.2.1 Definition. According to the DSM-V (APA, 2013), three criteria must be met for a diagnosis of ID:

- A Full Scale Intelligence Quotient that is below 70.
- Significant limitations in two or more areas or domains of adaptive behaviour:

  - Domain 1: Conceptual or cognitive skills such as language, reading, writing, mathematical ability, reasoning, memory and knowledge;
  - Domain 2: Social skills such as empathy, interpersonal communication, social judgments and the ability to make and retain relationships;
  - Domain 3: Practical skills such as autonomy in personal care, employment, personal financial management, recreation and social tasks.
- And evidence that the limitations were present before the age of 18.

The DSM-V (APA, 2013) identified three categories of IDs that were dependent upon the Full Scale Intelligence Quotient (IQ). An individual with an IQ between 50 and 70 would be classified with a mild ID. An individual with an IQ between 35 and 50 would be classified with a moderate ID. An individual with an IQ between 25 and 35 would be classified with a severe ID. An individual with an IQ below 25 would be classified with a profound ID. Individuals with an IQ between 71 and 84 would be classified with a borderline ID.

According to the ICD-10 (WHO, 2010) an ID was described as "mental retardation." The ICD-10 criteria for mental retardation was characterised by an impairment of skills that manifested during the developmental period and that could be present with or without a physical disability. These skills affected cognitive functioning, language, motor and social abilities. The severity of mental retardation was coded from F70 to F79. For F70 there was a mild mental retardation with an approximate IQ range of 50 to 69; for F71 there was a moderate mental retardation with an approximate IQ range of 35 to 49; for F72 there was a severe mental retardation with an approximate IQ range of 20 to 34; for F73 there was a profound mental retardation with an IQ that was below 20. For F78 the classification was

"other mental retardation." For F79, the classification was "unspecified mental retardation." There were no classifications for F74 to F77.

There were minor differences in the severity levels between the DSM-V and the ICD-10. Notably, the DSM-V would refer to someone with an IQ of 50 as 'moderate' while the ICD-10 would indicate that this was 'mild.' For the purposes of this study, the DSM-V (APA, 2013) criteria was applied throughout as this was consistently used in other studies with offenders with IDs (Hockley & Langdon, 2014; McDermott & Langdon, 2014). It was also useful for comparative purposes with these studies.

In the UK, the term 'learning disability' has been used to describe these diagnostic criteria (British Psychological Society, 2001). Similarly, in the USA and Canada the term ID was used. The terms 'intellectual disabilities' and 'learning disabilities' were essentially referring to the same condition. In Valuing People (Department of Health, 2001), a socially accessible definition of learning disability was referred to as a significantly reduced ability to understand new or complex information; and a reduced ability to cope independently with an onset before the age of 18. In the current study, 'intellectual disabilities' was used, as this was reflected in the literature.

1.2.2 Prevalence. The precise number of people with IDs in the UK was unknown. According to a report that was endorsed by the Department of Health, it was estimated that 1,191,000 people in England had IDs (Improving Health and Lives, 2011). It was also estimated that 530,000 of these were men and 375,000 were women, but of these, only 189,000 were known to ID services.

Notably, the Department of Health estimated that in 2001 there were approximately 1.4 million people with IDs living in England (Department of Health, 2001). However, Emerson and Hatton (2004) collated census and local authority data and they estimated that there were approximately 985,000 people with IDs living in England.

The three reports highlighted discrepancies in the estimated prevalence of people with IDs that were living in the UK. Taking the reports into consideration, the estimated prevalence of people with IDs in England appears to range from just below 1 million to 1.4 million people. This equated to approximately 2% of the population.

1.3 Intellectual Disabilities and Criminal Offending

1.3.1 Current context. In 2009, Lord Bradley (Department of Health, 2009) conducted a review to explore the effectiveness of court liaison and court diversion schemes for people with mental illness or IDs. In his findings many offenders, with IDs or a mental illness, had been unsuitably held in custody. For offenders with IDs, he recommended early identification and assessment of an ID as soon as possible after the arrest. He proposed that the responsibility for screening for IDs should be shared between the judiciary, police officers, national offender management officials and other relevant caseworkers.

Lord Bradley's conclusions were also echoed in a review of unmet mental health needs in prisons where Edgar and Rickford (2009) suggested that all prisons should have ID specialists and that IDs should be identified at the point of arrest, rather than after an individual has been remanded or sentenced. Notably, this was a complex task and prisons were currently not offering the detailed ID assessments that were highlighted by Edgar and Rickford (2009).

1.3.2 Prisons and psychological interventions. Even though offenders were not being assessed for IDs, prisons appeared to be supporting offenders depending on their offence, ID or mental illness. Some of these developments have focused on psychological interventions. For example, the Enhanced Thinking Skills Programme (ETSP) was a cognitive behavioural group intervention that focused on cognitive deficits, reasoning and problem solving and was developed for use in prisons (Clarke, 2000). A major criticism of

Clarke's study is that they excluded people with IDs and all participants had a Full Scale IQ that was above 80.

Notably, psychological interventions such as the ETSP were promising. However, they appeared to completely exclude offenders with IDs and this was problematic. Therefore, the validity and efficacy of such programmes with offenders with IDs was still to be explored. An adapted version of the ETSP was developed for offenders with IDs. Kelly (2014) conducted an evaluation of this adapted ETSP over a 3-year period. The findings indicated a significant improvement in empathy and perspective taking, while there were no significant improvements for impulsivity and locus of control. Other studies have also investigated adapted interventions with sex offenders with IDs. The Sex Offender Treatment Services Collaborative – Intellectual Disability (SOTSEC-ID) is a treatment programme for intellectually disabled sex offenders (Hayes, Murphy, Langdon, Rose, & Reed, 2007; Langdon et al., 2007). Murphy, Powell, Guzman and Hayes (2007) also used cogntivie behavioural therapy (CBT) for 8 male sex offenders with IDs. They concluded that they had adapted the CBT and that there were significant positive changes in sexual knowledge and victim empathy after treatment.

In summary, it was promising to see intervention programmes being adapted for offenders with IDs. However, these adapted programmes were not available for all offenders with IDs, especially given that offenders were not being assessed for IDs. Therefore, there was still a great need to validate adapted programmes for offenders with IDs (Kelly, 2014).

1.3.3 Legislation and secure forensic hospitals. In some instances treatment programmes were offered in secure forensic hospitals. The legislation permitted offenders with IDs to be detained under the Mental Health Act (2007), under civil and criminal sections. In certain situations offenders with IDs could be diverted from a crown court to low, medium or high secure forensic hospitals for treatment. This diversion was permitted under

Section 37 of the Mental Health Act (2007). For convicted offenders with IDs there was a sentencing discretion for judges. This sentencing discretion was not applied for crown court convictions where offences included murder, sexual or violence (Holland, 2004).

If an offender was not diverted from court then they could be transferred to a secure forensic hospital for treatment under Section 47/49 (Mental Health Act, 2007); assessment under Section 35, Section 36 and Section 38; or treatment with restrictions under Section 37/41. However, a major criticism of the Mental Health Act (2007) was that the provisions were mostly for people with mental health difficulties. This suggested that offenders with IDs were at risk of being excluded or overlooked within the legal context, especially if they were not formally assessed for an ID.

1.3.4 Prevalence for offenders with intellectual disabilities. According to the Ministry of Justice (2014), there are approximately 81,492 male prisoners in the UK. However, the exact number of offenders with IDs within the prison and criminal justice system is currently unknown (K. Hopkins, personal communication, September 23, 2013). There are two reasons for this. First, not all offenders were screened for IDs. Second, when offenders entered the criminal justice system a screening process collected data for a disability as an 'umbrella term.' This meant that having a disability could refer to an ID, mental illness or physical disabilities. The data collection did not specify the nature of the disability and it was not possible to extract the precise number of offenders with IDs

Lindsay, Law and McLeod (2002) suggested that the prevalence for offenders with IDs in prisons was excessively high. According to the Prison Reform Trust (2007), it was estimated that approximately 20% to 30% of all current incarcerated offenders had an ID. In 1988, Coid identified a diagnosable ID in 5.1% (n=334) of prisoners at HMP Winchester in the UK. According to the Bradley Report (Department of Health, 2009), it was estimated that the prevalence of prisoners with IDs ranged from 0.5% to 9%. However, part of this estimate

was based on self-report rather than formal testing and is potentially unreliable. A second study, which explored the prevalence of offenders with IDs using custody record forms (*n*= 9,014) found a prevalence rate of approximately 8.7% (Scott, McGilloway, & Donnelly, 2006).

A systematic review explored surveys of ID prevalence in a general prison population, between 1988 and 2004 (Fazel, Xenitidis, & Powell, 2008). Data from 10 surveys involving five countries (UK, USA, Australia, Dubai and New Zealand) were included. The findings suggested that the prevalence rate for a diagnosis of ID was between 0.5% and 1.5% of the prison population based on a sample consisting mostly of male prisoners. This prevalence rate appeared to be lower than a study in the UK, where a 7.1% prevalence was reported in a sample of 140 prisoners at HMP Liverpool (Hayes, Shackell, Mottram, & Lancaster, 2007).

Based on the varied prevalence data, studies in the UK, USA and Australia have suggested that offenders with IDs are over-represented in their respective criminal justice systems (Holland, Clare, & Mukhopadhyay, 2002). The actual figures should be interpreted with caution given the possibility of whether or not the offenders in these studies would meet the criteria for a diagnosis of an ID or a learning difficulty. Again, this raised the issue of accurately identifying ID offenders in the criminal justice system and that assessment using the DSM-V (APA, 2013) would be required to determine whether an offender had an ID. In contrast to some of the previous studies, Murphy, Harnett and Holland (1995) conducted a prevalence study at HMP Belmarsh and they found a 0% prevalence rate for offenders with IDs. The variability in prevalence suggested that there was an overestimate for prevalence rates depending on the definition of ID. Ultimately, this means that prevalence rates should be interpreted with the definition of ID for a particular study.

Another issue that was considered with prevalence rates was whether offenders with IDs had a guilty state of mind. The judicial system would not be applied if a guilty state of mind ('Mens Rea') could not be proved or if a victim with an ID provided evidence (Holland, 2004). It could be argued that definitions of crime are socially constructed as they varied from country to country. As a consequence, people with severe or profound IDs could not be an offender by definition. Furthermore, high rates of traumatic brain injury and substance misuse in prison populations have also contributed to deficits in memory, learning and cognition, which are often difficult to differentiate when considering a diagnosis of ID (Barnfield & Leathem, 1998).

In summary, the prevalence for offenders with IDs in the UK was estimated, at its highest point, to be approximately 9% of a British offender population (Department of Health, 2009; Scott et al., 2006). These estimations were helpful but they also appeared to be an inconsistent because low prevalence rates were also reported (Murphy et al., 1995). Furthermore, they were potentially misleading as they were based on retrospective case reviews, self-reports and estimations of a diagnosis of ID. These studies highlighted the variability of prevalence rates and the challenge of assessing prisoners for IDs. This problem required ongoing exploration (Holland, 2004).

1.3.5 Cost implications for offenders with intellectual disabilities. The current climate of financial austerity within the National Health Service (NHS) does not appear to support hefty investment into areas of healthcare, unless they are a major priority. Therefore, the issue of cost is an important one (Hayes, 2004).

At present, the cost for treatment and rehabilitation for ID offenders was approximately £320 million (or £128,000 per bed) across approximately 2500 beds in secure hospitals in England (Emerson et al., 2011). In the UK, it cost approximately £29,092 to house a single male offender for 1 year in a category B prison (Ministry of Justice, 2013a).

According to the HM Chief of Prisons, it cost approximately £52,000 to house a single male offender for 1 year in a category A prison (Her Majesty's Inspectorate of Prisons, 2000).

Seemingly, secure hospitals were more costly that prisons. Therefore, the issue of screening offenders for IDs could potentially be understood in the context of great cost implications to the criminal justice system. Fiscally speaking, this was a great dilemma because screening offenders would most likely increase costs that were associated with diversion into secure hospitals. Despite this, there was a need to ensure that offenders with IDs were appropriately diverted given that they would struggle to settle into a prison without suitable support.

1.3.6 Factors related to risk and comorbidity. In addition to cost factors, there are several factors that needed to be considered for offenders with IDs. These included risk factors, comorbidity, offence type and IQ.

Several studies have explored risk factors for offenders with IDs. Some studies identified mental illness in offenders with IDs as a contributing factor to offending (Barron, Hassiotis, & Banes, 2004). This suggested that offenders with IDs and a mental illness had higher levels of complexity, which made the provision of adequate interventions a challenge (Chan, Hudson, & Vulic, 2004). A review conducted by Hudson and Chan (2002) highlighted how adults with IDs demonstrated higher levels of challenging behaviour, which made them vulnerable to exclusion from services. In this context, access to appropriate interventions and services was an obstacle for ID offenders. Mohr, Curran, Coutts and Dennis (2002) highlighted the importance of collaborative multi-agency interventions, which included an integrated formulation of IDs, mental health and offending behaviour in order to manage the complexity of offenders with IDs that also had a mental illness.

Taylor (2002) found that aggression was the main reason offenders with IDs were admitted to hospital. Violent offences were the most frequently reported crimes for offenders

with IDs (Barron et al., 2004). This supported earlier studies, which identified aggressive behaviour as the most common reason for hospital admissions (Lakin, Hill, Hauber, Brunicks, & Heal, 1983). Novaco and Taylor (2004) suggested that offenders with IDs faced challenges and further criminal charges once they were admitted to a secure service. In their study, with male ID offenders (*n*=129), 46.5% of patients had assaulted another person post admission.

McGillivray and Moore (2001) also found that substance abuse was a risk factor for offenders with mild IDs. Similarly, Lindsay et al. (2013) highlighted alcohol was a risk factor for offenders with IDs. Klimecki, Jenkinson and Wilson (1994) found high recidivism rates with poor coping skills, while other studies linked personality and mood disorders with high risk and reoffending (Barron, et al., 2004; Lindsay et al., 2006a).

Offence types were highlighted in several studies and suggested that some offences were a higher priority than others. For example, sex offending and IDs was a large focus area (Hockley & Langdon, 2014; Lindsay, Steptoe, & Quinn, 2012; Thompson & Brown, 1997). In a retrospective case note survey (*n*=47) using male sex offenders with IDs, the occurrence of sex offences was approximately four to six times higher when compared to the offenders without IDs (Day, 1994). A major critique of Day's (1994) study was that they used the ICD-9 (WHO, 1978) classification system, which is currently out-dated, and that they recruited participants that were admitted between 1970 to 1988. Notably the ICD-9 was suitable at the time. However their sample was obtained by scrutinising case notes which they did not explain. Therefore, they appeared to select participants that were well documented with statements from victims, witnesses and offenders. This suggested that they excluded participants where this information was not available, and may indicate sampling bias. They also only reviewed sex offenders and their findings could not be generalised to a general ID offender population.

Simpson & Hogg (2001) conducted a systematic review, which explored offence types for offenders with IDs. They identified sex offences, theft and criminal damage to be higher for offenders within borderline IDs, when compared to the general offender population. They also highlighted that offenders with mild IDs and IDs below 50 would be less likely to drive or successfully plan and follow through with criminal behaviours. They concluded that there was insufficient evidence, based on the 15 papers they reviewed, to support the hypothesis that offender rates were higher for offenders with IDs, when compared to offenders without IDs. In another study, arson was highlighted as a focus area for offenders with IDs (Taylor, Thorne, Robertson, & Avery, 2002). The authors suggested that very little was known about ID offenders and fire-setting. They concluded that cognitive behavioural interventions showed significant improvements at reducing fire interest. While their study was convincing their small sample size (n=14) limited the findings. This finding highlighted the need for further research with a clear focus on intervention for offenders with IDs.

Another risk factor for offending was IQ. Farrington (1973) conducted a study, which compared boys with an IQ above 110 and boys with an IQ of less than 90, over a 10-year period. He concluded that one in five of the boys with an IQ of less than 90 had reoffended while one in 50 of the boys with an IQ over 110 had reoffended. These results suggested that there was a relationship between low IQ and reoffending and these findings have been replicated in later studies (Farrington, 2000; Goodman, Simonhoff, & Stevenson, 1995). Farrington (2000) also found that offenders with low IQs were most likely to be from economically disadvantaged families with high levels of parental conflict and this would have effected their ability to engage in schooling and ultimately result in low general ability. Farringdon (2005) suggested that there was a relationship between cognitive development and criminal behaviour where low IQ and antisocial behaviour were associated.

In summary, sex offences were the most studied offence types for ID offenders. It is possible that sex offences were a priority due to the traumatic nature of the effect on the victim. Further studies with sex offenders suggested the need for further research with an emphasis on cognitive distortions (Langdon, Murphy, Clare, Steverson, & Palmer, 2011b; Ward, Hudson, Johnston, & Marshall, 1997), cognitive behavioural interventions (Falshaw, Friendship, & Bates, 2003), social problem solving (Barnett & Wood, 2008; Lindsay et al., 2011a) and risk management (Beech & Fisher, 2004; Hanson & Harris, 2000; Kemshall, 2003). The majority of the studies appeared to focus on sex offenders with IDs. Other offence types were less studied. This highlighted the need for studies with offenders with IDs that had committed other types of offences.

1.4 Review of the Literature

Lindsay (2002) conducted a meta-review on systematic reviews that had focused on ID offenders. The aim of the review was to explore the link between IDs and offending. The method included a keyword search across 11 electronic databases. This search returned 2 results. In addition, 9 papers were obtained through personal contacts and 'low impact journals.' In total, 11 papers were included. Lindsay (2002) did not specify which search terms were used and this made it impossible to replicate this review and validate its findings.

Lindsay (2002) highlighted ethical and consent considerations when recruiting offenders with IDs because participants may have difficulty understanding information; methodological variability across the studies which weakened the generalisability of the findings; and intervention and assessment as the focus areas for further studies. Lindsay's (2002) review was brief and a detailed account of each study was not provided. Sample sizes were not mentioned and it was unclear whether these results could be generalised or whether this suggested reporting bias. Lindsay (2002) did not highlight any theoretical foundations. Therefore, the review did not provide any insight into moral development, problem solving or

cognition. It was possible that these limitations were present because the review did not intend on providing an in-depth analysis. However, given the limited number of studies that have been published in this area, it would make sense to provide as much detail as possible. As a final point, the majority of the papers were book chapters. This suggested that more empirical studies were required with offenders with IDs.

1.4.1 Key studies for offenders with intellectual disabilities. In order to address the limitations of Lindsay's (2002) review, a literature review was attempted for the current study. The aim of this literature review was to identify and evaluate studies that were conducted with a focus on moral reasoning, cognitive distortions and problem solving with male offenders with IDs. An electronic systematic search was conducted using multiple databases: PsychINFO (1806 - present), MEDLINE (1950 - present), AMED (1985 - present) and EMBASE (1980 - present) on 14th August 2013. Phrase searching, Boolean terms and truncation operators (Veale, 2012) were used with the following search terms:

1. "cognitive distortions" (Title, abstract and keyword)
2. "cognitive errors" (Title, abstract and keyword)
3. "thinking errors" (Title, abstract and keyword)
4. "faulty thinking" (Title, abstract and keyword)
5. Search terms 1 OR 2 OR 3 OR 4 (Combined)
6. "moral reason*" (Title, abstract and keyword)
7. "social problem solving" (Title, abstract and keyword)
8. "problem solving" (Title, abstract and keyword)
9. Search terms 7 OR 8 (Combined)
10. "intellectual disabil*" (Title, abstract and keyword)
11. "learning disability" (Title, abstract and keyword)
12. Search terms 10 OR 11 (Combined)

13. Search terms 9 AND 12 (Combined)
14. Search terms 5 AND 12 (Combined)
15. Search terms 6 AND 12 (Combined)
16. Search terms 13 OR 14 OR 15 (Combined)

The search returned a total of 577 articles (PsycINFO - 38; MEDLINE - 349; AMED - 60; EMBASE -130). An additional search, using key authors, was also conducted using MEDLINE (1950-present). This search was conducted using two key authors ("Langdon, P" and "Lindsay, W"). This search returned 102 articles, which were also included in the review. Key authors were contacted for access to any articles in print or under peer review (*n*=1). One article was currently in print. In total 680 articles were returned using the combined search. The titles and abstracts of the remaining articles (*n*=680) were then screened. Only 14 articles were selected for further reading. A total of 666 articles were not suitable. Unsuitable articles focused on children, parents, health professionals and females (*n*=339); mathematical ability, therapy or interventions, neurological conditions, personality disorders and memory (*n*=202); and duplicates (*n*=125). The key word "problem solving" appeared to be the cause for returning articles that were not relevant. It was noted that similar difficulties were found in Lindsay's (2002) review and this highlighted that very few published articles had explored this area of research.

For this reason only 3 of the 14 articles were deemed to be relevant. The remainder of the studies were hand selected on the basis that they focused on ID offenders and moral development, problem solving or cognitive distortions. In addition, library databases were thoroughly searched. Extensive reading and discussions with an expert in the field concluded that this was an under researched area. Limitations of this method are discussed in the final chapter. The following inclusion criteria were applied when selecting articles.

- Articles that focused on moral development, problem solving or cognitive distortions
- Studies that recruited adult male ID offenders with a mild to moderate IQ using the DSM-V criteria (APA, 2013)
- Peer reviewed quantitative journal articles
- Articles in English language

The following exclusion criteria were applied:

- Randomised controlled trials were excluded as they reported on treatment efficacy, which was not a focus area of the present study
- Studies with female, child or adolescent ID offenders because they could not be used for comparative purposes

Table 1

Summary of studies

Authors / Country	Design	Sample and Size	Measure CD, MR, PS	Key Findings
1. Langdon & Talbot (2006); UK	Quantitative, Between Groups, ANOVA	*N*=41; ID males; Three groups: ID & offence & treatment (*n*=12); ID & offence & no treatment (*n*=11); ID & no offence (*n*=18)	QACSO; NIES	Pro-offending attitudes to rape, homosexual assault, paedophilia and stalking/sexual harassment. Significant difference between two groups on cognitive distortions. All groups endorsed external locus of control.
2. Middleton, Mandeville-Norden, & Hayes (2009); UK	Quantitative, Repeated Measures Within Groups, ANOVA	*N*=264; ID males participating in iSOTP	CSQ;VEDS; NIES	Pro-offending attitudes, empathy deficits, fantasies, minimisation. Improvement in deficits of socio-affective functioning and pro-offending attitudes following iSOTP treatment.
3. Blumenthal, Gudjonsson, & Burns (1999): USA	Quantitative, Between & Within Groups ANOVA	*N*=66; ID males in prison and not in treatment; Two groups: SOC *(n*=36), SOA (*n*=30); Male	MOLEST & RAPE; BAI	Blame, denial, rationalisation. SOC endorsed more CDs related to sex with children than SOA. SOC reported more guilt than SOA. SOA tended to use blame more than SOC.

4. Gannon & Polaschek (2005); UK	Quantitative, Between Groups, ANOVA	*N*=98; ID males, two groups: Group 1 – Treated sex offenders (*n*=31) and untreated sex offenders (*n*=22); Group 2 – control offenders (non-sex related offences) (*n*=22) and control students (*n*=23)	MOLEST & RAPE	Entitlement, pro-offending beliefs identified for sex offenders. All groups disagreed with CDs in general. Treated sex offenders showed 'fake good, patterns of responding which is consistent with social desirability.
5. Lee et al. (1996); Australia	Quantitative, Repeated Measures	*N*=35 ID males in community based SOTP (*n*=25 paedophiles; *n*=8 rapists; *n*=2 paraphilics)	PTPSEF; CQ	Sexual fantasises, minimisation, justification, lack of empathy identified in sex offenders. Significant treatment effects maintained at 12 months showing a decrease in CDs related to sex offending.
6. Langdon, Maxted, Murphy, & SOTSEC ID group (2007); UK	Quantitative, Between Groups	*N*=34 ID male sex offenders; Two groups: Avoidant pathway (n=6); Approach pathway (n=38)	QACSO; SOSAS	No difference between Avoidant and Approach offenders on victim empathy, severity and type. Approach offenders showed higher levels of CDs and denial. Avoidant offenders were found to have lower IQs.

7. MacMahon, Jahoda, Espie, & Broomfield (2006); UK	Single Case Design	*N*=1; ID males; Offence history (convictions of assault and breach of peace)	NAS; PI	An equal number of solutions were generated when anger was high and low; Mood inductions were effective in manipulating anger levels; High anger arousal increased the perception of hostile intent.
8. Langdon et al. (2011b); UK	Quantitative, 2x2 Between Groups	*N*=80; Four groups: ID male offenders (*n*=20); ID male non-offender (*n*=20); non-ID male offender (*n*=20); non-ID male non offender (*n*=20)	SRM-SF; HIT	ID offenders > moral maturity > ID non-offenders; ID offenders fell into Stage 2 of Gibbs Sociomoral Stages; Non-ID offenders > moral maturity > ID offenders; *CD:* ID men > cognitive distortions > non-ID men; offenders > cognitive distortions > non-offenders.
9. McDermott & Langdon (2014); UK	Quantitative, 2x2 Between Groups	*N*=68; Four groups: ID male offenders (*n*=17); ID female offender (*n*=17); ID male non-offender (*n*=17); ID female non offender (*n*=17)	SRM-SF	*MR:* ID ID Offenders > moral maturity > ID non-offenders; MR for ID offenders fell into Stage 2 and Stage 2(3) of Gibbs Sociomoral Stages suggesting that MR was defined by pragmatic reasoning, needs and exchanges and the probability of criminal behaviour; The entire sample had immature moral reasoning abilities; No difference on MR between men and woman; MR predicted emotional and behavioural problems.

10. Langdon, Murphy, Clare, Palmer, & Rees (2013); UK	Quantitative, Single Case Series	*N*=7; ID male offenders (*n*=3) and male developmental disabilities offenders - Asperger Syndrome (*n*=4)	SRM-SF; PST; HIT	*MR:* MR ability improved following 12-week intervention; pre intervention MR scores fell into Stage 3(2); post treatment scores significant improvements into Stage 3.; *CD:* Reduction in CD following 12-week intervention. Significant decreases self-centred, minimising, assuming the worst, opposition defiance and physical aggression.; *PS:* No change following 12-week intervention but post scores suggested improvements in selecting appropriate solutions.
11. Lindsay et al. (2011); UK	Quantitative, Repeated Measures; & Quantitative, Repeated Measures, Within-Subjects ANOVA	Study 1: *N*=132; ID offenders (*n*=106 male; *n*=26 female)	SPSI-R (Simplified for ID)	*PS, Study 1:* SPSI-R (simplified for ID) shows psychometric integrity with ID sample; Four factor solution shows that the SPSI-R (simplified for ID) was consistent with original SPSI-R.
		Study 2: *N*=10: Two groups with ID sex offenders and (*n*=5) and ID violent offenders (*n*=5)	SPSI-R (Simplified for ID)	*PS, Study 2*: SPSI-R (simplified for ID) scores showed improvements in impulsiveness/ careless style after a 7-week intervention; A medium effect size for positive problem orientation and a large effect size for avoidant style was found after a 7-week intervention.

12. O'Connor (1996); Australia	Quantitative, Design not reported	*N*=13; ID male offenders	SSKAT; ABCS; WSFQ	*PS:* Clinical observation showed a reduction in minimisation and denial of offending behaviour following an PS intervention; Applied behaviour analysis was noted as a mechanism to determine the function of behaviours; No statistical data was presented in the study.
13. Lindsay et al. (2006b); UK	Quantitative, Between Groups t-tests; & Between Groups ANOVA	Study 1: *N*=24; ID male offenders; Two groups: SOA (*n*=12); SOC (*n*=12)	QACSO	*CD:* SOA > rape and attitudes towards women > SOC; Medium effect size on rape scale and dating abuse; Large effect size for offences against children.
		Study 2: *N*=30, ID male offenders; Three groups: SOA (*n*=10); SOC (*n*=10); SOE (*n*=10)	QACSO (Revised)	*CD*: Significant differences on offences against children scale; SOC highest on offences against children scale; Medium effect size on rape and sexual assault scale, SOA>SOC; Large effect size on offences against children scale, SOC>SOA.

Note. UK=United Kingdom; USA=United States of America; ID=Intellectual Disabilities; CD=Cognitive Distortions; MR=Moral Reasoning; PS=Problem Solving; SO=Sex Offender; MO=Mixed Offender; ANOVA=Analysis of Variance; SOA=Sex offences against adults; SOC= Sex offences against children; SOE=Sex offences exhibitionists; SOTP= Sex Offenders Treatment Programme; iSOTP=Internet Sex Offenders Treatment Programme;

QACSO=Questionnaire on Attitudes Consistent with Sex Offending (Broxholme & Lindsay, 2003); NIES=Nowicki-Strickland Internal-External Scale (Nowicki & Duke, 1974); CSQ=Children and Sex Questionnaire (Beckett, 1987); VEDS=Victim Empathy Distortions (Beckett & Fisher, 1994); MOLEST & RAPE (Bumby, 1996); BAI=Blame Attribution Inventory (Gudjonsson & Singh, 1989); PTPSEF=Psychosexual Treatment Program Self Evaluation (Lee, Proeve, & Lancaster, 1989); CQ=Cognitions Questionnaire (Abel et al., 1984); SOSAS=Sexual Offenders Self-Appraisal Scale (Bray & Foreshaw, 1996); NAS=Novaco Anger Scale (Novaco, 2003); PI=Provocation Inventory (Novaco, 2003); SRM-SF=Sociomoral Reflection Measure (Gibbs et al., 1992); HIT=How Think Questionnaire (Barriga, Gibbs, Potter, & Liau 2001); PST=Problem Solving Task (Nezu, Nezu, & Area, 2009); SPSI-R (D'Zurilla, Nezu, & Maydeu-Olivares, 2002); SSKAT=Socio-Sexual Knowledge of Attitudes Scale (Wish, McCombs, & Edmonson, 1980); ABCS=Abel and Becker Cognitions Scale (Abel et al., 1984); WSFQ=Wilson Sexual Fantasy Questionnaire (Wilson, 1978).

1.4.1.1 Results of review. A total of 13 studies were identified in Table 1. Table 1 consisted of articles from the UK (*n*=10), USA (*n*=1) and Australia (*n*=2). There were 3 articles for PS (Lindsay et al., 2011a; MacMahon et al., 2006; O'Connor, 1996), 3 articles for MR (Langdon et al., 2011b, 2013; McDermott & Langdon, 2014) and 9 articles for CD (Blumenthal et al., 1999; Gannon & Polaschek, 2005; Langdon & Talbot, 2006; Langdon et al., 2007, 2011b, 2013; Middleton et al., 2009; Lee et al., 1996; Lindsay et al., 2011a). There were 12 quantitative studies and 1 single case design. There were 6 between-groups, 3 repeated-measure-within-groups, 1 mixed, 1 single case series, 1 single case and 1 study where no design was clearly defined. A total of 8 studies focused on sex offenders (Blumenthal et al., 1999; Gannon & Polaschek, 2005; Langdon & Talbot, 2006; Langdon et al., 2007; Lee et al., 1996; Lindsay et al., 2011a; Middleton et al., 2009; O'Connor, 1996) and 5 studies focused on mixed groups of offenders (Langdon et al., 2011b, 2013; Lindsay et al., 2011a; MacMahon et al., 2006; McDermott & Langdon, 2014). There were 17 different measures. For CD, there were 9 measures. For PS there were 7 measures. For MR there was 1 measure. Validity and reliability of the measures were explicitly reported in 9 of the studies (Langdon & Talbot, 2006; Langdon et al., 2007, 2011b, 2013; Lee et al., 1996; Lindsay et al., 2006b, 2011; McDermott & Langdon, 2014; Middleton et al., 2009) and 7 studies reported formal permission from an appropriate ethics committee (Langdon & Talbot, 2006; Langdon et al., 2007, 2011b, 2013; Lindsay et al., 2006b, 2011; McDermott & Langdon, 2014).

1.4.1.2 Moral reasoning. Only 3 studies focused on moral reasoning. This suggested the moral reasoning was an under-researched area for offenders with IDs. All of the studies used Gibbs Sociomoral Stage theory (Gibbs et al., 1992), which will be discussed in detail in the next section that will explore the theoretical framework.

For the purpose of reading ease, Gibbs et al. (1992) developed the Sociomoral Stage theory, which consisted of 4 stages of reasoning and transitional stages, which were when stages overlapped. Stage 1 and Stage 2 were considered to be *immature* reasoning, while Stage 3 and Stage 4 were considered to be *mature* reasoning.

The studies in the current literature review identified that offenders with IDs showed higher levels of moral maturity when compared to non-offenders with IDs (Langdon et al., 2011b; McDermott & Langdon, 2014). Secondly, ID offenders demonstrated Stage 2(3) reasoning and non-offenders with IDs demonstrated Stage 2 reasoning using Gibbs Sociomoral Stage theory (Langdon et al., 2011b; McDermott & Langdon, 2014). According to Gibbs, Stage 2 reasoning suggested that ID offenders were making moral judgment decisions based on exchanges, superficial justifications and instrumental needs (Gibbs, 2003, 2010, 2013). The implications of this were highlighted by Palmer (2003) where offending at Stage 2 reasoning was justifiable if the offender perceived the rewards to be greater than the risks associated with the offending behaviour.

The SRM-SF was used in all three studies. Validity and reliability for the SRM-SF was accurately reported in all three studies. The SRM-SF appeared to be a good measure of moral reasoning for ID populations. These studies proposed that further research should focus on moral reasoning and offenders with IDs. Notably there were some moral reasoning measures that were not identified in the studies. For example the Moral Judgment Interview (Kohlberg, 1958; MJI) was developed in 1958 and sparked the development of other similar and related measures such as the Objective Moral Judgment Scale (Maitland & Goldman, 1974; OMJS) and the Maturity of Moral Judgment scale (Hogan & Dickstein, 1972; MMJ). However, these instruments were over four decades old and required a demanding scoring procedure,

which involved several hours of interviewing. These measures were followed by the development of the Defining Issues Test (Rest, 1979; DIT), which received criticism for being a moral reasoning recognition instrument and may be vulnerable to socially desirable responses. In 1982, Gibbs and Widaman developed the first version of Sociomoral Reflection Measure (SRM), which demonstrated good reliability, and concurrent and construct validity with the MJI (Gibbs, Widaman, & Colby, 1982). Despite having good psychometric properties, the SRM was criticised for being a recognition measure and the SRM-SF was later developed in 1992 (Gibbs et al., 1992).

While these studies contributed to the literature base, there were also limitations. Power and sample sizes were not reported in McDermott and Langdon, (2014). However, contact with the authors indicated that the study was adequately powered. One of the studies used a small sample size, which limits generalisability of the findings (Langdon et al., 2013). All of the studies used convenience samples (Langdon et al., 2011b, 2013; McDermott & Langdon, 2014). This highlighted the difficulties of recruiting ID offenders and raised concerns about socially desirable responding. Some participants were paid (Langdon et al., 2011b) and again this raised the potential for confounding (i.e. payment as a motivator for participation).

1.4.1.3 Cognitive distortions. A total of 9 studies focused on cognitive distortions (Blumenthal et al., 1999; Gannon & Polaschek, 2005; Langdon & Talbot, 2006; Langdon et al., 2007, 2011b, 2013; Middleton et al., 2009; Lee et al., 1996; Lindsay et al., 2006b). This highlighted that the majority of studies with ID offenders appeared to focus on cognitive distortions. The findings highlighted the presence of cognitive distortions that included pro-offending attitudes (Gannon & Polaschek, 2005; Langdon & Talbot, 2006; Lindsay et al., 2006b; Middleton et al., 2009);

minimisation (Gannon & Polaschek, 2005; Langdon et al., 2007, 2013; Middleton et al., 2009); blame (Langdon et al., 2007); denial and justification (Blumenthal et al., 1999; Langdon et al., 2007); entitlement (Gannon & Polaschek, 2005); self-centred and assuming the worst (Langdon et al., 2013); and harmful attitudes towards woman and children (Langdon & Talbot, 2006; Lindsay et al., 2006b). Empathy deficits were also reported (Gannon & Polaschek, 2005; Middleton et al., 2009). The findings supported Gibbs typology of self-serving cognitive distortions (Gibbs, 1991, 1993; Gibbs et al., 1995).

