Do people with intellectual disabilities have the skills to undertake cognitive behavioural therapy? An investigation into computerised training to improve accessibility

Leen Vereenooghe

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Abstract

While people with intellectual disabilities (IDs) are at increased risk of developing mental health problems, they are disadvantaged when accessing mental health services. The aims of this thesis are threefold: 1) to evaluate the efficacy of psychological therapies for people with IDs who experience mental health problems, 2) to improve the suitability of adults with IDs for cognitive behavioural therapy (CBT), and 3) to explore the acceptability of computer programmes in therapy as a reasonable adjustment to improve therapy accessibility.

A systematic review and meta-analysis of the current literature were conducted and identified CBT and individual therapies as the most efficacious treatment for anger and depression. Although adults with IDs and concurrent mental health problems appear to benefit from psychological therapies, clinical trials need to make use of improved reporting standards and larger samples.

Next, in two subsequent single-blind mixed experimental designs the efficacy of computerised training programmes in improving CBT skills in people with mild to moderate IDs is evaluated. Training programmes focused on linking situations to feelings and discriminating between thoughts, feelings and behaviours. When compared to an attention-control condition, training improved cognitive mediation skills, as assessed by the ability to link situations and mediating beliefs to feelings, and improved the ability to differentiate between thoughts, feelings and behaviours.

In a concluding qualitative study, the perspectives of service users with IDs and clinicians on using computers in therapy were explored. Both service users and clinicians were positive about the potential functions and benefits of using computers in therapy, but also drew attention to potential challenges and barriers.

Together, these studies show that computers can be used to improve the suitability of people with IDs for CBT and meanwhile encourage further exploration into the possibilities that these technologies can open up for improving the accessibility of psychological therapies.

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Preface

This thesis is submitted for the degree of Doctor of Philosophy at the University of East Anglia. I declare that this thesis presents my original work, that no part has been previously accepted and presented for the award of any degree or diploma from any university, and that, to the best of my knowledge, no material previously published or written by any other person is included, except where due knowledge is given.

This thesis has a length of 201 pages and is just over 55,500 words long.

Part of this work has been presented in the following publications:

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Chapter 1

The Mental Health of People with Intellectual Disabilities

1.1 Chapter Overview

People with intellectual disabilities (IDs) experience the same range of mental health problems as the rest of the population, yet they have long been excluded from receiving available evidence-based treatments. Their vulnerability to mental health problems lies in a complex interaction between biological, social and psychological factors, while, the social stigma surrounding IDs has been associated with the lack of treatment. Recent years, however, have seen a growing recognition of the mental health needs of people with IDs, with national and international policies advocating for equal access to mental health services for people with and without IDs.

The research presented in this thesis was conducted in the context of improving access to psychological therapies for people with IDs. The first chapter will therefore focus on the clinical population of people with IDs and mental health problems and begins by considering the historical context, as well as aetiological and epidemiological aspects of IDs. It then presents the current frameworks for the classification of mental health problems in people with IDs and addresses challenges related to their assessment and treatment. The chapter closes with an exploration of the policies that support research into the accessibility of psychological therapies.

1.2 Intellectual Disabilities

The terminology, classification and definition of IDs has been through considerable changes since the beginning of the 20th century. This section begins with a clarification of what constitutes IDs and addresses their prevalence, prevention and treatment.

1.2.1 Historical Context

The stigma surrounding IDs appears relatively static in comparison to the successive changes in terminology, and often contradicts the efforts made to promote the full integration and inclusion of people with IDs in society.

Historically, giving birth to a child with IDs in the ancient Greek and Roman era could be seen as a punishment from the gods and people with IDs had very few legal rights (Hodgson, 1953). Harris (2006) described how this view changed leading up to the early Middle Ages and argued that Christianity encouraged a more accepting attitude to support those with IDs. In the late Middle Ages, a divide became apparent between religious people who interpreted IDs in terms of demonological causes that had to be eradicated, and the medical world who sought explanations grounded in natural causes and encouraged people with IDs to turn to religious and charitable institutions for support and treatment (Harris, 2006b). It was not until the 17th Century, however, that residential care was organised and a focus on training professionals to treat people with IDs led to increased institutionalisation across Europe. The subsequent development of the first intelligence testing then paved the way for more targeted training of people with IDs, in contrast to the eugenics movement which considered IDs as a threat to human evolution (Fernald, 1915; Galton, 1883).

While policies of institutionalisation were implemented within many countries around the world during the 19th and early 20th century, the necessity of this was questioned by Fernald (1919) who showed that the majority of people with IDs did not show problematic behaviours, and could, if given adequate support, function in the community. It was also found that children with IDs who were living at home were further in their emotional and social development and were more independent than children with IDs living in institutions (Tizard, 1960). Furthermore, the increased life expectancy of people with IDs, following advances in medicine, challenged the system of large institutional facilities where the number of beds was restricted. Tizard (1960) therefore piloted a small-scale residential facility, resembling a family home, where children with IDs would live together in small groups and be supported by key workers in a residential and educational programme that was attuned to their mental age rather than their chronological age. It was expected that such family-care pattern would lead to less excitement, a less impersonal approach, and improved ability to develop and practise new skills. Although the pilot project took months to develop, once continuity in care was reached and the children with severe IDs were offered an educational programme based on their interests rather than a rigid curriculum there were notable reductions in the pathological and problem behaviours of the children (Tizard, 1960).

These findings inspired Wolfensberger (1972) to describe his principles of normalisation that proposed a reduction in institutionalised living, the empowerment of people with disabilities, and the re-integration into society, as measures that would contribute to a reduction in the stigma surrounding IDs. As a result, countries in North and Western Europe, Australasia and North America started closing large residential institutions and replaced them with community services (Mansell, 2006).

The re-integration of people with IDs in the community as a standalone intervention, however, is insufficient in reducing the social stigma of the disability. From a semantic perspective, for example, the stigma has not been helped by the ever-changing terminology to denote IDs (Crocker, Major, & Steele, 1998) and the use of IDs specific terminology as derogative and pejorative terms. Examples include “feebleminded” and “imbecile”, as well as “idiot” and “retard”. Changing objectionable terms, however, is unlikely to be effective in the long term insofar the new term focuses on a low IQ as the key diagnostic criterion (Detterman, 2010) and the social aspects of stigma are left unaddressed.

Moreover, these trends in moving people with IDs into the community and focusing on the person rather than the terminology have also affected the classification and definition of IDs in recent years.

1.2.2 Classification

Discrepancies exist in the definition and diagnostic criteria of IDs between the various classification systems used within health and mental health and the underlying models on which they are based. Whilst the ‘medical model’ characterises IDs in terms of its deficits in intellectual and adaptive functioning, the ‘social model’ accentuates the shortcomings of the society in meeting the needs of its members to achieve their individual potential (Hatton, 2012).

Leading classification systems of psychiatric and (mental) health disorders, the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV, DSM-IV-TR) (American Psychiatric Association, 1994, 2000) and the World Health Organisation’s International Classification of Diseases (WHO ICD-10, 1992), have typically adhered to the medical model; although changes have been made to the indexing of what they refer to as ‘mental retardation’. More recently, with the removal of the multiaxial classification in its fifth edition, the DSM-V (American Psychiatric Association, 2013) now identifies IDs under neurodevelopmental disorders, instead of under the former Axis-II ‘Personality disorders and mental retardation’.

The leading definition of the American Association on Intellectual and Developmental Disabilities (AAIDD, 2010) identifies IDs as ‘characterised by significant limitations both in intellectual functioning and in adaptive behaviour as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18’.

Likewise, the ICD-10 (1992) classifies the term mental retardation as a health condition, but proposed changes for the ICD-11, expected to be published in 2017, will likely see it indexed as intellectual developmental disorder (Salvador-Carulla et al., 2011).

Table 1.1 compares the classification and diagnostic criteria of the DSM-IV-TR, DSM-V and ICD-10. With the recently updated DSM, and the proposed changes to the ICD-11, there is a clear shift away from intelligence as the most important diagnostic criterion and towards the impact of IDs on adaptive behaviour (Salvador-Carulla et al., 2011).

Table 1.1 The Classification and diagnostic criteria of intellectual disabilities across the DSM-IV-TR, DSM-V, and ICD-10.

DSM-IV-TR	DSM-V	ICD-10
Terminology		
Mental Retardation	Intellectual Disability (Intellectual Developmental Disorder)	Mental Retardation
Classification		
Axis II; Disorders usually first diagnosed in infancy, childhood, or adolescence.	Neurodevelopmental disorders	Mental and Behavioural disorders
Diagnostic Criteria		
- *Intellectual functioning*		
“Significantly sub-average intellectual functioning: an IQ of approximately 70 or below on an individually administered IQ test.”	“Deficits in intellectual functions, such as reasoning, problem-solving, planning, abstract thinking, judgment, academic learning and learning from experience, and practical understanding confirmed by both clinical assessment and individualised, standardised intelligence testing.”	“Impairment of skills manifested during the developmental period, skills which contribute to the overall level of intelligence, i.e. cognitive, and language abilities.”
- *Adaptive functioning*		
“Concurrent deficits or impairments in present adaptive functioning in at least two of the following areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety.”	“Deficits in adaptive functioning that result in failure to meet developmental and sociocultural standards for personal independence and social responsibility. Without ongoing support, the adaptive deficits limit functioning in one or more activities of daily life, such as communication, social participation, and independent living, and across multiple environments, such as home, school, work, and recreation.”	“Impairment of skills which contribute to the overall level of intelligence, i.e. motor, and social abilities.”

- *Onset*		
“The onset is before age 18 years.”	“Onset of intellectual and adaptive deficits during the developmental period.”	“A condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period.”
- *Severity grading*		
Mild: IQ from 50-55 to 70 Moderate: IQ from 35-40 to 50-55 Severe: IQ from 20-25 to 35-40 Profound: IQ below 20 or 25	Severity based on basis of adaptive functioning, and not IQ scores	Mild: IQ range 50-69, mental age 9-12 Moderate: IQ range 35-49, mental age 6-9 Severe: IQ range 20-34, mental age 3-6 Profound: IQ under 20, mental age below 3

Furthermore, the classification systems differ in their gradation of IDs in terms of severity (Table 1). For the DSM-IV-TR (2000) and ICD-10 (1992) gradation is mainly based on intellectual functioning and determined in relation to the standard deviations below the mean IQ in the population, resulting in the subcategories of borderline, mild, moderate, severe and profound IDs. The AAIDD (2010) and the United Kingdom Department of Health (2001) take a different approach, however, and instead focus on the individuals' required level of support to determine the severity of the IDs.

In the United Kingdom, instead of intellectual disabilities or mental retardation, the Department of Health (2001) uses the term learning disabilities. Diagnoses of learning disabilities are based on the presence of three key diagnostic criteria: impaired intelligence as apparent by a reduced ability to learn new information and skills, impaired social functioning as apparent by reduced independence, and an onset of these impairments before adulthood. Diagnostic criteria do not require an intelligence quotient below 70, nor is IQ used to determine the level of severity.

The current focus on adaptive behaviour is also reflected in the DSM-V (2013) where a diagnosis of IDs now requires assessments of academic, social and practical skills (Harris, 2013). As a result of the recent changes in diagnostic criteria, new robust scientific methods will need to be developed to provide a standardised assessment of social and adaptive functioning that complies with these new classification systems (Whitaker, 2008).

1.2.3 Aetiology

The classification and diagnostic criteria of IDs do not identify a single or necessary causal factor. Instead, the classification systems acknowledge that impairments in intellectual and adaptive functioning can be caused by a variety of genetic, prenatal, perinatal and postnatal factors, some of which are recognised as individual syndromes.