Undoubtedly, these studies have contributed greatly to our understanding of ID offenders. However there are some limitations. Small sample sizes were used and this limits the generalisability of the results (Langdon et al., 2007, 2013; Lee et al., 1996; Lindsay et al., 2006b). There were as many measures of cognitive distortions as there were studies. Some of the measures were not supported by validity and reliability data (Blumenthal et al., 1999; Gannon & Polaschek, 2005). One study did not mention the measure (Gannon & Polaschek, 2005) and the name of the measure could only be found in the reference list. Some measures were out-dated given that the studies took place within the last few years when more reliable measures were potentially available (Blumenthal et al., 1999; Gannon & Polaschek, 2005; Middleton et al., 2009; Lee et al., 1996). The HIT was used with ID offenders (Langdon et al., 2011b, 2013) but no reliability or validity data has been generated for its use with ID populations. This highlighted the need for reliability and validity data for the HIT for people with IDs.

Notably there were several measures that were not in the studies and that could have been considered to identify cognitive distortions. For example, Ball's Neutralisation Scale (Ball, 1973) was developed for use with adolescent offenders and

was criticised for being too difficult to read. The Measure of Automatic Thinking Errors (MATE; Garvin, 1990) was criticised for having poor discriminant validity when a group of offenders was compared with a group of non-offenders. The Psychological Inventory of Criminal Thinking Styles (PICTS: Walters, 1995) was criticised for being a behavioural measure (Barriga et al., 2001). The problem with these measures was that they were not designed for use with ID populations. In 2001, the How I Think Questionnaire was developed (HIT; Barriga et al., 2001) to address some of these limitations and appeared to be a more suitable measure for cognitive distortions with offenders with IDs.

Given the limitations that were identified, the recommendations for future studies suggested that there was a need for reliable measures and the efficacy of interventions that focused on cognitive distortions (Blumenthal et al., 1999; Langdon & Talbot, 2006).

1.4.1.4 Problem solving. A total of 3 studies focused on problem solving (Lindsay et al., 2011a; McMahon et al., 2006; O'Connor, 1996). This suggested that problem solving was an under-researched area for ID offenders. Lindsay et al. (2011) identified a consistent four-factor solution for the adapted SPSI-R when used with offenders with IDs. They also identified improvements in Impulsivity / Careless Problem Solving Style, Positive Problem Orientation and Avoidant Problem Solving Style following a 7 week problem solving intervention for offenders with IDs. MacMahon et al. (2006) identified equivalent solutions being generated when anger levels were high and low using a single case study. O'Connor (1996) reported a clinical observation of reductions in offending behaviour following a problem solving intervention (n=13).

All of the problem solving studies had small sample sizes. As previously mentioned, this made interpretation of the results challenging. One of the problems with small sample sizes is that they could produce false positive results or they could overestimate the magnitude of effects. However, the small sample sizes appeared to highlight the difficulty in recruiting offenders with IDs. The designs for the studies were are all different. One was a single case study (MacMahon et al., 2006), which is susceptible to confounding, as results may be influenced by previous interventions. Single case studies are also problematic because they rely on one participant, which brings in other dilemmas of coercion and good ethical practice if the single participant wishes to drop out.

Lindsay et al. (2011) reported on two studies. The second study used a repeated-measures design (n=10), which explored changes in problem solving following the SPORT programme. The design for the second study was suitable (de Vaus, 2001). However, the sample size was small and not adequately powered for their hypotheses. O'Connor (1996) did not provide a clear description of the design and no graphs or statistical data were presented. During their study "occasionally offending behaviour was reported" (O'Connor, 1996, p.224). No indication of what the offence was and how any risks were managed were mentioned.

Between the three studies, the SPSI-R was the only psychometrically valid and reliable problem solving measure. The NAS, PI, SSKAT, ABCS and WSFQ were not considered to be 'pure' measures of problem solving. Notably very few valid and reliable problem-solving measures for adults ID populations appeared to exist. Some measures had also not been identified in the studies. For example, the Problem Solving Inventory (Heppner & Peterson, 1982; PSI) was designed to assess decision-making and problem-solving ability using a 35-item Likert scale with 6-point ratings

from “strongly disagrees” to “strongly agree.” The PSI demonstrated good test-retest reliability (r=0.89) and internal consistency (α=0.90) for the total score (Heppner, 1988). However, it was criticised for its vulnerability to socially desirable answers because it was a self-report measure. The Problem Solving Task (PST; Nezu et al., 1991) was developed to measure the course and outcome of interpersonal problem solving and demonstrated good inter-rater reliability (r=0.83) and test-retest reliability (r=0.79). However, this measure was designed to assess interpersonal problem solving (e.g marital conflicts and family disputes; D’Zurilla, et al., 2002) and was therefore limited in its ability to assess problem solving in other areas (i.e. everyday situations). At the time of this study, the authors were aware of a study that had used a modified version of the PST for offenders with IDs. However, this study was still under review and the findings were not available.

In summary, the studies suggested that high levels of anger exacerbated the probability of hostile attribution bias; a simplified version of the SPSI-R could be used with offenders with IDs; problem-solving interventions showed improvements in problem solving; and that clinician observations reported decreases in minimisation and denial following a problem solving intervention. These findings were interpreted with caution given the small sample sizes that were used.

1.4.1.5 Methodological issues. A number of methodological issues were identified in this review. Appropriate methodological and statistical techniques were demonstrated in several studies (Field, 2009, 2013; Tabachnick & Fidell, 1996): (Blumenthal et al., 1999; Gannon & Polaschek, 2005; Langdon & Talbot, 2006; Langdon et al., 2007, 2011b, 2013; MacMahon et al., 2006; McDermott & Langdon, 2014; Middleton et al., 2009; Lee et al., 1996; Lindsay et al., 2011a). However, many of these were affected by small sample sizes (Langdon et al., 2007, 2013; MacMahon

et al., 2006; Lee et al., 1996; Lindsay et al., 2006b, 2011; O'Connor, 1996). Furthermore, the majority of the studies did not report sample size calculations. The larger the sample size, the more powerful the results would be. Therefore, the benefit of calculating the power and sample size before a study was to reduce the possibility of a Type II error. Given the small sample sizes, the risk of Type II errors with offenders was potentially unsafe, as some of these studies involved treatment. Ultimately, small sample sizes limited the validity and reliability of some of these studies, despite having suitable designs.

Notably, there were several measures, but some measures were out-dated. The measures that appeared to be the most suitable for moral reasoning was the SRM-SF; for problem solving this appeared to be the SPSI-R (simplified version for ID). The HIT was used with a small sample size (n=7; Langdon at el., 2013) in one study and a suitable sample size in another (n=80; Langdon at el., 2011b). This suggests that the HIT was a measure that could be understood with ID populations. However there was no psychometric data for its use with ID populations.

As a final point, it was promising to see that 7 studies reported formal permission from an appropriate ethics committee (Langdon & Talbot, 2006; Langdon et al., 2007, 2011b, 2013; Lindsay et al., 2006b, 2011; McDermott & Langdon, 2014). It was assumed that the remaining studies obtained permission to conduct their research. However, according to the British Psychological Society (2009), all research involving human participants required ethics approval and researchers should indicate where approval has been obtained.

1.4.1.6 Conclusion. A number of conclusions were drawn from this review. First, it several studies focused on sexual offenders with IDs. There was a need to explore other types of offending behaviours amongst offenders with IDs. Second,

few studies focused on moral reasoning or moral development with offenders with IDs. Some studies have taken this forward more recently. However, empirical studies with offenders with IDs were still lacking. The evidence suggested that offenders with IDs would fall into Stage 2(3) of Gibbs Sociomoral Stage theory (Gibbs et al., 1992). However, these findings needed to be replicated.

Third, in terms of cognitive distortions, reliable measures are required for use with ID populations. The HIT was used with offenders with IDs. However, there was no psychometric data for its use with an ID population. Therefore the HIT needed to be validated for use with an ID population. The review showed evidence that specific cognitive distortions were present and that these cognitive distortions were consistent with Gibbs typology (Gibbs, 1991, 1993; Gibbs et al., 1995).

Fourth, few studies focused on problem solving with ID offenders. The studies that were reviewed had very small sample sizes apart from the first study in Lindsay et al. (2011). This highlighted the need to continue with research that focused on problem solving for offenders with IDs. Lastly, a simplified version of SPSI-R was identified as a good measure for use with an ID population.

This review demonstrated that moral reasoning, problem solving and cognitive distortions were all found with offenders with IDs. However, no studies appeared to explore these constructs in a single study. Theoretically, these constructs were important. However, the review did not provide a clear picture of how moral reasoning, cognitive distortions and problem solving were connected. Therefore, the next section explored how these constructs were related in a theoretical context.

1.5 Theories of Offending

Several theories have attempted to explain why people commit crimes. The scope of the current study was not to review all of these theories in detail. Lindsay,

Sturmey and Taylor (2004d) highlighted some of these theories. They suggested that genetic theories determined the extent to which biological mechanisms contributed to offending behaviour. In support of genetic theories, Kandel et al. (1988) conducted a study where they compared the sons of fathers who had a minimum of one prison sentence (*n*=92) with sons of fathers who had no criminal history (*n*=513). They concluded that the risk of offending was 5.6 times higher for the sons of fathers that had a criminal history. Similar results were identified by Mednick, Moffitt, Gabrielli and Hutchings (1986) where they concluded that sons who had no contact with their biological father were more likely to engage in criminal behaviour if their biological father had a criminal history. Genetic theories were criticised by Lindsay et al. (2004d). They suggested that genetic theories highlighted the relationship between offending and genetics. However, genetic theories did not clarify what specifically was inherited (i.e. thrill seeking or faulty learning). They also suggested that genetic theories did not consider the impact of the external environment on behaviour. In this context behavioural theories suggested that offending behaviour was learnt behaviours (Bandura, 1977). However, behavioural theories could not explain why some offenders with adverse childhood experiences did not commit crimes. Another critique of behavioural theories was that learning was an inherent component of offending and this limited its scope for use with an ID population because it is well evidenced that ID populations experience difficulties with learning.

According to Langdon, Clare and Murphy (2010a; 2011a) moral reasoning theory has improved our understanding of offenders with IDs. Meta analytic studies have shown that there is a strong relationship between moral reasoning and criminal behaviour for young offenders (Blasi, 1980; Stams et al., 2006). However, these meta-analytic studies appeared to have excluded offenders with IDs. As a result little, in the

form of empirical evidence, was known about moral reasoning for offenders with IDs. Recent studies have started to take this forward (McDermott & Langdon, 2014) and the findings suggested that there was a relationship between moral reasoning and offending behaviour for offenders with IDs.

1.5.1 Moral development. Moral reasoning was broadly defined as the process or ability of determining what was right and what was wrong (Reynolds & Ceranic, 2007). However, the definition of moral reasoning has evolved over the last century. Moral development was described as the maturation of moral reasoning as a result of social perspective taking and increasing cognitive ability (Hoffman, 1977; Langdon et al., 2010a). This sub-section covered theories of moral development.

1.5.1.1 Piaget's theory of moral reasoning. Piaget viewed moral reasoning as a developmental process where judgments between right and wrong were made based on social experiences. According to Piaget (1932) moral development developed gradually over time and was dependent upon moral reasoning. He suggested that young children made decisions based on rigid rules and consequences or punishments from a figure of authority. In other words, they engaged in heteronomous or autonomous moral reasoning. Heteronomous reasoning was based on decisions that were influenced by authority and punishment, while autonomous reasoning was based on laws and rules that were developed for society. Therefore, the factors that affected moral development were conscience, social attitudes and behaviour.

Piaget (1932) proposed that moral development developed in four stages, which he called the stages of development. Each stage was based upon biological maturation and the concept of readiness. Readiness referred to an active attempt to learn new information in order to move upwards from one stage to the next. Out of the four stages, the final stage was called the *formal operations stage* where abstract

thinking and solution generating were identified as strategies that were used to make moral decisions. Piaget (1932) concluded that a child's development was only complete if they passed through all the stages. Therefore, autonomous moral reasoning could only occur in the formal operational stage. Ultimately this meant that moral development could only take place if children engaged in autonomous moral reasoning and the ability use abstract thinking, which would be challenging for people with IDs.

There were some fundamental flaws in Piaget's theory. First, very few studies took place before 1960 (Landon et al., 2010a). There were no longitudinal or qualitative studies that examined Piagetian theory with ID populations. Edwards, Hopgood, Rosenberg and Rush (2000) suggested that Piaget underestimated children's abilities and that children were more able than he had thought. In other words children developed skills earlier than he had expected. This may have been influenced further by the samples in his studies, where he used small samples with children from a higher socio-demographic group. Edwards et al. (2000) suggested that Piaget's theory did not include the effects of social and cultural factors and this suggested that other factors might play a role in moral development. Piaget was also criticised for focusing on children and his findings could not be generalised to an adult population (Kohlberg, 1969).

1.5.1.2 Kohlberg's theory of moral development. In order to address these limitations, Kohlberg (1969; 1976) explored moral development over the life cycle. Kohlberg's main criticism of Piaget's theory was that it excluded moral development into adolescence and adulthood. It was in this context that Kohlberg introduced a developmental theory of moral reasoning. In Kohlberg's theory, there were three levels of moral reasoning with two sub stages in each level (Table 2). Kohlberg

suggested that individuals' passed through each stage until they reached the final stage where they developed a clear set of moral and ethical guidelines. According to Kohlberg (1969; 1976), moral development developed over the lifetime. Therefore, he was able to build upon Piaget's theory, which confined to moral development in children. Kohlberg's key findings also suggested that social perspective taking was a prerequisite for moral development as it naturally led to the need to engage in decision making (Kohlberg, 1976). Therefore, the ability to take someone else into consideration was critical to moral development.

There were some limitations for Kohlberg's theory of moral development (Gilligan, 1982; Rest, 1979; Snarey, 1994). In terms of cultural factors, religion was identified as a factor that influenced moral decision-making (Dirks, 1988; Rest, 1979). Specifically, individuals within an evangelical belief system showed less likelihood of entering the postconventional stages, while individuals with a liberal belief system were more likely to enter the higher stages of moral development. This suggested that religion, as a cultural factor, played a role in moral development and appeared to be absent in Kohlberg's model. A second cultural factor related to the difference between Western and non-Western cultures and how their value systems varied in relation to Kohlberg's model (Miller & Bersoff, 1992). It was hypothesised that community orientated non-Western cultures were more engaged in community related behaviours while individualised Western cultures were more engaged in individual responsibility to exhibit morally correct behaviours.

Table 2

Kohlberg's stages of moral development (1969, 1976)

Level	Stage	Description
Preconventional	1	*Obedience and Punishment Orientation:* Behaviour follows rules in order to avoid punishment
	2	*Individualism and Exchange:* Egocentric behaviour but also starting to identify that other viewpoints are valid
Conventional	3	Good interpersonal relationships: Behaviour in order to gain approval from others
	4	*Maintaining social order:* Insight into broader societal rules and norms that need to be followed
Postconventional	5	*Social contract and individual rights:* Understanding the relationship between individuals and society
	6	Universal principles: A clear set of moral and ethical guidelines that are used to guide behaviour

Kohlberg's theory was heavily criticised for being biased against women. Gilligan (1982) highlighted that Kohlberg used male participants to support his model of moral reasoning. Gilligan argued that men and women would be different in the way they make moral judgments. Gilligan (1982) highlighted that men were more justice orientated and women were more care orientated and postulated that this would influence the way they made moral judgments. This finding was identified in studies that explored moral reasoning with adolescents (Jaffee & Hyde, 2000; Thoma, Rest, & Davidson, 1991). Some studies confirmed this hypothesis (Baumrind, 1986; Lyons, 1983; Rest, 1979; Rothbart, Hanley, & Albert, 1986; Yacker & Weinberg, 1990) while other studies disconfirmed the hypothesis (Gregg, Gibbs, & Bassigner, 1994). These studies identified limitations in Kohlberg's model and as a result moral reasoning research continued. Later studies also identified similar inconsistences with the validity of some of the measures. For example, Walker (1984) identified no

difference between men and women in a study using the Moral Judgment Interview (MJI: Colby & Kohlberg, 1987). Ultimately, these limitations and lack of scientific rigor led others to re-visit and revise moral developmental theory.

1.5.1.3 Gibbs' Sociomoral Stages. Gibbs, Basinger and Fuller (1992; Gibbs, 1979, 2003, 2010, 2013) built upon Kohlberg's work and developed a Sociomoral Stage theory of moral development, which generally represented the first four stages in Kohlberg's original theory. Gibbs argued that the higher stages occurred infrequently across different cultures and were associated with education. As a consequence, they could not be considered as universal moral development stages. The Sociomoral Stage theory consisted of four stages (Table 3).

Stage 1 and Stage 2 formed the immature reasoning level and Stage 3 and Stage 4 formed the mature reasoning level (Gibbs et al., 1992). Stage 1 was concrete and superficial and moral judgments were based upon power and authority. The aspects that were incorporated into this stage appealed to a single authority, physical status, coercive rules, labels and physical aspects. The characteristics for Stage 2 were instrumental and with a focus on an individual needs. Therefore an individual could help someone with the expectation that the person would 'return the favour.' The aspects within Stage 2 were related to exchanges, equalities, rights, preferences, needs and advantages, although egocentricity remained apparent.

Mature reasoning incorporated cognitive decentration and social role taking. According to Gibbs et al. (1992) mature reasoning reflected an understanding of interpersonal relationships and society. Therefore, the characteristics for Stage 3 related to mutual relationships and prosocial behaviour. The aspects for Stage 3 related to relationships, empathetic role-taking, normative expectations, prosocial intentions, generalised caring and interpersonal approval. For Stage 4, the

characteristics were related to reasoning, which extended to a complex social system. The aspects that were considered were societal requirements, rights and values, responsibility, character, consistent practices, procedural equity and standards of conscience.

Table 3

Sociomoral Stages (Gibbs et al., 1992)

Level	Stage	Description
Immature	1: Unilateral and Physicalistic	Represents a morality of autarchic authority, physical power and rule-based consequences.
	2: Exchanging and Instrumental	Represents a morality based upon understanding and perspectives that develop through social interaction with some rigidity.
Mature	3: Mutual and Prosocial	Represents a morality based upon prosocial feeling (empathy), caring and conduct (role taking).
	4: Systemic and Standard	Maturity is represented through understanding and interaction of complex social structures with a focus on basic rights or values, societal responsibility, integrity, consistent practices and standards of conscience.

Gibbs also highlighted transition stages. A transition stage occurred where there was an overlap between aspects from 2 different stages. Individuals were positioned into transition stages depending on their responses and the scoring procedure within the manual. There were 2 transition stages that fell between each of 4 stages. According to Gibbs et al. (1992) the highest level of moral reasoning, called moral maturity, was attained when an individual based moral decisions on mutual and prosocial exchanges, which supported societal norms. A key strength for Gibbs'

theory was that it referenced criminal behaviour. Therefore, it was likely to relate to offenders, unlike Piaget or Kohlberg. Gibbs (2003, 2010, 2013) described criminal behaviour in the context of a moral developmental delay, which encompassed self-serving cognitive distortions and social skills deficiencies. Ultimately this suggested that immature moral development was causal with respect to self-serving cognitive distortions, which would increase the probability of criminal behaviour.

1.5.1.4 Moral reasoning and offenders with intellectual disabilities. Gibbs (2003, 2010, 2013) and Palmer (2003) argued that offenders demonstrated an immature moral schema and this lead to distorted cognitions and lower levels of empathy, thus increasing the risk of criminal offending. Palmer (2003) also suggested that adolescent offenders would reason at Stage 2 where they engaged in justifications that support offending behaviours. Earlier studies found significant relationships between IQ and levels of moral development in children (Hoffman, 1977). Gibbs (2003) suggested that adolescents demonstrated Stage 2 reasoning regarding justice and the law (Blasi, 1980; Gavaghan, Arnold, & Gibbs, 1983; Gregg et al., 1994). Therefore, because Stage 2 reasoning was characterised by egocentric thinking and meeting one's needs, the likelihood of making moral decisions that were unlawful or antisocial were higher. These studies were important, however they focused on children and adolescents and could not be generalised to adult offenders with IDs.

In two papers, Langdon et al. (2010a, 2011a) described the links between moral reasoning theory and criminal offending for adults. Within these two papers a number of points were highlighted. First, the majority of moral reasoning studies were conducted with children and adolescents with IDs. Secondly these studies took place almost 2 decades ago and they were out-dated. Thirdly, the methodological approaches that were used in these studies were flawed. These flaws related to

sampling bias as some of the studies used convenience samples, which suggested that might not produce representative results (Field, 2009, 2013). Studies did not describe their sample adequately, which made drawing definite conclusions complex. Another methodological issue has been previously mentioned and related to the definition of ID in some of these studies. Several of these studies included participants in the 'borderline' range and would not meet the current criteria for an ID using the DSM-V (APA, 2013). Therefore, the results in these studies could not be generalised to an ID population (Langdon et al., 2010a, 2011a).

In terms of moral reasoning, Langdon et al. (2010a, 2011a) suggested that non-offenders with IDs were more likely to demonstrate immature reasoning, which was based on rules and authority. This also suggested that lower stages of moral reasoning appeared to be a protective factor. In contrast, they suggested that offenders with IDs would have a higher IQ and that they would demonstrate Stage 2 reasoning, which was based on egocentric decision making and getting their needs met. Going further up the moral reasoning stages, they proposed that people without IDs would demonstrate mature moral reasoning (i.e. Stage 3 and Stage 4). This meant that they would be less egocentric and more focused on mutual and prosocial relationships, resulting in minimal offending behaviour. They concluded that further research was required with a focus on the development and design of tools for measuring moral reasoning and the related constructs for people with IDs. They highlighted the importance of the relationship between moral reasoning and criminal behaviour. Langdon et al. (2011b) were able to explore this relationship with a group of male offenders and non-offenders with and without IDs. Their study found that offenders with IDs demonstrated Stage 2(3) reasoning. This finding concurred with McDermott and Langdon (2014) where they identified offenders with IDs in Stage 2(3) reasoning

and non-offenders with IDs in Stage 2 reasoning. Their findings supported the link between ID offenders and immature moral reasoning. However, non-offenders with IDs had greater immaturity as they were in Stage 1 reasoning on some of the moral reasoning constructs.

In summary, moral reasoning studies have been in existence for a very long time. There was a large focus on children and adolescents. This prompted moral reasoning studies with non-intellectually disabled adults, offenders and more recently, ID populations. Given the present position of moral reasoning studies, there was a need to explore and develop an understanding of moral reasoning and suitable measures with an ID population. In this context Gibbs (2003) suggested that a delay in moral judgement was coupled with cognitive distortions and problem solving deficits.

1.5.2 Moral reasoning and cognitive distortions. Gibbs (2003, 2010, 2013) suggested that cognitive distortions were the drivers behind criminal behaviour in young offenders because information was inaccurately perceived. In other words, antisocial behaviour developed based on perceptions that were structured by moral schemas of self-serving cognitive distortions. Over time, the moral schemas reflected the young offenders moral stage. This implied that there was a link between cognitive distortions and moral development in young offenders (Hoffman, 2000).

Cognitive distortions have been described as persistent and systematic errors in reasoning (Barriga et al., 2001). As a consequence, they produced biased ways of interpreting experiences and lead to problematic emotional and behavioural responses. Gibbs (2003, 2010) and Palmer (2003) have argued that offenders demonstrated an immature moral schema and this has led to distorted cognitions and lower levels of empathy, thus increasing the risk of criminal offending. According to

Gibbs et al. (Gibbs, 1991, 1993; Gibbs et al., 1995) a typology of *self-serving* cognitive distortions existed in the context of offending (Table 4). According to Gibbs, self-serving cognitive distortions were divided into two categories, called *primary* (i.e. self-centered) and *secondary* (i.e. blaming others, minimising / mislabeling and assuming the worst). Gibbs (1991, 1993; Gibbs et al., 1995) suggested that primary self-serving cognitive distortions were related to egocentric bias and the prevention of damage to self-image. Secondary self-serving cognitive distortions were related to rationalising, neutralising empathy, guilt and diminishing cognitive dissonance between offending behaviour and self-image.

Table 4

Typology of cognitive distortions for offenders (Gibbs, 1991; 1993)

Cognitive Distortion	Description
Self-centered	Cognitions that relate to individual status, needs, rights and feelings. Others views and desires are not considered.
Blaming	Attribute blame to others, a group or momentary aberration, or victim
Minimising / mislabeling	Interpret antisocial behaviours as causing no harm, acceptable or reasonable. Absence of responsibility for behaviour.
Assuming the worst	Attributing hostile intentions to situations; considering the worst case scenario as the only interpretation of a situation; assuming no resolution is possible

Gibbs (1993, 2010) suggested that cognitive dissonance was when a cognitive distortion distanced an offender from blame and the consequences of their behaviour. Therefore, the cognitive distortions in Table 4 protected the offender against

psychological stress that was generated by their harm to others, and they were able to engage in offending behaviour.

1.5.2.1 Cognitive distortions and offending. Several studies explored cognitive distortions and offending behaviour. Many of these studies focused on men that have committed intimate partner violence offences (Cavanagh, et al., 2001; Goodrum, et al., 2001; Hearn, 1998; Presser, 2003; Reitz, 1999; Wood, 2004) and men that have committed sex offences (Abel et al., 1989; Blumenthal, Gudjonsson, & Burns, 1999; Ward, 2000). These studies concluded that cognitive distortions played a role in initiating and maintaining offending behaviour. For example, Ward (2000) identified how sex offenders used blame as a way of constructing causal explanations for their offending behaviour. In their study, some of the sex offenders blamed their victims for 'luring' them into committing their offences. Therefore, blame was a form of external causality where the reason for offending was attributed to external factors, such as the victims' behaviour. Minimisation was when an offender acknowledged their offence but did not recognise the severity of their offence and therefore avoided responsibility for their offence. The studies above identified cognitive distortions that were related to offending behaviour. However, they were related to specific offending behaviour (i.e. sex offending and domestic violence) and this suggested that other offending behaviours might be related to other specific cognitive distortions.

In order to explore this further, Barriga, Landau, Stinson, Liau and Gibbs (2000) introduced the terms *self-serving* and *self-debasing* cognitive distortions. They suggested that self-serving cognitive distortions were associated with externalising behaviours, such as aggression or antisocial behaviour, and that self-debasing cognitive distortions were associated with internalizing behaviours, such as anxiety or depression. Their findings were identified in earlier studies where Dodge (1993)

identified self-serving cognitive distortions as a bias form of social information processing; and Gibbs et al. (1995) used self-serving cognitive distortions as a central theme for the EQUIP programme, which was a treatment programme for adolescent offenders. These studies offered a good grounding for understanding cognitive distortions and offending behaviour. However, they excluded offenders with IDs and their findings cannot be generalised to ID populations.

1.5.2.2 Cognitive distortions, offending and intellectual disabilities. It has been well established that people with IDs have deficits in attention, memory, concentration, language and executive functioning (Carr et al., 2007). Therefore, their ability to interpret situations would inherently be different to those without IDs. Few studies have attempted to investigate how adult offenders with IDs interpret and respond to situations in which they have committed offences (Langdon et al., 2011a; 2011b).

Barriga et al. (2000) attempted to explore this conundrum in a sample of young offenders. They proposed that self-centered, blaming, minimising and assuming the worst were types of self-serving cognitive distortions that were related to offending or anti-social behaviour. However, their study was limited because it focused on adolescent offenders and a recent study addressed this gap.

Langdon et al. (2011b) explored the relationship between cognitive distortions and empathy amongst a sample of offenders and non-offenders, with and without IDs. The findings indicated that male offenders with IDs experienced the highest levels of cognitive distortions. The mean scores for minimising, opposition defiance, blame and assuming the worst were the highest for offenders with IDs in their study. Langdon at el. (2011b) indicated that high levels of cognitive distortions in offenders with IDs were also identified in other studies that have focused on sex

offenders with IDs (Broxholme & Lindsay, 2003; Lambrick & Glaser, 2004; Langdon, et al., 2007; Langdon & Talbot, 2006; Lindsay & Michie, 2013). Langdon et al. (2011b) concluded that men with IDs scored higher on cognitive distortions than men without IDs; that offenders scored higher on cognitive distortions than non-offenders; and that offenders with IDs reported the most cognitive distortions. They suggested that their study was the first to endorse cognitive distortions in offenders with IDs that were convicted of other offences, as opposed to sex offences. Their findings paved the way for further research, which would explore cognitive distortions in male ID offenders with mixed offences.

1.5.2.3 Summary. A number of studies identified different types of cognitive distortions. Self-serving cognitive distortions were recognised as central to offending behaviour in offenders with IDs (Barriga et al., 2000; Langdon et al., 2011b, 2013). While this was significant, some of these studies were limited. Firstly, they focused on exploring cognitive distortions with young offenders (Barriga et al., 2000; Gibbs et al., 1995; Hoffman, 1977) and sex offenders (Ward, 2000). This limited the generalisability of their results to a wider ID population. Furthermore, this highlighted the need for further research, which explored cognitive distortions with offenders with IDs. Some studies addressed this gap (Langdon et al., 2011b, 2013). One study in particular explored cognition and problem solving (Lindsay et al., 2011a). According to Palmer (2003), moral development was mediated through poor cognitive skills and decision-making. Mediation variables explained the relationship between variables (Field, 2009, 2013). Therefore, poor cognitive skills and poor decision-making were likely to affect moral development negatively. Given this link the next section will explore the role of problem solving with offenders with IDs.

1.5.3 Moral reasoning and problem solving. Problem solving was described as a self-directed cognitive behavioural process where an individual generated effective solutions for a specific problem (D'Zurilla & Nezu, 1990; D'Zurilla et al., 2002). McMurran and McGuire (2005) suggested that problem solving was a goal directed behaviour, which activated an individuals' reasoning ability. This suggested that problem solving was linked to reasoning ability. According to D'Zurilla and Nezu (2001) the process involved a problem and a conscious effort to develop a solution. A problem was defined as a problematic every day situation (D'Zurilla & Nezu, 2010). A problem could be time limited, acute, chronic or linked to a series of events. A solution was a response that was the outcome of the problem solving process (D'Zurilla & Nezu, 2010).

McMurran and McGuire (2005) argued that the ability to solve a problem was a skill that needed to be learnt, implying that there was a learning component to D'Zurilla and Nezu's (2001) definition of problem solving. It was well established that people with IDs experienced problems with attention, memory, perception and reasoning which will affect their ability to learn (Davey, 2008). Therefore, individuals with learning deficits would inherently struggle to solve problems. In this context, it was assumed that adults with IDs would experience difficulties with problem solving given their known difficulties with learning.

In the previous section, moral development was linked with poor cognitive skills and decision-making (Palmer, 2003; Palmer & Hollin, 1998); and self-serving cognitive distortions and immature moral reasoning stages were identified for offenders with IDs (McDermott & Langdon, 2014; Langdon et al., 2011b). These studies suggest that there was an overlap between cognitive distortions and the cognitive process of approaching solving problems. Approaching problems required a

goal directed manipulation of information (McMurran & McGuire, 2005). The information processing approach (IPA; Figure 1) is a cognitive model of how information was stored and used. According to Miller (2001), information was received using our senses, encoded into brief episodic memory, transformed, stored into autobiographical memory, and retrieved for relevant behavioural responses.

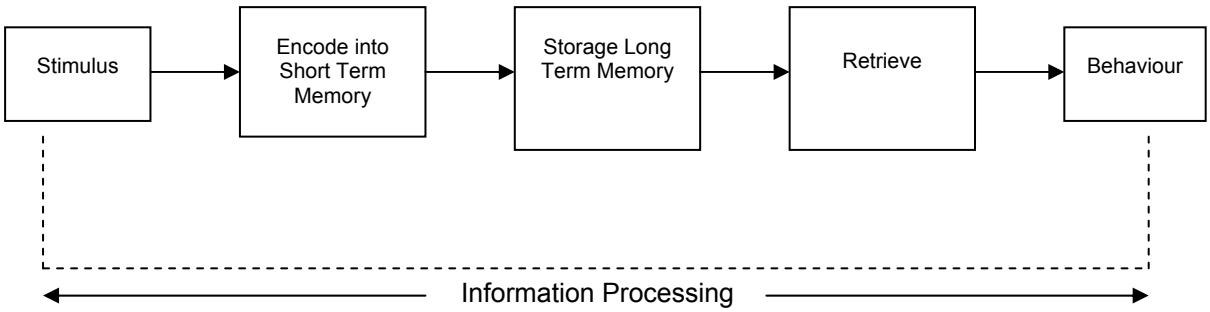

Figure 1. The information processing approach which includes data input, transformation and behavioural output.

In the context of the IPA, people with IDs would have difficulties with information processing which could lead to misinterpretations of their experiences. As a consequence of repeated misinterpretations, cognitive distortions developed and shaped their responses to situations or future problems. Another factor that might affect problem solving is cognitive dissonance. Lindsay, Marshall, Neilson, Quinn and Smith (1998) conducted a study with sex offenders with IDs (n=4). In their study they highlighted how cognitive dissonance between pro-offending cognitions and non-offending cognitions contributed to difficulties in 'choosing the right solution.' In their study, cognitive dissonance was related to accepting or defending two contradictory cognitions, which resulted in problem avoidance. It was argued that cognitive dissonance influenced the outcome of problem solving. While Lindsay et al. (1998)'s study was useful, it was based on a small sample size and the issue of cognitive dissonance needed to be explored further with an adequate sample size.

In this context, Dodge (1986) described a social information-processing model that incorporated four cognitive stages before an individual could select a socially suitable behaviour. Notably, Dodge's model used the term *social information processing*. They suggested that social information processing referred to problem solving within a social or interpersonal context (D'Zurilla et al., 2002). Given that violent or sex offences occurred in social contexts, this was important as it connected into Gibbs Stage 2 reasoning where social exchanges were associated with offending behaviour (McDermott & Langdon, 2014; Langdon et al., 2011b).

Table 5

Dodge's social information processing stages (1986)

Stage	Description
Stage 1	Encoding situational cues
Stage 2	Mental representation and interpretation of cues
Stage 3	Selecting possible responses for the situation
Stage 4	Evaluation and response selection

In Table 5, the cognitive stages illustrated that information processing started with encoding, which was followed by mental representation and interpretation. This provided the basis for response selection and an evaluation of the response selection. Dodge concluded that cognitive skills were related to problem solving. Crick and Dodge (1994; 1996; Dodge, 1986; Dodge & Price, 1994) built on the social information-processing model. Therefore, distortions in information processing were likely to lead to maladaptive behaviours. In Table 6, Crick and Dodge (1994) suggested that individuals approached a situation with existing social knowledge and

a selection of memories of how to interact, based on their previous experiences. Information was received through social cues and their response was a consequence of how the cues were interpreted.

Table 6

Six-stage social information processing model (Crick & Dodge, 1994; 1996)

Stage	Description
Stage 1	Encoding of internal and external cues
Stage 2	Interpretation of the cues
Stage 3	Selection of goals
Stage 4	Response access
Stage 5	Response decision
Stage 6	Behaviour enactment

Notably, the model was developed for use with children that demonstrated aggressive behaviours. It was hypothesised that ID populations might experience similar difficulties or cognitive skills deficits, which could lead to poor problem solving ability. Therefore, when individuals had cognitive skills deficits they were likely to demonstrate 'faulty' information processing and poor problem solving behaviours. It was hypothesised that adults with IDs would have similar information processing shortfalls because of their cognitive deficits. As a result, they would be limited in their ability to develop sound problem solving behaviours.

1.5.3.1 Problem solving and offenders with intellectual disabilities.

According to D'Zurilla and Goldfried (1971) the reason that offenders developed

maladaptive problem solving styles was because they did not progress through the five problem solving stages, which were illustrated in Table 7.

Table 7

D'Zurilla and Goldfried's five-stage model of social problem solving (1971)

Stage	Skills Needed
Stage 1: Problem orientation	Attention; concentration; memory; impulse control
Stage 2: Problem definition	Ability to manipulate and analyse information
Stage 3: Generating alternative solutions	Consequential thinking; generating alterative solutions; perspective taking
Stage 4: Decision making	Ability to communicate and resolve the problem based on the chosen solution
Stage 5: Solution implementation and verification	Reflection to determine whether the problem was solved effectively; storage of the problem solving mechanism into memory

Alongside each stage were the skills that were required in order to progress successfully to the next stage. Spivack, Platt and Shure (1976) refered to these skills as the interpersonal cognitive problem solving skills and they have aligned them with D'Zurilla and Goldfried's problem solving model (1971). This suggested that well-developed cognitive skills were required to solve problems and it also raised questions about ID populations and their ability to develop and apply cognitive skills.