Hatton (2012) provides a brief overview of the various genetic and non-genetic causes of IDs. Trisomy 21 or Down's syndrome, for example, is the most prevalent and well-known genetic disorder that has been linked to IDs. Certain other genetic disorders, such as phenylketonuria and congenital hypothyroidism, may also lead to the postnatal development of IDs, if they are left untreated. Next, prenatal exposure to developmental stressors, such as toxins and radiation, and psychosocial stressors are amongst the environmental factors that account for at least one quarter of people with IDs (Harris, 2006). Other prenatal causes may include developmental disorders of brain formation, gestational substance abuse by the mother, and poor nutrition. Perinatal factors that could contribute to the development of IDs are prematurity, maternal infections and problems during delivery. Meningitis and encephalitis infections following birth are also associated with an increased risk for IDs. Finally, postnatal causes of IDs are mainly associated with environmental factors that can range from infection and trauma, to exposure to toxic agents, poor nutrition and sensory and social deprivation of the new-born.

In addition to these singular causal factors, certain environmental, social and behavioural risk factors may interact with the vulnerable genetic or developmental predisposition in some people leading to IDs (Luckasson et al., 2002). The interaction between these factors can make it difficult to identify the aetiology, and for approximately forty percent of people with IDs, the causal factors remain unknown (McLaren & Bryson, 1987).

1.2.4 Epidemiology

1.2.4.1 Incidence and Prevalence

The occurrence and prevalence of IDs are dependent on the definition, classification and diagnostic criteria employed. For example, when a diagnosis requires an IQ of 70 or below, it can be expected that approximately 2.5 percent of the population would be affected by IDs, based on a mean population IQ of 100 and a standard deviation of 15.

A distinction should be made, however, between incidence and prevalence rates. Incidence rates have decreased over time as a result of developments in genetic counselling and prenatal diagnosis (Harris, 2006a). Improved prenatal screening for syndromes associated with IDs, for example, gives parents the option for an early termination of the pregnancy. The ethical concerns surrounding any means for the prevention of IDs should be addressed appropriately given the controversy and cultural differences that surround them. By contrast, there is a consensus that prevalence rates may have increased as a result of advances in healthcare and medical interventions that are associated with a higher life expectancy (Hatton, 2012).

1.2.4.2 Bio-psycho-social factors affecting prevalence rates

Demographic variables, such as gender and age, may also impact on incidence and prevalence rates. Certain syndromes or congenital anomalies appear more frequently in males, with X-linked recessive disorders being particularly prevalent in men compared to women (Harris, 2006a). Age is an other important factor. Impairments in adaptive functioning can change over time as a result of education and training; potentially leading to changes in diagnosis. The developmental aspect of IDs clarifies the disparity between prevalence rates reported for preschool and school-aged children. Severe IDs may be identified at an early age, but moderate and mild IDs can be misidentified early and difficulties may be related to a temporary developmental delay in young children, with reliable diagnosis only possible after education and training are less efficacious than what could be expected for more typically developing children. The high cognitive and social demands placed on children in their teenage years perhaps make it easier to identify people with IDs because of difficulties in social and adaptive functioning, whereas identification in old age is impeded by the reduced use of vocational or training programmes. Harris (2006a) proposed that the overall population prevalence is likely to be around one percent, taking into account impairments in adaptive functioning and changes in diagnosis over time.

Finally, socio-economic and cultural factors may explain discrepancies found in the incidence and prevalence of IDs across regions and countries. In Taiwan, a study has shown a steady increase in the prevalence of IDs since 2004, with a significantly higher proportion of boys being diagnosed than girls and higher prevalence rates in rural areas, 7.38 per cent, compared to urban areas, 5.15 per cent (Lai, Tseng, Hou, & Guo, 2012). This discrepancy between rural and urban areas is also evident in Norway, with more people affected by IDs in the northern and rural parts of the country (Søndenaa, Rasmussen, Nøttestad, & Lauvrud, 2010), and in the United States of America (Harris, 2006). By contrast, the prevalence of IDs in the Netherlands has been estimated around 0.70 percent of the total population (van

Schrojenstein Lantman-de Valk et al., 2006), which is similar to the estimates found for Finland (Westerinen, Kaski, Virta, Almqvist, & Iivanainen, 2007).

1.2.4.3 Methodological concerns

The variability in prevalence rates can partly be explained by regional access to health services, maternal education, and wealth (Harris, 2006; Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2011). However, certain observed differences between studies may be due to differences in research methods. Sampling strategies can include any or all of the following: surveying general practitioners' records, hospital data, school registers, social services registers, random households, and key informants (Maulik et al., 2011). No sampling strategy is comprehensive and it is likely that true prevalence exceeds the administrative prevalence rates (Maulik et al., 2011). Furthermore, the diagnostic measures, geographical target population and age-group of study samples may vary between studies; hence leading to diverging prevalence estimates. All these factors should be taken into consideration when designing health and social interventions for people with IDs as to not exclude those people who cannot be reached through their administrative records.

1.3 Mental Health of People with Intellectual Disabilities

The historical context of mental health services for people with IDs is characterised by a disregard for the occurrence of mental health and emotional problems in this population. Not only was it assumed that they could not experience the same range of mental health problems as the general population, but also that any observed behavioural and emotional problems were directly associated with IDs. Although previous research has successfully challenged these assumptions, some difficulties in the diagnosis and treatment of mental health problems persist.

This section looks into the classification methods and tools used in the assessment and treatment of mental health problems. It explores the challenges associated with the distinct symptomatology of some psychiatric disorders and the validity of standardised assessments developed for the general population. The section concludes with an examination of recent prevalence rates of mental health problems and the bio-psycho-social factors associated with their development.

1.3.1 Classification of Mental Health Problems

Diagnosis and classification of psychiatric disorders follows the DSM-V (APA, 2013) or ICD-10 (WHO, 1992) criteria. However, several researchers have voiced their concerns regarding the validity of certain diagnostic criteria for use with people with IDs, in particular for people with moderate to severe IDs (Meins, 1995; Sovner, 1986).

In response, a diagnostic tool specifically for people with IDs has been developed to address concerns regarding the validity and applicability of diagnostic criteria for people with ID and mental health problems: the Diagnostic Criteria for Psychiatric Disorders for Use with Adults with Learning Disabilities/Mental Retardation (DC-LD) (Royal College of Psychiatrists, 2001). The DC-LD is based on the ICD-10 and was specifically developed to assist with the diagnostic process of mental health problems in people with moderate and severe IDs. The structure of the DC-LD requires the clinician to first identify the severity (axis I) and cause (Axis II) of the IDs, prior to identifying any psychiatric disorders (Axis III) that can be classified as a pervasive developmental disorder, psychiatric illness, personality disorder, behavioural problem or other disorder.

The diagnosis of psychiatric disorders remains a daunting task, even with the DC-LD, due to the potentially different presentations of mental disorders in people with ID and the ability of people with ID to report their symptoms. Hebblethwaite, Jahoda and Dagnan (2011), for example, found that people with IDs have more difficulties reporting on their thoughts and feelings about real-life events than people without IDs. This limited introspective ability may have consequences for the accuracy of diagnoses based on self-reported problems.

Cooper, Melville and Einfeld (2003) reviewed these and other concerns related to the verbal requirements of the diagnostic process and highlighted the necessity to develop observable behavioural equivalents for verbal reporting of inner states, feelings and thoughts. Clinicians therefore turn to behavioural markers to help identify emotional problems, with challenging behaviour sometimes considered to be a non-verbal means of people with IDs to communicate and express their difficulties. With regards to depression, Hurley (2008) identified a number of typical behavioural symptoms, which include crying and anhedonia, but found challenging behaviour to be an atypical symptom.

The assumption to consider challenging behaviour as a symptom of mood disorders has been contested, however, with several authors critiquing that challenging behaviour should not be regarded as a behavioural equivalent of the cognitive and emotional factors underlying mood disorders, and hence should not be used as a key diagnostic criterion of mood disorders in people with ID (Sturmey, Laud, Cooper, Matson, & Fodstad, 2010; Tsiouris, Mann, Patti, & Sturmey, 2003).

1.3.2 Prevalence of Mental Health Problems

Estimating the prevalence of mental ill-health in people with IDs can be daunting, even with the availability of an appropriate classification system to support the diagnostic process. This section explores the various challenges within in the diagnostic process further, and considers the use of mental health assessments with people with IDs. It then continues to describe the methodological issues associated with prevalence studies before taking a closer look at three recent studies using different methodological approaches to assess the prevalence of mental ill-health in children and adults with IDs.

1.3.2.1 Concerns arising from the diagnostic process

Many challenges arise from diagnosing mental health problems according to a classification system, some of which are related to the distinct manifestation of psychiatric disorders in people with IDs. Concerns related to the validity of diagnostic criteria and assessments have been partially addressed by the development of the DC-LD (Cooper et al., 2003), although challenges remain about the validity of augmented diagnostic criteria.

For example, difficulties with verbal, cognitive and introspective skills may make it difficult to use standardised assessments that had been developed for use in the mainstream population. Using proxy reports, to be completed by a significant other, can provide clinicians with useful information to help formulate a diagnosis but should be used cautiously, as there may be issues associated with validity. In adults with IDs and depression, for example, proxy informants reported higher rates of somatic symptoms, whereas assessments of depressive symptoms using self-reports were characterised by more affective and cognitive symptoms (Mileviciute & Hartley, 2015).

The discrepancies that can be found between self-reports and proxy reports highlight the possibility of misdiagnosis. This can be of concern when carers and professionals perceive challenging behaviour and behavioural problems as requiring behavioural interventions rather than identifying them as mental health problems requiring psychological or psychiatric interventions.

Under-diagnosis or misdiagnosis may also occur as a result of 'diagnostic overshadowing', a term introduced by Reiss, Levitan, and Szyszko (1982) to describe how clinicians may fail to identify mental health problems by incorrectly attributing any symptoms to the presence of an ID.

1.3.2.2 Mental health assessment

Ensuring the validity of diagnostic criteria for mental health problems in people with IDs is only one part of the diagnostic process and using appropriate assessments is equally important. The growing recognition that symptomatology may present differently in people with IDs and that they may lack the skills to communicate their problems and experiences has led to the development of IDs-specific assessment tools.

The Psychiatric Assessment Schedule for Adults with Developmental Disability (PAS-ADD) (Moss, 1997) is an example of a diagnostic tool specifically designed for use with people with IDs and which has good reliability and validity (Moss et al., 1998). It uses accessible and simple language, as well as carer reports. A shortened version of it, the mini PAS-ADD, is also available and is widely used in research (Prosser et al., 1998).

Turning to the assessment of specific mental health problems, the Glasgow Depression Scale (Cuthill, Espie, & Cooper, 2003) has been developed using accessible language and IDs-specific items and provides a reliable alternative to the Beck Depression Inventory – II (Beck, Steer, & Brown, 1996) for use with people with IDs and low mood (Lunsky & Palucka, 2004). Similarly, the Glasgow Anxiety Scale (Mindham & Espie, 2003) offers a reliable means to assess anxiety in people with IDs.

For several psychiatric disorders, however, there are no assessments available that have been validated for people with IDs. This lack of appropriate assessments makes it difficult not only to diagnose mental health problems, but also to estimate their prevalence and to measure outcomes from intervention programmes, whether psychological, social or medical.

1.3.2.3 Methodological aspects of prevalence studies

Between-study variability in the diagnostic criteria and assessments of mental health is likely to influence the resulting prevalence estimates of mental health problems. Furthermore, methodological variation in terms of sampling strategy will impact on the reliability of prevalence estimates (Smiley, 2005). This section explores some of the methodological concerns with prevalence studies.