Stage 1 and Stage 2 were considered to be a metacognitive process that served as the motivation to identify and address the problem (D'Zurilla & Nezu, 2010). These two stages were referred to as *problem solving proper* (D'Zurilla & Nezu,

1999). Stage 3 and Stage 4 were considered to be problem solving skills and they illustrated the process of generating alternative solutions, and making decisions to implement the most effective solution. Based on this five-stage model, D'Zurilla and Nezu (1990) developed a measure of social problem solving, called the Social Problem-Solving Inventory (SPSI). The SPSI comprised of two major scales: Problem Orientation Scale (POS) and the Problem-Solving Skills Scale (PSSI). However, there were problems with the validity of the scales (D'Zurilla & Nezu, 2010) and D'Zurilla et al. (2002) developed a revised five-dimensional scale that consisted of two problem orientation categories and three problem solving styles.

In Table 8, Positive Problem Orientation was a constructive problem solving approach, which appraised the problem as a challenge rather than a threat and conveyed the belief that the problem could be solved. Negative Problem Orientation was a dysfunctional approach where the problem was seen as a threat and conveyed the belief that the problem could not be solved. These orientations were accompanied by frustration whenever a problem was encountered. A Rational Problem Solving style was a constructive approach, which was coherent with deliberate attempts to seek out effective solutions. An Impulsive/Careless Style was a dysfunctional style, which was characterised by impulsive, hurried and incomplete attempts to resolve problems. For this style, fewer alternative solutions were generated and the end result was often unhelpful. The Avoidance style was also a dysfunctional approach, which was characterised by avoidance, inaction or dependence. This culminated into waiting for the problem to dissipate, which reinforced problem avoidance.

Table 8

Problem-solving styles (D'Zurilla et al., 2002)

Problem-Solving Style	Description
Positive Problem Orientation (PPO)	Identifies constructive problem solving and cognitions.
Negative Problem Orientation (NPO)	Identifies dysfunctional and inhibitive problem-solving strategies.
Rational Problem Solving (RPS)	Identifies rational, thoughtful and methodical use of effective problem-solving strategies.
Impulsivity / Carelessness Style (ICS)	Identifies poor problem-solving strategies that are limited, impulsive, careless and partial.
Avoidance Style (AS)	Identifies poor problem-solving strategies that are passive, delayed or greatly dependent on others.

The problem solving styles in Table 8 were central to psychological interventions with offenders. Subsequently, problem-solving therapy (PST) was developed as a clinical intervention that focused on problem-solving attitudes and developing problem-solving skills. According to D'Zurilla and Nezu (2010), PST was designed to identify problematic problem solving styles, reduce psychopathology and improve psychological functioning through improved problem solving. According to McMurran and McGuire (2005) problem solving interventions were used to treat offenders in the criminal justice systems across the world. McMurran, Egan, Richardson and Ahmadi (1999) assessed problem-solving skills before and after treatment for offenders in a secure forensic unit. Their findings showed significant improvements in the ability to solve problems after treatment. Notably, PST was a cognitive behavioural psychological intervention and was found to be effective for a

range of populations (Nezu, 2004), including people with IDs (Nezu et al.,1991), along with anger problems (Feindler, Marriot, & Iwata, 1984).

Other studies explored problem solving with offenders (Ireland, 2001; McMurran, Fyffe, McCarthy, Duggan, & Latham, 2001). Zamble and Quinsey (1997) identified deficits in problem solving skills for offenders. McMurran et al. (1999) suggested that problem solving deficits resulted in offending behaviour because of maladaptive problem solving styles. This research was extended to studies with ID offenders (Barnett & Wood, 2008; Langdon et al., 2013; Lindsay et al., 2011a). In another study, attributional bias and problem solving deficits were compared using a group of ID males with aggression and a group of ID males without aggression (Basquill, Nezu, Nezu, & Klein, 2004). Two key findings were highlighted in their study. First, participants in the aggressive group presented with significantly higher cognitive distortions when compared to the non-aggressive group. Second, overall deficits in problem solving were identified in the aggressive group. Deficits in the ability to generate a range of solutions to a defined problem were identified in the aggressive group.

In summary there was some evidence that problem solving was an important consideration for offenders and offenders with IDs. Some treatment programmes showed that problem-solving interventions for offenders with IDs were effective (Lindsay et al., 2011a). Despite these studies, the focus on offenders with IDs is still minimal and further studies were required using integrated models of problem solving and related measures (Basquill et al., 2004; Lindsay et al., 2011a).

1.5.4 Connecting theories: A developmental social information processing model of moral judgement and behaviour. The previous section was related to moral development, cognitive distortions and problem solving as individual

theoretical frameworks. Garrigan and Langdon (in press) have integrated these theories by building on the work of Arsenoio and Lemerise (2004). They argued that a model, which integrated moral development theory, neuroscience, neuropsychology and problem-solving theory was missing. They proposed a developmental theory that was dynamic and would have the ability to predict behaviour. Arsenio and Lemerise (2004) argued that moral domain theory and social information processing models (SIP) could be integrated. Moral domain theory suggested that moral concepts were learnt during childhood and adolescence. Concepts of *fairness* and *rights of others* were learnt as themes rather than within global stages, that were identified by Piaget and Kohlberg. Their rationale for integrating these theories was because they shared the following assumptions:

- Children's interpretation of their social environment was related to their behaviour;
- A focus on behaviour which involves intentional harm and victimisation;
- Interests in aspects of social functioning

According to Arsenio and Lemerise (2004), the SIP model represented the 'real-time' processing and decision-making. This included encoding and interpreting social cues, which then guide behaviour (i.e. response selection from a list of possible responses in a particular situation). Similarly, the domain model guided behaviour and was dependent on how social situations were interpreted. However, the domain model suggested that social situations could either be interpreted on moral (i.e. issues of fairness or justice) or conventional (i.e. rules and prosocial behaviours) grounds. A major criticism of Arsenio and Lemerise (2004)'s model was that they focused on

children and adolescents. This was problematic as it excluded adults and ID populations.

As a direct response, Garrigan and Langdon (in press) produced a developmental theory, which suggested that changes occurred with maturation and was consistent with Gibbs Sociomoral Stage theory (Gibbs et al., 1992). Garrigan and Langdon (in press) said that: "One of the difficulties within this area is that moral development theory, neuroscience and neuropsychology, along with social problem-solving theory have not been integrated effectively into a developmental theory that is dynamic and recursive, and context-dependent, such that it should effectively predict behaviour" (Garrigan & Langdon, in press, p.11). They proposed an integrated model of moral development which included moral developmental theories, social information processing, perspective taking and aspects of neuroscience.

Garrigan and Langdon (in press)'s Developmental Social Information Processing Model of Moral Judgement and Behaviour is illustrated in Figure 2. Within their model there was an 'inner' and an 'outer' circle.' The outer circle reflected the processes that occurred in vivo within a situation, such as responding to problems in the moment they occur. The outer circle was heavily influenced by situational cues. Therefore, problem-solving styles were biased by how individuals interpreted cues. The outer circle incorporated empathy and emotion recognition using components in Hoffman (2000) and Lemerise and Arsenio's (2000) models of moral development, and was heavily based upon social information processing (Crick & Dodge, 1994).

The inner circle reflected the distal developmental and social constructs that effect proximal social information processing, both developmentally over time, and while decisions are activey being made. However, it is important to recognise that

there is makred overlap between the two. As these distal higher order constructs change and evolve, the process of social problem solving and moral reasoning becomes more mature (i.e. the outer circle). The inner circle comprised deficits in abstract reasoning, attention, inhibition and processing speed which were highlighted as areas of difficulty for people with IDs (Carr et al., 2007; Davey, 2008; Spivack et al., 1976). It was hypothesised that social information processing became more effective through ongoing social experiences in which moral judgements could be made along with increased cognitive and emotional capacity.

Turning back to the outer circle, in Step 1, they hypothesised that situational cues regulated what was encoded and that deficits in attention biased the encoding of situational cues, resulting in limited information on which to develop a response. Step 2 of the outer circle was aligned to Crick and Dodge's (1994) social information processing model, which involved perspective taking and attributions of intent. Garrigan and Langdon (in press) linked this with Theory of Mind (ToM) and the ability to mentalise (Frith & Frith, 2006). They suggested that memory and attention were also connected with ToM skills which if underdeveloped, would result in egocentric decision-making and poor moral judgement. Step 3 and Step 4 of the outer circle related to goal selection and response access. These stages also use ideas from Crick and Dodge's (1994) social information processing model. During these stages, antisocial behaviour was associated with deviant information processing (Fontaine, 2008) and reduced empathic arousal (Hoffman, 2000). According to Damasio (1994) somatic markers referred to emotions that corresponded with bodily (somatic) sensations through repeated experiences. Therefore, if an individual associated a somatic marker with a negative outcome the end result would be a negative emotion such as anger, which resulted in an aggressive response. In Step 3 and Step 4, it was

hypothesised that deficits in empathic arousal, abstract cognitive ability, emotion regulation and somatic markers will reduce the possibility of success in the next step.

Step 5 and Step 6 related to moral reasoning, moral judgement and behaviour enactment. During these steps, moral judgement was the actual response and moral reasoning was the process of using emotional and cognitive skills to determine the response. These skills included decision-making and evaluation, which relied on working memory. It was hypothesised that deficits in these abilities would have a negative impact on moral judgement and behaviour enactment.

A key strength of Garrigan and Langdon's (in press) model was that it specifically referred to people with IDs. Notably, this was not on the forefront of other moral developmental theories. Their model reflected some of the inherent difficulties that were present for people with IDs. For example, deficits in memory, attention, abstract thinking, cognitive inflexibility and brain development.

Their model was supported by evidence that children with IDs and behavioural problems tended to encode more negative cues when compared to their non ID counterparts (van Nieuwenhuijzen, Orobio de Castro, Wijnroks, Vermeer, & Matthys, 2004) and that social information processing and social problem solving deficits were identified in children with IDs (Jacobs, Turner, Faust, & Stewart, 2002; Leffert & Siperstein, 1996). Furthermore, their model was also supported by studies where individuals with IDs and aggressive behaviours appeared to have a hostile attributional bias (Basquill et al., 2004; Jahoda, Pert, & Trower, 2006) and offenders with IDs endorsed distorted and antisocial cognitions (Broxholme & Lindsay, 2003; Langdon et al., 2011b; Langdon & Talbot, 2006; Lindsay & Michie, 2004c; Lindsay et al., 2006b).

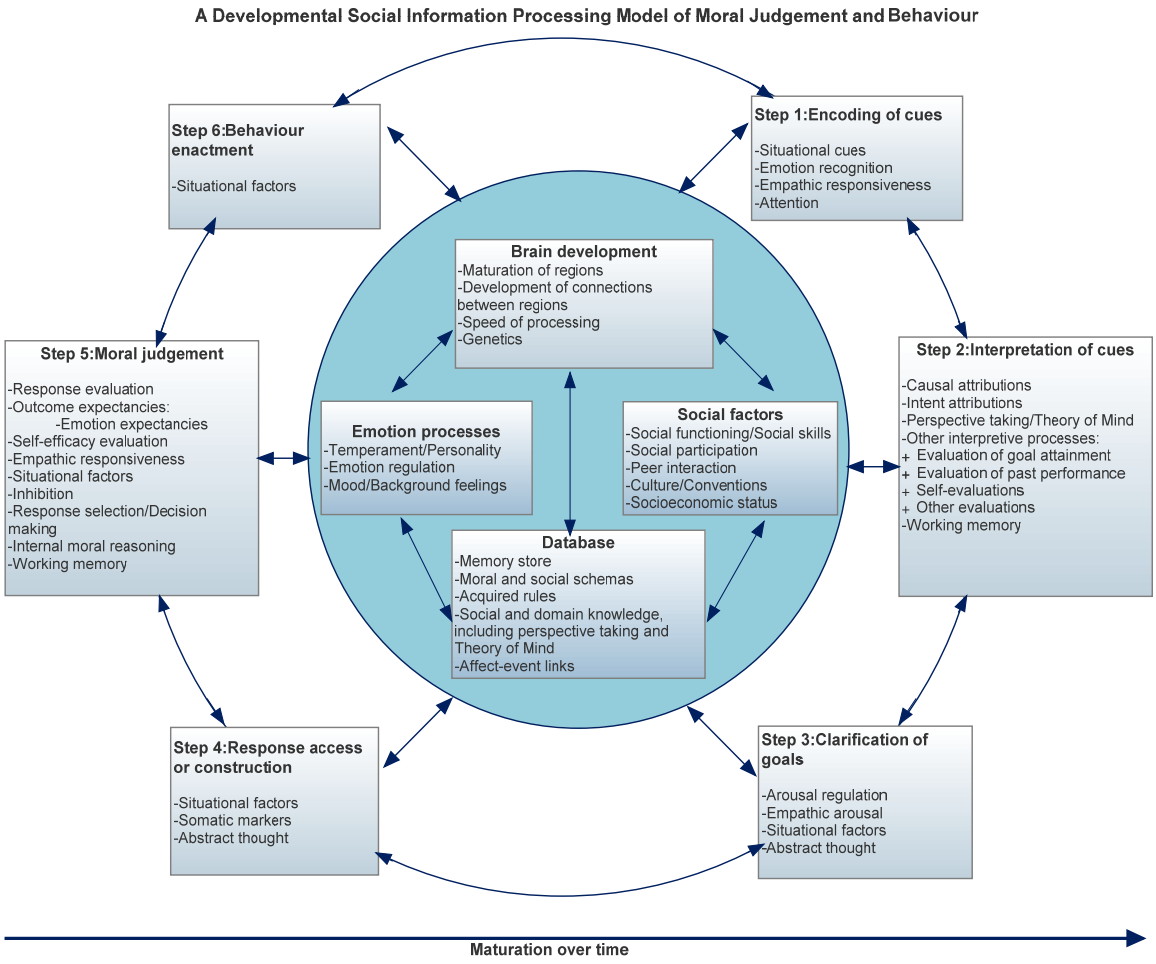

Figure 2. Garrigan and Langdon (in press) proposed a Developmental Social Information Processing Model of Moral Judgement and Behaviour.

In sum, Garrigan and Langdon's (in press) model supported findings where moral reasoning in adult offenders with IDs was different to their non-offending counterparts (Langdon et al., 2010; 2011a; 2011b; Langdon, Murphy, Clare, & Palmer, 2010b; McDermott & Langdon, 2014). Their model hypothesised that moral reasoning for adult offenders with IDs was related to self-serving cognitive distortions which leads to negative responses within the context of the law, legal justice and stealing. This integrated model attempted to connect existing theories in a coherent structure. To the author's knowledge, this model was not presented in previous studies and was a novel method of incorporating existing theories of moral

development. As with all new theories, there were limitations to Garrigan and Langdon's model. First, their model needed to be tested for validity and robustness. Second, they connected complex factors with hypotheses of how these elements could interact. These hypotheses needed to be tested further. These limitations were seen as an opportunity to investigate this theory further. Because this was a developmental model, the current study used Gibbs Sociomoral Stage theory as the main theoretical framework and references were made where connections were identified in Garrigan and Langdon's (in press) model. However, it was not within the scope of the current study to explicitly test Garrigan and Langdon's (in press) model.

1.6 Development of the Research Study

The current study was designed to explore moral reasoning, cognitive distortions and problem solving for offenders with IDs.

1.6.1 Theoretical and clinical rationale. A number of factors were considered for the theoretical and clinical rationale. Firstly, there appeared to be few studies that focused on moral reasoning with ID populations (Langdon, 2010a, 2011a). Seemingly, there were even fewer studies with offenders with IDs (Langdon, 2010a, 2011a; Lindsay, Hastings, Griffiths, & Hayes, 2007a). The studies that included offenders with IDs have focused on rehabilitation programmes in prisons (Lindsay, Hastings, & Beech, 2011b), sex offenders with IDs (Boer, et al., 2004; Lambrick & Glaser, 2004; Langdon & Talbot, 2006; Lindsay, Elliot, & Astell, 2004b), risk assessment (Lindsay & Beail, 2004a; McMillan, Hastings, & Coldwell, 2004), empathy for offenders with IDs (Proctor & Beail, 2007) and youth with IDs (Campagne & Harter, 1975). These studies did not focus on moral development.

Secondly, the current study included a literature review for studies relating to moral development with offenders with IDs. The findings indicated that offenders

with IDs had higher levels of moral maturity than their non-offender counterparts and that moral reasoning for ID offenders would fall into Stage 2(3) of Gibbs Sociomoral Stage theory (Gibbs, 2013). These findings were replicated in other studies (Langdon et al., 2011b; Langdon et al., 2013; McDermott & Langdon, 2014) and it was hypothesised that similar results should be found in studies with ID populations. One of the reasons that offenders were more mature was related to aspects within Stage 2(3) where they were more likely to struggle with perspective taking and at the same time engage in more social experiences than their non-offender counterparts. They were also more likely to endorse cognitive distortions in social situations, which made them more susceptible to engaging in antisocial or criminal behaviours. Notably, there were only a few studies, which explicitly explored moral development with ID populations. This implied that further research should be done to explore moral development and offending behaviour with adult male ID offenders.

Third, the literature review found 3 studies that focused on problem solving with offenders with IDs. Not many studies explored the connection between moral development and problem solving with offenders with IDs, with the exclusion of McMurran et al. (2001). Some theoretical frameworks suggested that offending was related to poor problem solving (D'Zurilla et al., 2004) or cognitive distortions and information processing (Crick & Dodge, 1994, 1996). Garrigan and Langdon (in press) also connected problem solving and cognitive distortions in a theoretical context. This provided the basis for exploring the connection between moral development and problem solving.

Fourth, the literature review highlighted that there were a number of cognitive distortions measures that had been used with offenders with IDs. Of these measures, the HIT was used with offenders and non-offenders with IDs (Langdon et al., 2011b,

2013). However, there was no psychometric data for the HIT with ID populations. This suggested that an investigation of the psychometric properties for the HIT was required to see if it could be used in future studies with ID populations.

Fifth, in the literature review, the majority of studies with offenders with IDs were conducted with sex offenders. Few studies were conducted with offenders with IDs and multiple offences (i.e. assault, theft). This suggested that further studies with offenders with IDs and multiple offence types were required.

Sixth, the issue of cost was highlighted. Complexity, prevalence and costs of incarcerating offenders with IDs were highlighted (Hayes, 2004; Holland et al., 2002; Langdon et al., 2010b; Lindsay, 2002; Murphy et al., 1995; Simpson & Hogg, 2001). It was expensive to place offenders with IDs into secure forensic hospitals. Given the high costs and the current economic climate, research with ID populations was essential so that treatment in secure settings can be improved and evidence-based.

Seventh, offenders with IDs are a complex group with equally complex risk factors. For example, aggression and risk to others (Novaco & Taylor, 2004; Taylor, 2002; Taylor et al., 2002), personality disorders (Lindsay et al., 2006), alcohol and increased offending patterns (Lindsay et al., 2013; Lindsay, Steptoe, & Quinn, 2012; McGillivray & Moore, 2001) and poor coping skills were identified (Klimecki et al., 1994; Holland, 2004; Lindsay et al., 2011a). Offenders with IDs were also at risk of mental health difficulties (Murphy, Holland, Fowler, & Reep, 1991), which had a negative effect on mental health services. These studies highlighted the potential for high levels of comorbidity and crossovers between services that provided psychological interventions. Because of this, research with ID populations was essential.

Lastly, it was envisaged that future studies addressing the issues above would support the development of intervention programmes for offenders with IDs. Therefore, the clinical implications of future studies could influence intervention programmes that focused on moral reasoning and other related factors such as problem solving and cognitive distortions. Some moral reasoning based interventions were effective in reducing offending (Schlaefi, Rest, & Thoma, 1985) while others showed limited effects (Copeland & Parish, 1979). More recent studies found that offence related deficits were an important focus for interventions that attempted to improve moral reasoning abilities (Ashkar & Kenny, 2007). For offenders with IDs the EQUIP programme showed improved perspective taking and reduced levels of cognitive distortions (Langdon et al., 2013). More of these studies were required.

1.6.2 Methodological rationale. Methodological limitations were identified in previous studies with ID populations (Langdon et al., 2010a, 2011a). A review of current studies highlighted similar limitations. For example, the use of unstandardised measures, poor designs and small sample sizes (de Vaus, 2001).

This suggested that there was a need for further studies with sound methodological approaches and valid measures. The issue of using measures that were adapted for use with ID populations was raised (Lindsay et al., 2006). An adapted version of the SPSI-R (D'Zurilla et al., 2002) was used with offenders with IDs and appeared to be a psychometrically valid and reliable problem solving measure. The SRM-SF was a reliable measure of moral reasoning for use with ID offenders (McDermott & Langdon, 2014; Langdon et al., 2010b). Langdon at el. (2011b) used the HIT (Barriga et al., 2001) to identify cognitive distortions for offenders with IDs. However, they indicated that the HIT had not been validated for use with offenders with IDs.

1.6.3 Summary. There appears to be a shortage of empirical studies, which explored the relationship between moral reasoning, distorted cognitions and problem solving in adult male offenders and non-offenders with IDs. Some studies that used unstandardised measures and were subject to methodological flaws. Furthermore, early studies used theories of moral development that were out-dated. Gibbs' Sociomoral Stage theory (Gibbs et al., 1992; Gibbs, 2003, 2010, 2013) included information processing and cognitive distortions while Crick and Dodge focused on problem solving (1994; 1996; Dodge, 1986; Dodge & Price, 1994). Garrigan and Langdon (in press) proposed a Developmental Social Information Processing Model of Moral Judgement and Behaviour, which required further research to assess its validity.

The current study provided a response by exploring the relationship between moral reasoning, distorted cognitions and problem solving in male offenders and non-offenders with IDs. Second, the differences in cognitive distortions, moral development and problem solving between offenders and non-offenders were explored. Third, the aim was to validate an adapted a measure of distorted cognitions for people with IDs. Lastly, the study aimed to provide useful insights into clinical interventions for offenders with IDs. It was envisaged that the findings from this study would contribute to current clinical practice.

1.6.4 Hypotheses. The current study aimed to investigate the relationship between moral reasoning, cognitive distortions and problem solving in male offenders with IDs. In order to explore this a group of offenders with IDs was compared with a group of non-offenders with IDs. The research hypotheses were highlighted below.

- **Hypothesis 1:** It was hypothesised that offenders with IDs would have significantly higher moral reasoning abilities than non-offenders with

IDs (Langdon et al., 2011b; McDermott & Langdon, 2014; Palmer, 2003). This was a one-tailed hypothesis.

- **Hypothesis 2:** Moral reasoning was linked with problem solving and it was hypothesised that there would be a significant difference in problem solving between offenders and non-offenders with IDs (Barnett & Wood, 2008; D'Zurilla et al., 2002; Garrigan & Langdon, in press; Lindsay et al., 2011a; McMurran & McGuire, 2005; Palmer, 2003). This was a two-tailed hypothesis.
- **Hypothesis 3a:** It was hypothesised that there would be a significant correlation between moral reasoning and cognitive distortions for men with IDs (Garrigan & Langdon, in press; Gibbs et al., 1995; Langdon et al., 2011b). This was a one-tailed hypothesis.
- **Hypothesis 3b:** It was hypothesised that there would be a significant positive correlation between moral reasoning and cognitive distortions for offenders with IDs (Garrigan & Langdon, in press; Gibbs et al., 1995; Langdon et al., 2011b).
- **Hypothesis 4a:** It was hypothesised that there would be a significant correlation between moral reasoning and problem solving for men with IDs (Basquill et al., 2004; Ireland, 2001; Lindsay et al., 1998, 2011a; McMurran et al., 1999, 2001). This was a one-tailed hypothesis.
- **Hypothesis 4b:** It was hypothesised that there would be a significant positive correlation between moral reasoning and problem solving for offenders with IDs (Basquill et al., 2004; Ireland, 2001; Lindsay et al., 1998, 2011a; McMurran et al., 1999, 2001). This was a two-tailed hypothesis.

In addition to the hypotheses, the basic psychometric properties were explored for the adapted version of the HIT.

- **Psychometric Question 1a:** Test-retest reliability and internal consistency was calcualated for the amnedend version of the HIT for men with IDs.
- **Psychometric Question 1b:** The amended version of the HIT should discriminate between offenders and non-offenders. Therefore, it was hypothesised that offenders with IDs would have significantly higher cognitive distortions than non-offenders with IDs (Barriga et al., 2001; Dodge, 1993; Langdon et al., 2011b; Gibbs et al., 1995).

CHAPTER TWO

2. Methodology

This chapter is divided into sections. The first describes the design of the study, followed by collaboration details, participants, measures, procedure, ethical considerations and a description of the data analysis. The chapter concludes with inter-rater reliability calculations and a description of the statistical analysis.

2.1 Study Design

The design for this study is a between-groups design with additional correlation and analyses to examine the basic psychometric properties of an adapted measure. The benefits of using a between-groups design and correlations were to investigate each hypothesis and the basic psychometric properties of one measure.

To address Hypothesis 1, the difference between moral reasoning was examined between offenders and non-offenders with IDs. This was repeated for problem solving (Hypothesis 2). To address Hypothes 3 and 4, a correlational design was used. The relationship between moral reasoning and cognitive distortions, and moral reasoning and problem solving for men with IDs were examined. A correlation co-efficient (r) was used to identify relationships, which could range from +1.00 to -1.00, where +1.00 is a perfect positive correlation between variables and -1.00 is a perfect negative correlation between variables (Coolican, 2009). It was generally accepted that $r<0.4$ is a weak correlation, while $0.4<r<0.7$ is a moderate correlation, and $r>0.7$ is a strong correlation. To explore the basic psychometric properties, a within-subjects design was used.

2.2 Collaboration

This study was conducted in collaboration with another trainee clinical psychologist and a clinical senior lecturer at the University of East Anglia. The reasons for conducting collaborative research was to ensure that a sufficient sample size, related to the research hypotheses, could be obtained; to increase the power of the findings through recruiting a large sample size; to address the difficulties in recruiting from an ID population (Lennox et al., 2005); and to increase generalisability through recruiting from a number of different research sites with different researchers. Furthermore, Blacker (2009) and others (Hayes, Murphy, & Sinclair, 2003) highlighted consent issues and permission to access secure facilities as obstacles when recruiting from people with IDs who have a history of criminal offending. This study was also part of a larger study, which received funding from the National Institute for Health Research.

2.3 Participants

The participants for this study were adult male ID offenders and adult male ID non-offenders. Therefore, a clinical sample consisting of two groups was recruited. The first group included male ID offenders (IDO). The IDO Group were recruited from medium and low-secure NHS and private forensic hospitals. Participants in this group were detained under the Mental Health Act (2007). Participants in the IDO Group had committed an offence, for which they were dealt with by the Crown Court in England. Consequently they were sentenced to custody within a secure hospital under Section 37 of the Mental Health Act (2007). No participants were seen in prisons.

The second group included male ID non-offenders (IDN). These participants had no known history of offending behaviour. Participants in the IDN Group were

recruited from council community learning disability teams, community day centres, NHS learning disability teams and private learning disability residential care homes. The majority of the IDN group were seen in their homes while some were seen in community centres. Specific data was not recorded and is discussed in the limitations.

2.3.1 Inclusion criteria. For the IDO Group the following criteria were applied:

- Males with a FSIQ between 50-70 and difficulties with adaptive behaviour with an onset below the age of 18. FSIQ was measured in the study. However, adaptive behaviour difficulties were assumed given that participants were currently in ID service;
- An indictable offence dealt with by a Crown Court. This criterion was also used in previous studies with ID offenders (McDermott, & Langdon, 2014; Langdon et al., 2010a);
- Ability to communicate in English language and ability to complete measures that were verbally read out aloud;
- Age between 18 – 65;
- Capacity to provide consent.

For the IDN Group the following criteria were applied:

- Males with a FSIQ between 50-70 and impaired adaptive behaviour with an onset below the age of 18.
- No known offence history;
- Ability to communicate in English language and ability to complete measures that were verbally read out aloud;
- Age between 18 – 65;

- Capacity to provide consent.

The study recruited male offenders and non-offenders because it was convenient and because recent studies using standardised measures suggested that no differences would be present (McDermott & Langdon, 2014).

2.3.2 Power and sample size. The sample size for this study was calculated using G*Power (Erdfelder, Faul, & Buchner, 1996) which has undergone rigorous testing to ensure that its accuracy was equivalent to power charts and power tables (Faul, Erdfelder, Lang, & Buchner, 2007).

To determine a sample size, numerous two-tailed hypotheses driven power analyses were undertaken (Black, 2009; Clarke-Carter, 2010). Means and standard deviations were based on a previous study that has used the same measures (Langdon et al., 2011b). An effect size of d=0.69 was obtained using the mean and standard deviations from Langdon et al. (2011b). The largest sample size was based on an independent samples t-test to determine significant differences between groups (Hypothesis 1; Hypothesis 2) and produced a sample size of N=52, or 26 participants per group. This was assuming a large effect size (f=0.8), power (1-β=0.80) and alpha level (α=0.05) using G*Power. According to Clarke-Carter (2010), in order to conduct Mann Whitney U tests, a sample size of N=50, or 25 per group, was required assuming a large effect size (f=0.6), power (1-β=0.80) and alpha level (α=0.05). For the correlational design, an effect size of d=0.76 was obtained from a meta-analysis which explored moral judgement (Stams et al., 2006) and equates to r=0.36. To achieve a power of 0.80 at the 5% significance level (using G*Power) a sample of 47 participants was required.

Because the study was a collaborative study a larger sample was required for hypotheses that were part of the other trainees study. Therefore 72 participants were

recruited and included in the data analysis, which is also 36 participants per group. The study was adequately powered for Hypothesis 1, 2, 3a, 4a and Psychometric Question 1a and 1b. Hypotheses 3b and 4b were underpowered.

2.3.3 Participant demographics. Seventy-two male participants with a diagnosis of a mild ID, based on the DSM-V criteria (APA, 2013), and an average age of 38.58 (14.66) years participated in this study. The total number of participants was split into two groups that were very close to being equal. The first group consisted of 38 non-offenders with IDs and the second group consisted of 34 offenders with IDs. Table 9 provides an overview of the age and FSIQ demographic information.

Table 9

Demographic information for total participant sample (mean and range scores)

Demographic Information	Range	Mean (SD)
Age for total sample (*N*=72)	18 - 68	38.58 (14.66)
Age IDN (*n*=38)	19 - 68	43.47 (14.17)
Age IDO (*n*=34)	18 - 59	33.12 (13.39)
FSIQ for total sample (*N*=72)	50 - 70	62.53 (4.93)
FSIQ IDN (*n*=38)	55 - 70	61.63 (4.96)
FSIQ IDO (*n*=34)	50 - 70	63.53 (4.78)

2.3.3.1 Age and Full Scale IQ. Demographic information was explored to investigate whether there were significant differences between the two groups. Levene's test indicated equal variances across the two groups and homogeneity of variance was assumed (F=0.006, p=0.940). Age scores were normally distributed. An independent samples t test was used to compare the mean age of each group. The IDO

Group was significantly younger than the IDN Group $t(71)=-3.177$, $p=0.001$ (Table 9).

For FSIQ, Levene's test indicated equal variances across the two groups and homogeneity of variance was assumed ($F=0.596$, $p=0.443$). FSIQ scores were normally distributed. An independent samples *t* test was used to compare the mean FSIQ of each participant group. The IDO Group did not have significantly higher FSIQ than the IDN Group, $t(71)=1.649$, $p=0.052$..

2.3.3.2 Demographic profile. Additional demographic data was collected and included ethnicity, marital status, dependents, level of education, physical health problems and mental health problems (Table 10).

In Table 10, the majority of the sample was White British (93%). A high proportion of the sample was single (81.9%). Very few participants had children (11.1%). The majority of the sample attended a special needs school (72.2%) and only a few attended a mainstream school (12.5%). A large proportion of the sample (49%) reported having physical health problems. The types of physical health problems that were reported included Asthma, Diabetes, Epilepsy, difficulty breathing and hypertension.

Table 10

Demographic information for total participant sample (frequencies and proportions)

Demographic information	(*N*/%)
Group	
IDN	38 (53%)
IDO	34 (47%)
Ethnicity	
White	67 (93%)
Asian or Asian British	1 (1.4%)
Black or Black British	2 (2.8%)
Not stated	2 (2.8%)
Marital Status	
Single	59 (81.9%)
Living with partner	4 (5.6%)
Divorced	1 (1.4%)
Dependents	
1 Child	6 (8.3%)
2 Children	2 (2.8%)

Level of Education	
Special needs school	52 (72.2%)
Learning support unit	9 (12.5%)
Mainstream school	9 (12.5%)
No School	2 (2.8%)
Physical Health Problems	
Yes: Total Sample (*N*=72)	35 (49%)
No: Total Sample (*N*=72)	37 (51%)
Yes: IDO (*N*=34)	13 (38.2)
No: IDO (*N*=34)	21 (61.8)
Yes: IDN (*N*=38)	22 (57.9)
No: IDN (*N*=38)	16 (42.1)
Mental Health Problems	
Yes: Total Sample (*N*=72)	39 (54%)
No: Total Sample (*N*=72)	33 (46%)
Yes: IDO (*N*=34)	23 (67.6)
No: IDO (*N*=34)	11 (32.4)
Yes: IDN (*N*=38)	16 (42.1)
No: IDN (*N*=38)	22 (57.9)
Autism	7 (10%)

Similarly, a large proportion of the sample reported to have a mental health problem (54%). The types of mental health problems that were reported included anxiety, depression, borderline personality disorder, schizophrenia and ADHD. In addition, a small number of participants had a diagnosis of Autism (10%). Physical and mental health problems were reported differently between the groups. In the IDN Group, 57.9% (*n*=38) reported a physical health problem compared with 38.2% in the IDO Group (*n*=34). This indicated a higher percentage of physical health problems in the IDN Group. In the IDO Group, 67.7% (*n*=34) reported a mental health problem compared with 42.1% in the IDN Group (*n*=38). This indicated a higher percentage of mental health problems in the IDO Group. For physical and mental health, a Kolmogorov-Smirnov test was used to assess whether the distribution was significantly different from a normal distribution. Participants were asked to report if they had a mental or physical health problem (i.e. yes or no). The data for physical health was significantly non-normal for the IDO, *D* (34)=.399, *p*=.000, and the IDN group, *D*(37)= .379, *p*=.000. The data for mental health was significantly non-normal for the IDO, *D*(34)= .429, *p*=.000, and the IDN, *D* (37)=.379, *p*=.000. A Mann-Whitney *U* test was conducted to explore the difference between the groups on physical and mental health. There was a significant difference between the two groups for mental health, $U = 481.00$, $z = -2.156$, $p = .031$. No significant differences were found for physical health, $U = 519.00$, $z = -1.655$, $p = .098$.

2.3.3.3 Offence profile. All participants in the IDN Group (*n*=38) were based in the community with supported living arrangements or in residential accommodation. All participants in the IDO Group (*n*=34) were based in secure forensic services (i.e. hospitals).

Table 11

Offence types for offenders with intellectual disabilities (frequencies and proportions)

Offence Type	N(%)
Sexual offending and indecent assault	17 (50.0)
Murder	1 (0.03)
Manslaughter	1 (0.03)
Grievous bodily harm (GBH) and assault	10 (29.0)
Arson	3 (0.08)
Armed robbery	1 (0.03)
Theft	1 (0.03)

In Table 11, half of the IDO Group were sex offenders (50%). In terms of frequency, the next most frequent offence type was GBH and assault (29%). The remainder of the offence types were small in comparison and included murder, manslaughter, arson, armed robbery and theft. The sample was recruited from October 2013 to April 2014.

2.3.4 Drop out. Five participants dropped out of the study because they found the questions too difficult or they were too anxious. A further 3 participants were excluded because they had a FSIQ score that was above 70. One participant in the IDO Group became aggressive and distressed during the screening procedure and they were excluded.

In total, 9 participants were not included, over and above of the 72 participants that were included. For all the excluded participants, questionnaires were retained but not included in the data analysis.