First, study design is often associated with sample size and scope. Longitudinal or prospective methods, for example, generally include keeping track of referrals made to a specific learning disabilities service, but usually render only a small cohort. Cross-sectional point-prevalence studies, on the other hand, typically have a greater cohort, but may fail to catch those who are not in receipt of treatment or do not appear on social services registers as having an IDs.

Second, sampling strategies determine the representativeness of the sample. Estimating prevalence rates based on a sample of people with IDs living in residential services and institutions is likely to be biased towards people with more severe IDs and more severe mental health problems (Cooper, Smiley, Morrison, Williamson, & Allan, 2007). Similarly, recruiting people from specialist learning disability services may miss people with mild and borderline IDs who are accessing mainstream mental health services.

Third, the reliability of prevalence estimates is associated with the reliability and validity of the employed assessments. Smiley (2005) and Reiss (1990) demonstrated that approaches based on case note reviewing, standardised assessments and clinical assessment show considerable variation in the diagnosis rate.

Finally, the inclusion and exclusion criteria as to what a study recognises as mental health problems will have a considerable impact on prevalence rates. Whilst some studies explicitly exclude specific phobias (Cooper et al., 2007), others have includes problem behaviours and autism spectrum disorders (Borthwick-Duffy, 1994; Deb, Thomas, & Bright, 2001). Hence, prevalence rates vary widely between studies, ranging from a 10 to 52% point prevalence (Azam, Sinai, & Hassiotis, 2009).

1.3.2.4 Recent prevalence estimates of mental health problems

As the previous section clarifies, differences in methodological approaches may result in considerable variability in prevalence estimates of mental health problems. Rather than reviewing all prevalence studies, this section focuses on three studies to illustrate the variability in both methods and results.

Adopting a case ascertainment approach to identify all people with IDs aged 16 or over, Cooper and colleagues (Cooper et al., 2007) demonstrated an IDs point-prevalence rate of 0.33% of the overall adult population. The PAS-ADD and a full psychiatric assessment – in line with the DC-LD, ICD-10-DCR and DSM-IV-TR were conducted with a cohort of 1023 people with IDs of which 39, 24, 19 and 18 percent were classified as having mild, moderate, severe, and profound IDs respectively. Excluding specific phobias, 41% of participants had at least one clinical diagnosis, with psychotic, affective and anxiety disorders the most common diagnoses. Differences could be observed, however, between the level of IDs. Whilst psychotic and anxiety disorders were nearly twice as common in people with mild IDs (approximately 6%) compared to moderate to profound IDs (approximately 3%), affective disorders were found to be relatively equally prevalent across all levels of IDs. The study also found considerable differences between the prevalence rates based on the mainstream psychiatric diagnostic instruments, the ICD-10-DCR and DSM-IV-TR, and diagnostic tools adapted for use with people with IDs, the clinical diagnosis and DC-LD diagnosis. The latter two identified nearly twice as many cases of mental ill-health, regardless of whether autistic spectrum disorders and problem behaviours were included. This poses the question whether mainstream diagnostic tools are under-recognising mental ill-health, whether IDs-specific instruments are over-diagnosing, or whether this discrepancy adequately represents the higher prevalence rates of mental health problems found in this population.

In their study, Deb, Thomas, and Bright (2001) investigated the potential discrepancies in prevalence of mental ill-health between the adult population with and without IDs. To this extent, their sampling method was directed at people living in the community rather than people residing in institutions or clinics, which could lead to inflated prevalence rates. Using case registers of social services, a random sample of adults with IDs completed an assessment comprising the Mini PAS-ADD, for people with mild IDs, or the Diagnostic Assessment for the Severely Handicapped (DASH) (Matson, Gardner, Coe, & Sovner, 1991), for people with severe IDs. Following these assessments, a point-prevalence of 14.4% was found for psychiatric disorders identified in the ICD-10, with a 4.4% prevalence recorded for ‘schizophrenic’ disorders and an equal prevalence estimate of 2.2% found for depression and generalised anxiety disorder. The prevalence of phobic disorders, excluded in the Cooper et al. (2007) study, was found to be 4.4%. The overall prevalence rates, however, included behavioural problems and autistic spectrum disorders.

The prevalence of mental health problems in children and adolescents was examined by Emerson and Hatton (2007). Using data from two national surveys of the mental health of British children and adolescents, both with and without IDs, they estimated the prevalence of psychiatric disorders based on the ICD-10. Psychopathology was assessed using the Development and Well-Being Assessment (DAWB) (Goodman, Ford, Richards, Gatward, & Meltzer, 2000) which comprises structured interviews with the child or the child’s carer, usually the mother, and sometimes a teacher. The observed point prevalence of specific psychiatric disorders was approximately 1%, regardless of the presence of IDs. The overall prevalence of psychiatric disorders in the ID sample, however, was significantly higher than for the typically developing children, 36% compared to 8% for psychiatric disorders, 12% compared to 4% for emotional disorders, 11% compared to 3% for anxiety disorders, and 21% compared to 4% for conduct disorders. They also found that although only 3.5% of children between 5 and 15 years of age were identified as having IDs, children with IDs and psychiatric disorders account for 14% of all children with a psychiatric diagnosis. However, a main weakness of this study lies in the identification of children with IDs, which relies on proxy reports of learning difficulties rather than standardised assessments.

1.3.3 A Bio-Psycho-Social Model to understand factors associated with mental health problems in people with IDs

Several factors have been identified as predisposing, precipitating or perpetuating factors that increase the risk of developing and maintaining mental health problems amongst people with IDs.

From a biological perspective, being female, urinary incontinence, and severity of the IDs were found to be associated with mental health problems in adults with IDs (Cooper et al., 2007). Incidentally, the absence of severe mobility constraints and physical disabilities were associated factors, as well. Other biological risk factors include smoking and certain genetic disorders. Prader-Willi syndrome and fragile X syndrome, for example, are two genetic disorders causing IDs and which are associated with an increased predisposition to develop psychotic disorder and attention deficit hyperactivity disorder, respectively (Boer, Holland, Whittington, et al., 2002; Hagerman & Cronister, 1996).

Mental health is also affected by various social and psychological factors and adults suffering from mental ill-health are more likely to be living with paid carers (Cooper et al., 2007). For children, Emerson and Hatton (2007) found that previous exposure to psychosocial disadvantage, which was associated with emotional disorders and conduct disorders, was significantly higher among children with IDs than among typically developing children.

Furthermore, several studies have shown an association between the number of experienced life events and mental ill-health (Cooper et al., 2007; Hatton & Emerson, 2004). Hulbert-Williams and Hastings (2008) pointed out that although there is strong evidence for the association between stressful life events and psychopathology, the methodological approach of past studies does not allow for inferences about causality. Thus, it cannot be fully determined whether some of the wider range of life events, as reported by Hatton & Emerson (2004), are in itself a cause or consequence of a person’s mental ill-health. Concerns regarding the potential bias in retrospective reporting of life events were addressed by Esbensen and Benson (2006) in a prospective prevalence study. Their findings showed that depressive symptoms and problem behaviour were often preceded by a higher frequency of retrospectively reported life events. Although the study still adopted a retrospective and potentially biased reporting of life events, it employed a standardised measure for participants to recall whether specific events and experiences had occurred.

Identifying and addressing life events that preceded or perpetuated a mental health problem may not be sufficient a response. As Biswas and Furniss (2009) reported, behavioural problems may persist over time beyond the original life event and the impact of the initial problem on carers may add a new perpetuating factor to the mental ill-health of the person with ID.

The impact of biological, psychological and social factors on the development and persistence of mental health problems underlines the necessity for multi-factorial interventions which do not tend to treat a problem in isolation.

1.4 Treatment

The previous sections of this chapter focused on the prevalence of IDs and the occurrence of mental health problems in this population. This section will briefly focus on the treatment of mental ill-health as an introduction to the next chapter where psychotherapeutic interventions will be discussed in more detail. The aim is to provide an overview of the available treatment options and the governmental policies that promote and support them rather than performing an in-depth analysis of treatment efficacy.

1.4.1 Treatment approaches

1.4.1.1 Pharmacological interventions

The most commonly prescribed pharmacological treatments in people with IDs comprise the antipsychotic medications. Atypical antipsychotics, in particular, are frequently used due to their assumed effect on mood and aberrant behaviour; however, their use is also associated with weight gain and sedation in a population that has a high risk of being overweight and limited physical activity (Zarcone et al., 2001). Furthermore, King (2007) warns that although medication may be effective in the treatment of MH in people with ID, special consideration should be given to any pre-existing medical conditions that may influence its efficacy or be adversely affected by it. This concern was shared by Matson et al. (2000) who, upon selectively reviewing the evidence for the efficacy of psychopharmacological interventions, warranted against their use for behavioural problems such as self-injurious behaviour, aggression and stereotypies. Nevertheless, there is preliminary and tentative evidence that suggests medication may be effective in the management of behavioural problems (Deb et al., 2008; Deb, Sohanpal, Soni, Lenôtre, & Unwin, 2007), although it remains the case that this may be as a consequence of side-effects, such as sedation, which raises significant ethical concerns.

1.4.1.2 Behavioural interventions

From a behavioural perspective, it can be assumed that problem behaviours are the result of operant conditioning, and as such, are affected by social and environmental antecedents and consequences. Hence, behavioural approaches to treatment are based on information gathered through functional analysis or a functional assessment of the behaviour (Reese, Hellings, & Schroeder, 2007). Attempts to manage behavioural problems have therefore focused on optimising the social and environmental context by, for example, reducing group size, managing noise levels, adjusting staff ratios and implementing structured day schedules (Reese et al., 2007). In addition, interventions directly aimed at reducing problem behaviour or increasing adaptive behaviour include behaviour shaping, extinction, token economy, differential reinforcement, self-monitoring, positive behaviour support, and applied behaviour analysis (Benson & Havercamp, 2007).

1.4.1.3 Psychosocial and psychotherapeutic interventions

Historically, people with IDs were not offered psychotherapy as IDs were seen as a contra-indication for psychotherapy which was therefore not expected to be effective (Freud, 1953). Despite efforts to develop a limited evidence base for the efficacy of psychological therapies, there remained a certain 'therapeutic disdain' in clinicians and researchers, wary of working with this client population (Bender, 1993).

Dagnan (2007) distinguished four types of psychosocial interventions based on the context to which they are aimed. Interventions can be aimed at the individual or their immediate social context, but also at their broader social context and service provider. Assertiveness and social skills training are examples of interventions aimed at the individual, whereas family interventions, supported employment programmes, and intensive case management approaches are all aimed at the wider clients' context.

Psychological therapies form a distinct area of interventions, with individual and group-based cognitive behavioural therapy and psychodynamic approaches receiving most of the attention. The availability, accessibility and efficacy of psychological therapies, will be discussed in more detail in the following chapters.

1.4.2 Health care and mental health care policies

Treatments for mental health problems are more widely available than ever before, with a variety of pharmacological, social and psychological interventions offered through national health services, private health care providers and charitable organisations. The growing provision of mental health services has been both the grounds and result of national policies and legislation.

In the United Kingdom, the Equality Act (2010), formerly the Disability Discrimination Act (1995), addressed potential sources of discrimination faced by people with disabilities and required the National Health Service to make 'reasonable adjustments' to the provision of healthcare, and by extension mental health care, for people with IDs. In addition to protecting the rights of people with disabilities to education, employment, housing and transport, these documents are concerned with the ability of people to access services offered by professionals, including health professionals.

Mistreatment, inhuman or degrading treatment of people, regardless of disability, is covered by the Human Rights Act (1998), which incorporates the European Convention on Human Rights and offers citizens an independent European court of justice to handle any cases of mistreatment by government services.