2.4 Measures

One screening measure, three outcome measures and a demographics questionnaire were used in this study. The measures that were used in this study were selected based on

their suitability to explore the variables of interest within the context of conducting research with people that have IDs. Measure selection was discussed with experts in the field of ID offenders (Langdon, personal communication, October 17, 2012; January 18, 2013; Lindsay, personal communication, September 08, 2012). All of the measures were purchased from the respective publishers and permission was obtained where measures were adapted for use with ID populations.

2.4.1 Wechsler Abbreviated Scale of Intelligence. Where possible, FSIQ scores were recorded from participants' files if they were conducted after 2010, and were determined using either the Wechsler Adult Intelligence Scale Third Edition (WAIS-III; Wechsler, 1997) or the Wechsler Adult Intelligence Scale Fourth Edition (WAIS-IV; Wechsler, 2008).

However, not all participants were seen in settings where files were kept (i.e. community day centres). Therefore, the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999) was administered. The WASI was an abbreviated version of the Wechsler WAIS-III. The WAIS-III consisted of 14 subtests that took approximately 90 minutes to conduct. The benefit of using the two-subtest version of the WASI was that it could be done in approximately 15 minutes.

The WASI used either two or four of the subtests within the WAIS-III to estimate a FSIQ. The two-subtest version of the WASI could be used to estimate FSIQ using Vocabulary (verbal) and Matrix Reasoning (non-verbal) tasks. The WASI was reported as a reliable measure with a mean reliability coefficient for the FSIQ (r=.98) and a test-retest reliability (r=.88) for the FSIQ two-subtest version (Kaufman & Lichtenberger, 2005). The two subtest version of the WASI also had good internal consistency, r=.89 (Kaufman & Lichtenberger, 2005), and good concurrent validity, r=.92, with the WAIS-III (Garland, 2005).

2.4.2. The Sociomoral Reflection Measure Short-Form. The socio-moral reflection measure short form (SRM-SF) was a measure of moral reasoning production (Gibbs et al., 1992). The SRM-SF consisted of eleven items that took approximately 20 minutes to complete (Appendix A). The items included structured questions about contracting and making promises with others and children, honesty, affiliation with parents and friends, life and living, property, law and legal justice. For example, participants were asked: " How important is it to keep promises, if you can, to a friend?" or "How important is it for judges to send people that break the law to prison?" Participants were asked to indicate whether they think it is "very important", "important" or "not important." This was then followed with a question, depending on their initial response: "And why is it important?" Participants' responses to items were recorded and a score was allocated.

The scoring was manualised and participants were assigned to one of Gibbs's Sociomoral stages (Gibbs, 2003, 2010, 2013; Gibbs et al., 1992). Using the manual, a rating was assigned to each item. These ratings were converted to scores per item. These scores were summed to produce a total score. The total score was divided by the number of completed items and then multiplied by 100. This generated a global stage score between 100 and 400, which corresponded with a moral stage (Table 12).

The SRM-SF required researchers to be well versed with the content and scoring procedure. In order to achieve this, the authors (Gibbs et al., 1992) specified that a minimum of 30 hours of study and practice using the SRM-SF should be undertaken prior to its use. This included overall familiarisation with the items and scoring, scoring practice per question and scoring practice per questionnaire. The SRM-SF demonstrated good test-retest reliability (r=0.88) and internal consistency (α=0.92). Gibbs et al (1992) reported that the SRM-SF showed good convergent validity through positive correlations with age (r=0.66) and verbal intelligence (r=0.49).

Table 12

Sociomoral Reflection Measure Short-Form and moral stages

Score	Moral Stage
100 – 125	Stage 1
126 – 149	Transition Stage 1(2)
150 – 174	Transition Stage 2(1)
175 – 225	Stage 2
226 – 249	Transition Stage 2(3)
250 – 274	Transition Stage 3(2)
275 – 325	Stage 3
326 – 349	Transition Stage 3(4)
350 – 374	Transition Stage 4(3)
375 – 400	Stage 4

The SRM-SF has been shown to be a reliable measure for use with ID populations in the UK (Langdon, et al., 2010a). Therefore, it was a suitable outcome measure for this study. For this study, the scoring of the SRM-SF was completed and checked by two researchers and inter-rater reliability was reported at the end of this chapter.

2.4.3 The How I Think Questionnaire. The HIT was initially developed for use with a youth population in the United States and was used to measure self-serving cognitive distortions (Barriga & Gibbs, 1996; Barriga et al., 2001). The HIT contained 54 items on a 6-point Likert scale and took approximately 20 minutes to complete. According to the manual, there were 6-point ratings from "strongly disagrees" to "strongly agree." A score of 1 was allocated when a participant "strongly disagrees" and a score of 6 was allocated when a participant "strongly agrees." Therefore, higher scores reflected higher levels of cognitive distortions. It required a fourth grade reading level, based on the Flesch-Kincaid Reading Index, which meant that it would be suitable for those with low literacy abilities (Wampler,

1988). Notably, a seventh-grade reading level was considered appropriate for professional audiences. A total score was calculated using the manual. The total scores were used to categorise responses into four categories: Self-Centred, Minimising-Mislabeling, Blaming Others and Assuming the Worst.

These categories were linked with behavioural referents, which included Physical Aggression, Opposition Defiance, Lying and Stealing. Barriga et al. (2001) reported the internal consistency to range from α=0.93 to α=0.96, which suggested excellent internal consistency. More recently, Gini and Pozzoli (2012) conducted a meta-analysis of the psychometric properties of the HIT and found excellent reliability (r=0.93), strong convergent validity and the ability to discriminate between offenders and a control group (N=8186). However, there was limited psychometric information on its use with ID populations (Langdon et al., 2011b). An anomalous responding score was also calculated for the HIT. A score that was greater than '4' was considered to be suspect and potentially unreliable.

Given this predicament, this study modified the HIT for use with ID offenders, with permission from the authors and publisher. In order to modify the HIT, the Flesch Reading Ease score (Flesch, 1948; Kincaid, Fishburne, Rogers, & Chisson, 1975; FRE) was calculated for each item (Appendix B). The FRE was also used in other studies with sex offenders who have IDs, where an average FRE score of 88.21 for all the items provided high levels of reliability and validity (Lindsay, Whitefield, & Carson, 2007b). Words that were not *British* or seemingly complex for an individual with an ID were replaced with alternatives. A total of 12 changes (Table 13) were made with an FRE mean for all 56 items of 87.31, which was consistent with a similar study (Lindsay et al., 2007b). These changes were undertaken in consultation with an expert working with offenders with IDs who has experience of using questionnaires with this population.

Therefore, a modified version of the HIT with a visual analogue scale (Appendix C) was used for this study and permission was obtained from the publishers (Appendix D). A visual analogue scale was used so that people with IDs could respond to the items without having to retain the options for responding on a Likert scale. In terms of scoring the modified version of the HIT, the scoring system was changed in order to accommodate its use with an ID population. The Likert scale was changed from a 6-point scale to a 4-point scale. A score of 1 was allocated if a participant "strongly disagrees" and a score of 4 was allocated if a participant "strongly agrees." Therefore, high scores would still reflect higher levels of cognitive distortions and be consistent with the manual.

Table 13

Modifications to the How I Think Questionnaire (HIT)

Original Item (Item Number)	FRE (%)	Rational for Change	New Item (FRE; %)
I can't help losing my temper a lot (2)	92.9	Ambiguous sentence	I lose my temper a lot (100.00)
I am generous with my friends (9)	87.9	Substituted 'Generous.'	I give a lot to my friends (100.00)
When I get mad, I don't care who gets hurt (10)	100.00	Substituted 'mad.'	When I get angry, I don't care who gets hurt (100.00)
Sometimes I gossip about other people (13)	31.5	Low FRE	Sometimes I talk about other people when they don't know (69.7)
Everybody lies, it's no big deal (14)	59.7	Low FRE	Everyone lies. It's not a problem to lie (86.4)
I have sometimes said something bad about a friend (20)	66.1	Low FRE	Sometimes I have said bad things about a friend (84.9)
If a store or home owner gets robbed, it's really their fault for not having better security (25)	65.1	Low FRE and substituted 'store.'	If shops get robbed it's their fault for not having good security (74.8)

People are always trying to hassle me (29)	78.8	Substituted 'hassle.'	People are always trying to get on my nerves (94.3)
Stores make enough money that it's ok to just take the things you need (30)	95.9	Changed 'stores' to 'shops.'	Shops make enough money that it's ok to just take the things you need (95.9)
It's important to think of other people's feelings (34)	61.2	Low FRE	I should think about others feelings (73.8)
If someone is careless enough to lose a wallet, they deserve to have it stolen (39)	61.8	Ambiguous sentence	It's ok to steal a wallet if someone leaves it behind (80.3)
When I lose my temper, it's because people try to make me mad (46)	89.5	Removed 'mad.'	When I lose my temper, it's because people try to make me angry (83.0)

2.4.4 The Social Problem Solving Inventory Revised Short-Form. The Social Problem Solving Inventory Revised Short-Form (SPSI-R-SF) was developed to identify problem orientation and problem solving abilities (D'Zurilla, et al., 2002). Notably the Social Problem Solving Inventory Revised has a long form (SPSI-R-L), with 52 items, and short form (SPSI-R-SF) with 25 items. D'Zurilla et al. (2002) suggested that when problem solving was being assessed alongside a larger test battery, it was advisable to use the SPSI-R-SF to avoid long testing sessions, participant fatigue and inaccurate responses. Because the SPSI-R-SF was much shorter, it limited the potential for participants to become confused with lengthy questionnaires, and was therefore more suitable for ID populations. The SPSI-R-SF demonstrated strong test-retest reliability (r=0.79), internal consistency (α=0.85) and convergent validity with a self-report measure of distress (D'Zurilla et al., 2002).

The SPSI-R-SF was used for males or females above the age of 13 years old and consists of 25 items taking approximately 20 minutes to complete. The authors recommend reading the measure out loud for participants with difficulties. Each item consisted of a current problem or scenario. Participants were asked to respond to each item on a 5-point Likert-type scale, ranging from "not at all true of me" to "extremely true of me." Using the

manual, a score was allocated to each item. Then, a grid sheet was used to assemble items into five scales and a total SPSI-R-SF raw score. The raw scores were plotted onto a grid to obtain standard scores, depending on the age group, which could be either young adults (17-39 years), middle-aged adults (40-55 years) or elderly adults (60-80 years). Standard scores for the SPSI-R-SF had a mean of 100 and a standard deviation of 15.

The five scales in SPSI-R-SF were used to categorise responses into problem solving styles and problem solving strategies. The problem solving orientations and styles were illustrated and explained in Table 8 in the previous chapter. They included Positive Problem Orientation (PRO), Negative Problem Orientation (NPO), Rational Problem Solving style (RPO), Impulsivity / Carelessness Problem Solving style (ICS) and Avoidance Problem Solving style (AS). High scores on the adaptive scales, which were the PPO and RPO, suggested a positive and effective problem solving style, while high scores on the dysfunctional scales, which are the NPO, ICS and AS, suggested the presence of defective problem-solving strategies. In order to interpret scores, the magnitude of "good" or "poor" problem solving ability was determined through observations of how far a standard score deviated from the mean score of 100, using the guidelines in Table 14.

A simplified version of the SPSI-R-SF was used in a previous study with ID offenders (Lindsay et al., 2011a; Appendix E). The motive for using a simplified version was to improve the understanding of the questions for participants with IDs. Lindsay et al. (2011a) conducted an exploratory factor analysis on the simplified version of the SPSI-R-SF and reported a consistent four-factor solution with the original SPSI-R-SF questionnaire. For this reason, permission was obtained from the authors to use the simplified SPSI-R-SF (W. Lindsay, personal communication, September 2013) under the condition of first purchasing the original manual and obtaining permission from the distributors, Multi-Health Systems (Appendix F). A visual analogue scale was also used (Appendix E).

Table 14

Guideline for interpreting SPSI-R-SF standard scores

Standard Score	Interpretative Guidelines
145 and above	Extremely above norm group average
130 – 144	Very much above norm group average
115 – 129	Above norm group average
86 – 114	Norm group average
71 – 85	Below norm group average
56 –70	Very much below norm group average
55 and below	Extremely below norm group average

2.5 Procedure

The procedure included two sections. The first was the recruitment procedure (Appendix G) and the second was the research procedure (Appendix H).

2.5.1 Recruitment procedure. NHS ethics approval was obtained. Each member of the research team contacted managers of day centres for the IDN Group and managers of secure units for the IDO Group. They discussed the study with the managers and asked them to share the information within their teams and identify any potential participants. Information sheets for staff were provided to facilitate this process (Appendix I). When potential participants provided consent to the team manager, a list of potential participants was obtained and a research team member contacted them. A copy of the participant information sheet (Appendix J) and participant consent form (Appendix K) was provided to each potential participant. A member of the research team contacted potential participants (i.e. telephone contact or appointments) to discuss the study; provided an opportunity to ask

questions; explained the risks of participating; confirmed participation; obtained signed consent forms and arranged two dates for data collection.

2.5.2 Research procedure. A member of the research team met participants on the agreed date(s). They checked that the participant still wanted to participate and ensured that the consent form was signed. Participants were also asked if they wanted someone to be present during the session. The assessment took approximately 2 hours to complete (Table 15). The time was reduced if the WASI was not required. The researcher then proceeded with data collection at Time 1: The researcher administered the first three measures, with a 15-minute break before administering the second three measures that were part of the second trainee's thesis. The researcher read the questionnaires to each participant. The researcher collected the paper questionnaires for secure storage. This was followed by data collection at Time 2 (2 weeks after Time 1): The researcher administered the HIT Questionnaire and paper questionnaires were securely stored. Because there were 3 researchers, the same researcher saw each participant twice. The first researcher recruited 11 participants; the second researcher recruited 32 participants; and the third researcher recruited 29 participants.

Table 15

Measures used in Time 1 and Time 2

Time 1	Time 2
Consent Forms	HIT
WASI	
Demographics Questionnaire	
HIT	
SPSI-R-SF	
SRM-SF	

At the end of Time 1 and Time 2, participants were given the opportunity to ask any questions. Each participant was given a shopping voucher to the value of £20.00 and thanked for their participation. Participants that completed the consent forms and were deemed ineligible were also reimbursed with a £5.00 voucher. Because this study formed part of a larger collaborative study that was still ongoing, the Chief Investigator was scheduled to respond to the relevant Ethics and R&D Departments once the study ended.

2.6 Ethics and Consent

This ethics procedure included ethics approval, consent, risk and storage plans for the data. Ethical research in mental health is essential as it ensures that research is safe and non-harmful for participants (DuBois, 2008).

2.6.1 Approval. A favourable ethical opinion was gained from the National Research Ethics Service Committee, South West Frenchay, (Research Ethics Committee Reference: 13/SW/0084) on 15 May 2013 (Appendix L). Table 16 included a summary of the research sites that were included in this study.

For all NHS sites, Research and Development (R&D) approval was obtained. For some private hospitals, residential care homes and day centres, a letter of permission was obtained (Appendix M; Appendix N; Appendix O; Appendix P; Appendix Q; Appendix R; Appendix S; Appendix T). Some institutions did not issue the researcher with a letter. However, they consented to asking potential participants if they wanted to take part in the study. When such arrangements were made, a copy of the NHS ethics documentation was also provided to the relevant organisation, residential care home or day centre.

Table 16

Research sites

Research Site	Sample Target	Recruited
Hertfordshire Partnership University NHS Trust	IDN	Yes
Norfolk Community Health Care NHS Trust & Day Centres in Norfolk	IDN & IDO	Yes
Huntercombe Hospitals, UK	IDO	Yes
St Andrews Healthcare, UK	IDO	Yes
Day Centres across Peterborough, Leicestershire, Northamptonshire	IDN	Yes
Private residential, supported living homes across Peterborough, Leicestershire and Northampton shire	IDN	Yes
Cambridgeshire and Peterborough NHS Foundation Trust	IDN	No
Leicestershire Partnership NHS Trust	IDN	No
Milton Park Hospital, UK	IDO	No

2.6.2 Consent, information and coercion. Information sheets and informed consent forms were used in this study. These forms were reviewed using the Flesch Reading Ease (FRE) and a FRE score of 81.00 was obtained. A FRE score between 80.00 and 90.00 was desirable for research purposes (National Research Ethics Service, 2011). In addition to being written in easy language, information sheets and consent forms contained pictorial cues that could facilitate understanding. Consent forms were checked verbally with each participant.

Participants received information on what they would be required to do for the study, in order to provide informed consent about participating (Elmes, Kantowitz & Roediger, 1999). Participants were told that the study aimed to explore thinking patterns, how they understood a list of scenarios and how they solved problems using two data collection points, which lasted approximately 2 hours at Time 1 and 20 minutes at Time 2. They also had the opportunity to ask questions before participating in the study. Participants were told that they could drop out of the study at any time and this would not have an impact on the current service or treatment they received. The consent form asked participants for permission to speak to staff members or key workers that worked with them in order to obtain offence related information, risk information and previous FSIQ assessments.

To minimise perceived coercion, participants could be accompanied by someone known to them, when consent was discussed. Some participants did not want someone present when consent was discussed. For these participants, the researcher checked whether they could understand the information about the study. If they could retain the information and repeat this back to the researcher (along with their understanding of what participation would involve) then they were deemed to have capacity to consent. The Mental Capacity Act (2005) was used to determine capacity. Participants were also told that the study would be written up in the form of a doctoral thesis, and published in a journal article.

2.6.3 Risks, confidentiality and benefits. Participants were informed of the potential risks of this study. For example, they could become distressed about a question that they could not understand. The study was not designed to cause distress. No immediate risks were envisaged and the study was considered to be a low risk study. Even with low risk studies, there was the possibility that participants could become distressed. Therefore, if a participant or staff member became distressed, the Chief Investigator was available to offer advice and support.

There was also the possibility that participants, especially those with an offence, disclosed information about a crime that was not been reported and/or harm to others or themselves. In such situations, it was necessary to compromise confidentiality. The British Psychological Society Code of Ethics and Conduct (2009) suggested consulting a professional colleague to discuss the risk and the potential confidentiality breach. Furthermore, breaking confidentiality should be done, as far as possible, with the individual's knowledge (Gale, 1995; Oliver, 2003). To address this risk, the process for breaking confidentiality was explained to all participants.

For the IDO Group, participants were informed that any potential disclosure would be discussed with them first. The researcher would then discuss the risk with a staff member and the Chief Investigator in order to establish a risk management plan. The participant would be part of the risk management plan. Risk was described in the context of 'keeping participants and other people safe.' In order to manage the potential disclosure within the offender group, participants were asked to only provide information that was known by staff members, police officers, social workers or doctors.

For the IDN Group, a lone-working policy was followed because some participants were seen in their home. All participants had a carer /parent that was informed of their participation. Any risk related concerns would be discussed with the carer / parent and a risk

management plan would be established. This included contact with the local LD team to provide support with risk management. In such situations, the Chief Investigator was also be contacted for advice.

The data collection was conducted by a team of qualified and trainee clinical psychologists. The trainee clinical psychologists received regular supervision from an expert in the field of IDs and were aware of the potential risks associated with this study. Lastly, participants were informed that participating in this study could improve our understanding people with IDs and inform further treatment.

2.6.4 Distress. Two participants become distressed during the study. The first participant became distressed prior to the screening. This participant had initially agreed to participate in the study after meeting the researcher two weeks prior. However, on the day they became distressed during the consent discussion. Because of this, they were excluded and thanked for their interest in the study. They were also seen by the in-house consultant psychologist and were scheduled into weekly appointments. A follow up call was made a few days later to check on the participant and no further problems were reported.

The second participant became distressed during the Time 1 data collection. They were asked if they wanted to continue and they asked for a cigarette break to decide. During their cigarette break they spoke to their key worker. After their cigarette break, they agreed to complete the data collection the next day. They were seen the following day and they completed the remainder of the measures.

Both of these incidents were discussed with the Chief Investigator on the day that they occurred.

2.6.5 Storage and access to data. Confidential data should be stored securely (Data Protection Act, 1998). Therefore, all identifiable data was kept separate from participants' NHS records, and stored securely with Chief Investigator (University of East Anglia).

Paper forms (i.e. completed outcome measures; informed consent forms) were stored in a locked cabinet that was only accessible to the research team. A unique study code linked participants to their data. Only members of the research team were able to link the study code and identifiable data. Electronic data was anonymised and stored on a University of East Anglia (UEA) encrypted desktop computer. In situations where anonymised electronic data needed to be accessed off site, an encrypted password protected keydrive was used.

Once the study was complete, data was stored securely and remained the responsibility of the Chief Investigator. The procedure for data storage was for it to be archived off-site. The Data Protection Act (1988) specified that data should not be kept for longer than necessary. Therefore, data would be kept for a period of 10 years in order to re-appraise the data for further research; and/or to provide the original data for inspection if queries were raised regarding the integrity of the results.

2.7 Data Preparation and Analysis

2.7.1 Data preparation. The raw data was checked to ensure that all the questionnaires were completed before being prepared for statistical analysis (Pallant, 2010). All the questionnaires were hand scored. Demographic information and FSIQ scores were obtained for all participants. Data was then transferred into SPSS Version 20.0.0. Statistical analyses were conducted using SPSS Version 20.0.0.

There were some items that had not been answered. Firstly, 14 participants did not answer all the questions in the SRM-SF. According to the scoring manual, a minimum of 7 questions needed to be answered in order for the measure to be valid and a global stage to be calculated. The scoring manual provided a separate calculation that was used if respondents did not answer all the questions. This calculation was done manually for each of the 14 participants. Secondly, two participants missed one answer for the HIT. According to the scoring manual for the HIT, respondents needed to answer at least 49 out of the 54 items in

order for the measure to be valid. Because these participants only missed one item, the scoring was not affected. No data was missing for all the SPSI-R-SF measures.

Where relevant, missing data was coded as '999' on the database. Raw data was screened and cleaned before the analysis could commence. Outliers and data for participants that dropped out were also removed (Pallant, 2010).

2.7.2 Inter-rater reliability. For the SRM-SF inter-rater reliability was calculated. According to Gibbs et al. (1992) an inter-rater reliability of $r \geq 0.80$ was required for the SRM-SF. Therefore, 33% (n=24) of the SRM-SF measures in this study were second-rated by an expert rater.

This was done in two parts that included 12 SRM-SF measures each. For the first part, the first 12 SRM-SF measures were rated by the researcher. Once the ratings had been done the expert rater was then asked to rate the same 12 measures. Rating scores were entered onto a separate database and inter-rater reliability was computed using SPSS. The result for the first 12 SRM-SF measures indicated an inter-rater reliability of r= 0.694 which was below the recommendation by Gibbs et al. (1992). The expert rater provided the researcher with a detailed breakdown of the moral reasoning stage for all the participants that were included in the first inter-rater reliability calculation. Keywords were also highlighted as the researcher was scoring these incorrectly. The keywords were 'upset', 'happy', 'learn' and 'feel.' Scoring across the different sections of the manual were also explained and demonstrated. Scoring the same question across all the measures was also encouraged in order to focus on each question. The inconsistencies were amended and the 12 SRM-SF scores were entered onto the database using the expert rating.

Because the inter-rater reliability was too low, a second set of 12 SRM-SF measures were selected and the process was repeated. The inter-rater reliability was r=0.958 using an intra-class correlation. This was an excellent inter-rater reliability and was above the

recommendation by Gibbs et al. (1992). The remaining 48 SRM-SF questionnaires were then scored by the researcher, with a particular emphasis on the keywords and expert advice for scoring across sections.

2.7.3 Data analysis. Various methods were used to conduct the data analysis. First, demographic data was explored using descriptive statistics (Field, 2009, 2013; Pallant, 2010). This was followed by tests of normality and homogeneity of variance.

2.7.3.1. Age and Full Scale IQ. As previously mentioned the IDN Group were significantly older than the IDO Group; and there were no significant differences when the IQ scores for the two groups were compared. However, in order to explore Hypothesis 1, 2 and 3b, the relationship between age and all the dependant variables (total scores) were explored (Appendix U). Similarly, the relationship between IQ and all the dependant variables (total scores) were also explored. Spearman's rho correlation coefficients were used to explore relationships between the variables.

There were no significant relationships between age and any of the dependant variables for the IDO Group or the IDN Group (Appendix U). For IQ and the IDO Group there were no significant relationships between IQ and the SRM-SF; IQ and the SPSI-R-SF; and IQ and the HIT1. For the IDN Group there were no significant relationships between IQ and the SPSI-R-SF; and IQ and the HIT1. There was a significant relationship between IQ and the SRM-SF, (r=.44, p=.003); and IQ and the HIT2, (r=-.28, p=.047). For both groups there was a small significant relationship between IQ and the HIT2.

In order to select appropriate statistical analyses, skewness, normality and homogeneity of variance were explored for all the variables, taking into account any significant correlations between the variables. This was done to determine whether parametric or non-parametric analysis could be used.

2.7.3.2 Tests of normality and homogeneity of variance. In the first instance, histograms were used to assess whether a distribution was normal. This was followed by the Kolmogorov-Smirnov test to assess whether the distribution was significantly different from a normal distribution. Skewness and kurtosis were also explored. Tests of normality and homogeneity of variance were conducted using total scores for all the measures (Appendix V).

For the IDO Group, the SRM-SF Global score was normally distributed; D (33)= .110, p=.200. The HIT Time 1 Total score was significantly non-normal; D (33)=.183, p=.007. The HIT Time 2 Total score was normally distributed; D (33)= .074, p=.200. The SPSI-R Total score was normally distributed; D (37)=. 102, p=.200.

For the IDN Group, the SRM-SF Global score was normally distributed; D (37)= .124, p=.160. The HIT Time 1 Total score was significantly non-normal; D (37)= .177, p= .005. The HIT Time 2 Total score was normally distributed; D (37)= .130, p=.117.The SPSI-R Total score was normally distributed; D (37)=.081, p=.200.

Normality for the sub-scores across all the measures were assessed for the full sample and these are illustrated in Appendix V and Appendix W. There were 7 construct scores for the SRM-SF, 5 sub-scores for the SPSI-R-SF and 22 sub-scores for the HIT1 and HIT2. For the IDO Group, 14 of the sub-scores were non-normal and 20 were normal. For the IDN Group, 16 of the sub-scores were non-normal and 18 were normal. The mean and interquartile ranges (IQR) using Tukey's Hingers are reported for all non-normal data in Appendix X.

Levene's test for Equality of Variances was used to test the homogeneity of variance (Field, 2009). Levene's test was conducted for the total scores of each outcome measure (Table 17). For Levene's test, equal variances are assumed when p>.05.

Table 17

Tests for homogeneity of variance

Measure	Levene's Statistic	Sig.
SRM-SF Global Score	0.349	0.556
HIT Time 1 Total Score (HIT1)	8.525	0.005
HIT Time 2 Total Score (HIT2)	1.848	0.178
SPSI-R-SF Total Score	0.863	0.356

Levene's test indicated equal variances between the two groups for SRM-SF Global score, SPSI-R-SF Total score, and the HIT2 Total score, which supported parametric data analyses. Levene's test indicated unequal variances for the HIT1 Total score, which supported non-parametric data analysis. However, across all the data, there was a mix of normal and non-normally distributed data, which supported non-parametric data analysis.

2.7.3.3 Analysis. After assessing for normality not all the data were normally distributed. Substantial proportions of the data were skewed. An attempt was made to transform the data. However, this was unsuccessful.For Hypothesis 1 and 2, where difference were being explored there were some problems with comparing non-normal and normal data sets. Therefore, non-parametric analyses were used (Field, 2009; Howell, 2010). For consistency this was used throughout, even when data was normal. This process was followed for all the hypotheses and was discussed with the Chief Investigator who has conducted similar studies with ID populations.

Because some of the research hypotheses included multiple comparisons, Bonferroni corrections were used to control the family-wise error rate and the risk of making a Type 1 error (Clarke-Carter, 2010). Bonferroni corrections can be used to adjust the *p* value when several independent statistical tests are performed simultaneously. Bonferroni corrections can

also be used when there are multiple comparisons, regardless of independence. This means that if outcomes are correlated, corrections should be used. In order to address this, Bonferroni corrections were used for Hypothesis 1, Hypothesis 2 and Psychometric Question 1b.

The the statistical analysis for Hypothesis 1 and Hypothesis 2 were the same. For these hypotheses, Mann-Whitney *U* tests were conducted to explore the difference between the groups (Field, 2009, 2013; Foreshaw, 2007).

Relationships between moral reasoning and cognitive distortions (Hypothesis 3a; Hypothesis 3b); and moral reasoning and problem solving abilities were explored (Hypothesis 4a; Hypothesis 4b). This statistical analysis was conducted for the full sample (Hypothesis 3a and Hypothesis 4a) and then for the IDO Group (Hypothesis 3b and Hypothesis 4b). For these hypotheses, Spearman's rho correlation coefficients were calculated to explore relationships between the variables (Field, 2009, 2013). Therefore, a statistical analysis was conducted to explore correlations between scores on the SRM-SF and the HIT1; SRM-SF and the HIT2; and the SRM-SF and the SPSI-R-SF.

The basic psychometric properties for one of the measures that were amended and used in the study. For Psychometric Question 1a, internal consistency was examined by calculating Cronbach's alpha (Cronbach, 1951) and intra-class correlation coefficients were calculated to measure test-retest reliability (Tabachnik & Fidell, 1996). For Psycometric Qustion 1b, Mann-Whitney *U* tests were used to explore the differences between the two groups on a measure of cognitive distortions (total scores and sub-scale scores).

CHAPTER THREE

3. Results

3.1 Overview of Chapter

This chapter describes the analysis and results for the study. The demographic profile is discussed in the previous chapter. The results for the hypotheses are presented in detail. The chapter concludes with a summary of the findings.

3.2 Hypothesis 1

3.2.1 Hypothesis 1: Offenders with intellectual disabilities will have signficiantly higher moral reasoning that non-offenders. The moral reasoning abilities of the IDO Group were significantly higher than the IDN Group when the SRM-SF Global Scores were compared, $U = 247.50$, $z = -4.5$, $p = .000$. Hypothesis 1 was supported (Table 18).

The differences between the constructs on the SRM-SF were also compared (Table 20) using Bonferroni adjusted alpha levels of 0.007 per test (.05/7). Results indicated that the IDO Group scored significantly higher than the IDN Group on Contract ($U = 382.50$, $z = -3.03$, $p = .001$), Life ($U = 343.00$, $z = -3.46$, $p = .000$), Law ($U = 323.00$, $z = -3.63$, $p = .000$) and Legal Justice ($U = 356.00$, $z = -3.20$, $p = .001$). There were no significant differences on Truth ($U = 467.00$, $z = -2.11$, $p = .017$), Affiliation ($U = 468.50$, $z = -2.02$, $p = .022$) and Property ($U = 449.50$, $z = -2.11$, $p = .017$).

Table 18

Comparing offenders and non-offenders on the SRM-SF and SRM-SF Constructs

SRM-SF Construct:	**Offenders with ID (IDO) *n*=34 (M, SD)**	**IDO: Median and Interquartile Range**	**Non-offenders with ID (IDN) *n*=38 (M, SD)**	**IDN: Median and Interquartile Range**
SRM-SF Global Score	242.41 (35.06)*	244 (227-268)	202.03 (30.74)	200 (182-225)
Contract	237.50 (33.73)**	250 (225-250)	213.60 (29.02)	217 (200-233)
Truth	233.53 (62.37)	250 (200-250)	200.00 (56.95)	200 (150-250)
Affiliation	248.97 (59.91)	250 (200-300)	217.11 (63.70)	225 (175-250)
Life	262.50 (48.17)**	250 (225-300)	219.74 (47.63)	225 (200-250)
Property	210.61 (70.44)	200 (200-250)	172.37 (74.16)	150 (100-250)
Law	234.85 (98.02)**	200 (200-300)	151.32 (74.88)	150 (100-200)
Legal Justice	250.00 (90.45)**	200 (200-300)	185.14 (87.29)	150 (100-250)

* $p<.05$, ** $p<.007$ using Bonferroni adjusted alpha levels, *M* = Mean, *SD* = Standard Deviation

3.2.2 Stages of moral reasoning per group. Hypothesis 1 showed significant differences between the groups on the SRM-SF Global Score. In order to illustrate this difference further, a frequency table for the levels and stages of moral reasoning was generated. Table 19 depicts the stage and level of moral reasoning for both groups. For the IDO Group, 35.3% fell into Stage 2(3). For the IDN Group, 60.5% fell into Stage 2.

A Mann-Whitney *U* test was conducted to explore the difference between the groups on stages of moral reasoning. The IDO group were signficiantly higher across the stages, $U = 262.50$, $z = -4.5$, $p = .000$.

Table 19

Moral reasoning stages for offenders and non-offenders with intellectual disabilities

SRM-SF Stage and Level	**IDO Group *(n*=34)**	**IDN Group *(n*=38)**
	n (%)	***n (%)***
Stage 1	0 (0)	0 (0)
Transition Stage 1 (2)	0 (0)	0 (0)
Transition Stage 2 (1)	1 (2.9)	6 (15.8)
Stage 2	7 (20.6)	23 (60.5)
Transition Stage 2(3)	12 (35.3)	6 (15.8)
Transition Stage 3(2)	8 (23.5)	3 (7.9)
Stage 3	6 (17.6)	0 (0)
Transition Stage 3(4)	0 (0)	0 (0)
Transition Stage 4(3)	0 (0)	0 (0)
Stage 4	0 (0)	0 (0)

In terms of frequencies, this suggested that the majority of offenders with IDs fell into Stage 2(3) of Gibbs Sociomoral stages (Gibbs, 2003, 2010, 2013; Gibbs et al., 1992). Similarly, the majority of non-offenders with IDs fell into Stage 2 of Gibbs Sociomoral stages (Gibbs, 2003, 2010, 2013; Gibbs et al., 1992).

3.3. Hypothesis 2

3.3.1 Hypothesis 2: There will be a significant difference in problem solving between offenders and non-offenders with intellectual disabilities.

Problem solving abilities of the IDO Group were significantly higher than the IDN Group when the SPSI-R-SF total

scores were compared, $U = 463.50$, $z = -2.06$, $p = 0.020$. This suggested that the IDO Group demonstrated better problem solving abilities than the IDN Group. Therefore, Hypothesis 2 was supported.

In order to understand this difference further, the sub-scores on the SPSI-R-SF were explored using Bonferroni adjusted alpha levels of 0.01 per test (.05/5). The sub-scores that were included are Positive Problem Orientation (PPO), Negative Problem Orientation (NPO), Rational Problem Solving Style (RPS), Impulsive / Careless Problem Solving Style (ICS) and Avoidance Problem Solving Style (APS). The results indicated that there were significant differences for one of the SPSI-R-SF sub-scores (Table 20). For ICS, the IDO Group were significantly higher than the IDN Group, $U = 370.00$, $z = -3.11$, $p = .001$. There were no significant differences between the groups on NPO, $U = 485.00$, $z = -1.82$, $p = .034$; PPO, $U = 508.50$, $z = -1.56$, $p = .060$; RPS, $U = 601.00$, $z = -0.51$, $p = .307$; APS, $U = 622.50$, $z = -0.27$, $p = .397$. Notably, the mean for the IDN Group was higher than the mean for IDO Group on APS. The mean for the IDO Group was higher than the mean for IDN Group on PPO.

Table 20

Comparing offenders and non-offenders on the mean and standard deviations of the SPSI-R-SF Total and Sub-scores

Measure and Sub-Score	**IDO Group (*n*=34) (M, SD)**	**IDO: Median and Interquartile Range**	**IDN Group *(n*=38) (M, SD)**	**IDN: Median and Interquartile Range**
SPSI-R-SF Total Score	50.56 (15.92) *	48.00 (40.00-65.00)	42.71 (14.00)	43 (32.00-51.00)
Positive Problem Orientation	10.29 (4.12)	10.00 (7.00-12.00)	8.74 (4.02)	8.00 (6.00-12.00)
Negative Problem Orientation	12.59 (5.14)	12.00 (10.00-16.00)	10.24 (5.90)	11.00 (4.00-14.00)
Rational Problem Solving Style	8.62 (4.97)	9.00 (5.00-13.00)	8.13 (4.45)	9.00 (4.00-11.00)
Impulsive / Careless Problem Solving Style	11.65 (4.75) **	11.00 (9.00-16.00)	7.87 (4.37)	8.00 (4.00-11.00)
Avoidance Problem Solving Style	7.41 (5.15)	7.00 (4.00-9.00)	7.74 (5.82)	8.00 (3.00-11.00)

* $p<.05$, ** $p<.01$ using Bonferroni adjusted alpha levels, *M* = Mean, *SD* = Standard Deviation

3.4. Hypothesis 3 and 4

Hypothesis 3 and 4 tested whether there was a significant relationship between moral reasoning and cognitive distortions for men with IDs; and moral reasoning and problem solving ability for men with IDs. Four hypotheses were tested and these were reported below. All participants were included and there was no missing data. For Spearman's rho, a small ($0.1 > r > 0.29$), medium ($0.3 > r > 0.49$), or strong ($0.5 > r > 1.0$) correlation was deduced (Field, 2009, 2013).