Specific attention to IDs has been given in the Mental Health Act (2007). It states clearly that people with IDs should not be considered to automatically have a mental disorder that requires treatment and recognises them as equal citizens. Reports by the Department of Health (2001) go a step further and set out the following four core principles for working with and supporting people with IDs: protection of rights, independence, freedom of and control over personal choices, and inclusion. With regards to health services, the report formulated objectives to reduce the health inequalities by increasing access to mainstream health services, as well as through the development of LD specialised services.

The difficulties experienced by people with IDs in accessing health services are acknowledged in the 'Healthcare for all' report (Michael, 2008). It proposed a new way for general practitioners to register and monitor adults with IDs with the aim of increasing their visibility in the health system. It further makes recommendations to ensure health services make reasonable adjustments to facilitate access by people with IDs and highlights the necessity for training professionals and clinicians of all areas of health services in IDs.

More recently, the Department of Health (2009) published 'Valuing People Now', which is considered an update of the 2001 White Paper 'Valuing People' (Department of Health, 2001) and reports on the progress made since its first publication. The report follows the fundamental principle that human rights are no different for people with or without disabilities. Particular attention was given to the implementation of the previous report with regards to people with more complex needs or people with IDs and co-occurring diagnoses of autism spectrum disorders, as well as minority ethnic groups with IDs.

In spite of the many policies and governmental reports published to promote the rights of people with IDs to equal access of health services, there is still a long way to go. The necessity for more progress to be made is evident from observational data that show that people with IDs are more likely to be seen by a psychiatrist or having received a psychiatric assessment when they are over 30 years of age with more severe or profound IDs and live in in residential care (S Bhaumik, Tyrer, McGrother, & Ganghadaran, 2008).For an accessible mental healthcare service that supports equal access to people with and without disabilities practice will need to follow policy.

1.5 Conclusion

This chapter introduced the construct of IDs and addressed both the incidence and prevalence of people with IDs, as well as their vulnerability to develop mental health problems. The multitude of factors associated with mental ill-health in this population poses a number of challenges in terms of diagnosis, assessment and treatment. Recent legislation and policies may have underlined the rights of people with IDs to equal access of health and mental health services, but their translation into practice takes time.

In the search for evidence-based and accessible treatments, many obstacles need tackling: the social stigma of IDs, staff confidence in working with people with IDs, validity of psychiatric assessments, and many more. The next chapter will explore more closely the currently available evidence-based psychological therapies and will discuss their availability and accessibility in more detail.

Chapter 2

The Availability and Accessibility of Psychological Therapies

2.1 Chapter Overview

As discussed in Chapter 1, people with IDs are at increased risk of developing mental health problems compared to the general population; however, treatment in the form of psychological therapy is not commonly offered to this population. This chapter begins with an overview of the psychological therapies currently available to people with IDs who experience mental health problems, in light of the recent policies to improve access to psychological therapies. Following a discussion of the reasonable adjustments that can be made to therapy to improve access for people with IDs, the focus shifts to consider whether people with IDs can actually take part in therapy; something which has been frequently debated within the literature. The final sections of this chapter will review the available assessment and training tools currently used to determine and improve the suitability of people with IDs for CBT. The chapter concludes with a brief discussion of the challenges involved in developing accessible materials to assess and train therapy skills and whether they contribute to improving the overall accessibility of psychological therapies to people with IDs.

2.2 Psychological Therapies for People with IDs

Clinical psychologists, psychotherapists and psychiatrists have been offering psychological therapies to people with IDs for many years. The rate at which therapy is being offered has increased, while the once common therapeutic disdain towards clients with IDs is decreasing. Improved training about IDs, improved therapist confidence and greater awareness of the mental health difficulties experienced by people with IDs are all contributing factors. More recently, policy makers have attempted to catch up with unofficial guidelines and are now pushing for psychological therapies to become more widely available. Meanwhile, mental health services are encouraged to offer therapies on a non-discriminatory basis to all people, regardless of disability. This section provides a brief historical context and exploration of the applicability of the main psychological therapies used with people with IDs.

2.2.1 Psychodynamic therapies

2.2.1.1 Historical context

Psychoanalytic and psychodynamic therapies were, as with the general population, the first psychotherapeutic interventions being offered as a treatment for mental health problems. Although initial interest from psychodynamic therapists was shown as early as the 1930s, it took about half a century for clinicians and researchers to systematically offer and evaluate psychodynamic therapies for people with IDs. This early lack of evidence became apparent in a review of the literature conducted twenty years ago that only identified three studies, with a total sample of nine people (Beail, 1995).

The poor availability of psychodynamic therapies for people with IDs has been explained in terms of their suitability for this type of treatment. Beail and Jackson (2013) point towards the theoretical assumption that the ego contains intelligence and thought functions and a level of intellectual functioning is needed to access and reflect upon this. In spite of this, there have been accounts of successful psychodynamic therapies being conducted with children, so it could be assumed that people with mild IDs may be able to benefit from this type of therapy.

2.2.1.2 Theoretical framework

The theoretical framework behind psychoanalytic and psychodynamic therapies dates back to the original work of Freud, although therapists have made adjustments to account for the impact IDs can have on the ability to engage in therapy. Psychodynamic approaches focus on the relationship between the client and therapist and explore how mental representations of early relationships give meaning to a client’s current experiences and how these are represented and relived in the therapeutic relationship. Through processes of transference and countertransference, client and therapist will come to a greater understanding of past and current thoughts, feelings and behaviours (Beail & Jackson, 2013).

Sinason (1992) described how psychodynamic therapy with people with IDs moves through three stages. Initially, the therapeutic relationship is used to address the potential ‘secondary handicap’, which results from using psychological defence mechanisms and exaggeration of the present disability and impairments. The second stage then focuses on the vulnerability and feelings associated with acknowledging one's disability. It is only when people have come to terms with their disability and how this affects the therapeutic relationship, that the third stage can commence in which the focus of the therapy shifts towards improving the person's internal and external functioning.

2.2.1.3 Challenges and applicability

A main challenge in conducting psychodynamic therapies with people with IDs may lie in their difficulties with forming a strong therapeutic relationship. These difficulties may arise due to their often fragile emotional attachments (Sinason, 2004) and can be expected given that over a third of referrals are concerned with trauma, abuse and bereavement (Parkes et al., 2007). Various psychodynamic approaches to therapy are thought to have the potential to overcome this difficulty. For example, systemic family therapy, and art, music and drama therapies provide the person with different means to explore meaningful relationships and to engage in a therapeutic relationship (Parkes & Hollins, 2007).

The applicability and efficacy of psychodynamic interventions has been assessed in multiple case studies (Alim, 2010; Applegate & Barol, 1989; Berry, 2003; Kellett, Beail, Bush, Dyson, & Wilbram, 2009) and single group designs (O'Connor, 2001). Further research has shown that it is feasible to deliver psychodynamic interventions individually, as well as in a group-based format (Jones & Bonnar, 1996; O'Connor, 2001), and can be delivered in time limited shorter-term interventions (Beail, Kellett, Newman, & Warden, 2007). Although the methodological quality of psychodynamic intervention studies is often poor, the current findings suggest that they may be effective in reducing behavioural problems (Beail, 1998) and reducing recidivism rates amongst offenders with IDs (Beail, 2001).

Considerably more research, especially in the form of controlled trials, is required to develop an evidence-base for the use of psychodynamic therapies in people with IDs, as has been done for the mainstream population (Shedler, 2010).

2.2.2 Cognitive behavioural therapies

2.2.2.1 Historical context

Behavioural therapies came onto the foreground in the 1970s and are based on learning theory to explain and treat various mental health problems. However, as the dominance of learning theory principles came under discussion, attention was drawn towards cognitive aspects and self-control, giving rise to the development of cognitive and cognitive behavioural therapies (Bandura, 1977; Kanfer & Karoly, 1972).

With the newfound recognition that cognitions played an important role in the development and persistence of mental health problems, therapies started to focus on the underlying and mediating role of cognitions (Kendall & Panichelli-Mindel, 1995; Kendall, 1985).

2.2.2.2 Theoretical framework

The two most influential cognitive behavioural approaches, by Beck (1976) and Ellis (1977), followed the assumption that cognitive distortions, not deficits, should be the subject of therapy, and therapy should aim to identify and subsequently modify the content of these cognitions. Cognitive behavioural therapies share an underlying theory that requires an interaction between, at a minimum, cognitions and behaviour. However, CBT models vary in how this interaction is expressed.

Beck's model of cognitive therapy proposed that thoughts, behaviours and feelings all interact with each other and are the result of how an activating event is processed (Beck, Rush, Shaw, & Emery, 1979; Beck, 1976). This information processing is based on schemas, or cognitive structures, that influence how events are interpreted and activate automatic thoughts. Therapy focuses on understanding the underlying schemas and modifying the automatic thoughts and behaviours.

The rational emotive therapy model of Ellis (1977) describes how the behavioural and emotional symptoms of mental health problems are a consequence of how activating events are interpreted. It is a more unidirectional model that is often referred to as the ABC model. In this model, an activating event or antecedent, A, brings about a belief, B, that may lead to both behavioural and emotional consequences, C, that either confirm or disconfirm this belief (Trower, Jones, Dryden, & Casey, 2011). The objective of therapy is therefore to identify the emotional or behavioural consequences associated with mental health problems, and acknowledging how the relationship between the event and the experienced consequences are mediated by thoughts, a process referred to as cognitive mediation.

2.2.2.3 Challenges and applicability

While the underlying theoretical model is made explicit during therapy, it is assumed that in order to benefit from CBT the person must understand this model. However, due to the limitations in the cognitive and verbal ability of people with IDs, it has been argued that cognitive therapies may not be recommended for this population and that behavioural techniques may be more effective (Sturmey, 2004). Nevertheless, more behaviourally oriented interventions, such as relaxation and assertiveness training, are reliant on cognitive skills such as self-monitoring and self-management, and can therefore still be considered cognitive behavioural techniques (Hurley, 2005; Taylor, 2005)

Numerous case-studies, group designs and well-conducted controlled trials have investigated the applicability, acceptability and efficacy of CBT for people with IDs, in particular for anger problems and offending (Hamelin, Travis, & Sturmey, 2013; Murphy et al., 2010; Nicoll, Beail, & Saxon, 2013). Accounts of successful treatment of anxiety disorders and depression have also been reported (Hurley, 2004; McCabe, McGillivray, & Newton, 2006).

2.2.3 Mindfulness-based therapies

Mindfulness-based approaches are a relatively recent development in the broader range of third wave cognitive therapies. The premise of mindfulness-based therapies is not to modify the distortional or dysfunctional thoughts, but rather to change how the person interacts with their thoughts and feelings (Shapiro & Carlson, 2009). In contrast to other psychological therapies, it is predominantly based on a self-management approach.

Meditation on the Soles of the Feet is the most well-documented approach of using mindfulness-based strategies with people with IDs, yet most of the evidence is based on single-subjects designs (Singh et al., 2013). This meditation technique requires people to divert their attention away from an emotionally loaded situation, and instead focus on a neutral experience, the feeling of the soles of the feet, before redirecting their attention to the current situation with renewed calm and control. Studies have shown its potential in reducing aggression and anger problems in people with IDs (Singh et al., 2007, 2011; Singh, Wahler, Adkins, & Myers, 2003)

Overall, mindfulness-based approaches are an emerging area of research in the treatment of people with IDs and there is a need for more empirical evidence to evaluate its efficacy (Singh et al., 2013).

2.3 Accessibility of Psychological Therapies for People with IDs

Various psychological therapies have been used with people with IDs and mental health problems. Despite the potential challenges in applying these theoretical models in the treatment of people with IDs, their evidence base is growing. Recently, policy has started to catch up with practice and not only recognises the efforts being made to offer psychological therapies, but also actively promotes them. This section explores the impact of recent policies on the availability and applicability of psychological therapies to people with IDs and discusses how and what reasonable adjustments can be made to increase their accessibility.