3.4.1 Hypothesis 3a: There will be a significant relationship between moral reasoning and cognitive distortions for men with intellectual disabilities. In Table 21, there was a significant relationship between the SRM-SF Global scores and HIT1 Total scores, r (72)= .380, p = .001. This result indicated a medium positive significant correlation between moral reasoning and cognitive distortions for men with IDs.

Table 21

Correlations between moral reasoning, cognitive distortions and problem solving

Correlation	**Spearman's Rho: Full Sample (*N*=72)**	**Spearman's Rho: IDO Group (*n*=34)**
SRM-SF and HIT1	0.380 *	-0.011
SRM-SF and HIT2	0.214 *	0.060
SRM-SF and SPSI-R-SF	0.419 *	0.310 *

* p<.05, ** p<.01, *** p< .001

A second analysis was conducted to explore the relationship between moral reasoning and the HIT2 Total scores (Table 21). There was a significant relationship between the SRM-SF Global scores and HIT2 Total scores, r(72)= .214, p = .035. This result indicated a small

positive significant correlation between moral reasoning and cognitive distortions for men with IDs. In summary, there was a statistically significant positive relationship (small to medium) between moral reasoning and cognitive distortions for men with IDs. Therefore Hypothesis 3a was supported.

3.4.2 Hypothesis 3b: Moral reasoning will correlate positively with cognitive distortions for offenders with intellectual disabilities. In Table 21, there was a non-significant relationship between the SRM-SF Global scores and HIT1 Total scores for offenders with IDs, $r(34) = -.011$, $p = .241$. A second analysis was conducted to explore the relationship between moral reasoning and the HIT2 Total scores. There was a non-significant relationship between the SRM-SF Global scores and HIT2 Total scores for offenders with IDs, $r(34) = .060$, $p = .369$. In summary, moral reasoning was not positively correlated with cognitive distortions for offenders with IDs. Therefore Hypothesis 3b was not supported.

3.4.3 Hypothesis 4a: There will be a significant relationship between moral reasoning and problem solving for men with intellectual disabilities. In Table 21, there was a significant relationship between the SRM-SF Global scores and the SPSI-R-SF Total scores, $r(72) = .419$, $p = .000$. This result indicated a medium positive significant correlation between moral reasoning and problem solving for men with IDs. Therefore Hypothesis 4a was supported.

3.4.4 Hypothesis 4b: Moral reasoning will correlate positively with problem solving for offenders with intellectual disabilities. In Table 21, there was a significant relationship between the SRM-SF Global scores and the SPSI-R-SF Total scores for offenders with IDs, $r(34) = 0.310$, $p = .037$. This result indicated a medium positive significant correlation between moral reasoning and problem solving for offenders with IDs. Therefore Hypothesis 4b was supported.

3.5 Basic Psychometric Properties of the HIT

3.5.1 Psychometric Question 1a: Psychometric properties of the HIT will identify a medium to strong test-retest reliability and internal consistency with men who have intellectual disabilities. Two analyses were computed for Psychometric Question 1a (Table 22). The internal consistency and test-retest reliability was determined. For the total sample, the Cronbach's alpha for the 54-item modified How I Think Questionnaire (HIT) was α = .81. This suggested that the modified HIT was found to have a good internal consistency when used with the IDN Group (54 items; α = .81). The Intra-class correlation co-efficient produced good test-retest reliability for the IDO Group (r = 0.81, p = .000). Therefore, Psychometric Question 1a was supported.

Table 22

Internal consistency and test-retest reliability for the modified How I Think Questionnaire

Group	Internal consistency	Test-retest reliability
Total Sample (N=72)	0.808*	0.808*
IDO (n=34)	0.751*	0.751*
IDN (n=38)	0.749*	0.749*

* p<.05, * p<.05, ** p<.01, *** p< .001

3.5.1.1 Psychometric properties of the HIT for the two groups. This same analysis was repeated for each group (Table 22). For the IDO Group, the Cronbach's alpha for the 54-item modified How I Think Questionnaire (HIT) was α = .75. This suggested that the modified HIT was found to have a good internal consistency when used with the IDO Group (54 items; α = .75). The Intra-class correlation co-efficient produced good test-retest reliability for the IDO Group (r = 0.75, p = 0.000). For the IDO Group, the Cronbach's alpha

for the 54-item modified How I Think Questionnaire (HIT) was α = .75. This suggested that the modified HIT was found to have a good internal consistency when used with the IDO Group (54 items; α = .75). The Intra-class correlation co-efficient produced good test-retest reliability for the IDO group (r = 0.75, p = 0.000). The results suggested that the modified version of the HIT demonstrated good internal consistency and good inter-rater reliability when used with the IDN Group and the IDO Group. These results were consistent with Psychometric Question 1a.

3.5.2 Psychometric Question 1b: Offenders with intellectual disabilities will have significantly higher cognitive distortions than non-offenders. In order for the HIT to be a psychometrically valid measure, it should discriminate between the IDO Group and the IDN Group. Analyses for the HIT1 and HIT2 were conducted to explore the difference between the groups (Table 23). For the HIT Total scores, the IDO Group had significantly higher cognitive distortions than the IDN Group at both Time 1, U = 191.00, z = -5.13, p = 0.000, and Time 2, U = 349.00, z = -3.35, p = 0.000. Therefore Psychometric Question 1b was supported.

In order to understand this difference further, the sub-scores on the HIT1 and the HIT2 were explored using Bonferroni adjusted alpha levels of 0.005 per test (.05/11). The sub-scores that were included are Overt, Covert, Anomalous Responding, Self-Centred, Blaming Others, Minimisation / Mislabeling, Assuming the Worst, Oppositional Defiance, Physical Aggression, Lying and Stealing (Table 23).

Table 23

Comparing offenders and non-offenders on the mean and standard deviations of HIT1, HIT2 and their Sub-Scores

Scores and Sub-Scores	**IDO Group (*n*=34) (M,SD)**	**IDO: Median and Interquartile Range**	**IDN Group (*n*=38) (M,SD)**	**IDN: Median and Interquartile Range**
HIT1 Total Score	2.17 (0.56)*	2.04 (1.85-2.34)	1.59 (0.27)	1.55 (1.39-1.80)
HIT2 Total Score	2.02 (0.51)*	2.01 (1.67-2.27)	1.64 (0.35)	1.56 (1.34-1.90)
HIT1 Overt	2.18 (0.62)**	2.10 (1.80-2.40)	1.60 (0.36)	1.50 (1.30-1.85)
HIT1 Covert	2.21 (0.61)**	2.18 (1.80-2.38)	1.61 (0.28)	1.59 (1.41-1.76)
HIT1 Anomalous Responding	4.34 (0.60)	4.25 (4.00-4.75)	5.15 (0.59) **	5.25 (4.75-5.63)
HIT1 Self-Centred	2.16 (0.70)**	2.00 (1.67-2.33)	1.52 (0.35)	1.44 (1.22-1.78)
HIT1 Blaming Others	2.29 (0.55)**	2.20 (2.00-2.50)	1.84 (0.33)	1.80 (1.60-2.10)
HIT1 Minimisation / Mislabeling	2.02 (0.71)**	2.00 (1.44-2.22)	1.38 (0.33)	1.33 (1.22-1.56)
HIT1 Assuming the Worst	2.17 (0.59)**	2.18 (1.82-2.27)	1.60 (0.34)	1.55 (1.27-1.82)
HIT1 Oppositional Defiance	2.39 (0.63)**	2.30 (2.10-2.60)	1.84 (0.41)	1.80 (1.50-2.10)
HIT1 Physical Aggression	1.97 (0.69)**	2.00 (1.40-2.20)	1.36 (0.38)	1.20 (1.00-1.60)
HIT1 Lying	2.37 (0.68)**	2.25 (1.88-2.75)	1.71 (0.41)	1.63 (1.50-1.88)

HIT1 Stealing	1.99 (0.64)**	1.91 (1.55-2.18)	1.51 (0.27)	1.55 (1.36-1.73)
HIT2 Overt	2.07 (0.53)**	1.95 (1.75-2.35)	1.66 (0.45)	1.60 (1.25-2.00)
HIT2 Covert	1.99 (0.53)**	1.94 (1.61-2.19)	1.62 (0.33)	1.60 (1.34-1.88)
HIT2 Anomalous Responding	4.41 (0.64)	4.50 (3.88-4.75)	5.05 (0.70)**	5.00 (4.50-5.75)
HIT2 Self Centred	2.06 (0.60)**	2.00 (1.67-2.22)	1.55 (0.44)	1.44 (1.22-1.78)
HIT2 Blaming Others	2.16 (0.55)	2.10 (1.80-2.50)	1.88 (0.37)	1.90 (1.60-2.10)
HIT2 Minimisation / Mislabeling	1.74 (0.60)	1.78 (1.22-2.00)	1.47 (0.47)	1.22 (1.00-1.89)
HIT2 Assuming the Worst	2.07 (0.53)**	2.00 (1.82-2.27)	1.63 (0.43)	1.64 (1.18-2.00)
HIT2 Oppositional Defiance	2.27 (0.59)**	2.30 (1.80-2.50)	1.88 (0.49)	2.00 (1.50-2.30)
HIT2 Physical Aggression	1.86 (0.56)**	1.90 (1.40-2.20)	1.45 (0.48)	1.30 (1.00-1.80)
HIT2 Lying	2.16 (0.53)**	1.64 (1.27-2.09)	1.67 (0.45)	1.63 (1.25-2.00)
HIT2 Stealing	1.81 (0.62)	1.64 (1.67-2.27)	1.57 (0.29)	1.55 (1.34-1.90)

* $p<.05$, **$p<.005$ using Bonferroni adjusted alpha levels, *M* = Mean, *SD* = Standard Deviation

For the HIT1 the IDO Group reported significantly higher scores on 10 of the sub-scores when compared with the IDO Group; Overt, $U = 257.00$, $z = -4.39$, $p = .000$; Covert, $U = 222.50$, $z = -4.79$, $p = .000$; Self-Centred, $U = 263.00$, $z = -4.33$, $p = .000$; Blaming Others, $U = 299.00$, $z = -3.93$, $p = .000$; Minimisation / Mislabeling, $U = 266.50$, $z = -4.30$, $p = .000$; Assuming the Worst, $U = 230.00$, $z = -4.71$, $p = .000$; Oppositional Defiance, $U = 287.00$, $z = -4.06$, $p = .000$; Physical Aggression, $U = 266.50$, $z = -4.30$, $p = .000$; Lying, $U = 261.50$, $z = -4.35$, $p = .000$; and Stealing, $U = 325.00$, $z = -3.63$, $p = .000$. For the Anomalous Responding scores, the IDN Group reported significantly higher scores, $U = 220.50$, $z = -4.81$, $p = 0.000$.

For the HIT2, the IDO Group reported significantly higher scores on 7 of the sub-scores when compared with the IDO Group: Overt, $U = 377.00$, $z = -3.04$, $p = .001$; Covert, $U = 359.00$, $z = -3.24$, $p = .001$; Self-Centred, $U = 315.00$, $z = -3.75$, $p = .000$; Assuming the Worst, $U = 342.50$, $z = -3.43$, $p = .000$; Oppositional Defiance, $U = 412.00$, $z = -2.65$, $p = .004$; Physical Aggression, $U = 363.00$, $z = -3.22$, $p = .001$; and Lying, $U = 319.00$, $z = -3.70$, $p = .000$. There were no significant differences on 3 of the sub-scores: Blaming Others, $U = 446.00$, $z = -2.26$, $p = .012$; Minimisation / Mislabeling, $U = 459.00$, $z = -2.13$, $p = .017$; Stealing, $U = 509.50$, $z = -1.55$, $p = .062$. For the Anomalous Responding scores, the IDN Group reported significantly higher scores, $U = 332.00$, $z = -3.55$, $p = 0.000$.

3.5.2.1. Anomalous responding. The results indicated that there were significant differences between the two groups for Anomalous Responding on the HIT1 and the HIT2. Anomalous Responding was the only sub-score where the IDN Group was significantly higher than the IDO Group.

According to the scoring manual, anomalous responses should be explored to determine whether the scores should be interpreted with caution. An Anomalous Responding score that is greater than 4 was considered to be suspect (i.e. subject to social desirability).

Using the manual, the cut-off score for excluding data was an Anomalous Responding score that was greater than 4.25. A score of 4.25 was approximately one standard deviation above the mean. Because the Likert scales were changed from 6-point scales to 4-point scales, the cut-off score of 4.25 could not be used. Therefore, for the current study, Anomalous Responding scores were explored to identify scores that were approximately one standard deviation above the mean. For the HIT1, using the total sample (M=4.77, SD=0.72), an Anomalous Responding score that was above 5.49 could be considered as suspect. Frequency charts were explored and 15 participants (20%) had Anomalous Responding scores that were above 5.49. For the HIT2, using the total sample (M=4.75, SD=0.74), an Anomalous Responding score that was above 5.49 could be considered as suspect. Frequency charts were explored and 16 participants (22%) had Anomalous Responding scores that were above 5.49. This suggested that approximately 22% of the total sample should have been excluded based on the Anomalous Responding scores. However, this would have been problematic for the other hypotheses and these participants were not excluded. This was also observed in Langdon et al. (2013) where participants with high Anomalous Responding scores were retained for their study. The Anomalous Responding scores highlighted the potential influence of social desirability, which would be discussed in the limitations section.

In summary, the results indicated that the total scores for the HIT1 and HIT2 were significantly higher for the IDO Group, irrespective of their Anomalous Responding scores. This meant that the IDO Group presented with significantly greater levels of distorted cognitions, or in other words, offence supportive beliefs. This also suggested that the HIT was able to discriminate between offenders and non-offenders when the total scores were compared. This demonstrated discriminant validity and provided further support for Psychometric Question 1a.

3.6 Summary of Findings

In the current chapter, there were six hypotheses and two psychometric questions. Hypothesis 1 explored the difference in moral reasoning between offenders with IDs and non-offenders with IDs. The results indicated that there was a significant difference in moral reasoning when the IDO Group was compared with the IDN Group; that moral reasoning total scores were significantly higher for the IDO Group; and that the IDO Group scored significantly higher than the IDN Group on constructs of Contract, Life, Law and Legal Justice. The majority of the IDO Group (35.3%) fell into Transition Stage 2(3) and the majority of the IDN Group (60.5%) fell into Stage 2 of Gibbs Sociomoral stages (Gibbs, 2003, 2010, 2013; Gibbs et al., 1992). Hypothesis 1 was supported.

Hypothesis 2 explored the difference in problem solving between offenders with IDs and non-offenders with IDs. For problem solving total scores, the IDO Group was significantly higher than the IDN Group. Therefore Hypothesis 2 was supported. Further analyses were conducted for the sub-scores of the SPSI-R-SF and these yielded more detailed results. The IDO Group reported significantly higher Impulsive / Careless Problem Solving Styles than the IDN Group. There were no significant differences between the two groups for Positive Problem Orientation, Negative Orientation, Rational Problem Solving Style or Avoidance Problem Solving Style. These results partially supported Hypothesis 2.

Hypothesis 3a explored the relationship between moral reasoning and cognitive distortions for men with IDs. The results indicated that there was a small to medium significant positive relationship between moral reasoning and cognitive distortions for men with IDs, and Hypothesis 3a was supported. Hypothesis 3b explored this relationship with the IDO Group. The results were not consistent with Hypothesis 3a. Moral reasoning was not positively correlated with cognitive distortions for offenders with IDs. Hypothesis 3b was not supported.

Hypothesis 4a explored the relationship between moral reasoning and problem solving for men with IDs. The results indicated that there was a medium significant positive relationship between moral reasoning and problem solving for men with IDs, and Hypothesis 4a was supported. Hypothesis 4b explored this relationship with the IDO Group. Similar results were found. There was a medium significant positive relationship between moral reasoning and problem solving for offenders IDs, and Hypothesis 4b was supported.

Psychometric Question 1a explored the basic psychometric properties of the HIT for men with IDs. The results indicated that the HIT demonstrated good internal consistency and test-retest reliability for use with men with IDs. Identical findings were found when the same analysis was conducted separately with the IDN and IDO groups. Psychometric Question 1a was supported.

Psychometric Question 1b explored the difference in cognitive distortions between offenders and non-offenders with IDs. The results indicated that there were significant differences between the groups for cognitive distortions total scores; and that the IDO Group reported significantly higher levels of cognitive distortions on the HIT1 and HIT2 total scores. Psychometric Question 1b was supported.

The results also indicated that the IDO Group reported significantly higher cognitive distortions on the following sub-scales when the HIT was completed on two separate occasions: Overt, Covert, Self-Centred, Assuming the Worst, Oppositional Defiance, Physical Aggression and Lying. Notably, when the HIT1 was completed the results indicated that the IDO Group reported significantly higher cognitive distortions on Blaming Others, Minimisation / Mislabelling and Stealing on the HIT1, and that these sub-scales were not significantly different when the HIT2 was completed. There was a significant difference in the Anomalous Responding scores when the two groups were compared. For both the HIT1 and HIT2, the IDN Group Anomalous Responding scores were significantly higher than the

IDO Group. For approximately 22% of the sample the Anomalous Responding scores were above the threshold that was recommended by the manual. This presented a problem for Psychometric Question 1b and would be discussed in the next chapter.

In summary, the HIT was modified for use with men with IDs and basic psychometric properties were supported (Psychometric Question 1a and 1b). This suggested that the modified HIT was a good psychometric instrument for use with ID populations that consisted of male offenders and non-offenders.

CHAPTER FOUR

4. Discussion

4.1 Overview of Chapter

Within this chapter, an overview of the findings is presented. The findings are discussed in relation to the hypotheses. A methodological critique, followed by the theoretical and clinical implications for the study, is also presented. The chapter concludes with recommendations for future studies and a final conclusion.

4.2 Summary of Results in Relation to the Hypotheses

This study intended to explore the difference between moral reasoning and problem solving respectively, when comparing offenders and non-offenders with IDs; the relationship between moral reasoning and cognitive distortions for men with IDs and offenders with IDs; the relationship between moral reasoning and problem solving for men with IDs and offenders with IDs; and the psychometric properties of an adapted cognitive distortions measure for use with men with IDs. The hypotheses are discussed below and linked to previous research with ID populations.

4.2.1 Hypothesis 1: Offenders with intellectual disabilities will have significantly higher moral reasoning than non-offenders. Previous studies highlighted that offenders with IDs had higher levels of moral reasoning when compared to non-offenders with IDs. More specifically, offenders with IDs were found to demonstrate Stage 2(3) reasoning and non-offenders with IDs were found to demonstrate Stage 2 reasoning (Langdon et al., 2011b, 2013; McDermott & Langdon, 2014). Intelligence was related to higher levels of education and abstract thinking, which was linked to higher stages of moral reasoning (Farrington, 1973, 2000, 2005; Goodman et al., 1995). Langdon et al. (2011a) suggested that IQ was

related to increased opportunities for socialisation and that this resulted in higher moral reasoning levels for offender with IDs. These studies provided the setting for the current study, which predicted that similar findings would be identified. More specifically, the current study predicted that offenders with IDs would demonstrate higher levels of reasoning when compared to non-offenders with IDs; and that ID offenders would demonstrate reasoning that was based upon moral justifications, understanding interactions, exchanges and instrumental needs.

The findings for this study were consistent with three previous studies (Langdon et al., 2010a, 2011b; McDermott & Langdon, 2014). When moral reasoning global scores were explored, offenders with IDs were reasoning at significantly higher levels when compared to non-offenders with IDs. The results appeared to support Langdon et al. (2011b)'s explanation that offenders with IDs were more 'morally mature' than non-offenders with IDs in the context of Gibbs Sociomoral Stages (Gibbs et al., 1992). Garrigan and Langdon (in press) suggested that offenders with IDs would engage in reasoning that involved meeting individual needs as opposed to lower reasoning stages that would be guided by rules or authority to avoid punishment or negative consequences. The premise here was that unilateral and physical authority acted as a protective factor for offending. An example of this was a response from a non-offender where they indicated that they would not steal because the "Police would catch you and put you in jail." These results suggested that the higher levels of immature moral reasoning were associated offending with behaviour.

To explore this further, the moral reasoning construct scores were compared. Some studies have found that offenders with IDs reported higher reasoning scores on some of the constructs of the SRM-SF (Langdon et al., 2011b; McDermott & Langdon, 2014). Specifically, offenders with IDs scored higher on the Contract, Life, Law and Legal Justice constructs. In the current study, offenders with IDs were reasoning at significantly higher

levels on the same constructs. Notably, the non-offenders reasoned at Stage 2 for these constructs while the offenders reasoned at Stage 2(3) for Contract and Law, and Stage 3(2) for Life and Legal Justice. This suggested that reasoning at lower stages (where decision-making was based on authority and punishment) for Contract, Life, Law and Legal Justice was likely to prevent the non-offenders from engaging in criminal behaviour. These results supported previous studies where offenders with IDs were found to have higher scores on Law and Legal Justice in comparison to their non-offender counterparts (Langdon et al, 2011b; McDermott & Langdon, 2014). Therefore, higher stages on these constructs were characterised by egocentric thinking and difficulties with perspective taking and were linked with the offender group.

Hypothesis 1 also explored the moral developmental stages for offenders and non-offenders with IDs. The majority of offenders with IDs (35.5%) were reasoning at Stage 2(3) and the majority of non-offenders with IDs (60.5%) were reasoning in Stage (2). Langdon et al. (2013) also identified 2 participants in Stage 2(3) reasoning prior to engaging in a EQUIP programme. The same 2 participants later had transitioned into Stage 3(2) following the EQUIP programme, which suggested that participants who engaged in treatment could potentially score in a much higher level than the other studies identified (Langdon et al., 2011b; McDermott & Langdon, 2014). Similar findings were also observed in the current study where 17.6% of offenders with IDs were reasoning at Stage 3(2).

Typically in Stage 2(3), behaviours could include individualistic perspective taking and interactions that were congruent with meeting one's own needs or interests. However, Stage 2(3) excluded mutual and prosocial perspective taking, which according to Garrigan and Langdon (in press), made them more vulnerable to increased illegal and antisocial behaviours. Secondly, mutual relationships would be observed in Stage 3 (Gibbs et al., 1992) and would act as a protective factor for avoiding illegal behaviour because moral

justifications were based on empathy, good conduct and other prosocial interactions. McDermott and Langdon (2014) suggested that Transition Stage 2(3) could represent the middle stage of moral reasoning and introduce a higher risk of anti-social and/or illegal behaviour (Blasi, 1980).

It was also noted that current or previous psychological treatment could influence moral reasoning scores for the IDO Group. This could explain why 6 offenders with IDs were in Stage 3 reasoning (17.6%; *n*=34) and would be consistent with Langdon et al. (2013)'s findings where 2 offenders with IDs transitioned into Stage 3(2) reasoning following a psychological intervention. In summary Hypothesis 1 was supported and has been identified in previous studies. The occurrence of consistent results across these studies has started to provide reliable results, which suggested that offenders with IDs would reason at Stage 2(3) when using Gibbs Sociomoral Stages (Gibbs, 2003; Gibbs, 2010; Gibbs et al., 1992). Hypothesis 1 was therefore accepted.

4.2.2 Hypothesis 2: There will be a significant difference in problem solving between offenders and non-offenders with intellectual disabilities. Problem solving was linked with moral development (Arsenio & Lemerise, 2004). In the current study, Hypothesis 1 identified Stage 2(3) reasoning for offenders with IDs. Stage 2(3) reasoning included moral justifications based on understandings that developed following social interactions. D'Zurilla et al. (2004) suggested that offending behaviour was related to poor problem solving while Garrigan and Langdon (in press) suggested that the problematic behaviours were linked with social problem solving. They argued that ongoing social experiences presented the opportunity for social perspective taking which helped spur on moral and cognitive development leading to increasing problem solving ability. For this reason, a series of negative experiences were problematic and resulted in problem solving difficulties. Given that offenders with IDs were found to reason at higher stages and reported fewer physical

disabilities than non-offenders with IDs, they were more likely to engage in more social experiences where they would be faced with having to solve problems on a daily basis. Therefore, problem-solving abilities for offenders with IDs would be higher than non-offenders with IDs.

Offenders with IDs were also likely to be engaging in psychological therapy that was related to their index offence. Some of the treatment would have included basic problem solving skills, which would have improved their problem solving ability. This was supported by Langdon et al. (2013) when they identified that problem-solving abilities increased following participation in the adapted EQUIP programme. However, as previously mentioned, Langdon et al. (2013)'s findings should be treated cautiously because they used a small sample size and their results were based on only 3 participants in their sample. Lindsay et al. (2011) also found that offenders with IDs problem solving abilities improved following a pilot evaluation of the SPORT programme. Their study indicated that offenders with IDs demonstrated significant improvements in Positive Problem Orientation, Impulsive/Careless and Avoidant Problem Solving Styles. Therefore, because the IDO participants in the current study were in a secure service (and most likely engaging in some type of psychological intervention) it was hypothesised that they would demonstrate higher problem solving abilities when compared to the IDN Group.

For clarity, high scores on the total score and adaptive scales, which were the PPO and RPO, suggested a positive and effective problem solving style, while high scores on the dysfunctional scales, which were the NPO, ICS and AS, suggested the presence of defective problem-solving strategies. The results for the current study indicated that the total problem solving scores for the IDO Group were significantly higher when compared to the IDN Group. This suggested that the IDO Group had significantly better problem solving abilities and was consistent with improved levels of problem solving as found by Lindsay et al.

(2011). However, in terms of the SPSI-R-SF scoring manual, both groups were still within the 'extremely below the norm group average' which was indicated when both the mean scores for each group was below 55 (D'Zurilla et al., 2002). This suggested that both groups experienced significant difficulties with problem solving when compared to a non-ID population. Similar findings were also identified in Basquill et al. (2004). It was possible that the IDO Group's current environment was modelling effective problem solving strategies on a day to day basis, and that they were reporting their problem solving ability based on 'seeking help from staff' on a secure unit.

In order to understand the difference in problem solving ability, comparisons were the made using the sub-scores of the problem solving measure. The results indicated that there was a significant difference in Impulsive / Careless Problem Solving Style, where the scores for the IDO Group were higher than the IDN Group. A high score on this scale indicated higher levels of dysfunctional problem solving. The mean scores for Impulsive / Careless Problem Solving Style for the IDO Group were similar to the mean scores for the same sub-score at the midpoint in Lindsay et al. (2011)'s study. In a comparative context, this suggested that offenders with IDs were responding in the same way as offenders in the 'middle' of treatment. It could be argued that their problem solving abilities might have been different had they have been recruited into the study prior to their offence. Nonetheless, this difference was important as it suggested that impulsivity and carelessness differentiated the two groups when the problem solving sub-scores were compared. The Impulsive / Careless Problem Solving Style is a dysfunctional problem solving style that is characterised by impulsive attempts to respond to problems. According to D'Zurilla et al. (2002), individuals' that rated highly on this sub-score processed information too quickly, which resulted in few solutions being considered and the possibility that they could become upset or frustrated. This is a crucial finding that can be used to inform interventions with offenders with IDs.

There were no significant differences between the groups for Positive Problem Orientation Negative Problem Orientation, Rational Problem Solving Style and Avoidance Problem Solving Style. For the IDO Group, the mean scores for PPO, NPO, RPO and APS for the IDO Group were similar to Lindsay et al. (2011). However, these similarities were varied as they could only be compared with scores across various points of Lindsay et al. (2011)'s study, making it challenging to compare the current study's results. Given that Lindsay et al. (2011) did not include non-offenders with IDs, it was not possible to compare the problem solving scores for the non-offenders in the current study.

In summary, the results of the current study suggested that offenders with IDs were more likely to act impulsively and become frustrated or upset when dealing with problems, putting them at risk of ineffective problem solving or pro-offending responses (i.e. responding aggressively). This highlighted the link with offending behaviours. The current study also identified how offenders with IDs were more likely to engage in limited and impulsive problem solving strategies, which could potentially result in poor 'response selection.' This was consistent with faulty information processing and cue interpretation (Crick & Didge, 1994, 1996), which also resulted in poor social experiences and ultimately moral schema deficits. Ultimately the study highlighted that men with IDs did not demonstrate effective problem solving and that offenders with IDs were more likely to be impulsive and frustrated when they encountered problems. In conclusion, Lindsay et al. (2011b) were the only study that used the adapted version of the SPSI-R-SF for men with IDs. Therefore comparisons with other studies using the SPSI-R-SF (original version) were limited. Given that their study used a small sample size (n=10), further studies with adequately sized samples are required to generalise the results for the current study. For this reason, studies with offenders and non-offenders with IDs were required to replicate these conclusions.

4.2.3 Hypothesis 3a and Hypothesis 3b: There would be a significant relationship between moral reasoning and cognitive distortions for men with intellectual disabilities. Hypothesis 3 was divided into two hypotheses, which explored the relationship between moral reasoning and cognitive distortions for men with IDs (Hypothesis 3a); and for offenders with IDs (Hypothesis 3b). Langdon et al. (2011b) conducted a study where they identified cognitive distortions in a sample of men with IDs. Previous research found that cognitive distortions were also identified in studies with offenders with IDs (Barriga et al., 2000; Gibbs et al., 1995; Hudson, 2005; Langdon et al., 2011a; Langdon et al., 2011b; Murphy, 1990; Ward et al., 1997). Gibbs (1993) suggested that cognitive dissonance was when cognitive distortions protected an offender from blame and the consequences of their behaviour. Therefore, offenders were able to engage in offending behaviour as a result of their cognitive distortions. Cognitive distortions were also described as egocentric thinking, which was identified in Stage 2 reasoning (Gibbs, 2003; Gibbs, 2010; Gibbs et al., 1992).

Garrigan and Langdon (in press) hypothesised that moral reasoning was related to cognitive distortions. They proposed that cognitive distortions were a product of egocentric bias, which was associated with a moral developmental delay. Therefore, development was affected by experiences, which lead to moral developmental delays and cognitive distortions.

For Hypothesis 3a, a statistical analysis revealed that there was a small to medium significant positive relationship between moral reasoning and cognitive distortions for men with IDs. Hypothesis 3a was supported. These findings supported the theoretical relationship between moral reasoning and cognitive distortions (Gibbs, 2003, 2010; Hoffman, 2000; Langdon et al., 2011a). Hypothesis 3b explored the same relationship with offenders with IDs. A statistical analysis did not reveal a significant relationship and Hypothesis 3b was not supported. It was possible that Hypothesis 3b was not supported due to the limited variability of the mean scores on both measures in the IDO Group and the small sample size (n=34).

In summary, the current study confirmed that there was a small to medium significant relationship between moral reasoning and cognitive distortions for men with IDs. Given the positive relationship between moral reasoning and illegal behaviour among young offenders (Blasi, 1980; Stams et al., 2006), this finding was important as it suggested that psychological interventions with men with IDs could potentially focus on this relationship. Similar findings were found using a sample of non-ID incarcerated delinquents in Sweden, where a small correlation (r=0.28) was found between the SRM-SF and the HIT (Larden, Melin, Holst, & Langstrom, 2005). Because Hypothesis 3b was not supported this relationship should be explored with a larger sample of offenders with IDs.

4.2.4 Hypothesis 4a and Hypothesis 4b: There would be a significant relationship between moral reasoning and problem solving for men with intellectual disabilities. Hypothesis 4 was divided into two hypotheses, which explored the relationship between moral reasoning and problem solving for men with IDs (Hypothesis 4a); and for offenders with IDs (Hypothesis 4b). Problem solving was described as a cognitive developmental process that involved executive functioning, memory and information processing (Ferretti & Cavalier, 1991; Short & Evans, 1990). Garrigan and Langdon (in press) suggested that information processing became more effective through ongoing social experiences where moral judgements were made more often. In this context it was hypothesised that moral reasoning and problem solving would be positively correlated. Recent studies demonstrated how problem solving abilities improved following a problem solving intervention programme with offenders with IDs that had been incarcerated for violent and sexual offences (Lindsay et al., 2011a; N=10). However Lindsay et al. (2011b)'s study was a pilot and limited due to the small sample size and the difficulty of generalising the results to the wider ID population. Lindsay et al. (2011) suggested that an amended version of SPSI-R-SF would be a suitable measure for use with an ID population.

For Hypothesis 4a and Hypothesis 4b, a statistical analysis found a medium significantly positive relationship between moral reasoning and problem solving for men with IDs, and offenders with IDs. The results suggested that there was a positive relationship when using an adequate sample size, which was an improvement following Lindsay et al. (2011)'s study. Therefore, Hypothesis 4a and Hypothesis 4b were supported.

These findings were consistent with the theoretical relationship between moral reasoning and problem solving where McMurran and McGuire (2005) suggested that problem solving was related to goal directed behaviour, which activated reasoning ability. Given that men in the current study demonstrated immature moral reasoning (Hypothesis 1) and below average problem solving ability (Hypothesis 2), the findings also corresponded with Palmer (2003, 2005) where moral reasoning was linked with poor decision-making.

In summary, the current study was a preliminary investigation of the relationship between moral reasoning and problem solving using an adapted problem solving and cognitive distortions measures and an adequate sample size. Significant relationships were identified. A detailed discussion regarding the theoretical implications of these findings was discussed in the next section.

4.2.5 Psychometric Questions. Two psychometric questions were tested in this study.

4.2.5.1 Psychometric Question 1a: An adapted version of the HIT will demonstrate a medium to strong test-retest reliability and internal consistency with men who have intellectual disabilities. The aim of Psychometric Question 1a was to examine the basic psychometric properties of a cognitive distortions measure (HIT) for use with men with IDs. It was predicted that a modified version of the HIT would demonstrate a medium to strong test-retest reliability and internal consistency. According to Barriga et al. (2001), the HIT demonstrated excellent internal consistency ranging from α=0.93 to α=0.96 using a sample of

incarcerated adolescents. Similar psychometric properties were reported in a second study (Gina & Pozzoli, 2012). However, its use with an ID population was a relatively novel phenomenon. Only two studies appeared to use the HIT with an ID population (Langdon et al., 2011b; Langdon et al., 2013). Given its limited use with an ID population, the current study hypothesised that it would be a psychometrically sound measure if some minor amendments were made for it to be used with an ID population. Permission was obtained from the distributors of the HIT and amendments were made in order to adapt the wording for an ID population. In addition, the Likert scales were also amended to contain less scale-points and visual analogue scales were used. The results were interpreted using the recommendations of McDowell (2006). Notably, Langdon et al. (2010a) used the McDowell recommendations in a previous study, where they explored the psychometric properties of a different measure, which was also used with an ID population.

The results of the current study indicated that the amended version of the HIT was found to have good internal consistency and test-retest reliability for men with IDs. Psychometric Question 1a was supported. Identical findings were reported when the same analysis was conducted with the IDO Group and the IDN Group individually. The study concluded that the amended HIT was a suitable measure for use with men with IDs.

4.2.5.2 Psychometric Question 1b: Offenders with intellectual disabilities will have significantly higher cognitive distortions than non-offenders. In order for the HIT to be a psychometrically valid measure, it should discriminate between offenders and non-offenders with IDs. Therefore, the aim of Psychometric Question 1b was to explore the difference in cognitive distortions between the two groups. Some studies have found that offenders with IDs endorsed various cognitive distortions, (Broxholme and Lindsay, 2003; Langdon et al, 2013; Lindsy & Michie, 2004) but that this needed to be explored further (Hudson, 2005). In a different study Jahoda, Pert and Trower (2006) found that cognitive deficits were related to

offending behaviour in a sample of offenders with IDs. Gibbs (2003) suggested that self-serving cognitive distortions lead to offending behaviour when there were moral developmental delays. Notably, in the current study, moral developmental delays for the IDO Group were identified in Hypothesis 1. Therefore, offenders with IDs were hypothesised to report higher levels of cognitive distortions than their non-offender counterparts.

The results of the current study indicated that offenders with IDs reported significantly higher levels of cognitive distortions when the total scores were compared with non-offenders for the HIT1 and HIT2. This finding supported Psychometric Question 1b as the HIT1 and HIT2 total scores were able to differentiate offenders and non-offenders with IDs. However, when the sub-scores of the HIT1 and HIT2 were compared, the results suggested that not all the cognitive distortions sub-scores were significantly different. The results also indicated that the IDO Group reported significantly higher cognitive distortions on the Overt, Covert, Self-Centred, Assuming the Worst, Oppositional Defiance, Physical Aggression and Lying sub-scales when the HIT was completed on two separate occasions. This was consistent with Gibbs (1991, 1993; Gibbs et al., 1995) typology of self-serving cognitive distortions. The results suggested that these cognitive distortions differentiated the offenders from the non-offenders. Therefore, offenders with IDs were processing information according to their own views, expectations and needs which would disregard others' needs and legitimise offending behaviour. Furthermore, this also indicated that offenders with IDs were attributing hostile intentions to others, which could also legitimise offending behaviour. According to Gibbs (2010) these cognitive distortions indicated an egocentric bias with egoistic motives resulting in immature moral development.

The mean for Lying and Oppositional Defiance were the highest sub-scales for the IDO Group on the HIT1 and HIT2. Notably, the mean scores for the same sub-scales were also the highest for the IDN Group. This suggested that the mean score for Lying and

Oppositional Defiance were the highest for both groups and that the severity of these cognitive distortions appeared to differentiate the two groups in the context of offending behaviour.

For the IDO Group, the mean scores for Lying and Oppositional Defiance were not compared to Langdon et al. (2011b) because the Likert scales had been changed in the current study. However, the baseline scores on these constructs of the HIT were also in the 'top group' for Langdon et al. (2011b)'s study. This was a crude descriptive comparison. However, it suggested that the severity of these cognitive distortions were relevant in the context of whether someone with an ID engaged in offending behaviour. Lying and Oppositional Defiance are behavioural referents. According to Gibbs (1991), these are also secondary cognitive distortions, which serve to neutralise guilt or reduce distress when engaging in illegal behaviour. Gibbs (1991) suggested that lying or blaming others acted as mechanisms for neutralising guilt when engaging in illegal behaviour.

However, there were some factors that made interpreting the results slightly problematic. The Anomalous Responding scores indicated that approximately 22% of the sample had scored above one standard deviation from the mean, which suggested that they were not suitable for the analysis. This highlighted the effect of social desirability. Because participants in the IDO Group were currently in custodial facilities, it was possible that they responded to items on the HIT in a socially desirable manner when they first completed the measure. All participants responded verbally to items on the HIT, which was designed to be a self-rated written measure. For this reason they might have changed their responses to be more socially acceptable. For example, one question asked respondents to indicate their agreement to a statement, which read: "Everyone breaks the law, it's no big deal." The majority of participants (59%) in the IDO Group disagreed with this statement despite long histories of offending. Significantly higher Anomalous Responding scores for the IDN Group

could be understood by relating their responses to lower moral developmental stages where they were guided by unilateral authority. Therefore lower stage reasoning served as a protective factor. Similar Anomalous Responding score issues were highlighted in Langdon et al. (2011b) where they included participants when their scores were above the cut-off.

These were important findings because they related to future clinical implications that would be discussed in the limitations section. In summary, the findings in this study supported the findings in previous studies, namely that offenders with IDs presented with higher cognitive distortions when compared to their non-offending counterparts. Psychometric Question 1b was supported. Self-serving cognitive distortions were identified for the IDO Group was consistent with Gibbs typology of self-serving cognitive distortions (1991; 1993). The findings suggested that the HIT was able to differentiate between offenders and non-offenders with IDs, which also supported Psychometric Question 1a.

4.3 Theoretical Implications

The literature highlighted numerous methodological limitations in previous studies, which were conducted with ID populations (Langdon et al., 2010b; Langdon et al., 2011a). At present, there appeared to be a need to explore different constructs and theoretical models that could be useful when working with offenders with IDs. Previous studies suggested that moral reasoning theory could be used to understand offending behaviour with ID populations (Langdon, 2010a, 2011b, 2013). With young offenders in particular, there were links between moral reasoning and offending behaviour (Stams et al., 2006). Langdon et al. (2010b; 2011a) provided an overview of the literature relating to moral development for people with IDs. Some of the key points in their overview suggested that:

- Piagetian and Kohlbergian theories of moral reasoning were limited due to their focus on childhood and strict hierarchical models of moral development;

- Immature moral reasoning was related to cognitive distortions (Palmer, 2003);
- Developmental delays in moral judgement contributed to cognitive distortions, social skills deficits and poor problem solving (Gibbs, 2003, 2013);
- Stage 2, which included Stage 2(3) reasoning was associated with self serving cognitive distortions (Gibbs, 1991, 1993; Gibbs et al., 1995);
- People with IDs experienced moral reasoning delays and were more likely to reason in lower levels of Gibbs Sociomoral Stages;
- Future research with ID populations should focus on development and design aspects of effective measures for moral reasoning;
- And previous studies with ID populations were laden with methodological complications, creating the necessity to re-explore this population group with robust methodological designs.

In addition to these key points, Langdon et al. (2010b) concluded that the life experience of people with IDs had changed significantly since many of the previous studies with ID populations took place. For example, ID populations would not have had the right to education and this could have affected their ability to develop appropriate problem solving skills. They highlighted several theoretical developments within the field of moral reasoning and that an 'update' was needed. Within this context, Garrigan and Langdon (in press) proposed an updated theoretical model, which integrated moral development, cognition and problem solving. For this reason, their model along with Gibbs Sociomoral Stage model (Gibbs et al., 1992) was used as a theoretical framework for the current study.

Garrigan and Langdon (in press)'s Developmental Social Information Processing Model of Moral Judgement and Behaviour suggested that several factors were involved in

moral development. Their model was described in Chapter 1 and would not be replicated in detail. For clarity, the model consisted of two 'circles that orbit around each other.' The outer cycle represented the steps that occurred when an individual was faced with a social problem that required action, which was considered more proximal. The inner circle represented the more distal higher order constructs, which developed over time and influenced the more proximal steps. Garrigan and Langdon proposed that as the distal higher order constructs developed, proximal constructs (i.e. cognition), affect and decision-making became increasingly mature. They also suggested that there was some evidence using children and adults with IDs that supported their theory (Brugman & Bink, 2010; DiBiase, 2010; Gibbs et al., 1996; Nas, Brugman, & Koops, 2005; van Nieuwenhuijzen, Orobio de Castro, Wijnroks, Vermeer, & Matthys, 2004, van Nieowenhuijzen & Vriens, 2012). Their model included theories related to moral development (Gibbs et al., 2013) and problem solving (Crick & Dodge, 1994, 1996; Dodge, 1980). In terms of the theoretical implications, each hypothesis was discussed in the context of Garrigan and Langdon (in press)'s model and Gibbs Sociomoral Stage theory (Gibbs et al., 1992).

For Hypothesis 1, the results of the current study suggested that ID offenders reasoned at Stage 2(3) of Gibbs Sociomoral Stage theory and that they reasoned at significantly higher levels when compared to non-offenders with IDs, who reasoned at Stage 2. For the full sample, men with IDs demonstrated immature reasoning (Gibbs et al., 1992). This finding supported Gibbs Sociomoral Stage theory, where Langdon et al. (2011b) suggested that offenders reasoned higher than Stage 1 because they would not appeal to unilateral or physicalastic consequences (i.e. following rules and avoiding punishment), and would be more motivated by their own needs and justifications based on social interactions.

Hypothesis 2 indicated that offenders with IDs were significantly better at problem solving. This finding was consistent with McMurran and McGuire (2005). The full sample

was in the 'extremely below norm group average' range. This suggested that men with IDs did not demonstrate effective problem solving abilities in general and supports Garrigan and Langdon's model. The offenders demonstrated difficulties with NPO and ICS, which suggested that they experienced difficulties with problem orientation in D'Zurilla and Goldfried's five-stage model of problem solving (1971). In terms of Garrigan and Langdon's model (in press), men with IDs in the current study demonstrated immature reasoning and demonstrated poor problem solving abilities as highlighted in the 'outer circle' of their model. Poor problem solving was linked to social information processing (Dodge, 1986, 1994, 1996; Dodge & Price, 1994). Garrigan and Langdon (in press) suggested that social information processing was problematic for people with IDs because social information processing relied on moral development ('database'). In this context, Hypothesis 2 was supported by D'Zurilla and Goldfried's five-stage, Garrigan and Langdon's model (in presss), and Gibbs Sociomoral Stages (Gibbs et al., 1992).

Hypothesis 3a identified a positive significant relationship between moral reasoning and cognitive distortions for men with IDs. This finding was also supported by Garrigan and Langdon (in press)'s model. They suggested that moral development would be influenced by cognition, which involved perspective taking and social information processing. In their model, Step 1 was where information could be encoded erroneously and result in cognitive distortions. Therefore, men with IDs demonstrated immature reasoning (Hypothesis 1) and it was expected that they would report cognitive distortions. Hypothesis 3b was not supported and no significant relationship was identified between moral reasoning and cognitive distortions for offenders with IDs. Issues related to small sample size, social desirability and score variability made it challenging to relate this finding to theoretical implications.

Hypothesis 4a identified a positive significant relationship between moral reasoning and problem solving for men with IDs. This finding was supported by Garrigan and Langdon

(in press)'s model as they suggested that moral maturity (i.e. database) would be related with the ability to perform tasks, which also involved information processing. Therefore, immature moral development (i.e. Stage 2 and Stage 2/3) was related to problem solving difficulties (i.e. extremely below the norm group average) for men with IDs. Similar findings were found with offenders with IDs. This was consistent with Garrigan and Langdon (in press) as they suggested that as a consequence of higher moral maturity, individuals would be better at tasks that involved information processing and visa versa. Notably, the IDO Group was significantly better at problem solving (i.e. using the problem solving total scores) and demonstrated higher moral developmental stages than the IDN Group.

Psychometric Question 1a and 1b were related to the psychometric properties of the HIT. The findings suggested that the HIT demonstrated good internal consistency and test-retest reliability for men with IDs. These hypotheses were not directly related to any theory, as they assessed the psychometric properties of the HIT. Psychometric Question 1b was also related to the psychometric properties as the findings suggested that the HIT total scores could discriminate between offenders and non-offenders with IDs; and cognitive distortions were significantly higher for offenders with IDs. This finding supported Gibbs typology of self-serving cognitive distortions, which suggested that immature moral development was causal with respect to self-serving cognitive distortions, which would increase the probability of criminal behaviour. There was equal support for Garrigan and Langdon (in press)'s model where they proposed that moral development would be influenced by perspective taking. Given that cognitive distortions involved perspective taking and that offenders demonstrated immature reasoning, their model supported the finding where offenders with IDs demonstrated significantly higher levels of cognitive distortions.

4.4 Methodological Evaluation

This section considered the results of the current study in the context of the strengths and weaknesses of the methodology, design, statistical analysis and limitations of the measures.

4.4.1 Strengths and limitations. The hand search method was used to explore the literature for the study. This approach was used following an initial attempt to identify articles using a traditional systematic literature review, which was unsuccessful due to the nature of the articles. The articles were reviewed based on their methodology and their link to moral reasoning, cognitive distortions or problem solving. This was done to demonstrate the limited number of peer-reviewed articles for offenders with IDs relating to the current study. However, this was a limitation for the current study. This process could have been strengthened by using the Critical Appraisal Skills Checklist (CASP), which explores the quality, clinical utility, benefits and the review question prior to selecting articles for review. The benefits of using the CASP is recomened for further reviews and could also prevent any bias during the critical appraisal process.

4.4.1.1 Design, method and analysis. This study used a between groups design with additional correlations. Substantial proportions of the data were not normally distributed. Attempts to transform the data were unsuccessful because some of the data was skewed. Therefore non-parametric data analyses were applied throughout. There were three main reasons for this. First, attempts to transform the data were not successful. Second, there was a potential risk of transforming the data in order to obtain a significant result (Howell, 2007). Third, Grissom (2000) reported that the means of transformed variables could occasionally reverse the differences of means of the original variables. Notably, this was also a limitation of the study and in hindsight could have been pursued further.

Hypothesis 1,2, and Psychometric Question 1b used a between-subjects cross-sectional design with Mann Whitney *U* tests. The benefits of this design were that comparisons could be made between two groups. For between-subjects designs there needed to be a clear group classification criteria. This study used offence history as a main discriminative group variable. A key requirement for between-subjects designs was that groups needed to be homogenous. Therefore, a demographics questionnaire was used to explore descriptive data between the two groups. Notably, the groups were not significantly different on the FSIQ variable, which meant that the variable did not need to be controlled during the analysis. The groups were different on the Age variable. However, because of the skewness of the data, parametric analyses were not used and age was not controlled during the analyses. A second measure to address the homogeneity of the sample was to use tests of normality and equivalence. Returning to Hypothesis 1, 2, and Psychometric Question 1b, significant differences were detected between the groups on moral reasoning, problem solving and cognitive distortions. No relationships were inferred between these variables. This suggested that a between-groups design was suitable for Hypothesis 1, 2, and Psychometric Question 1b.

Hypothesis 3a, 3b, 4a and 4b used a cross-sectional correlational design with Spearman's rho correlation coefficients. The strength of this design was that data could be collected at a single point, which limited the potential for participants to drop out. There were also some disadvantages when using cross-sectional correlational designs. Correlations did not allow for causality, as correlations indicated the strength and direction of a relationship between two variables (Clark-Carter, 2010). Therefore, the only conclusions that were drawn were related to relationships between variables. Hypotheses 3a, 3b, 4a and 4b did not make any causal inferences. However, the inability to infer a causal relationship was a weakness of the correlational design. A second limitation of the correlational design was that it captured

participants' experiences 'on the day.' This was addressed through using measures that specifically asked participants to respond based on their experiences over the last 4 weeks. The use of cross-sectional correlational designs was appropriate, as the relationship and strength between moral reasoning and cognitive distortions, and moral reasoning and problem solving were reported.

The study used correlations to explore the degree of the associations between moral reasoning, cognitive distortions and problem solving. Hypotheses were formed based on Gibbs Sociomoral Stage theory (Gibbs et al., 1992). Towards the final stages of the study, the Garrigan and Langdon model was made available. This is an unpublished article that was not peer reviewed at the time the study took place. Therefore the current study was not focused entirely on the Garrigan and Langdon (in press) model but references were made in relation to it. This is a limitation as the predictive nature of the Garrigan and Langdon (in press) model could have been explored and an alternative statistical analysis could have been considered to explore the predictive ability of some of the variables in the model (e.g. the ability of problem solving to predict immature moral development and offending behaviour). Ordinal and multinomial regression could have been used to examine predictors of different patterns of trajectories for the Garrigan and Langdon (in press) model. Regression analyses were not used in the current study because the hypotheses were not focused on exploring one-way causal effects from one variable to another. Furthermore large sample sizes have been suggested for ordinal and multinomial regression. Taylor, West and Aiken (2006) suggest that to achieve 80% power, a logistic regression model with three categories required a sample size ranging from 249 to 461. Such large sample sizes were not possible for the current study. In future, larger studies could focus on the predictive nature of moral reasoning, cognitive distortions and problem solving using the Garrigan and Langdon (in press) model.

Psychometric Question 1a used Cronbach's alpha and Intraclass correlations. The benefit of using these analyses was to eliminate individual differences that may have occurred when using independent groups (Howitt & Cramer, 2011). Therefore, factors such as FSIQ, age, and demographic variables remained the same. Another benefit was that it required fewer participants than cross-sectional designs (Field, 2009, 2013) and this was particularly attractive given the difficulties that were identified when recruiting ID populations (Lindsay, 2002). A third benefit was the ability to explore test-retest reliability and consistency of measures which is a recognised method of assessing basic psychometric characteristics (Clark-Carter, 2010; Field, 2009, 2013).

However, as with all designs, there were also limitations for repeated-measures designs. Firstly, not all factors were measured in the first instance. It was impossible to measure every aspect of each and every participant (i.e. motivation). Therefore, for Psychometric Question 1a, some participants could have changed their responses between Time 1 and Time 2. Examples of this could be that they trusted the researcher since meeting them at Time 1 and that they provided more accurate responses at Time 2; or that they were more motivated because they would be paid for participating immediately after Time 2. Alternatively, there could be other unknown personality or motivational factors that could have influenced their response patterns for Time 1 and Time 2. Clark-Carter (2010) suggested that order effects and carry-over effects contributed to participant responses in repeated-measure designs. Order effects occurred when a participant became 'better' at answering the Time 2 questionnaire because they learnt the answers at Time 1. Carry-over effects occurred when a participant remembered their answer from Time 1, rather than providing an answer that was more accurate. There were two ways of countering against order effects. The first was to randomise the order and the second was to use counterbalancing. Neither of these countering techniques was used as it was not possible to

randomise participants and changing the order would not have mattered because data was only collected twice. This was a limitation for Psychometric Question 1a. In an attempt to control carry-over effects, the study was very strict about seeing each participant exactly two weeks apart. Increasing the delay between data collection points was a recognised strategy to minimise carry-over effects (Clark-Carter, 2010).

4.4.1.2 Sample, size and recruitment. The sample consisted of 72 adults with mild to moderate IDs. These were split into two groups of offenders (*n*=34) and non-offenders (*n*=38). The groups were 'close to being equal.' A clinical sample was used and this increased the ability to generalise the results to an ID population. One limitation is that the sample was a convenience sample and this introduced the possibility of bias. The issue of convenience sampling was challenging and other studies with ID offenders have also relied on this method of sampling due to the ethical and practical challenges of recruiting participants from ID populations (Langdon et al., 2011b; Langdon et al., 2013; McDermott & Langdon, 2014; Lindsay et al., 2011a). This study was not able to maneuver its way around this challenge, and it is a limitation and an ongoing issue for studies with offenders with IDs. A further limitation was identified in hindsight and was related to the absence of data on the location of recruitment for the IDN group. Further studies could include this in the demographic questionnaire.

Sex was an exclusion criterion and was also not considered in the demographics questionnaire. Only men with IDs were included. A limitation of the current study relates to sex differences. Gilligan (1982) suggests that men and women are different in their moral reasoning styles. Men are said to be justice orientated and women care orientated. McDermott and Langdon (2014) found no differences between moral development when comparing men and women and this contradicts Gilligan's findings. This suggests that the findings in the current study might be relevant to male and female ID populations.

A power calculation was used to determine the sample size prior to the recruitment. This calculation indicated that 52 participants were required and the sample size was achieved. The overall power would have increased if more participants could have been recruited, in particular if more participants could have been recruited for Hypothesis 3a and 4a. However, the recruitment period was beyond 6 months and this highlighted the timeous task of recruiting participants from an ID population.

In terms of the recruitment, the study used 3 researchers to collect data. This was a major strength as the required sample size was collected. For the IDO Group, recruitment was conducted through secure units across the East of England. Therefore, recruitment involved a substantial amount of travelling. Furthermore, these secure units were often 'tucked away' in rural locations that could be over 40 miles away from the base of the researcher. It would have been very near impossible for a single researcher to obtain all the data in 6 months if they were collecting the data on their own. For this reason, the shared recruitment procedure was a great strength of this study, and should be considered for further studies with ID populations. It should also be mentioned that recruitment for the IDO Group involved contact with clinicians to screen whether participants were suitable. This 'middle man' approach appeared to be quite challenging at times because very often clinicians on secure units were unable to respond due to high case loads and other clinical commitments. The issue of burnout and the negative affects on staff morale when working in secure units with ID offenders was raised in previous studies (Skirrow & Hatton, 2007; Taylor, 2002) This was something that needed to be considered when conducting research with ID offenders in secure facilities.

Notably the IDN group were seen in their homes and the IDO group were seen in forensic hospitals. The location of where each group was seen was different and this could have influenced their responses. It is possible that participants in the IDO group could have

underreported for fear of punishment or having to attend additional therapy sessions. It is also possible that participants in the IDN group underreported to avoid punishment or 'getting into trouble.' In order to address this, both groups were informed that participation was voluntary and that they could stop at any time.

Because participants were screened for offending histories, allocation into the IDO or IDN group was straightforward. This was a strength of the current study. On one occasion, an IDN participant revealed that the "Police told them off for taking something in a shop." The researcher asked how long ago this took place and the participant's response was "When I was about 5 and it never happened again." On this occasion, the researcher made contact with the Chief Investigator and it was agreed that the participant would be recruited into the IDN Group, given that they had no long history of offending and no crown court convictions.

4.4.1.3 Risk management. In order to manage risk and distress, all participants were asked if they wanted to participate in the study. Therefore, participation was voluntary. In order to manage coercion, participants were asked if they wanted someone present during the data collection points. A carer or support worker was asked to sit in during informed consent sessions. These risk management procedures were strengths of the study. On one occasion a participant in the IDO Group made use of the telephone number and let the Chief Investigator know that they wanted to participate after reading the information sheet. This suggested that information sheets were being read once they had been left with participants.

The procedure before seeing a participant was to ask staff or carers how they were doing on the day and if it was 'okay' to see them. For the IDO Group, the researcher also checked whether a participant could be seen alone and whether there were any other risk indicators. These procedures helped to minimise any distress and risk to participants and researchers.

4.4.2 Strengths and limitations of measures. This section described the strengths and limitations of each measure. The measures included the demographic questionnaire, WASI (Wechsler, 1999), SRM-SF (Gibbs et al., 1992), HIT (Barriga & Gibbs, 1996; Barriga et al., 2001) and the SPSI-R-SF (D'Zurilla, et al., 2002). Each participant completed every measure. In general, this was a strength of the current study as only a few items on some of the measures were incomplete or unscorable. The missing data was minimal and insufficient to warrant excluding participants. All measures were read out aloud to participants and visual analogue scales were used. These were strengths of the current study.

4.4.2.1 Demographics questionnaire. A demographics questionnaire was used to determine the demographic profile of the sample. It may have been appropriate to collect information regarding whether participants in the IDO Group were currently receiving any type of psychological treatment. It could be argued that their participation in psychological interventions, which were related to cognitive restructuring or improving problem solving, may have had an impact on their responses to the HIT and the SPSI-R-SF. This was a limitation of the demographics questionnaire.

There were more mental health problems reported in the IDO Group. This concurred with Barron et al. (2002), which found higher levels of mental health difficulties in offenders in comparison to non-offenders. This suggested that other factors such as anxiety or personality disorders could have influenced participants' responses.

In sum, the demographics questionnaire was useful in collecting data that was used to explore the profile of participants. This study did not focus on the sample characteristics and there were no specific hypotheses that were linked to the profile. For example, other studies have included hypotheses on female offenders and demographic information for their study was essential (McDermott & Langdon, 2014). This could be considered as a limitation. Should further studies wish to replicate the current study, it would be worthwhile to collect

data on previous therapy, current therapy and diagnosis of personality disorder, as these might influence participants' responses to items on the measures.

4.4.2.2 Definition of intellectual disability. Langdon et al., (2011a) highlight the need for studies with ID populations to be clear that the sample recruits participants with IDs. The rationale for this was because some studies used samples where they included Borderline FSIQ scores, which are between 71 and 84. The problem with including Borderline IDs is that comparisons couldn't be drawn because the samples were not heterogeneous. This study ensured that all participants were in the mild ID range by using the two-subtest version of the WASI (Wechsler, 1999) as part of the screening procedure. In some instances where FSIQ scores were available on the file and permission to access the file was granted, these FSIQ scores were then used. The two-subtest version of the WASI was a useful screening tool that was administered fairly quickly, which was another motivation for using it. Using the WASI in this context was a strength of the current study. However, there was a floor effect for the WASI as the minimum FSIQ that could be obtained is 55 and this potentially limited the inclusion of participants with a FSIQ score below 55. Notably, in the current sample, there were 8 participants that had a FSIQ of exactly 55 using the WASI. There was also only 1 participant with a FSIQ of 50 and their score was obtained from their file.

The current study could have used the WAIS-III or the WAIS-IV as a screening measure to limit the floor effect of the WASI. However, given the 2-hour time frame that was planned for data collection sessions and that none of the hypotheses were related to FSIQ, it was decided that the WASI would be suitable. It was envisaged that using the WASI would take less time and minimise the potential of participants dropping out, due to the long time period and potential difficulty when completing the WAIS-III or the WAIS-IV.

4.4.2.3 The Socio-moral Reflection Measure Short-form. In general, a strength of the study was that there was that there was a very limited amount of missing data for the

SRM-SF. Fourteen participants did not complete all the questions. However, their scores were still eligible as they all completed more than 7 of the items of the SRM-SF. One of the strengths of the SRM-SF is that it was used in previous studies with offenders with IDs (McDermott & Langdon, 2014; Langdon et al., 2011b). Secondly it was read out aloud and the researcher could probe for answers that were scorable. The advantage was that participants could respond to each item with some discussion. Participants were also able to 'skip' questions and this was noticed in only a few recording forms. It was possible that some of the questions might have been difficult to understand and this was something that could be explored further.

The SRM-SF has been found to demonstrate sound psychometric properties (Langdon et al., 2010a) and this was a strength of the current study. The results in the current study were consistent with the results in the previous studies that have used the SRM-SF with offenders with IDs. This was a strength of the current study as it suggested that the SRM-SF was a reliable measure that would produce similar results across studies with ID offenders. As a final point, inter-rater reliability was calculated on two occasions. The first occasion reported an inter-rater reliability that was too low (r = .694). The second occasion reported an inter-rater reliability that was excellent (r = .958). Using inter-rater reliability was a strength of the current study as it suggested that the scoring was accurate in consistent with the scoring manual.

4.4.2.4 The How I Think Questionnaire. An adapted version of the HIT was used in this study. The HIT was completed by all participants. Only two participants missed a single item on the HIT. This was permitted in terms of the manual and their total scores and sub-scale scores could still be determined (Barriga & Gibbs, 1996; Barriga et al., 2001). A key strength for using the HIT was that it has been used in 2 previous studies with offenders with IDs (Langdon et al., 2011b; Langdon et al., 2013). Barriga et al. (2001) reported that

confirmatory factor analysis supported the structure of the HIT, which made it a useful measure for the study as it suggested that the HIT measured the construct of cognitive distortions.

Langdon et al. (2011b) identified the need to explore reliability and validity data for the HIT given that they had started to use it with an ID population and that this data was not available. This formed the basis for Psychometric Question 1a, 3b of the current study. As a result the HIT was amended for use with an ID population and this was strength as it responded to Langdon et al. (2011b)'s recommendation. The results indicated that the HIT had good psychometric properties for use with men with IDs.

There were also some limitations because the current study used an adapted version of the HIT. Firstly, it was difficult to compare the findings in the current study with the norm scores in the manual. Secondly, it was not possible to determine whether participants could be assigned into the clinical, borderline or non-clinical ranges given that the scoring of the Likert scales in the amended version of the HIT had been changed for the current study. And thirdly, there were problems related to social desirability as indicated be the Anomalous Responding scores. Social desirability occurred when participants minimised their undesirable qualities and over reported their positive qualities. This was a limitation that should be considered when using amended measures. A similar issue was also identified by Langdon et al. (2013) when they used the HIT and described elevated Anomalous Responding scores as a possible result of intellectual or developmental disabilities. These limitations made it difficult to compare HIT total scores and sub-scale scores to previous studies. Inter-rater reliability was not calculated for the HIT and this was a limitation for the current study. As a result, the hypotheses that explored cognitive distortions should be replicated in further studies using the amended version of the HIT.

4.4.2.5 The Social Problem Solving Inventory Revised Short-form. An adapted version of the SPSI-R-SF was used in this study. All participants completed the SPSI-R-SF and there was no missing data. The rationale for using an amended version of the SPSI-R-SF was based on a previous study where it was used with ID offenders (Lindsay et al., 2011a). Therefore, results in the current study could be compared to Lindsay et al. (2011a) and this was a strength. Another strength for using the SPSI-R-SF was that it is not limited to any specific client group. For example, Langdon et al. (2013) used the Problem Solving Task (PST; Nezu et al., 1991) in their study where they also explored problem solving ability for offenders with IDs. Upon closer inspection it was noted that the PST was originally developed for use with sex offenders with IDs. Because this study was looking to recruit offenders with multiple offences, the SPSI-R-SF was used.

One of the limitations for comparing the results to Lindsay et al. (2011a) was that their study collected data at different points during an intervention and their study used a very small sample size (N=10). For this reason comparisons were made, but should be interpreted with caution as Lindsay et al. (2011a)'s study was a preliminary study with an underpowered sample size.

Another limitation for the SPSI-R-SF was the issue of cognitive dissonance. Cognitive dissonance was when an individual held two contradictory beliefs. In other words they 'thought one thing' and 'did another.' The SPSI-R-SF appeared to assess their problem solving plan or what they have done in the past. It was unclear whether participants were scripting responses such as "I'll just ask someone here to help me"; or whether they were simply repeating what they had heard from others. Therefore the SPSI-R-SF did not appear to measure the behavioural component of problem solving, as it did not follow the participant to observe how they responded to situations. This was a limitation of the measure and would need to be considered in future studies.

In sum, the current study was the first study that used the amended SPSI-R-SF with an adequately powered sample size. The hypotheses that explored problem solving were all consistent with the key theoretical frameworks for moral reasoning (Garrigan & Langdon, in press; Gibbs, 2003, 2010, 2013; Gibbs et al., 1992, 1995). Because this was the second time the amended SPSI-R-SF was used with an ID population, the hypotheses related to problem solving should be replicated to test the validity of the conclusions in the current study.

4.4.3 Summary. In conclusion the results for Hypothesis 1, 2, 3a, 4a, 4b and Psychometric Question 1a and 1b were significant. Only one hypothesis was not significant and this appeared to be related to social desirability and variability in data for the IDN Group on some of the measures. Non-parametric analyses were used for all the hypotheses for consistency and due to the skweness and normality of the data. The hypotheses were replicated in some previous studies and were linked with upcoming theoretical models that integrated moral development, information processing, problem solving and distorted cognition. This suggested that these results demonstrated external validity as they were consistently identified in other studies. This was a strength of the study as future studies could use the findings for comparative purposes. The results for Psychometric Question 1a and 3b indicated good internal consistency and test-retest reliability for men with IDs. This suggested that the HIT was a psychometrically valid measure for use with ID populations. However, this was a preliminary finding and it should to be replicated in future studies.

In terms of the measures, the SRM-SF showed positive strengths as a reliable and valid measure. Similar results were found in the current study when compared with previous studies. The amended version of the HIT produced good results. The SPSI-R-SF showed positive results and it supported existing (Gibbs et al., 1992; D'Zurilla et al., 2002) and developing theoretical frameworks (Garrigan & Langdon, in press). Given that the SPSI-R-SF was amended, relevant hypotheses should be replicated in further studies in order to

validate them further. All the measures were read out aloud and visual analogue scales were used. This is was a strength for the current study.

4.5 Clinical Implications and Future Research Recommendations

The current study used moral development as a theoretical framework for exploring problem solving and cognitive distortions for offenders and non-offenders with IDs. The results were consistent with the few studies that focused on moral reasoning with ID offender populations (McDermott & Langdon, 2014; Langdon et al., 2011b; Langdon et al., 2013). According to Langdon et al. (2011a) people in the highest and lowest levels of moral development tend to be less likely to engage in illegal or antisocial behavoiur. The rationale for this was based on Gibbs Sociomoral Stages (Gibbs et al., 2013). Therefore, Stage 2(3) was considered the high risk stage for offenders. The results indicated that offenders were reasoning at Stage 2(3) where they demonstrated understanding social interactions, goal identification and response access. This appeared to be consistent with Step 2, Step 3 and Step 4 of Garrigan and Langdon (in press)'s model. Ultimately, it suggested that moral development had important clinical implications for working with ID populations.

In a clinical context, this was an extremely important finding given that treatment for ID offenders was identified as a costly and urgent focus area (Barron et al., 2004; Taylor et al., 2002; Holland, 2004; Ward et al., 1997). In terms of treatment, previous studies highlighted interventions for offenders with IDs. These included the EQUIP programme (Gibbs et al., 1995), SPORT programme (Lindsay, Steele, Smith, Quinn, & Allan, 2006c) and SOTSEC-ID (Langdon et al., 2007). Notably, moral reasoning, cognitive distortions and problem solving were integrated across these interventions and this suggested their importance for clinical implications. Because offenders IDs demonstrated Stage 2(3) reasoning it is important to consider constructs like problem solving, moral development and

distorted cognitions. Furthermore, these constructs should be incorporated as targets within clinical interventions.

The use of measures in the current study were linked to the clinical implications. Since commencing with this study, the researcher was approached on a few occasions with the same question: "Do you know of a measure I can use for cognitive distortions as I'm based in a learning disability service?" It was possible that the question was raised because the researcher is currently in contact with other trainee clinical psychologists. However, these trainee clinical psychologists have supervisory clinical psychologists in existing services and the question suggested that measures for ID offenders were of importance. For this reason measures in this study could be useful in clinical settings for offenders and non-offenders with IDs. Notably, the measures were all completed which suggested that they could be completed by people with IDs. Furthermore, visual analogue scales were useful and should be considered when working with ID populations. Secondly, the SRM-SF showed consistency in identifying ID offenders reasoning ability. Thirdly, the amended HIT showed good psychometric properties and was suitable for use in clinical settings once permission from the publishers was obtained. Fourthly, the amended SPSI-R-SF demonstrated links with existing and developing moral reasoning theoretical frameworks.

4.5.1. Future research recommendations. The current study explored moral development, cognitive distortions and problem solving for offenders and non-offenders with IDs. Significant differences were found on all the variables when offenders and non-offenders were compared. The results supported existing and upcoming theoretical frameworks and appropriate methodological designs and analyses were used.

The results were useful as they contributed to the small pool of methodologically rigorous studies that focused on moral reasoning with ID populations. What was still unclear was whether these results related to stronger 'causes' of behaviour and whether theoretical

models could predict behaviour. McDermott and Langdon (2014) started to explore the predictive nature of moral reasoning. They found that moral development predicted behavioural problems for people with IDs. The current study added to this limited pool of methodologically robust studies. The findings suggested that moral reasoning, problem solving and cognitive distortions were relevant to working with offenders with IDs. The findings supported the Garrigan and Langdon (in press) model where they proposed that social experiences were understood through a cognitive filter, which influenced the ability to solve problems. Over time, distal higher order constructs (i.e. brain maturation, moral schema development and emotion regulation) developed and contributed to moral development as illustrated in the Garrigan and Langdon (in press) model. Therefore, delayed moral development was related to distorted cognitions and poor problem solving for men with IDs. Because this study was one of the first to explore this relationship, further studies should be conducted to replicate the results.

Notably, psychological interventions were not a focus of this study. This was a limitation and further studies could potentially build on the current study by measuring the same constructs along with different interventions. Treatment programmes that were based on problem solving and moral development for ID offenders, with varied offence types, were still developing. Further studies should focus on using the amended version of the HIT and SPSI-R-SF to explore the changes after such intervention programmes. Theories for interventions should be theoretically robust and need to be tested with ID populations. The current study supported the hypothesis that ID offenders demonstrate reasoning at Stage 2(3) of Gibss Sociomoral Stage theory and this appeared to be consistent with Step 2, Step 3 and Step 4 of Garrigan and Langdon (in press)'s model. It was promising to see that Garrigan and Langdon (in press)'s theory has started to resemble some consistency with a well-

established theory of moral development. Because this theory is still 'youthful' future studies needed to explore its validity and make comparisons with the results in the current study.

4.6 Final Conclusions

The current study examined moral reasoning for offenders and non-offenders with IDs. This was considered in the context of relationships between moral reasoning and cognitive distortions; relationships between moral reasoning and problem solving; and moral reasoning ability when compared to non-offenders with IDs. In addition, the study was a preliminary study, which used two measures that were adapted for use with ID populations. One of the hypotheses explored the psychometric properties of an adapted cognitive distortions measure. The findings in the current study indicated that:

- There was a significant difference between moral reasoning for offenders and non-offenders with IDs. Offenders with IDs demonstrated Stage 2(3) reasoning, which is based on exchanges, and instrumental needs. Non-offenders with IDs demonstrated Stage 2 reasoning. The constructs of Contract, Life, Law and Legal Justice were significantly different (IDO>IDN) when using the SRM-SF.
- Offenders with IDs were significantly better at problem solving when compared to non-offenders with IDs. However, they reported higher levels of Careless Problem Solving Style, which suggested that they might engage in impulsive and narrow behaviours in order to solve problems.
- The HIT demonstrated good internal consistency and test-retest reliability for use with men with IDs.