2.3.1 A policy perspective

According to the *Healthcare for all* report (Michael, 2008), health services frequently fail to identify people with IDs who are in need of healthcare. It also acknowledged that people with ID were likely to have unmet health needs and that when services were being offered, these would often be less effective. Given the challenges in identifying and treating mental health problems in people with IDs, it would be reasonable to assume that the concerns raised in this report do not only apply to physical, but also to mental health.

Actions were taken to improve the accessibility of mental health services for people with IDs. One example is the development of a toolkit to assess and improve the accessibility of services (National Development Team for Inclusion, 2013). Meanwhile, the Improving Access to Psychological Therapies (IAPT) strategy was developed to improve access to mental health services for people with depression and anxiety; however, it was not originally designed to meet the needs of people with ID who have mental health needs.

With the publication of a positive practice guide, the prevalence and complexity of the mental health needs of people with IDs were formally recognised (Department of Health, 2009a). The report recommended that mental health and learning disability services work together to provide effective support for people in need and that IAPT services adopt a flexible approach when supporting people with IDs.

To increase the accessibility of IAPT services to people with IDs, it has been suggested that services provide clear statements of inclusion criteria. People with IDs may not always be considered as qualifying for IAPT services, by either themselves or service providers, and such criteria would inform people that people with IDs can be legitimately referred to IAPT services (Chinn, Abraham, Burke, & Davies, 2014).

2.3.2 Reasonable adjustments to improve accessibility

2.3.2.1 General adjustments to the provision of psychological therapies

The Learning Disabilities Positive Practice Guide (Department of Health, 2009a) states that IAPT services should make reasonable adjustments when offering psychological services to people with IDs. Possible adjustments include the provision of easy to read materials to inform people about their services, scheduling appointments according to the person’s ability to attend, variability in length of therapy sessions, suggesting the presence of independent advocates, and using mental health assessments that have been validated for use with people with IDs (Department of Health, 2009a).

Providing staff training in IDs is another approach to ensure services are able to recognise the mental health needs of this population. Training may be required to increase staff competency and confidence in recognising, assessing and treating mental health problems in people with IDs, with particular attention given to the specific and variable needs of this population (Chinn et al., 2014; Department of Health, 2009a; Mason, 2007).

Involving carers in treatment has also been promoted for people who are reliant on them to access mental health services, but their involvement could also be beneficial to support the communication between the therapist and the person with IDs (Department of Health, 2009a; Hurley, Tomasulo, & Pfadt, 1998; Royal College of Psychiatrists, 2004). Furthermore, carers can often provide valuable information in the form of proxy-reports and behavioural observations that are monitored throughout therapy. Where the relationship with the carer plays an important role in the development or persistence of a mental health problem, involvement of both parties in therapy may facilitate a more systemic approach.

Seeing past the assumption that the limitations in verbal expression are associated with an inability to address nonverbal behaviours and cognitions, Hurley and colleagues proposed a series of cross-therapeutic adaptations that would enable therapists to attune the therapeutic process to the cognitive, verbal, developmental and dependency level of their client (Hurley et al., 1998). Major adaptations included simplification of therapeutic techniques by building up an intervention with multiple smaller tasks or reducing the length and increasing the frequency of sessions. Language and activities can also be made more accessible through the use of simple language in short sentences and the adding of drawings to facilitate understanding. In addition, Hurley et al. (1998) suggested that presentation and interaction style should be adapted to the developmental level of each person, whereby games could be a more appropriate technique.

These suggested adjustments are very general and could apply to any form of psychological therapy or counselling. However, it could be argued that the therapeutic framework itself is the main hurdle for people not being considered suitable for therapy.

2.3.2.2 Therapy-specific adjustments

Adjustments to therapy considered by psychodynamic therapists are the increased attention to non-verbal communication and the loosening of the therapeutic relationship. Parkes and Hollins (2007) describe how people with IDs may experience the distant therapist as persecutory and that the formation of a strong therapeutic alliance might require more warmth and less rigidly enforced boundaries concerning the timing of sessions or sharing of information with carers or health professionals. By contrast, Hurley et al. (1998) argued that attachments may be more intense and would require therapists to be more firm in protecting the therapeutic boundaries.

Using case examples, Willner (2006) described how different approaches can be used to change distorted cognitions or learn to manage cognitive deficits in a simpler way than through the traditional A-B-C model of rational emotive therapy. With a focus on psycho-education, narrative therapy or self-management tasks people had been able to change those cognitions that CBT would consider the causal or perpetuating factors of the current mental health problem.

The theoretic framework behind psychodynamic and cognitive-behavioural therapies may indeed result in different adaptations being required. In a review of the frequency and type of adaptations made by therapists of either background, Whitehouse, Tudway, Look, and Stenfert-Kroese (2006) found that therapists were most likely to be flexible with the use of methods to ensure they suited the cognitive level of the person with IDs. While psychodynamic therapists were unlikely to address disability issues, they were more likely to address potential transference and countertransference concerns, and to involve carers. Cognitive behavioural therapists, however, were more explicit in their use of simplified techniques and directive methods, but were equally unlikely to address issues arising from the person's disability and rehabilitation.

Originally a CBT method, agenda setting has been recommended for various psychological therapies because of its ability to make therapy more predictable for people with IDs (Lindsay, Jahoda, Willner, & Taylor, 2013). The repetitive nature of this task may lead people to take more control of the therapeutic process while the relative complexity of therapy appears more manageable.

Most of the evidence supporting adaptations to therapy, however, is based on anecdotal evidence. The findings of Whitehouse et al. (2006) may not be representative either, as they were based on a review of the literature and therefore required the primary studies to explicitly describe the adaptations made to the therapeutic intervention. Furthermore, for psychodynamic therapies, this evidence was predominantly available from case studies. Therefore, the true extent of adaptations made to therapy is unclear and in the absence of any comparative study exploring the effects of adapting therapy, it will also remain unclear whether such adaptations make therapy more accessible and whether this results in better outcomes. Although there appear to be benefits in making adaptations to therapeutic methods, Lindsay (2009) warns that any adaptation should not undermine the integrity of the therapeutic approach.

2.4 Suitability for Psychological Therapy

Changes implemented to improve the accessibility of psychological therapies have largely followed a practical and physical approach to therapy, focusing on language and physical barriers, rather than making changes to the therapeutic framework. Meanwhile, in mainstream mental health services, clinicians and researchers have tried to determine what works for whom, with a renewed focus on increasing accessibility to therapies that are likely to be efficacious for each individual. Some studies have therefore focused on identifying criteria that are indicators of a person's readiness and suitability for therapy, rather than modifying the delivery of therapy.

2.4.1 General criteria for suitability for cognitive behavioural therapies

An initial attempt to determine a person's suitability for therapy was made by Safran and colleagues who set out to determine whether short-term cognitive therapy would be more suitable to certain clients (Safran, Segal, Shaw, & Vallis, 1990). Nine selection criteria were identified that could be assessed in a pre-therapy interview to evaluate the person's suitability for this type of therapy. The criteria cover a range of skills, from the motivational and interpersonal to certain cognitive skills.

Motivation for therapy is considered a key factor in determining a person's suitability for short-term therapies. Safran et al. (1993) referred to the extent to which a person accepts their responsibility in the therapeutic process and acknowledges how they can and should play an active role in the treatment. Focality is another aspect of motivation for therapy and concerns the person's ability to remain focused on the problem, which is of particular importance in short-term therapies. Related to motivational factors are the potential security operations, which are strategies employed by the person to reduce their in-session anxiety, but may interfere with their ability to explore personal thoughts and emotions.

In addition to motivational skills, Safran et al. (1990) identified the need for interpersonal skills as a means for establishing an effective and supportive therapeutic alliance. In particular, therapists should look for evidence of the person's ability to form an alliance within a short-term time frame. This evidence can come from in-session experiences, for example in the initial stages of therapy, as well as out-of-session experiences, such as previous (therapeutic) relationships.

The cognitive skills that may be required to undertake psychological therapy are associated with the underlying theoretical framework of therapy. For CBT, it is considered essential that the person can access their automatic thoughts in order to evaluate and change these during therapy. Similarly, people are expected to be aware of their experienced emotions, and be able to differentiate between different emotional states in themselves and others; this is because the recognition and acknowledgment of emotions is considered a first step in accessing the automatic thoughts that precede them. Following the accessibility of automatic thoughts and emotional experiences, suitability for CBT increases when the person’s therapy goals are compatible with the cognitive rationale (Safran, Segal, Vallis, Shaw, & Samstag, 1993). In this respect, it is expected that people see the relevance of typical cognitive therapy tasks, such as homework assignments and exploring the associations and interactions between their values, beliefs, emotions and behaviour.

Finally, Safran et al. (1990, 1993) considered the chronicity of a problem as a determining factor in evaluating the suitability of a person for short-term therapies. The implicit hypothesis being that more complex and chronic problems would require a more intensive and long-term therapeutic approach to resolve the underlying dysfunctional behavioural and characterological styles.

From a less therapy-specific perspective, Rollnick (1998) proposed to evaluate a person’s suitability or readiness for therapy in terms of their willingness and ability. Willingness to engage in therapy is a motivational factor and maps onto Safran et al.’s (1990) concepts of alliance potential and ability to acknowledge oneself as an agent of change in the therapeutic process. Rollnick’s (1998) ability to engage in therapy is more therapy-specific and refers to the understanding and skills required to successfully engage in and benefit from therapy.

Although Safran et al. (1990) and Rollnick (1998) defined their criteria for suitability for cognitive therapies with the general adult population in mind; it can be assumed that these criteria are applicable to the efficacious psychotherapeutic treatment of people with IDs, as well. Similarly, the criteria identified by Safran et al. (1990) were intended to evaluate a person’s suitability for short-term cognitive therapies, but can easily be applied to the wide range of cognitive-behavioural therapies when taking into account the expected duration of therapy and the chronicity of the problems.

2.4.2 Readiness of people with ID for cognitive behavioural therapies

Turning to people with IDs again, little evidence is available to help determine whether a person and their presenting mental health problems would be more suitable for one psychotherapeutic approach over the other. In the absence of strong evidence directing the choice of therapy, this section focuses on CBT as the most well-researched area, and explores the evidence regarding its suitability for people with IDs.

2.4.2.1 Willingness to engage in CBT

Few people with IDs refer themselves for therapy and this may affect their motivation to engage with therapy and subsequent therapy outcomes (Willner, 2003, 2006). Motivation to change is crucial as it is associated with accepting personal responsibility to act as an agent of change in the therapeutic process and the understanding that success is not the sole responsibility of the therapist (Safran, Vallis, Segal, & Shaw, 1986). Offenders with IDs, for example, may perceive their difficulties as caused by environmental factors and therefore be more interested in changing these factors than to work on their own thoughts and how they affect their behavioural responses (Lindsay, 2009).

Group therapies may be particularly suitable for ensuring people stay motivated to adhere to therapy because receiving praise in a group can be efficacious in shaping appropriate coping mechanisms (Lindsay, 2009). Similarly, Rose, West and Clifford (2000) described how interactive group techniques appeared to promote a sense of ownership and motivation to change in people with IDs and anger problems.

Role expectations may also affect the person’s willingness to engage in therapy, as Dagnan, Jahoda and Kilbane (2013) explained. Previous experiences with different health professionals can influence how a person thinks about therapy and its potential outcomes and are important for the therapist to assess to ensure people have appropriate expectations.

Finally, research into the effects of a group intervention for anger found that treatment effects tended to be higher for people who were accompanied by a carer or member of staff throughout the intervention (Rose, Loftus, Flint, & Carey, 2005). The potential of involving carers in therapy has also been touched upon by Willner (2006), who argued that carer involvement may improve therapy engagement. However, it has been recognised that carer involvement is not without risk, as they themselves may lack the willingness or ability to engage successfully with the therapeutic process (Willner, 2006).

2.4.2.2 Ability to engage in CBT

Research examining the cognitive factors associated with suitability for CBT has largely focused on the effects of IQ. In a small-scale randomised controlled trial it was found that verbal and total IQ, but not performance IQ, were positively correlated with the treatment effects of a group-based anger management intervention (Willner, Jones, Tams, & Green, 2002). Furthermore, the findings indicated that a minimum verbal IQ score of 50 may be required to benefit from the intervention. For a similar group intervention for anger problems, Rose and colleagues reported that receptive language ability explained some of the variability found in outcome scores on an anger inventory measure (Rose et al., 2005).

Other skills that impact upon the ability to engage in CBT are associated with the theoretical framework of CBT. Firstly, a distinction should be made between the cognitive deficit and the cognitive distortion models. While a deficit-based model implies that certain maladaptive cognitions cannot be changed due to deficiencies in a person's information processing ability, the distortion-based model proposes that distortions may occur in the content of a person's thoughts and can therefore be subject to change (Kendall, 1985).

Formal assessments of suitability for CBT have been developed for certain skills relating to the cognitive rationale. Research on emotion recognition is widespread, although not generally conducted with the aim of assessing readiness for therapy. Assessments relating to the accessibility of automatic thoughts and compatibility with the cognitive rationale, however, have almost exclusively been developed for use with people with IDs.

Several studies investigated the ability of people with IDs to undertake certain aspects of CBT. Characteristics of each study's sample size are presented in Table 2.1 and indicate that nearly all studies included adults with mild to moderate ID. The table also highlights the pioneering position of the United Kingdom in this area of research, as no studies conducted outside the UK could be identified.

Table 2.1. Sample characteristics of studies assessing therapy skills in people with IDs.

Study	Sample size	Age	Ability level	Country
S1. (Reed & Clements, 1989)	*N* = 55 26M/29F	Age range: 14 – 25	BPVS mean for ‘pass’-group = 65.4 BPVS mean for ‘non-pass’ group = 29.2	UK
S2. (Dagnan & Proudlove, 1997)	*N* = 40 19M/21F	Mean age = 35 (SD = 9.6)	BPVS mean = 64.0 (SD = 27.1)	UK
S3. (Dagnan & Chadwick, 1997)	*N* = 29 15M/14F Data available for *n* = 6	Mean age = 39 (SD = 14)	BPVS mean = 73 (SD = 26)	UK
S4. (Dagnan, Chadwick, & Proudlove, 2000)	*N* = 40 19M/21F	Mean age = 35.1 (SD = 9.5)	BPVS mean = 64.0 (SD = 27.1)	UK
S5. (Sams, Collins, & Reynolds, 2006)	*N* = 59	Age range: 17 – 60	WASI IQ: Mean = 58.0 (Range 50 – 72) BPVS-II mean = 85.4 (SD = 27.7)	UK
S6. (Joyce, Globe, & Moody, 2006)	*N* = 52 25M/27F	Mean age = 40 (SD = 11.6)	BPVS mean = 12.87 (SD = 6.9) CASP section 6, mean decile = 6 (SD = 2.91)	UK
S7. (Oathamshaw & Haddock, 2006)	*N* = 50 27M/23F	Mean age = 43 $\text{Mean}_{\text{Male}}$ = 43.15 (SD = 11.31) $\text{Mean}_{\text{Female}}$ = 43.09 (SD = 2.03)	BPVS-II minimum score: 48 Additional diagnosis: Schizophrenia, schizoaffective disorder, or psychotic symptoms	UK
S8. (Dagnan, Mellor, & Jefferson, 2009)	*N* = 41 27M/14F	Mean age = 39.2 (SD = 11.7)	BPVS-II mean = 61.48 (SD = 26.56)	UK

Note. Sample size M/F: male to female ratio; BPVS, British Picture Vocabulary Scale (Dunn, Dunn, Whetton, & Pintillie, 1982; Dunn & Dunn, 1997); WASI, Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999); CASP, Communication Assessment Profile for Adults with a Mental Handicap (van der Gaag, 1988)

Procedures for assessing emotional awareness range from participants having to label a modelled or pictured emotion (Joyce et al., 2006) to presenting participants with a forced-choice response option when deciding which pictured emotion shows a given emotion (Dagnan & Chadwick, 1997; Reed & Clements, 1989; Sams et al., 2006). These assessments of emotional awareness have indicated that overall people with mild to moderate IDs are able to recognise and differentiate between happy and sad, whereby 'happy' is the most frequently recognised and correctly identified emotion (Joyce et al., 2006; Oathamshaw & Haddock, 2006). Emotion recognition becomes increasingly difficult, however, when more emotional states are added (Joyce et al., 2006).

Following the cognitive rationale, emotional awareness has also been assessed by asking participants to link events to emotions; or in the terminology of the ABC model, by linking activating events to consequential emotions. Events were either described to participants (Joyce et al., 2006; Reed & Clements, 1989) or presented as a picture sequence (Dagnan et al., 2000, 2009; Oathamshaw & Haddock, 2006). Regardless of how task items were presented, fifty to seventy-five percent of participants succeeded in making a correct link for each item presented.

Exploring people's understanding of the cognitive rationale of CBT a bit further, Dagnan and Chadwick (1997) trialled an assessment of cognitive mediation skills. To assess the ability of people with ID to recognise thoughts as a mediating factor between activating events and emotional consequences, they presented participants with brief scenarios and paired them with an emotion before prompting participants to offer a mediating belief. In two separate studies, participants were able to provide valid mediating thoughts for approximately half of the task items (Dagnan & Chadwick, 1997; Dagnan et al., 2009).

In 2000, a new cognitive mediation assessment was introduced using forced-choice responding rather than the open-ended questions used by Dagnan & Chadwick (1997) and by Dagnan et al. (2009). In line with the ABC framework, tasks would present either an event and belief and then ask participants to choose the appropriate consequential emotion, the AB-choose C task, or present an event and emotion and ask participants to identify the appropriate mediating belief, the AC-choose B task (Dagnan et al., 2000). In several replication of these tasks, maximum fifteen to twenty-five percent of participants passed the task by obtaining a score higher than what could be expected based on chance levels (Dagnan et al., 2000; Joyce et al., 2006; Oathamshaw & Haddock, 2006).

Finally, two studies assessed the ability of people with mild to moderate ID to differentiate between thoughts, feelings and behaviours. When these components were presented as a word or as a short sentence, then respectively 19, 51 and 67% of participants were able to identify enough thoughts, feelings and behaviours to pass these subtasks (Oathamshaw & Haddock, 2006). However, when these components were presented in story-form, participants identified overall 54% of items correctly (Sams et al., 2006).

A detailed overview of the research methods and outcomes of these assessment studies is presented in Table 2.2.

Table 2.2. Methods and outcomes of studies assessing therapy skills in people with IDs.

Methods: Presentation	Methods: Response procedures	Items & scoring	Outcome	Correlations with language ability or IQ
Skill: Emotional awareness and recognition				
a. Emotions named verbally: happy – sad	Forced choice (2) Pointing to cartoon face that matches emotion	Items: 2	S1 (Reed & Clements, 1989): 67 % 'passed' tasks a, b, c and d	S1. BPVS
		'Pass': maximum score on skills a, b, c, and d.	S6 (Joyce et al., 2006): 50% 'passed' tasks a, b, c, and d	S6. BPVS, CASP
b. Emotions modeled by experimenter: happy – sad	Forced choice (2) Pointing to cartoon face that matches emotion	Items: 2 'Pass': maximum score on skills a, b, c, and d.	S1: see task (a) above S6: see task (a) above	S1: see task (a) above S6: see task (a) above
Emotions named verbally: happy – sad – frightened – worried – angry	Forced choice (5) Pointing to Makaton face	Items: 5 Max score: 5	S2 (Dagnan & Proudlove, 2000): Mean = 2.7 (SD = 1.6) 23% scored 5/5; 8% scored 0/5 'Happy' most recognised: *n* = 90%	S2. BPVS
			S5 (Sams et al., 2006): Mean = 3.36 (SD = 1.64) 44% scored 5/5	S5. BPVS, WASI
			S7. (Oathamshaw & Haddock, 2006): Mean = 2.89 (SD = 1.17) 'Happy' most recognised: *n* = 96%	S7. BPVS-II
			S8. (Dagnan et l., 2009): Mean = 2.3 (SD = 1.6) 15% scored 5/5; 15% scored 0/5	

Methods: Presentation	Methods: Response procedures	Items & scoring	Outcome	Correlations with language ability or IQ
Emotions named verbally; angry – disgusted – excited – hurt – interested – surprised – afraid – bored – happy – sad – sneaky – thinking	Forced choice (6) Pointing to photographs of emotional faces	Items: 12, presented as 2 x 6 Max score per set: 6	S6 (Joyce et al., 2006): Mean = 4.4 (SD = 2.6) 17% scored 0/6 ‘Happy’ most identified, *n* = 36	
Emotions presented in photographs; angry – disgusted – excited – hurt – interested – surprised – afraid – bored – happy – sad – sneaky – thinking	Verbally labeling emotions	Items: 12 Max score per set: 6	S6 (Joyce et al., 2006): Mean = 2.7 (SD = 1.8) 33% scored 0/6 ‘Happy’ most labeled, *n* = 65%	
Skill: Linking event to emotion				
c. Situation explained verbally	Forced choice (2) Pointing to cartoon face that represent own emotion	Items: 1 ‘Pass’: maximum score on skills a, b, c, and d.	S1: see task (a) above S6: see task (a) above	S1: see task (a) above S6: see task (a) above
d. Picture sequences of event	Forced choice (2) Verbal or pointing to cartoon face	Items: 6 Max score: 6 ‘Pass’: maximum score on skills a, b, c, and d.	S1: see task (a) above S6: see task (a) above	S1: see task (a) above S6: see task (a) above
			S4. (Dagnan et al., 2000): 75% ‘passed’ task d	S4. BPVS
			S7 (Oathamshaw & Haddock, 2006): 72% ‘passed’ task d	S7. BPVS-II
			S8 (Dagnan et al., 2009): Mean = 4.7 (SD = 1.5)	

Methods: Presentation	Methods: Response procedures	Items & scoring	Outcome	Correlations with language ability or IQ
Skill: Linking event-belief pairs to emotions				
Scenarios (event & belief) presented verbally	Forced choice (2) Verbally.	Items: 10 Max score: 10 'Overall Pass': score >= 8 'Congruent Pass': score = 5/5 'Incongruent pass': score = 5/5	S4 (Dagnan et al., 2000): 10% 'Overall pass' 38% 'Congruent pass'; 3% 'Incongruent pass' S6 (Joyce et al., 2006): 12% 'Overall pass' 19% 'Congruent pass'; 4% 'Incongruent pass' S7 (Oathamshaw & Haddock, 2006): 12% 'Overall pass' 30% 'Congruent pass'; 2% 'Incongruent pass'	S4. BPVS – overall / congruent S6. BPVS – overall / congruent / incongruent
Skill: Linking event-emotion pairs to beliefs				
Scenarios (events) presented verbally, emotions (happy – sad) presented in pictures	Open question. Verbally formulating a belief	Items: 6	S3 (Dagnan & Chadwick, 1997): Mean appropriate beliefs = 3.7 (SD = 1.6) S8 (Dagnan et al., 2009): Mean appropriate beliefs = 2.16 (SD = 2.06)	
Scenarios (event & emotion) presented verbally	Forced choice (2) Verbally	Items: 10 Max score: 10 'Overall Pass': score >= 8 'Congruent Pass': score = 5/5 'Incongruent pass': score = 5/5	S4 (Dagnan et al., 2000): 25% 'Overall pass' 20% 'Congruent pass'; 13% 'Incongruent pass' S6 (Joyce et al., 2006): 14% 'Overall pass' 21% 'Congruent pass'; 6% 'Incongruent pass' S7 (Oathamshaw & Haddock, 2006): 10% 'Overall pass' 14% 'Congruent pass'; 4% 'Incongruent pass'	S4. BPVS – incongruent S6. CASP – overall / congruent S7. BPVS-II – emotions / behaviours