- Offenders with IDs reported significantly higher levels of cognitive distortions when compared to non-offenders with IDs.
- In terms of rank order, Lying and Oppositional Defiance were the most prominent cognitive distortions for ID offenders.
- There was small to medium positive and statistically significant relationship between moral reasoning and cognitive distortions for men with IDs. This relationship was not replicated offenders with IDs.
- There was medium positive and statistically significant relationship between moral reasoning and problem solving for men with IDs. This relationship was replicated with offenders with IDs.

The study contributed to the limited number of studies that have explicitly focused on moral development and offenders and non-offenders with IDs. The strengths and limitations of the current study were described in relation to the design, methodology and statistical analysis. A key strength of the study was an adequately powered sample size. Therefore, it addressed a major critique that was related to methodological flaws (Langdon et al., 2011a). Limitations included extraneous variables such as social desirability, personality factors, motivation and treatment.

It was envisaged that future studies would revisit and replicate some of the hypotheses in the current study. Further studies could include a second series of validation studies for the psychometric properties of the amended HIT and the amended SPSI-R-SF. There was also a need to explore the structure of the relationships between moral reasoning, cognitive distortions and problem solving using a longitudinal design where causal inferences could be examined. Lastly, there was a need to explore how these constructs changed before, during and after interventions that were used with ID populations. It was envisaged that future studies would use these recommendations and that this would contribute to current and

upcoming theories of moral reasoning (Gibbs et al., 1992; Garrigan & Langdon, in press). The conclusion for the current study was that further research with ID populations was still required.

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Appendices

Appendix A: Socio-Moral Reflection Measure Short Form (SRM-SF) *

1	Think about when you've made a promise to a friend of yours. How important is it for people to keep promises? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?) _____ _____ _____ _____ _____
2	What about keeping a promise to anyone? How important is it for people to keep promises, if they can, even to someone they hardly know? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?) _____ _____ _____ _____ _____

3	How about keeping a promise to a child? How important is for parents to keep promises, if they can, to their children? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?)
4	In general, how important is it for people to tell the truth? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?)

5	Think about when you've helped your mother of father. How important is it for children to help their parents? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?) _____ _____ _____ _____ _____
6	Let's say a friend of yours needs some help and may even die, and youre the only person who can save him or her. How important is it for a person (without losing his or her own life) to save the life of a friend? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?) _____ _____ _____ _____ _____
7	What about saving the life of anyone? How important is it for a person (with losing his or her own life) to save the life of a stranger? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?)

8	How important is for a person to live even if that person doesn't want to? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?)
9	How important is it for people not to take things that belong to other people? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?)

10	How important is for people to obey the law? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?) _____ _____ _____ _____ _____
11	How important is for judges to send people who break the law to jail? Circle one: Very Important Important Not Important WHY IS THAT VERY IMPORTANT / IMPORTANT / NOT IMPORTANT (WHICHEVER YOU CIRCLED?) _____ _____ _____ _____ _____

Appendix B: Modifications to the How I Think Questionnaire (HIT) *

	Original Item	Flesh Reading Ease (FRE) (%)	Rationale	Proposed New Item (FRE %)
1	People should try to work on their problems.	92.0	-	Retain
2	I can't help losing my temper a lot.	92.9	Ambiguous sentence	I lose my temper a lot. (100.00)
3	Sometimes you have to lie to get what you want.	95.1	-	Retain
4	Sometimes I get bored.	75.8	-	Retain
5	People need to be roughed up once in a while.	100.00	-	Retain
6	If I made a mistake, it's because I got mixed up with the wrong crowd.	95.7	-	Retain
7	If I see something I like, I take it.	94.3	-	Retain
8	You can't trust people because they always lie to you.	86.7	-	Retain
9	I am generous with my friends.	87.9	Substituted 'Generous.'	I give a lot to my friends. (100.00)
10	When I get mad, I don't care who gets hurt.	100.00	Substituted 'mad.'	When I get angry, I don't care who gets hurt. (100.00)
11	If someone leaves a car unlocked, they are asking to have it stolen.	76.5	-	Retain
12	You have to get even with people who don't show you respect.	88.9	-	Retain
13	Sometimes I gossip about other people.	31.5	Low FRE	Sometimes I talk about other people when they

				don't know. (69.7)
14	Everybody lies, it's no big deal.	59.7	Low FRE	Everyone lies. It's not a problem to lie. (86.4)
15	It's no use trying to stay out of fights.	100.00	-	Retain
16	Everyone has the right to be happy.	78.8	-	Retain
17	If you know you can get away with it, only a fool wouldn't steal.	95.9	-	Retain
18	No matter how hard I try, I always get into trouble.	80.3	-	Retain
19	Only a coward would ever walk away from a fight.	78.2	-	Retain
20	I have sometimes said something bad about a friend.	66.1	Low FRE	Sometimes I have said bad things about a friend. (84.9)
21	It's ok to tell a lie if someone is dumb enough to fall for it.	90.0	-	Retain
22	If I really want something, it doesn't matter how I get it.	81.8	-	Retain
23	If you don't push people around, you always get picked on.	87.9	-	Retain
24	Friends should be honest with each other.	90.9	-	Retain
25	If a store or home owner gets robbed, it's really their fault for not having better security.	65.1	Low FRE and substituted 'store.'	If shops get robbed it's their fault for not having good security. (74.8)
26	People force you to lie if they ask too many questions.	87.9	-	Retain
27	I have tried to get even with someone.	82.3	-	Retain

28	You should get what you need, even if it means someone has to get hurt.	90.0	-	Retain
29	People are always trying to hassle me.	78.8	Substituted 'hassle.'	People are always trying to get on my nerves. (94.3)
30	Stores make enough money that it's ok to just take the things you need.	95.9	Changed 'stores' to 'shops.'	Shops make enough money that it's ok to just take the things you need. (95.9)
31	In the past, I have lied to get myself out of trouble.	95.9	-	Retain
32	You should hurt people first, before they hurt you.	94.3	-	Retain
33	A lie doesn't really matter if you don't know that person.	87.9	-	Retain
34	It's important to think of other people's feelings.	61.2	Low FRE	I should think about others feelings. (73.8)
35	You might as well steal. If you don't take it somebody else will.	96.1	-	Retain
36	People are always trying to start fights with me.	94.3	-	Retain
37	Rules are mostly meant for other people.	78.8	-	Retain
38	I have covered up things that I have done.	100.00	-	Retain
39	If someone is careless enough to lose a wallet, they deserve to have it stolen.	61.8	Ambiguous sentence	It's ok to steal a wallet if someone leaves it behind. (80.3)
40	Everyone breaks the law, it's no big deal.	92.9	-	Retain
41	When friends need you, you should be	100.00	-	Retain

	there for them.			
42	Getting what you need is the only important thing.	75.5	-	Retain
43	You might as well steal. People would steal from you if they had the chance.	100.00	-	Retain
44	If people don't cooperate with me, it's not my fault if someone gets hurt.	77.8	-	Retain
45	I have done bad things that I haven't told people about.	87.9	-	Retain
46	When I lose my temper, it's because people try to make me mad.	89.5	Removed 'mad.'	When I lose my temper, it's because people try to make me angry. (83.0)
47	Taking a car doesn't really hurt anyone if nothing happens to the car and the owner gets it back.	76.2	-	Retain
48	Everyone needs help once and a while.	90.9	-	Retain
49	I might as well lie. When I tell the truth, people don't believe me anyway.	92.0	-	Retain
50	Sometimes you have to hurt someone if you have a problem with them.	76.5	-	Retain
51	I have taken things without asking.	73.8	-	Retain
52	If I lied to someone that's my business.	71.8	-	Retain
53	Everybody steals – you might as well get your share.	75.5	-	Retain

54	If I really want to do something, I don't care if it's legal or not.	84.4	-	Retain
Mean FRE		84.48	**New Mean FRE**	87.31

Appendix C: How I Think Questionnaire – Modified (HIT) *

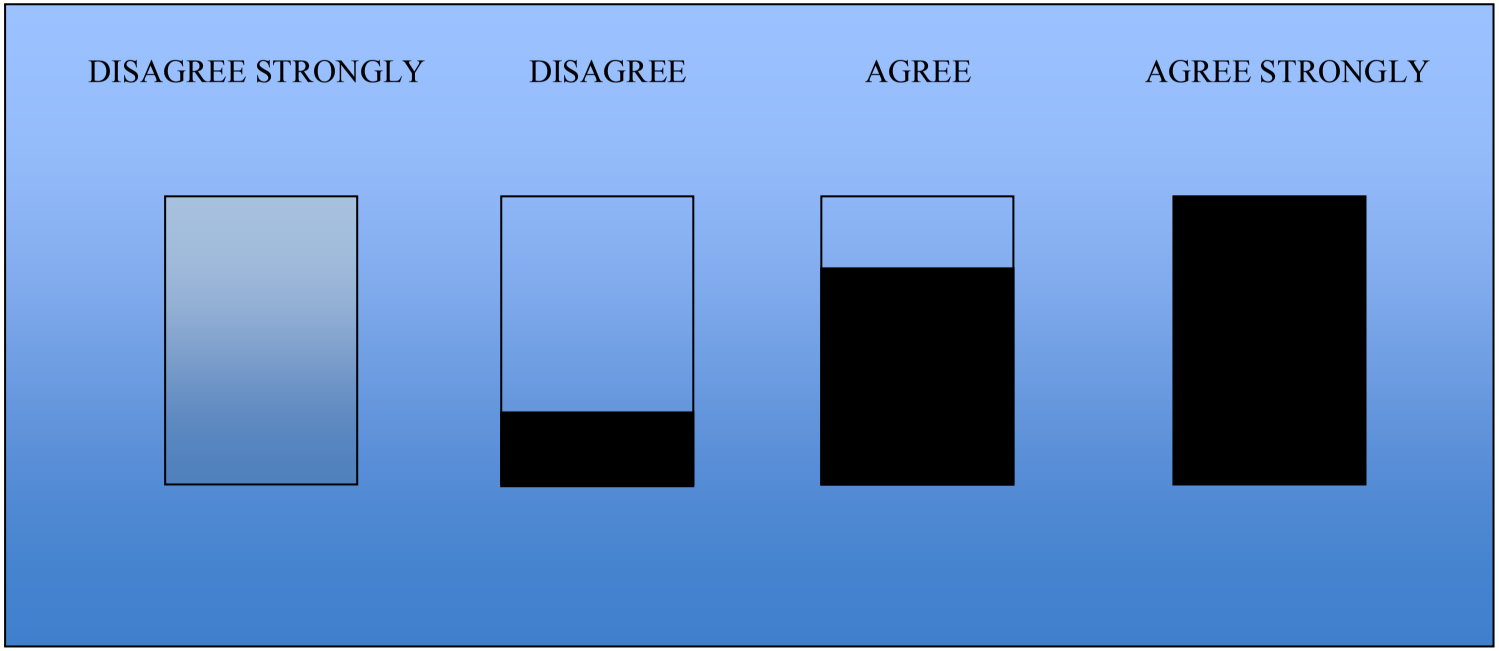
		Agree Strongly	Agree	Disagree	Disagree Strongly
1	People should try to work on their problems				
2	I lose my temper a lot				
3	Sometimes you have to lie to get what you want				
4	Sometimes I get bored				
5	People need to be roughed up once in a while				
6	If I made a mistake, it's because I got mixed up with the wrong crowd				
7	If I see something I like, I take it				
8	You can't trust people because they always lie to you				
9	I give a lot to my friends				
10	When I get angry, I don't care who gets hurt				
11	If someone leaves a car unlocked, they are asking to have it stolen				
12	You have to get even with people who don't show you respect				
13	Sometimes I talk about other people when they don't know				
14	Everyone lies. Its not a problem to lie.				
15	It's no use trying to stay out of fights				
16	Everyone has the right to be happy				
17	If you know you can get away with it, only a fool wouldn't steal				
18	No matter how hard I try, I always get into trouble				
19	Only a coward would ever walk away from a fight				
20	Sometimes I have said bad things about a friend				
21	It's ok to tell a lie if someone is dumb enough to fall for it				
22	If I really want something, it doesn't matter how I get it				

23	If you don't push people around, you always get picked on				
24	Friends should be honest with each other				
25	If shops get robbed it's their fault for not having good security				
26	People force you to lie if they ask too many questions				
27	I have tried to get even with someone				
28	You should get what you need, even if it means someone has to get hurt				
29	People are always trying to get on my nerves				
30	Shops make enough money that it's ok to just take the things you need				
31	In the past, I have lied to get myself out of trouble				
32	You should hurt people first, before they hurt you				
33	A lie doesn't really matter if you don't know that person				
34	I should think about others feelings				
35	You might as well steal. If you don't take it somebody else will				
36	People are always trying to start fights with me				
37	Rules are mostly meant for other people				
38	I have covered up things that I have done				
39	Its ok to steal a wallet if someone leaves it behind				
40	Everyone breaks the law, it's no big deal				
41	When friends need you, you should be there for them				
42	Getting what you need is the only important thing				
43	You might as well steal. People would steal from you if they had the chance				
44	If people don't cooperate with me, it's not my fault if someone gets hurt				
45	I have done bad things that I haven't told people about				

46	When I lose my temper, it's because people try to make me angry				
47	Taking a car doesn't really hurt anyone if nothing happens to the car and the owner gets it back				
48	Everyone needs help once and a while				
49	I might as well lie – when I tell the truth, people don't believe me anyway				
50	Sometimes you have to hurt someone if you have a problem with them				
51	I have taken things without asking				
52	If I lied to someone that's my business				
53	Everybody steals – you might as well get your share				
54	If I really want to do something, I don't care if its legal or not				

Visual Analogue Scale
(For use with the HIT)

For each question that is read out, please point to the one that you think is the best answer.



Appendix D: Permission to Modify the How I Think Questionnaire (HIT) *

From: Judy Parkinson [mailto:jparkinson@researchpress.com]
Sent: Tuesday, May 07, 2013 8:33 PM
To: Peter Langdon (MED)
Cc: gibbs.1@osu.edu; budpotter@att.net; barrigaalvaro@yahoo.com
Subject: RE: HIT

Hi Peter,
Thank you for waiting patiently for Research Press to send you our approval to use the *How I Think Questionnaire* in your Data Collection Pack with other instruments. As you have indicated that you do not intend to publish or sell the assessments, we can give you permission to adapt and reproduce it for your research. The only thing we require is credit to the original source, and since you have slightly changed some of the questions, your version is a very close adaptation. Please put a notice in small print at the bottom of your page 11 (where the *How I Think Questionnaire* starts) as follows: "From *How I Think Questionnaire,* by John C. Gibbs, Alvaro Q. Barriga and Granville Bud Potter, Champaign, IL: Research Press, 2001. Adapted and reproduced by permission of the publisher." Since you are producing this for noncommercial use, we will not ask for a fee.
Are you planning to use our HIT Manual for the scoring of the Questionnaire? If you have any interesting results in your data collection, please let our authors and me know.
Best regards,

Judy Parkinson, President & CEO
Research Press, 2612 N. Mattis Ave., Champaign, IL 61822
800-519-2707
217-352-1221 fax
www.researchpress.com

Appendix E: Social Problem Solving Inventory Short Form Revised (SPSI-R-SF)*

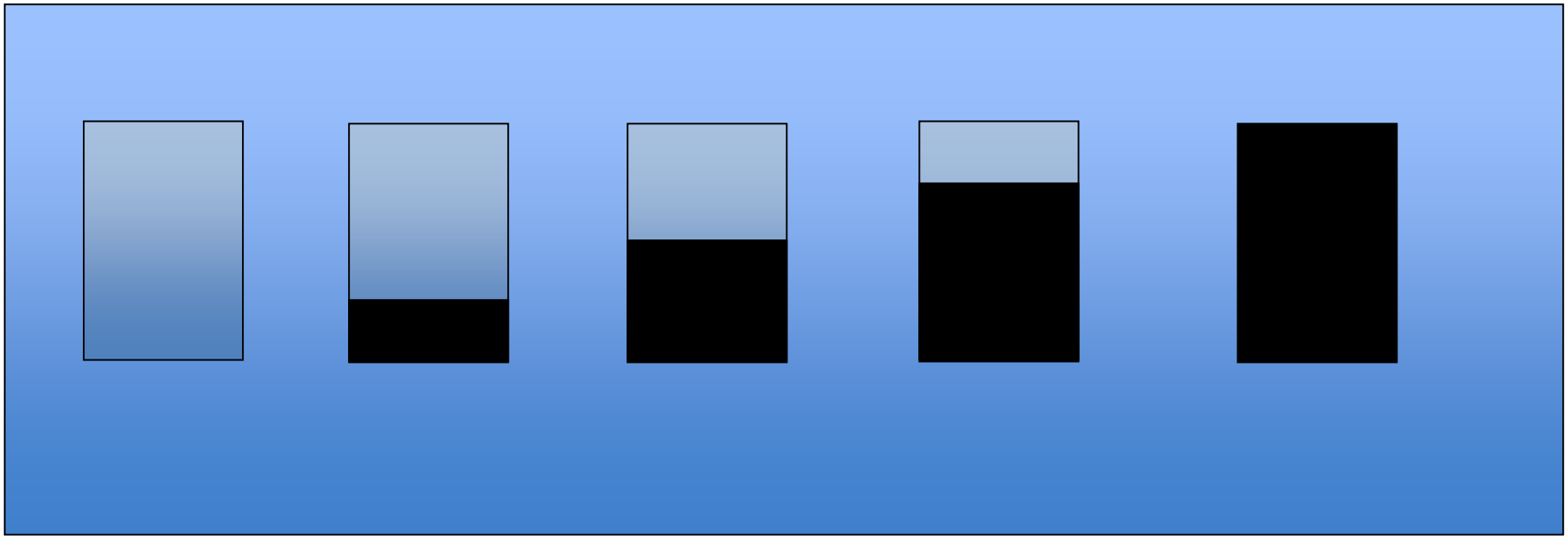
		Not at all true of me	Slightly true of me	Moderately true of me	Very true of me	Extremely true of me
1	I feel threatened and afraid when I have an important problem to solve	0	1	2	3	4
2	When making decisions I do not look at the options I just do the first thing I think	0	1	2	3	4
3	I worry when I have an important decision to make	0	1	2	3	4
4	If I fail to solve a problem I keep going anyway	0	1	2	3	4
5	I think a problem is always a good challenge	0	1	2	3	4
6	I wait to see if a problem will sort itself out before I do anything	0	1	2	3	4
7	If I fail at first I get frustrated	0	1	2	3	4
8	If I have a hard problem I worry I won't manage it on my own	0	1	2	3	4
9	Whenever I have a problem, I believe it can be solved	0	1	2	3	4
10	I go out of my way to avoid having to deal with problems in my life	0	1	2	3	4
11	Difficult problems make me very upset	0	1	2	3	4
12	When I have a decision to make I look at the good and bad things which may happen	0	1	2	3	4
13	When problems occur in my life, I like to deal with them as soon as possible	0	1	2	3	4
14	When I am trying to solve a problem, I go with the first	0	1	2	3	4

	idea that comes to mind					
15	I can always solve hard problems on my own	0	1	2	3	4
16	When I have a problem I try to get all the facts first	0	1	2	3	4
17	When a problem occurs in my life, I put off trying to solve it for as long as possible	0	1	2	3	4
18	I spend more time avoiding my problems than solving them	0	1	2	3	4
19	When I try to solve a problem I think about what I want to happen so I know what to do	0	1	2	3	4
20	When I have a decision to make I don't think about the good and bad I just do it	0	1	2	3	4
21	When I solve a problem I look to see if it was a good thing to do	0	1	2	3	4
22	I put off solving problems until it is too late to do anything about them	0	1	2	3	4
23	When I am trying to solve a problem, I think of all the options until I cannot come up with any more	0	1	2	3	4
24	When making decisions, I go with my gut feeling without thinking too much about what might happen	0	1	2	3	4
25	I make decisions on the spur of the moment	0	1	2	3	4

Visual Analogue Scale
(For use with the SPSI-R-SF)

For each question that is read out, please point to the one that you think is the best answer.

NOT AT ALL TRUE SLIGHTLY TRUE MODERATELY TRUE VERY TRUE EXTREMELY TRUE



Appendix F: Permission to Modify the Social Problem Solving Inventory (SPSI-R-SF)*

MHS
Multi-Health Systems Inc. www.mhs.com
Publishers and Distributors of Professional Assessment Materials

August 27, 2013

To Whom it May Concern,

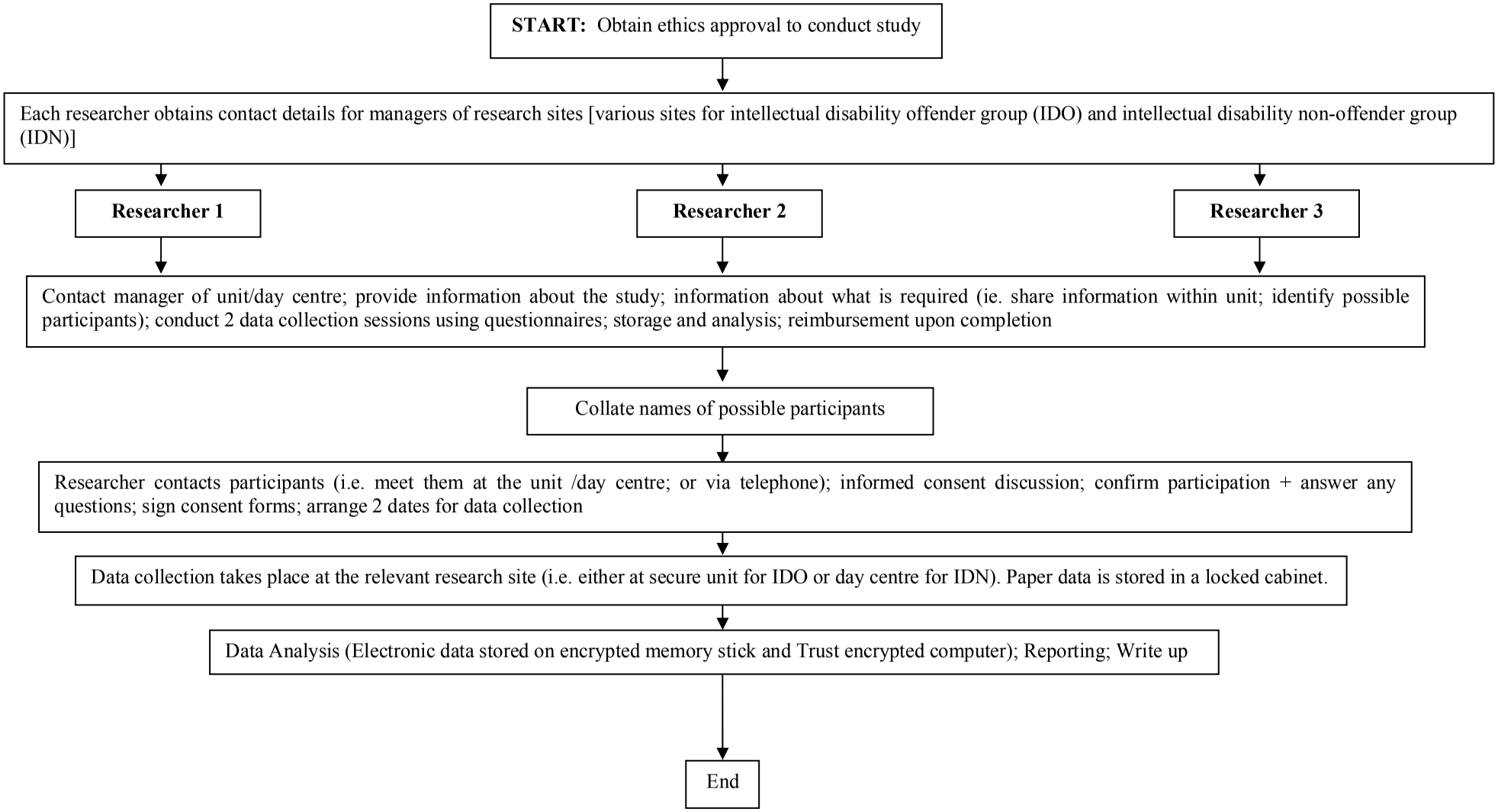
This letter is to confirm that Matthew Daniel, from the University of East Anglia, been granted permission by Multi-Health Systems Inc, (MHS) to use a modified version of the Social Problem-Solving Inventory-Revised™ (SPSI-R™).

Matthew Daniel has also met our Qualifications, which are in accordance with the ethical and professional standards of the American Psychological Association and the Standards for Education and Psychological Testing, to administer this instrument.

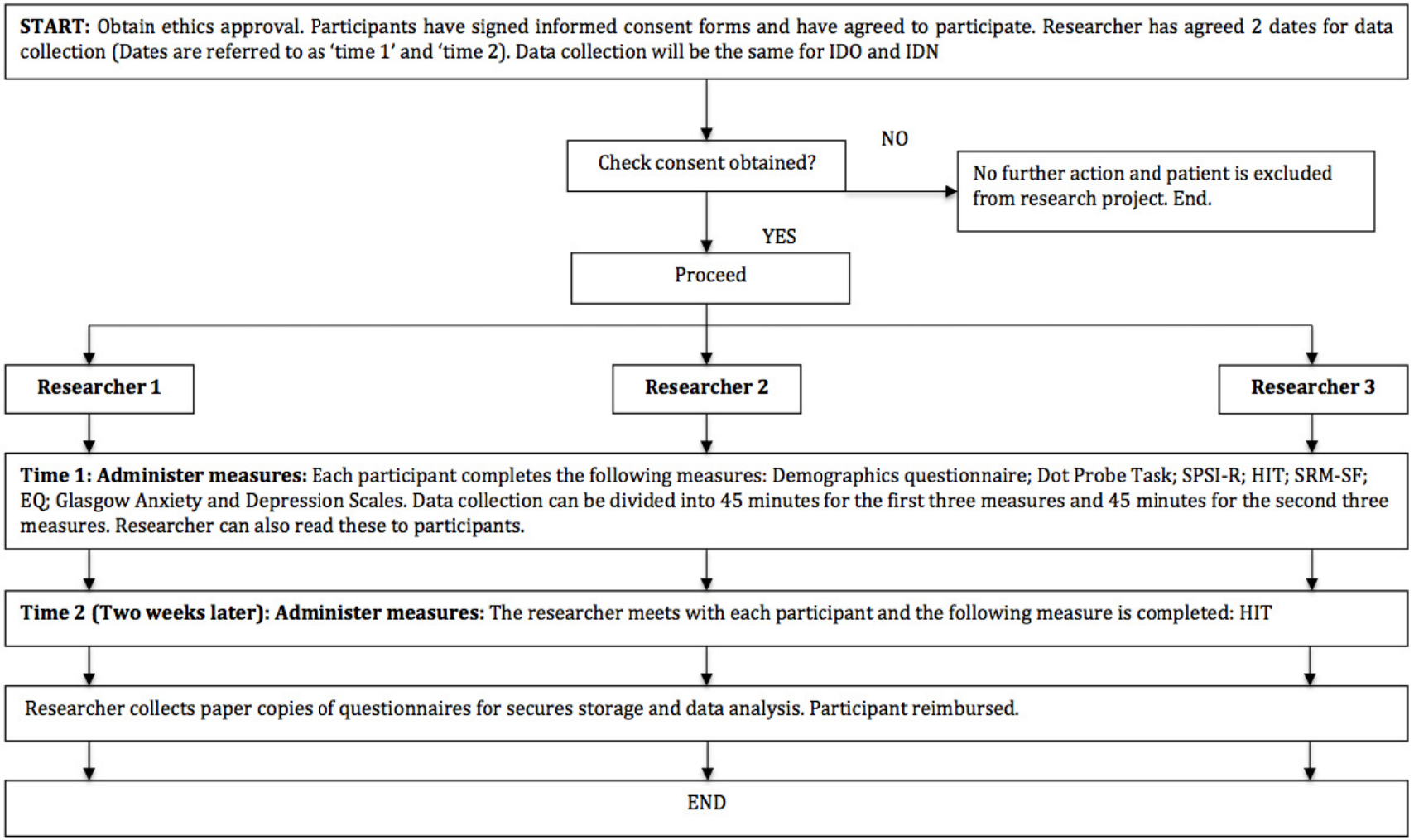
Thank you,

Betty Mangos
Multi Health Systems, Inc.

Appendix G: Algorithm for Participant Recruitment



Appendix H: Algorithm for Research Procedure



Appendix I: Information Sheet for Professionals

Department of Psychological Sciences

Norwich Medical School

University of East Anglia
Norwich NR4 7TJ England

How do people with learning disabilities understand what is right and wrong?

Information for Professionals

Who is involved in the study?

This research is funded by the National Institute of Health Research. It is being run by the University of East Anglia, across the East of England.

Who are the researchers?

Dr Peter Langdon, Clinical Senior Lecturer, University of East Anglia
P.Langdon@uea.ac.uk
Susan Sadek, Trainee Clinical Psychologist, University of East Anglia
S.Sadek@uea.ac.uk
Matthew Daniel, Trainee Clinical Psychologist, University of East Anglia
Matthew.Daniel@uea.ac.uk

What is the aim of the study?

To better understand the factors which may explain offending behaviour in men with intellectual disabilities. Previous research has shown that an ability to see other people's perspectives (empathy), determining right from wrong (moral reasoning) and the way people process and understand the world (cognition) are important factors. This study aims to investigate the way these concepts, and how they interact with each other.

Which service users can be involved in the research?

1. ***Men***, aged ***18 – 65***
2. With a ***mild intellectual disability***
3. Who are have the ***capacity to consent*** to taking part in research

Participants are being recruited from NHS and independent sector secure forensic services, and day services and community intellectual disability teams.

What happens in the study?

Researchers get in contact with teams who may have eligible service users, to discuss the research with staff.

Staff can give service users an information sheet, and ask them if they would like to talk to the researchers.

If service users say they would be interested in taking part, staff can then inform the researcher.

The researcher will arrange a time to visit the service user. They will explain the study further, answer questions, and ensure that information sheets have been read and understood. The full research assessment will take approximately 2 hours.

The researcher will meet the service user again, two weeks later for a follow up appointment. This will take 15 minutes.

Principal Investigator: Dr Peter Langdon Phone: 01603 593599
Address: Department of Psychological Sciences, Norwich Medical School, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ

Appendix J: Information Sheet for Participants

Department of Psychological Sciences

Norwich Medical School

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593599
Fax
01603 593604
Email
P.Langdon@uea.ac.uk

INFORMATION SHEET

Study Title: Attention Bias and Moral Reasoning in People with Intellectual Disabilities

You are being asked to take part in research.

IF YOU WOULD LIKE SOMEONE ELSE TO BE PRESENT WHILE WE TALK ABOUT THIS, PLEASE TELL ME. YOU CAN HAVE AN ADVOCATE, FRIEND, KEYWORKER, OR SOMEONE ELSE COME IN AND TALK WITH US.

You can talk to others about this research study if you want to. This can be anyone you like.

Please ask if there is anything that you do not understand.

Payment

- We will give you a shopping voucher for £20.00

How long will it take?

- About two hours. You can take a break half way through if you like.
- Two weeks later, we will visit and talk to you for 15 minutes with some extra questions.

We want to find out:

- We want to find out how people with a learning difficulty understand why some things are right or wrong.

Are there bad things that could happen?

- No.
- Some of the pictures we will show you on the computer might not be very nice. They might show people in pain, or might contain blood. They will only appear on the computer very quickly - for one second at a time.
- You may think some of the questions are silly, but we would like you to try to answer them as best as you can.
- If anything upsets you, we can stop, and you can talk to Peter, Susan or Matthew about it, or you can talk to someone else.

Are there any good things that might happen?

- By saying YES you might help us to understand how people with learning difficulties understand why some things are right and some things are wrong. You might also help us to understand why some people look at pictures in different ways.

Will information about me be kept private?

- Yes, but:
    - We will tell your care team if you tell us things that mean you or someone else is at risk. This is to protect you and other people.
    - We may look at your records. We will ask you if this is okay.
    - People who are in charge of making sure that the researchers are following the rules may also look at your records and the information they collect about you.

What happens at the end?

- The results will be written about. No names will be given.

Who is organising and giving money for the research?

- We will give you a shopping voucher for £20.00
- The Department of Health is paying for the research.

Has the research been checked?

- People have looked at the study to check it is safe.
- People have also checked to make sure that everyone gets good information before they start.

What if you are unhappy about the research?

- You can talk to the researchers first if you like.
- You can make a complaint to the University of Kent or the NHS.
- We will give you information about how to complain.
- You may want a key worker to help you make a complaint.
- If you are harmed, you may be able to take legal action against the University of East Anglia or the NHS, but you may have to pay for this.

Contacts:

- If you want any extra information, or you wish to complain, you or your key worker can call (Monday to Friday) or write to:

  Dr. Peter Langdon, Clinical Psychologist

  His phone number is: 01603 593599 or 01603593310

  His address is: Department of Psychological Sciences
  Norwich Medical School
  University of East Anglia
  Norwich
  NR4 7TJ

Appendix K: Participant Informed Consent Forms

University of East
Anglia, Norwich,
NR4 7TJ
Telephone: 01603 593599
Fax: 01603 593604
Email: P.Langdon@uea.ac.uk
WWW: www.med.uea.ac.uk/psychology

CONSENT FORM FOR RESEARCH

Participant identification number:

Study title:

Attention Bias and Moral Reasoning in People with Intellectual Disabilities

Name of researchers

Susan Sadek, Trainee Clinical Psychologist
Matthew Daniel, Trainee Clinical Psychologist
Dr Peter Langdon, Lecturer in Clinical Psychology

Please tick ✓ the box if you agree with the sentence.

I confirm an advocate/key-worker was actually present when the study was explained to me. ☐

I understand the information sheet dated ** ***** 2012 (Version 1.0) for this study, explained to me by _____ ☐

I have asked any questions I wanted to. ☐

I understand that taking part in this research study is my choice. ☐

I understand that I can leave the research at any time (even while doing the questionnaires) without giving a reason. ☐

I understand that it will not affect my care if I take part or do not take part. ☐

I agree for the research team to look at my clinical notes. ☐

I agree for my key worker to know I am taking part. ☐

I agree to take part in the research. ☐

I understand that I am only to tell the researchers about offences which other people already know about (e.g. the police, my doctor, my nurse, or my social worker). ☐

I understand that if I tell the researchers about offences which no one else knows about then they may tell other people about them (e.g. the police, my doctor, or my social worker). ☐

I understand that people from the NHS may check the information collected by the researchers to make sure they are following the rules. I agree to this. ☐

I would like to be contacted in the future to take part in other studies. ☐

_____	_____	_____
Name of Participant	Date	Signature

My address is:

_____
_____

My telephone number is:

_____

_____	_____	_____
Name of Witness (Key Worker/Carer/Advocate if Present)	Date	Signature

_____	_____	_____
Name of Researcher		Date Signature

Appendix L: NHS Research Ethics Service Study Approval Letter

NHS
Health Research Authority
NRES Committee South West - Frenchay
Bristol Research Ethics Committee Centre
Level 3, Block B
Whitefriars
Lewins Mead,
Bristol
BS1 2NT

Telephone: 01173421334
Facsimile: 01173420445

15 May 2013

Dr Peter Langdon
Clinical Senior Lecturer/Honorary Consultant Clinical & Forensic Psychologist
University of East Anglia
Department of Psychological Sciences
Norwich Medical School, University of East Anglia
Norwich Research Park, Norwich
NR4 7TJ

Dear Dr Langdon

Study title:	**Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.**
REC reference:	**13/SW/0084**
Protocol number:	**1**
IRAS project ID:	**117923**

Thank you for your letter of 30 April 2013, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the NRES website, together with your contact details, unless you expressly withhold permission to do so. Publication will be no earlier than three months from the date of this favourable opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to withhold permission to publish, please contact the Co-ordinator Miss Christine Hobson, nrescommittee.southwest-frenchay@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Ethical review of research sites

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission ("R&D approval") should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements.

Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of approvals from host organisations

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

Document	*Version*	*Date*
Covering Letter		18 March 2013
Evidence of insurance or indemnity		15 May 2012
Investigator CV		
Other: Student CV		
Other: Student CV		

Other: Dot - Probe Images	2	30 April 2013
Other: Data Collection Pack Time 1	2	30 April 2013
Other: Data Collection Pack Time 2	2	30 April 2013
Participant Consent Form	2	30 April 2013
Participant Information Sheet: professionals	1	18 October 2012
Participant Information Sheet	2	30 April 2013
Protocol	3	02 May 2013
Questionnaire: Validated: Social Reflection Questionnaire		
REC application		21 March 2013
Referees or other scientific critique report		
Response to Request for Further Information		30 April 2013

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document *"After ethical review – guidance for researchers"* gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments
- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

Further information is available at National Research Ethics Service website > After Review

13/SW/0084	**Please quote this number on all correspondence**

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

With the Committee's best wishes for the success of this project.

Yours sincerely

Dr Robert Beetham
Chair

Email: nrescommittee.southwest-frenchay@nhs.net

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Mrs Yvonne Kirkham*
Ms Clare Symms, NHS Norfolk

Appendix M: Hertforshire Partnership NHS Foundation Trust R&D Approval

Hertfordshire Partnership NHS
University NHS Foundation Trust

Dr Peter Langdon
University of East Anglia
Department of Psychological Sciences
Norwich Medical School, Norwich Research Park
Norwich
NR4 7TJ

R&D Department
Department of Psychiatry
QEII Hospital
Howlands
Welwyn Garden City
AL7 4HQ

Tel. 01707 369058
Tel. 01707 365069
Fax. 01707 365169
e-mail t.gale@herts.ac.uk

29th May 2013

Dear Dr Langdon,

Research Study: Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.

REC reference: 13/SW/0084

I have received the documentation in support of the above project. Following a review by The R&D Department, I am pleased to tell you that the study now has R&D approval for our Trust on behalf of Hertfordshire Partnership University NHS Foundation Trust.

Approval is given on the understanding that you will notify the R&D Office of any further amendments to the study design, that you will carry out the study as specified in the final version of the protocol, and that you will comply fully with the HPFT R&D Policy (copy sent by e-mail).

With kind regards

Dr Tim M Gale
Manager, Research and Development Department
Visiting Professor, Dept Psychology, UoH

Hertfordshire Partnership NHS
NHS Foundation Trust

Standard Operating Procedure for Research: Research and Development (R&D) Governance Policy

Authorising Officer	Dr Geraldine O'Sullivan
Signature of Authorising Officer	
Version:	V1
Ratified by:	Executive Team
Date ratified:	22.02.2011
Name of originator/author:	Dr Tim Gale, R&D Manager
Name of responsible committee/individual:	Research and Development Committee
Date issued:	22.02.2011
Review date:	22.02.2014
Type:	Practice
Summary:	
Target audience:	All staff involved in R&D

Hertfordshire Partnership NHS Foundation Trust is committed to providing an environment where all staff, service users and carers enjoy equality of opportunity.The Trust works to eliminate all forms of discrimination and recognise that this requires, not only a commitment to remove discrimination, but also action through positive policies to redress inequalities.

Providing equality of opportunity means understanding and appreciating the diversity of our staff, service users & carers and ensuring a supportive environment free from harassment. Because of this Hertfordshire Partnership NHS Foundation Trust actively encourages its staff to challenge discrimination and promote equality of opportunity for all.

Appendix N: Norfolk Community Health & Care NHS Trust R&D Approval

Norfolk Community NHS
Health and Care
NHS Trust

Ref: 2013LD02 (117923)

Norfolk & Suffolk Primary & Community Care Research Office
Hosted by: South Norfolk CCG
Lakeside 400
Old Chapel Way
Broadland Business Park
Thorpe St Andrew
Norwich
NR7 0WG

Tel: 01603 257283
Fax: 01603 257292
E-mail: paul.mills1@nhs.net
http://www.southnorfolkccg.nhs.uk/info.aspx?p=8

Dr Peter Langdon
Department of Psychological Sciences
Norwich Medical School
University of East Anglia
Norwich
NR4 7TJ

20 May 2013

Dear Dr Langdon

Re: 2013LD02 (117923). Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.

REC Number: 13/SW/0084

Chief Investigator: Dr Peter Langdon

Sponsor: University of East Anglia

Further to your submission of the above project through NIHR CSP your project has now been reviewed in accordance with the NIHR CSP Operating Guidelines and all the mandatory research governance checks have now been satisfied. I am therefore pleased to inform you on behalf of **Norfolk Community Health & Care NHS Trust** that NHS permission (R&D approval) was granted on **20th May 2013** for your study to take place at the following sites:

- Learning Disabilities Service, Norfolk Community Health & Care NHS Trust

Please note the following condition of approval:

- Please ensure that Norfolk Community Health & Care NHS Trust staff record verbal consent to pass contact details to the study team in the patient's medical notes.
- Please ensure that the LD service at NCH&C are informed if any participants from NCH&C exhibit any distress during the study so that any support needed can be put in place.

It is noted that there were a number of minor errors on the REC letter of favourable opinion, which you have highlighted to the REC. If this letter is reissued, please ensure a copy is sent through to us to update our records.

You may now begin your study at the above sites. **Please note also, if you wish to extend approval to any sites other than those listed above you must apply for this through NIHR CSP.**

NHS Permission is granted on the basis of the information supplied in the application form, protocol and supporting documentation, if anything subsequently comes to light that would cast doubts upon,

or alter in any material way, any information contained in the original application, or a later amendment application there may be implications for continued NHS Permission.

Permission is granted on the understanding that the study is conducted in accordance with the Research Governance Framework and the terms of REC favourable opinion.

If you have any queries regarding this or any other project please contact Paul Mills, R&D Officer, at the above address. Please note, the reference number for this study is **2013LD02 (117923)** and this should be quoted on all correspondence.

Yours sincerely

Clare Symms
Research Governance Manager, Norfolk & Suffolk Primary & Community Care Research Office
Signed on behalf of Norfolk Community Health & Care NHS Trust

cc: Yvonne Kirkham, University of East Anglia, Sponsor Representative
File

Conditions of NHS Permission
Please note the following conditions of NHS Permission - it is your responsibility to ensure that these conditions are disseminated to all parties involved in this project at the above sites.

You must notify the Norfolk & Suffolk Primary & Community Care Research Office of:

- All proposed changes to this study, whether minor or substantial
- All Serious Adverse Events relevant to the above sites
- Any deviations from the protocol or protocol breaches including any urgent safety measures that are required to be taken in order to protect research participants against any immediate hazard to their health or safety
- All incidents[1] or complaints in relation to the research project at the above sites
- Any Sponsor or funder initiated audits, or any regulatory inspections to be conducted in relation to this study at the above sites
- The study conclusion and/or termination of the study; where smartcards have been issued, this notification must be made on a site by site basis to allow deactivation of smartcards at that site.
- All publications relating to the study

Recruitment of Community Teams:
You are responsible for ensuring an appropriate assessment is made of the suitability and capacity of community teams to undertake the study at the point they are recruited.

- You are expected to put in place an agreement or delegation of authority to ensure clarity of roles and responsibilities between yourself and the site as necessary.
- You are responsible for oversight of the project at each participating site to ensure compliance with the protocol and any study related SOPs or work instructions

Payment of Support Funding:
You are required to provide details of study activity on an ongoing basis in the format specified by the Norfolk & Suffolk Primary & Community Care Research Office to enable quarterly payment of support funding.

Documentation:

[1] An incident is defined as any event or circumstance that could have, or did, lead to harm, loss or damage and includes loss of data, confidentiality breaches, harm to researchers or staff or damage to property.

You are required to provide all participating sites with all relevant study information to enable them to fulfil their role within the research. This will include as a minimum:

(a) Final approved protocol
(b) Copies of REC favourable opinion, NHS Permission letter covering that site, any other approvals necessary (e.g. MHRA)
(c) Participant information sheets, consent forms, invitation letters, posters/adverts and any other documentation given to the participant

It is your responsibility to update the information held at each site with any amendments made to this documentation and all approval letters applicable to those amendments and to ensure that all essential documents held at each site are maintained, stored and archived as appropriate.

Transfer of data

- Transfer of patient identifiable or confidential data must be in accordance with Trust policies.

Scope of permission

- Please note that the above permission applies only to research activity on NHS staff or premises or involving NHS Patients and/or their tissues, data or samples. Separate agreements and permissions will be required for research involving private patients or those under the care of social services.

Documents Reviewed

The following documents were reviewed:

Letter of Favourable Opinion from NRES Committee South West – Frenchay, dated 15th May 2013

- Evidence of Insurance/Indemnity, 15th May 2012
- Investigator CV – Dr Peter Langdon
- Investigator CV – Susan Sadek
- Investigator CV – Matthew Daniel
- Dot Probe Images, Version 2, 30th April 2013*
- Participant Consent Form, Version 2, 30th April 2013
- Information Sheet for Professionals, Version 2, 30th April 2013*
- Participant Information Sheet, Version 2, 30th April 2013
- Protocol, Version 3, 2nd May 2013
- Social Reflection Questionnaire
- Response to Request for Further Information, 30th April 2013

Other Documents Reviewed

- Fully Signed NHS R&D Form, Lock Code 117923/425321/14/16
- Signed SSI Form, Lock Code 117923/452092/6/88/179430/272221

* These documents are incorrectly labelled on the REC letter of favourable opinion.

Appendix O: St Andrew's Healthcare Study Approval

St Andrew's Academic Centre

Institute of Psychiatry at The Maudsley | KING'S College LONDON University of London | St Andrew's

25 April 2014

Matthew Daniel
Matthew.Daniel@uea.ac.uk

ACADEMIC CENTRE
E: gdickens@standrew.co.uk
T:01604 616362

Dear Matthew

RE: Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.

I confirm that we have received evidence of ethical approval for this study. You have provided evidence of an honorary contract with St Andrews and have received a clear enhanced CRB disclosure.

I confirm that permission was granted to conduct recruitment for this study in line with the approved protocol.

You are required to comply with any requests to audit compliance with St Andrew's policies in respect of this research.

Yours sincerely

Professor Geoff Dickens
Research Manager

Appendix P: Huntercombe Healthcare Study Approval

From: Ford, Peter [Peter.Ford@huntercombe.com]
Sent: Friday, July 26, 2013 4:49 PM
To: Matthew Daniel (MED)
Subject: FW: Research Enquiry: Matthew Daniel (Trainee Clinical Psychologist) need to respond

Dear Matthew,

We have discussed your proposal and are happy to assist in your research. Please contact me after the middle of August to make arrangements to proceed with data collection.

Yours sincerely

Peter
Peter T. Ford
Consultant Psychologist, Head of Psychology, Specialised Mental Health and Intellectual Disability Recovery Services, (South & East).
E: peter.ford@huntercombe.com
T: 01733 844385 | Mobile: 07799330642
Kings Delph Lodge, 761 Oil Mills Road, Pondersbridge, Huntingdon, Cambridgeshire PE26 2TR
The Huntercombe Group.

Appendix Q: Cambridgeshire and Peterborough NHS Foundation Trust R&D Approval

Cambridgeshire and Peterborough NHS
NHS Foundation Trust

Understanding children, young people and families

5 August 2013

R&D Ref: M00551

Dr Isabel Clare
Cambridge Intellectual & Developmental
Disabilities Research Group
Department of Psychiatry
University of Cambridge, Douglas House
18bTrumpington Road
Cambridge CB2 8AH

Research and Development Department
Joint Research Office
Box 277
Addenbrooke's Hospital
Hills Road
Cambridge
CB2 0QQ

Direct Dial: 01223 596472 ext 6472
E-mail: beth.muldrew@cpft.nhs.uk
www.cpft.nhs.uk

Dear Dr Clare

Re: 13/SW/0084 – Developing measures of empathy and reasoning

In accordance with the Department of Health's Research Governance Framework for Health and Social Care, all research projects taking place within the Trust must receive a favourable opinion from an ethics committee and approval from the Department of Research and Development (R&D) prior to commencement.

R&D have reviewed the documentation submitted for this project, and has undertaken a **site specific assessment** based on the information provided in the SSI form, and I am pleased to inform you that we have no objection to the research proceeding within CPFT.

Sponsor: University of East Anglia

Funder: NIHR Post-Doctoral Fellowship Programme

End date: 01/12/2015

Protocol: Version 3.0 dated 2 May 2013

Conditions of Trust Approval:

- The project must follow the agreed protocol and be conducted in accordance with all Trust Policies and Procedures especially those relating to research and data management. Any mobile devices used must also comply with Trust policies and procedures for encryption.
- You and your research team must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice and the Data Protection Act 1998 and are aware of your responsibilities in relation to the Human Tissue Act 2004, Good Clinical Practice, the NHS Research Governance Framework for Health and Social Care, Second Edition April 2005 and any further legislation released during the time of this study.

HQ Elizabeth House, Fulbourn Hospital, Cambridge CB21 5EF
T 01223 726789 F 01480 398501 www.cpft.nhs.uk

A member of Cambridge University Health Partners

- Members of the research team must have appropriate substantive or honorary contracts with the Trust prior to the study commencing. Any additional researchers who join the study at a later stage must also hold a suitable contract.
- You and your research team must provide to R&D, as soon as available, the date of first patient first visit.

If the project is a clinical trial under the European Union Clinical Trials Directive the following must also be complied with:

- the EU Directive on Clinical Trials (Directive 2001/20/EC) and UK's implementation of the Directive: The Medicines for Human Use (Clinical Trials) Regulations 2004;

- the EU Directive on Principles and Guidelines for Good Clinical Practice (EU Commission Directive 2005/28/EC); and UK's implementation of the Directive: The Medicines for Human Use (Clinical Trials) Amendment Regulations 2006;

Amendments
Please ensure that you submit a copy of any amendments made to this study to the R&D Department.

Annual Report
It is obligatory that an annual report is submitted by the Chief Investigator to the research ethics committee, and we ask that a copy is sent to the R&D Department. The yearly period commences from the date of receiving a favourable opinion from the ethics committee.

Please refer to our website www.cpft.nhs.uk for all information relating to R&D including honorary contract forms, policies and procedures and data protection.

Should you require any further information please do not hesitate to contact us.

Yours sincerely

Pp Stephen Kelleher
Senior R&D Manager

Cc Sue Steel, Contracts Manager, University of East Anglia

Appendix R: Leicestershire Partnership NHS Foundation Trust R&D Approval

Research Support Service
Community, Mental Health & Learning Disability Services

Leicestershire Partnership NHS
NHS Trust
A University Teaching Trust

Research & Development Office
Lakeside House
4 Smith Way
Grove Park
Enderby
Leicester
LE19 1SS

Direct dial: 0116 295 7641
Email: david.clarke@leicspart.nhs.uk

Tel: 0116 295 7500
Fax: 0116 295 7599
Web: www.leicspt.nhs.uk

DC/MD/FOMH0635/ST/MHRN (CSP117923)

Mr Matthew Daniel
Cambridgeshire and Peterborough Foundation NHS Trust
Norwich Medical School,
University of East Anglia
Norwich Research Park,
Norwich
NR4 7TJ

17th June 2013

Dear Matthew

RE: CSP 117923 Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.

Thank you for applying for NHS Permission (also known as Research Governance Approval) for the above-named study. I am pleased to inform you that the formal review of the project is now complete. The outcome of this review is given below:

Full Approval	☒	Approval in Principle	☐	Approval refused	☐

Your responsibilities are set out in the attached agreement, which must be signed and returned to the Research Office. You should keep a copy for your records. All research must be managed in accordance with the requirements of the Dept. of Health Research Governance Framework (RGF), and to ICH-GCP standards. In order to ensure compliance with these standards, the Trust may randomly select your study for audit against these standards at any time, and may employ an external agency for this purpose.

This approval is contingent upon the validity of the following information:

Study Summary

Chief Investigator (Supervisor):	Dr Peter Langdon			HC/LoA[1]	Yes/No
Principal Investigator:	Mr Matthew Daniel			HC/LoA	Yes/No
Other Investigator:	Ms Susan Sadek			HC/LoA	Yes/No
Indemnity Provider:	University of East Anglia & NHS Indemnity	Start Date	28/06/2013		
NIHR Portfolio:	YES (MHRN)	End Date	28/06/2015		
Student Project	YES	Target Recruitment	30		

Approved Documentation

Document	Version Number	Date	REC Date
REC favourable opinion letter	N/A	15.05.13	15.05.13
Participant consent form	2	30.04.13	15.05.13

[1] Honorary Contract or Letter of Access Required

Participant Information sheet: professionals	1	18.10.12	15.05.13
Participant Information sheet	2	30.04.13	15.05.13
Protocol	3	02.05.13	15.05.13
Questionnaire: Validated: Social Reflection Questionnaire	N/A	N/A	15.05.13
Data collection pack time 1	2	30.04.13	15.05.13
Data collection pack time 2	2	30.04.13	15.05.13
Dot probe images	1	17.01.13	15.05.13

Please note that all research with an NHS element is subject to the Research Governance Framework for Health and Social Care 2005. If you are unfamiliar with the standards contained in this document, or the LPT policies that reinforce them, you can obtain advice from the R&D Office, or go to http://www.dh.gov.uk/PolicyAndGuidance/ResearchAndDevelopment/ResearchAndDevelopmentAZ/ResearchGovernance/fs/en.

You must stay in touch with the R&D Office during the course of the research project, particularly if/ when:

- There is a change of Principal Investigator;
- The project finishes (please complete a summary report form)
- Amendments are made, whether minor or substantial;
- Serious Adverse Events have occurred (must be reported within 24 hours of becoming aware of the event).

This is necessary to ensure that your indemnity cover is valid. Should any untoward events occur it is essential that you contact the R&D Office immediately. If patients or staff are involved in an incident, you should also contact the Clinical Risk Manager.

The duration of this approval extends only to the date specified in your NRES submission, and you should inform the Trust if this is to be extended. Action may be taken to suspend Trust approval if not conducted to these standards, and the study must commence within two years of the REC approval date, and within six months of R&D Approval.

I hope the project goes well, and if you need any help or assistance during its course, please do not hesitate to contact me.

Kind regards

Dr. Dave Clarke
[Operational Lead Research & Development]

Research Support Service

Leicestershire Partnership NHS
NHS Trust

RESEARCH GOVERNANCE

Investigator Agreement & Responsibilities

Trust Reference:	**FOMH0635**	**CSP Reference:**	**117923**	**IRAS Reference:**	**13/SW/0084**
Project Title:	**Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.**				

As Principal Investigator for this study I agree to the following:

- I understand the responsibilities of a Principal Investigator defined in the Research Governance Framework and agree to abide by these.
- I will ensure that the study does not proceed, and recruitment does not take place without written approval from the Research Office and all sites involved.
- Summary information about the study can made available to publicly accessible systems and communications media, except where this would compromise the protection of intellectual property.
- I will assist with any audits or monitoring of research whether conducted by the Trust, sponsor, University (when acting as Sponsor), or regulatory authority. This includes maintenance and availability of a Master Site File.
- I will co-ordinate completion and submission of interim, annual and final reports according to funders, ethics committee and Trust requirements.
- I will ensure that the protocol and any subsequent changes to the study design are conveyed to and approved by the relevant authority, and where necessary are independently peer-reviewed and notified to the host Research Office.
- I will ensure that any serious adverse events (SAEs) are reported following the procedures set out if the Trust's policy on reporting research-related adverse events.
- I will notify the Research Office if there is any need or intention to change the principal investigator for the study (perhaps requiring a new honorary contract etc.)
- I will make every reasonable effort to disseminate the findings of the study, including through peer-reviewed publication, and will lodge a copy of any such publication with the Research Office.

Name: .....
(Local) Principal Investigator

Signature: ..... Date: .....

Note: The Principal Investigator may delegate some or all of the responsibilities listed above but they will remain accountable to the Chief Executive for the overall conduct of the study. Any delegation of responsibility must be explicit and documented as per Standard Operating Procedure..

Please return the signed agreement to the Research Office.

Leicestershire Partnership NHS
NHS Trust

A University Teaching Trust

Lakeside House
4 Smith Way
Grove Park
Enderby
Leicester
LE19 1SS

Tel: 0116 295 0030
Fax: 0116 295 0842
www.leicspt.nhs.uk

10 June 2013

Private and Confidential
Mr Matthew Daniel
Department of Psychological Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

Dear Matthew

RE: Letter of Access for Research

This letter confirms your right of access to conduct research through Leicestershire Partnership NHS Trust for the purpose and on the terms and conditions set out below. This right of access commences on **3 June 2013** and ends on **30 September 2014** unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project.

The information supplied about your role in research at Leicestershire Partnership NHS Trust has been reviewed and you do not require an honorary research contract with this NHS organisation. We are satisfied that such pre-engagement checks as we consider necessary have been carried out.

You are considered to be a legal visitor to Leicestershire Partnership NHS Trust premises. You are not entitled to any form of payment or access to other benefits provided by this NHS organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through Leicestershire Partnership NHS Trust, you will remain accountable to your employer **Cambridgeshire & Peterborough NHS Foundation Trust, Fullbourn Hospital** but you are required to follow the reasonable instructions of **Dr Dave Clarke, Research and Development Operational Lead** in this NHS organisation or those given on her/his behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with Leicestershire Partnership NHS Trust policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with Leicestershire Partnership NHS Trust in discharging its duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on Leicestershire Partnership NHS Trust premises. You must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of any other contract holder and you must act appropriately, responsibly and professionally at all times.

You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice (http://www.dh.gov.uk/assetRoot/04/06/92/54/04069254.pdf) and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

Leicestershire Partnership NHS Trust will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

If your current role or involvement in research changes, or any of the information provided in your Research Passport changes, you must inform your employer through their normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely

Annie Lin
Human Resources Officer
Leicestershire Partnership NHS Trust

cc: Dave Clarke, R&D office at Leicestershire Partnership NHS Trust
Dr Peter Langdon, P.langdon@uea.ac.uk

Appendix S: Cambridgeshire County Council Study Approval

My ref:
Your ref:

Date: 14th June 2013

Contact: Amanda Hawkes
Direct dial: 01223 715904
E Mail: amanda.hawkes@cambridgeshire.gov.uk

Cambridgeshire County Council

Adult Social Care

Quality Governance & Practice Development Team

Box CC1310
Castle Court
Shire Hall
Cambridge
CB3 0AP

Susan Sadek
Department of Psychological Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

Dear Susan,

I am writing with regard to your research application for: 'Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.'

Having received and considered your application, and following our recent discussion, I am writing to confirm that we give approval to this research proposal.

Can I wish you good luck with your research. I would really appreciate it if you could let us have a copy of the research report when it is completed. Should you have any questions with regard to the research project then please do not hesitate to contact me.

Yours sincerely,

Amanda Hawkes

Quality Assurance Manager

Appendix T: South Essex Partnership University NHS Foundation Trust Study Approval

Providing Partnership Services in Bedfordshire, Essex and Luton

SEPT

Date: 19 July 2013

Matthew Daniel
Department of Psychological Sciences
Norwich Medical School
University of East Anglia,
Norwich Research Park, Norwich
NR4 7TJ

matthew.daniel@uea.ac.uk

Directorate of Clinical Governance & Quality
Pride House
Christy Close
Southfields Industrial Estate
Laindon
Essex
SS15 6EA

Tel: 01268 407725
Fax: 01268 407810
sarah.thurlow@SEPT.nhs.uk

Chair: Lorraine Cabel
Chief Executive: Dr Patrick Geoghegan OBE

Letter of access for research

Dear Matthew Daniel

Research Study – Developing measures and exploring relationships between empathy, reasoning and problem solving with men with intellectual disabilities who have forensic mental health problems.

NIHR ID number - 14267
IRAS reference - 117923
NRES reference - 13/SW/0084

As an existing NHS employee you do not require an additional honorary research contract with this NHS organisation. We are satisfied that the research activities that you will undertake in this NHS organisation are commensurate with the activities you undertake for your employer. Your employer is fully responsible for ensuring such checks as are necessary have been carried out. Your employer has confirmed in writing to this NHS organisation that the necessary pre-engagement check are in place in accordance with the role you plan to carry out in this organisation. This letter confirms your right of access to conduct research through South Essex Partnership University NHS Foundation Trust for the purpose and on the terms and conditions set out below. This right of access commences on 14th June 2013 and ends on 30th September 2014 unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from this NHS organisation. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving permission to conduct the project.

You are considered to be a legal visitor to South Essex Partnership University NHS Foundation Trust premises. You are not entitled to any form of payment or access to other benefits provided by this organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through South Essex Partnership University NHS Foundation Trust, you will remain accountable to your employer Cambridgeshire and Peterborough NHS Foundation Trust but you are required to follow the reasonable instructions of your nominated manager Sarah Thurlow in this NHS organisation or those given on her behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with South Essex Partnership University NHS Foundation Trust policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with South Essex Partnership University NHS Foundation Trust in discharging its duties under the Health and Safety at Work etc. Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on South Essex Partnership University NHS Foundation Trust premises. Although you are not a contract holder, you must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of a contract holder and you must act appropriately, responsibly and professionally at all times.

If you have a physical or mental health condition or disability which may affect your research role and which might require special adjustments to your role, if you have not already done so, you must notify your employer and the Trust research department through Sarah Thurlow prior to commencing your research role at the Trust.

You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice (http://www.dh.gov.uk/assetRoot/04/06/92/54/04069254.pdf) and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

South Essex Partnership University NHS Foundation Trust will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act 1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation accepts no responsibility for damage to or loss of personal property.

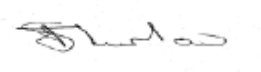
We may terminate your right to attend at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. You must not undertake regulated activity if you are barred from such work. If you are barred from working with adults or children this letter of access is immediately terminated. Your employer will immediately withdraw you from undertaking this or any other regulated activity and you MUST stop undertaking any regulated activity immediately. Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

Show next page (→)

Providing Partnership Services in Bedfordshire, Essex and Luton

If your circumstances change in relation to your health, criminal record, professional registration or suitability to work with adults or children, or any other aspect that may impact on your suitability to conduct research, or your role in research changes, you must inform the NHS organisation that employs you through its normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely



Sarah Thurlow
Head of Research

Cc:	Dr Peter Langdon	Chief Investigator (UEA)	p.langdon@uea.ac.uk
Cc:	Yvonne Kirkham	Sponsor Contact	y.kirkham@uea.ac.uk
Cc.	Clare Symms	Lead NHS R&D Contact	Clare.Symms@norfolk.nhs.uk

Appendix U: Correlations between Age and IQ

Table 24

Correlations between Age and IQ and the main variables in the study

Correlation	IDO Group Spearmans Rho	IDN Group Spearmans Rho
Age and SRM-SF Global Score	.08	-.00
Age and SPSI-R-SF	.17	-.03
Age and HIT1	.06	-.06
Age and HIT2	-.04	.06
IQ and SRM-SF Global Score	.09	.44*
IQ and SPSI-R-SF	.21	-.13
IQ and HIT1	-.06	-.26
IQ and HIT2	.29*	-.28*

* $p<.05$, ** $p<.01$, *** $p< .001$

Appendix V: Tests of normality

Table 25

Tests of normality for the IDO Group

Measure	Kolmogorov-Smirnov	Sig.
Total Scores		
SRM-SF Global Score:	.111	.200*
HIT Time 1 Total Score (HIT1)	.183	.007
HIT Time 2 Total Score (HIT2)	.074	.200*
SPSI-R Total Score	.102	.200*
Sub-scores		
SPSI-R-SF Positive Problem Orientation	.113	.200*
SPSI-R-SF Negative Problem Ortientation	.155	.042
SPSI-R-SF Rational PS Style	.112	.200*
SPSI-R-SF Impulsive Careless PS Style	.098	.200*

SPSI-R-SF Avoidance PS Style	.136	.130*
HIT1 Covert Total	.175	.012
HIT1 Overt Total	.174	.013
HIT1 Anomolous Responding	.127	.197*
HIT1 Self Centred	.181	.008
HIT1 Blaming Others	.154	.047
HIT1 Minimise / Mislabel	.136	.128*
HIT1 Assuming Worst	.185	.006
HIT1 Opposition Defiance	.149	.060*
HIT1 Physical Aggression	.117	.200*
HIT1 Lying	.115	.200*
HIT1 Stealing	.163	.026
HIT2 Covert Total	.105	.200*
HIT2 Overt Total	.094	.200*

HIT2 Anomolous Responding	.100	.200*
HIT2 Self Centred	.176	.011
HIT2 Blaming Others	.097	.200*
HIT2 Minimise / Mislabel	.141	.093*
HIT2 Assuming Worst	.125	.200*
HIT2 Opposition Defiance	.128	.182*
HIT2 Physical Aggression	.105	.200*
HIT2 Lying	.125	.200*
HIT2 Stealing	.127	.197*
SRM-SF Contract	.208	.001
SRM-SF Truth	.229	.000
SRM-SF Affiliation	.153	.048
SRM-SF Life	.143	.083*
SRM-SF Property	.198	.002

SRM-SF Law	.171	.015
SRM-SF Legal Justice	.244	.000

* $p<.05$, ** $p<.01$, *** $p< .001$

Table 26

Tests of normality for the IDN Group

Measure	Kolmogorov-Smirnov	Sig.
Total Scores		
SRM-SF Global Score:	.124	.160*
HIT Time 1 Total Score (HIT1)	.177	.005
HIT Time 2 Total Score (HIT2)	.130	.117*
SPSI-R Total Score	.081	.200*
Sub-scores		
SPSI-R-SF Positive Problem Orientation	.154	.027
SPSI-R-SF Negative Problem Ortientation	.125	.157*
SPSI-R-SF Rational PS Style	.114	.200*
SPSI-R-SF Impulsive Careless PS Style	.136	.084*
SPSI-R-SF Avoidance PS Style	.136	.081*

HIT1 Covert Total	.090	.200*
HIT1 Overt Total	.132	.100*
HIT1 Anomolous Responding	.111	.200*
HIT1 Self Centred	.154	.026
HIT1 Blaming Others	.119	.200*
HIT1 Minimise / Mislabel	.189	.002
HIT1 Assuming Worst	.097	.200*
HIT1 Opposition Defiance	.110	.200*
HIT1 Physical Aggression	.191	.001
HIT1 Lying	.153	.028
HIT1 Stealing	.111	.200*
HIT2 Covert Total	.129	.125*
HIT2 Overt Total	.111	.200*
HIT2 Anomolous Responding	.145	.047

HIT2 Self Centred	.106	.200*
HIT2 Blaming Others	.092	.200*
HIT2 Minimise / Mislabel	.208	.000
HIT2 Assuming Worst	.122	.176*
HIT2 Opposition Defiance	.142	.057*
HIT2 Physical Aggression	.196	.001
HIT2 Lying	.093	.200*
HIT2 Stealing	.150	.034
SRM-SF Contract	.161	.016
SRM-SF Truth	.210	.000
SRM-SF Affiliation	.119	.200*
SRM-SF Life	.164	.013
SRM-SF Property	.247	.000
SRM-SF Law	.244	.000

SRM-SF Legal Justice	.278	.000

* p<.05, ** p<.01, *** p< .001

Appendix W: Normal and non-normal data per outcome measure and per group

Normal and non-normal data per outcome measure

Outcome Measure	Full Sample (N=72)	IDO Group (*n*=34)	IDN Group (*n*=38)
SRM-SF Global Score	•	•	X
Contract	X	X	X
Truth	X	X	X
Affiliation	X	X	•
Life	X	X	X
Property	X	X	X
Law	X	X	X
Legal Justice	X	X	X

SPSI-R-SF Total Score	•	•	•
Positive Problem Orientation	X	•	X
Negative Problem Orientation	X	X	X
Rational Problem Solving Style	•	•	•
Impulsive / Careless Problem Solving Style	•	•	X
Avoidance Problem Solving Style	X	X	X
HIT1 Total Score	X	X	X
HIT2 Total Score	•	•	X
HIT1 Overt	X	X	X
HIT1 Covert	X	X	•
HIT1 Anomalous Responding	X	X	•
HIT1 Self-Centred	X	X	X

HIT1 Blaming Others	X	X	•
HIT1 Minimisation / Mislabeling	X	X	X
HIT1 Assuming the Worst	X	X	•
HIT1 Oppositional Defiance	•	X	•
HIT1 Physical Aggression	X	•	X
HIT1 Lying	X	•	X
HIT1 Stealing	X	X	•
HIT2 Overt	•	•	•
HIT2 Covert	•	•	X
HIT2 Anomalous Responding	•	•	X
HIT2 Self Centred	•	X	•
HIT2 Blaming Others	•	•	•

HIT2 Minimisation / Mislabeling	X	X	X
HIT2 Assuming the Worst	•	•	X
HIT2 Oppositional Defiance	X	X	X
HIT2 Physical Aggression	X	•	X
HIT2 Lying	•	•	•
HIT2 Stealing	X	X	X

* X = Non-Normal and • = Normal

Appendix X: Non-normal data

Non-normal data: Median and interquartile ranges

Outcome Measure: Median (IQR)	Full Sample (N=72)	IDO Group *(n*=34)	IDN Group *(n*=38)
SRM-SF Global Score	•	•	200 (182-225)
Contract	233 (200-250)	250 (225-250)	217 (200-233)
Truth	245 (150-250)	250 (200-250)	200 (150-250)
Affiliation	250 (175-279)	250 (200-300)	•
Life	250 (200-275)	250 (225-300)	225 (200-250)
Property	200 (100-250)	200 (200-250)	150 (100-250)
Law	175 (100-250)	200 (200-300)	150 (100-200)
Legal Justice	200 (150-300)	200 (200-300)	150 (100-250)

SPSI-R-SF Total Score	•	•	•
Positive Problem Orientation	9.00 (7.00-12.00)	•	8.00 (6.00-12.00)
Negative Problem Orientation	12.00 (8.00-16.00)	12.00 (10.00-16.00)	11.00 (4.00-14.00)
Rational Problem Solving Style	•	•	•
Impulsive / Careless Problem Solving Style	•	•	8.00 (4.00-11.00)
Avoidance Problem Solving Style	7 (3.00-11.00)	7.00 (4.00-9.00)	8.00 (3.00-11.00)
HIT1 Total Score	1.77 (1.45-2.98)	2.04 (1.85-2.34)	1.55 (1.39-1.80)
HIT2 Total Score	•	•	1.56 (1.34-1.90)
HIT1 Overt	1.80 (1.40-2.11)	2.10 (1.80-2.40)	1.50 (1.30-1.85)
HIT1 Covert	1.75 (1.49-2.20)	2.18 (1.80-2.38)	•
HIT1 Anomalous Responding	4.75 (4.13-5.38)	4.25 (4.00-4.75)	•
HIT1 Self-Centred	1.67 (1.33-2.14)	2.00 (1.67-2.33)	1.44 (1.22-1.78)

HIT1 Blaming Others	2.00 (1.70-2.30)	2.20 (2.00-2.50)	•
HIT1 Minimisation / Mislabeling	1.44 (1.22-2.00)	2.00 (1.44-2.22)	1.33 (1.22-1.56)
HIT1 Assuming the Worst	1.82 (1.45-2.18)	2.18 (1.82-2.27)	•
HIT1 Oppositional Defiance	•	2.30 (2.10-2.60)	•
HIT1 Physical Aggression	1.45 (1.10-2.00)	•	1.20 (1.00-1.60)
HIT1 Lying	1.88 (1.50-2.38)	•	1.63 (1.50-1.88)
HIT1 Stealing	1.64 (1.36-2.00)	1.91 (1.55-2.18)	•
HIT2 Overt	•	•	•
HIT2 Covert	•	•	1.60 (1.34-1.88)
HIT2 Anomalous Responding	•	•	5.00 (4.50-5.75)
HIT2 Self Centred	•	2.00 (1.67-2.22)	•
HIT2 Blaming Others	•	•	•

HIT2 Minimisation / Mislabeling	1.44 (1.11-1.89)	1.78 (1.22-2.00)	1.22 (1.00-1.89)
HIT2 Assuming the Worst	•	•	1.64 (1.18-2.00)
HIT2 Oppositional Defiance	2.10 (1.60-2.40)	2.30 (1.80-2.50)	2.00 (1.50-2.30)
HIT2 Physical Aggression	1.60 (1.00-2.00)	•	1.30 (1.00-1.80)
HIT2 Lying	•	•	•
HIT2 Stealing	1.64 (1.41-2.11)	1.64 (1.67-2.27)	1.55 (1.34-1.90)

* IQR = Interquartile range for non-normal data using Tukey's Hinges; • = normal