Methods: Presentation	Methods: Response procedures	Items & scoring	Outcome	Correlations with language ability or IQ
Skill: Discriminating between beliefs, emotions and behaviours				
Stories (belief, emotion & behaviour) presented verbally and written on cards	Forced choice (3) Verbally, gesturing or pointing to box with example picture	Items: 6 stories of 3 components each Max score: 18 Max score beliefs, emotions and behaviours subsets: 6	S5 (Sams et al., 2006): Overall: Mean = 9.75 (SD = 3.68) Beliefs subset: Mean = 3.88 (SD = 1.61); 19% scored 6/6 Emotions subset: Mean = 2.76 (SD = 1.89); 7% scored 6/6 Behaviours subset: Mean = 3.12 (SD = 2.07), 17% scored 6/6	S5. WASI – overall / emotions / behaviours
Items (beliefs, emotions / behaviour) presented verbally	Forced choice (3) Verbally	Items: 23 (8 emotions, 8 behaviours & 7 beliefs) 'Pass' for emotions & behaviours subset: scores >= 6 'Pass' for beliefs subset: scores >= 5	S7 (Oathamshaw & Haddock, 2006): 19% 'passed' beliefs subset 51% 'passed' emotions subset 67% 'passed' behaviours subset	S7. BPVS-II – emotions / behaviours

Note. BPVS, British Picture Vocabulary Scale (Dunn et al., 1982; Dunn & Dunn, 1997); Makaton faces refer to the Symbols of Makaton (Walker, 1985); Forced choice (n): n, number of responses to choose from; WASI, Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999); CASP, Communication Assessment Profile for Adults with a Mental Handicap (van der Gaag, 1988).

Most of these CBT specific skills were found to be correlated with IQ, or at least with verbal comprehension, as shown in Table 2.2. This finding would be in line with earlier assumptions that people with IDs do not have the skills required to undertake CBT. However, the true association between these therapeutic skills and verbal ability might be lower if assessments could be developed that are less reliant on verbal ability for understanding task items and instructions, as well as for the recording of responses.

The availability of assessments to determine whether a person with IDs has the ability to understand the cognitive rationale and perform cognitive therapy tasks might appear like a practical and efficient step in the decision making process of offering therapy. However, Willner (2006) warns against deciding whether to offer psychological therapies to people with IDs merely based on an assessment of their cognitive skills and performance in psychological or cognitive assessments. In this respect, assessments of suitability should be seen as guiding the therapeutic process and indicating where adjustments may be required or desirable, while a thorough case formulation remains an essential aspect of therapy.

2.5 Preparing People with IDs for CBT

Following research into identifying and assessing the necessary skills to undertake CBT, there has been some interest in developing training programmes that might prepare people with IDs to perform therapy-specific tasks. The underlying premise is that preparation for therapy may increase their suitability for CBT and thereby lead to better outcomes. Although there is no evidence yet to support this assumption, there is a growing interest in developing such programmes.

Using a group training programme, McKenzie, Matheson, McKaskie, Hamilton, and Murray (2000) aimed to improve the emotion recognition skills of people with moderate IDs. Six people were assessed for their ability to recognise emotions from line drawings and photographs by either labelling the emotion or matching it to another pictured emotion. A ten-week training programme focused on teaching participants to identify facial features that are associated with particular emotions and applying these identification skills to still images, such as line drawings and photographs, as well as video clips. There was no control condition.

At both baseline and post-test, participants' accuracy in identifying emotions was highest for tasks using a forced-choice design when compared to tasks requiring labelling or matching to sample. Overall, training had a significant effect on emotion recognition skills when participants were asked to identify emotions pictured in line-drawings and photographs. Interestingly, emotion recognition was higher for photographs that provided contextual information in addition to the emotional expression than when no such information was available.

In a randomised experiment, Bruce and colleagues investigated whether they could improve the understanding of people with IDs of the cognitive rationale underlying CBT (Bruce, Collins, Langdon, Powlitch, & Reynolds, 2010). A relatively small sample of thirty-four people with mild to moderate IDs were assessed regarding their ability to link thoughts to feelings and their ability to discriminate between thoughts, feelings and behaviours.

Participants allocated to the training condition subsequently received a one-hour session with a trainer that focused on the different components of each task. People were encouraged to identify and discuss different thoughts, feelings and behaviours with the support of simple language, pictures, mime, personal experiences and several sample exercises. The control intervention, on the other hand, was a one-hour behavioural relaxation training. Baseline, intervention and post-test assessments were completed at one week intervals.

Following training, participants had improved their ability to select an appropriate emotional response when presented with a thought. This training effect also generalised to previously unseen materials to the extent that the average post-test performance on four new items exceeded average performance on the six items presented at baseline. The ability to differentiate between thoughts, feelings and behaviours, however, did not improve with training.

The small sample size limits the strength of the conclusions, but these initial findings show that training interventions can be developed to improve some of the skills required to undertake CBT.

2.6 Challenges in the Assessment of and Training in Therapy Skills

The development of assessment and training materials for use with people with IDs provides similar challenges to those encountered when developing IDs-specific assessments of mental health needs. Verbal comprehension and ability, in particular, are important factors in deciding the format of such materials, whereas length of completion is likely to impact upon motivation to complete the tasks.

A further challenge in developing appropriate methods is ensuring their validity. There has been some debate as to what is the ideal way of assessing cognitive mediation skills in people with IDs (Dagnan et al., 2000, 2009).

A critical trade-off should also be made between standardisation and personalisation. Standardised materials have the benefit of comparability between studies and provide a means for progress monitoring. Materials based on personal experiences, however, may be more clinically relevant and more meaningful in relation to the therapeutic process.

2.7 Conclusion

This chapter focused on the accessibility and suitability of psychological therapies to people with IDs and how these can be improved. While policies require mental health services to make reasonable adjustments and therapists themselves have made adaptations to varying aspects of therapy, there is little evidence regarding the impact of these adjustments on therapy uptake, adherence and outcomes. Using a variety of assessments, we are now able to evaluate a person’s suitability for therapy in terms of their cognitive ability. However, it is unclear whether these assessments are clinically meaningful when deciding who receives therapy, which people would benefit from further training in these skills and whether or how these CBT abilities relate to therapy outcomes. In spite of this, psychological therapies are more widely available than ever before and the next phase of research will focus on ways to further improve the accessibility, suitability and efficacy of therapies.

Chapter 3

Research Questions

3.1 Background

The previous chapters drew attention to the concern that people with IDs are at risk of developing mental health problems at a higher rate than the mainstream population. Interactions between biological, genetic, psychological, social and environmental factors all contribute to the often complex mental health needs of people with IDs.

Pharmacological and psychological treatments have been developed to support the prevention and treatment of mental health problems. Their efficacy has been established in the mainstream population, but their use with people with IDs has been slow. Clinicians and researchers who started offering and evaluating psychological therapies for people with IDs are now receiving support from government policies that promote the provision of inclusive mental health services. There is a growing recognition, amongst all involved, that cognitive, verbal or developmental limitations do not justify the lack in provision of adequate services and instead reasonable adjustments should be made to ensure equal access to efficacious therapies for people with IDs.

The work presented in this thesis builds on the assumption that there is scope to further improve the accessibility of psychological therapies for people with IDs. It is organised into three parts, each with their own objective.

Part 1 will focus on the efficacy of psychological therapies. It will explore which psychological therapies are currently being offered to people with IDs and aims to identify established or evidence-based interventions for a variety of mental health problems.

Part 2 is concerned with assessing and improving the suitability of people with IDs for psychological therapies, and CBT in particular. The development of new interventions to train CBT skills, and their subsequent evaluation, will be addressed in two separate studies.

Finally, in Part 3 we will shift the focus from research to practice and explore the acceptability of new tools to improve the suitability of people with IDs for CBT. This part will also consider how such tools can comply with the requirements for reasonable adjustments.

3.2 Part 1 – Evaluating the Efficacy of Psychological Therapies

For a long time, pharmacological and behavioural approaches were the treatment of choice for mental health problems in people with IDs as it was believed that the limited cognitive capacity of people with IDs would prevent them for engaging with and benefiting from the traditional talking therapies. The growing body of evidence, originally in the form of case studies, has successfully challenged this assumption.

Case studies have reported the successful treatment of anxiety disorders (Suveg, Comer, Furr, & Kendall, 2006), phobias (Davis III, Kurtz, Gardner, & Carman, 2007; Freeman, 1997; Hurley, 2004), panic disorder (Hurley, 2007), mood disorders (Fernandez, Tom, Stadler, Cain, & Knudsen, 2005), post-traumatic stress disorder (Lemmon & Mizes, 2002; Mevissen, Lievegoed, & de Jongh, 2011), psychotic symptoms (Barrowcliff, 2008; Haddock, Lobban, Hatton, & Carson, 2004), symptoms of obsessive-compulsive disorder (Klein-Tasman & Albano, 2007), dental anxiety (Prangnell et al., 2008), anger problems (Gonzalez-Prendes, 2007) and sexual offenders (Shenk & Brown, 2007).

Meanwhile, intervention studies with a single-group or controlled design have also shown the promising effects of psychological therapies, but their density may be lower due to the methodological and ethical concerns of conducting such trials.

Obtaining a sufficiently large sample size is a major concern for intervention studies. Furthermore, Bhaumik, Gangadharan, Hiremath and Russell (2011) highlighted the issue of representativeness of study samples because recruitment strategies are often based on referral or through contact with gate-keepers, such as service providers or carers. Whilst these people generally have the best interest of the person with IDs at heart, some are wary that researchers share this interest, whereas people with IDs who aren't receiving services may be difficult to identify and recruit into a study (Becker, Roberts, Morrison, & Silver, 2004).

An additional difficulty in recruiting participants with IDs into intervention studies is the requirement of informed consent. Although participants may have the ability to understand study procedures, this does not imply that they can understand and compare the potential risks and benefits associated with the proposed intervention (Arscott, Dagnan, & Stenfert-Kroese, 1998, 1999) or consider the potential impact of randomisation (Oliver et al., 2002).

The scarcity of controlled outcome studies within this area can partially be explained by a combination of recruitment strategies, concerns about treatment effectiveness, and ethical concerns regarding consent and randomisation, not to mention difficulties with attracting appropriate funding. However, considering the marked prevalence of psychiatric disorders amongst people with IDs, there is a clear need for further clinical trials within this area. Others have attempted to undertake both narrative and meta-analytic reviews in order to examine the effectiveness of psychological therapy with people who have IDs who have mental health problems, including forensic mental health problems. For example, in a survey of reviews, Gustafsson et al. (2009) identified 55 reviews of therapy for people with IDs and concurrent mental health problems, and the evaluation of theoretical aspects of psychological therapy provision was sparse. Primary research was considered to lag behind due to the lack of randomised control trials (RCTs); however, it could be argued that evidence from non-RCTs should not be disregarded due to the ethical challenges associated with undertaking psychological research within this area.

Several other reviews have been undertaken in this area. First, Prout and Nowak-Drabik (2003) conducted a comprehensive literature review identifying ninety-two intervention studies of which thirty-five comprised a control group. Half of these controlled trials were published dissertations. Nevertheless, the diversity in psychotherapeutic techniques, and approaches under review, which included accounts of relaxation and social skills training, led to the conclusion that there was a moderate treatment effect. Also, approximately one third of the included studies omitted details regarding the underlying psychotherapeutic theory.

Second, evidence for the treatment of post-traumatic stress disorder (PTSD) in people with IDs was evaluated by Mevissen and de Jongh (2010). They found prevalence rates of PTSD difficult to estimate due to the absence of valid and reliable diagnostic measures, and a symptomatology differing from that in the general population. Only case studies reporting on the successful treatment of PTSD could be identified and it was concluded that currently no empirically validated treatment is available.

Third, and turning to forensic mental health problems, there have been several attempts to review interventions for people with IDs who have forensic mental health problems, such as criminal offending or anger problems. For example, a systematic review by Ashman and Duggan (2008) aimed to evaluate the efficacy of interventions for sex offenders with IDs; however, it failed to identify published randomised controlled trials.

Behavioural and cognitive-behavioural interventions to reduce aggressive behaviours were evaluated by Hassiotis and Hall (2008) and found to have some temporary effect. Outcome data were available for three studies but the considerable between-study heterogeneity in the population and outcomes prevented estimations of treatment effect across studies. The inclusion of behavioural modification interventions in this review may be a confounding factor and therefore the results do not provide sufficient support for the efficacy of traditional psychological therapies.

Another review of cognitive-behavioural interventions for anger, by Hamelin, Travis, and Sturmey (2013), presented a large between-group effect size for randomised controlled trials of approximately 1.5. This estimate was based on the analysis of two trials, and the inclusion of studies that were not fully randomised reduced the effect size to 0.9. The lower limit of the 95% confidence interval then dropped from 1.49 to 0.16. However, double counting of evidence occurred in this second analysis, as both the individual and group therapy arms of Rose, O'Brien, and Rose (2009) were included.

The final and most recent review was conducted by Nicoll, Beail, and Saxon (2013). They completed a meta-analysis of cognitive-behavioural interventions for anger yielding large treatment effects for individual and group therapy. Estimates of treatment efficacy were based on uncontrolled effect sizes as studies with uncontrolled designs were included in the analysis. Their rationale was that the variety of comparison groups across studies would result in increased and potentially problematic heterogeneity in the analyses. Taking the small sample sizes into account the estimated treatment effect is likely to be more conservative.

Some authors have criticised the evaluation of cognitive therapy with people with IDs as being biased due to confounding with behavioural interventions that frequently constitute treatment packages (Sturmey, 2004, 2005). Beail (2005) argued that contrasting the efficacy of behavioural and cognitive-behavioural interventions would be problematic because they have been evaluated with different groups of people with IDs. For example, most ''pure'' behavioural interventions have been evaluated for challenging behaviour in people with severe to profound IDs, whereas CBT evaluation has focused on people with ''mild-to-moderate'' IDs and mental health problems living in the community. Hurley (2005) and Taylor (2005) further contend that relaxation and assertiveness training require cognitive skills, such as self-monitoring, in addition to the use of behavioural techniques; many other common techniques within CBT are grounded within learning theory (e.g. graded exposure).

The efficacy of behavioural interventions for challenging behaviour has been well-documented, but predominantly behavioural approaches may not be sufficient to address the mental health problems of people with IDs (King, 2005). The Royal College of Psychiatrists (2004) noted that psychological therapies, whilst employing disorder- or theory-specific psychotherapeutic interventions, should also aim to address the emotional needs of people with IDs. Self-reports of emotional regulation have proven to be a valuable predictor of emotional adjustment, whilst dysfunctional adjustment to a situation may cause behavioural problems (Berking, Orth, Wupperman, Meier, & Caspar, 2008). The prevention and treatment of mental health problems will hence have to address emotion regulation processes, a component of many psychotherapeutic interventions.

As a consequence, considering the problems with some of the previous reviews in this area, it was considered timely to undertake a meta-analysis of the current literature in order to examine whether or not structured psychological therapy, including but not limited to CBT, is efficacious when used with people who have IDs.

Chapter 4 will be dedicated to a systematic review of the literature using the PsychINFO, MedLine and CINAHL Plus databases of international peer-review journals. The aims are fourfold:

- To identify all intervention studies of an independent groups design, with or without randomised allocation, that evaluate the efficacy of any psychological therapy offered to children and adults with IDs in the treatment or prevention of mental health problems.
- To provide a critical appraisal of the methods used in the identified studies and their impact on the conclusions regarding the intervention’s efficacy.
- To statistically evaluate, using meta-analyses, the efficacy of psychological therapies in reducing mental health problems when compared to a waiting-list, treatment as usual, or no-intervention control group.

- To identify areas with limited available evidence to suggest directions for future research.

3.3 Part 2 – Improving the Suitability for CBT

Alongside the evaluation of psychological therapies for the treatment of mental health problems amongst people with IDs, researchers also focused their attention towards factors that may influence a person's suitability for psychological therapy. Suitability criteria for CBT have been described in terms of ability and willingness (Willner, 2006), as well as in terms of the potential to form a therapeutic alliance, motivation for change, ability to remain problem-focused, accessibility of (negative) automatic thoughts, ability to differentiate between emotional states and general affinity with the cognitive rationale (Safran et al., 1993, 1986). Hence, one factor that may influence a person's suitability for CBT lies in their ability to grasp the concepts presented within therapy, or more in particular the concepts presented in CBT (Stenfert-Kroese, Dagnan, & Loumidis, 1997). There has been little research, however, looking at these variables within therapy for people with IDs.

From a theoretical perspective, the antecedent-belief-consequent (A-B-C) model (Ellis, 1977; Trower et al., 2011) has helped inform clinicians about the necessary skills that are needed in order to successfully take part in cognitive-behavioural therapy. The model asserts that emotional and behavioural responses or consequences (C) to an activating event or antecedent (A) are shaped by the person's interpretation or beliefs (B). These three components reflect three component skills needed in order to take part in CBT: (a) accessibility of automatic thoughts, (b) ability to differentiate emotions, and (c) understanding of the cognitive rationale (Safran et al., 1993, 1986). Accessibility of automatic thoughts corresponds with the belief component, while differentiation of emotions corresponds to the consequences component, and the cognitive rationale is reflected within the cognitive mediation process, which hypothesises that the relationship between situations and emotions are mediated by cognition.

Several authors have examined whether people with IDs have difficulties with some of the component skills needed to take part in CBT and whether these skills can improve following training, which has been described in detail in Chapter 2. These assessment and training studies suggested that people with IDs have some understanding that emotions are linked to situations, but find it harder to understand how cognitions mediate this connection. However, while there is evidence that an understanding of the A-B-C model is associated with outcome from CBT (Safran et al., 1993), we still do not know whether this is also the case for people with IDs. Furthermore, various studies have shown strong links between verbal ability, and both readiness for CBT (Dagnan et al., 2000; Dagnan & Chadwick, 1997; Joyce et al., 2006; Reed & Clements, 1989; Sams et al., 2006), as well as therapeutic gains (Willner et al., 2002). The currently available assessments and training methods (Dagnan et al., 2000; Joyce et al., 2006; Reed & Clements, 1989) rely heavily on verbal comprehension and may be too difficult for some people with moderate IDs. They also use abstract symbols of emotions that do not conform to the recommendations of presenting information in line drawings or photographs, if possible with contextual information presented alongside it (McKenzie et al., 2000).

Hence, there is scope to make further adaptations to existing assessment and training methods which aim to improve CBT skills. This may eventually improve the accessibility of therapy for a population with a high prevalence of mental health problems (Clarke, 2003; Emerson & Hatton, 2007; Hulbert-Williams & Hastings, 2008; S Reiss & Benson, 1984).

Chapters 5and 6 will therefore focus on the development and evaluation of a training paradigm to improve specific CBT skills. These training programmes will be based on pictures, requiring minimal verbal ability to respond to task items, and will be computerised to facilitate the standardisation of these instruments and introduce a game component, in line with the recommendations formulated by McKenzie et al. (2000) and Hurley, Tomasulo, and Pfadt (1998).

Chapter 5 is dedicated to the first intervention study which used a single-blind mixed experimental design in which adults with IDs were randomised to receive either a computerised training or an attention-control condition. Cognitive mediation skills were assessed at pre-test and post-test using computerised versions of cognitive mediation assessments by Dagnan and Chadwick (1997) and Dagnan et al. (2000) in which participants have to link feelings to situations and beliefs, as well as link beliefs to situations and feelings. Training was based on the Reed and Clements' task (1989) in which participants had to link situations to feelings. The specific objectives were:

- To evaluate the effect of training in linking situation to feelings, and vice versa, on the ability to link pairs of situations and mediating beliefs to feelings.
- To evaluate the effect of training in linking situation to feelings, and vice versa, on the ability to link pairs of situations and feelings to appropriate mediating beliefs.
- To evaluate whether congruency of the cognitive mediation task items is associated with the ability to link pairs of situations and mediating beliefs to feelings or with the ability to link pairs of situations and feelings to appropriate mediating beliefs.

The second intervention study, described in Chapter 6, follows the same 2 (Group: training or attention-control) x (2 (Time: 1 or 2) x *S*) study design. The primary objective of this study was to evaluate the effects of a training programme on discriminating between behaviours, thoughts and feelings. Pre- and post-test assessments comprised computerised versions of the Behaviour-Thought-Feeling Questionnaire (Oathamshaw & Haddock, 2006), in addition to the computerised cognitive mediation tasks of Chapter 5. Training was based on the Thought-Feeling-Behaviour Card Sorting Task (Quakley, Reynolds, & Coker, 2004). The specific objectives of this study were:

- To evaluate the effect of training, when compared to an attention-control condition, on the ability to discriminate between behaviours, thoughts, and feelings, both separately and when pooled together.
- To evaluate the effect of training, when compared to an attention-control condition, on cognitive mediation skills as assessed by the ability to link situations and beliefs to feelings, and the ability to link situations and feeling to mediating beliefs.

3.4 Part 3 – Exploring the Acceptability of Reasonable Adjustments

The choice for computerised training programmes, rather than traditional paper-based ones, should not be surprising. Computers have been used successfully as assistive technologies in supporting everyday communication, as well as a means of training vocational skills, problem-solving skills, and social skills (Dattilo, Williams, & Cory, 2003; Davies & Hastings, 2003; Standen & Brown, 2005). Hence, their implementation in therapeutic practice would appear a logical next step, if not a late one. Indeed, Tomlinson et al. (2014) identified global research priorities in people with intellectual and developmental disabilities, with particular attention given to research investigating how various assistive devices and software can be used to support people with IDs in gaining access to appropriate health services.

Although research has shown that computer technologies can be beneficial for people with IDs, what is not yet clear is how these technologies can be successfully implemented in therapy and what their impact is on therapy engagement and outcome. However, prior to conducting large-scale experimental studies to evaluate their impact, it is desirable to identify the expectations and concerns of its end-users, in this case clinical psychologists and people with IDs.

The concluding study of this work will therefore seek to explore the attitudes of both end-user groups to inform the development and design of computer programmes to be used in therapeutic practice with people with IDs.

Chapter 7 concerns a qualitative study using semi-structured interviews with people with IDs and clinical psychologists experienced in working therapeutically with children and adults with IDs. The aim is to explore how computers can be used in clinical practice with people with IDs so to inform the further development and evaluation of such programmes in research and practice. The specific objectives of this study were: to explore the perspectives of clinicians and people with IDs on:

- To identify potential functions and benefits of using computer programmes in therapy with people with IDs.
- To identify potential challenges and barriers of using computer programmes in therapy with people with IDs.
- To identify important features relating to the design and usability of computer programmes for use in therapy with people with IDs.

Part 1

Evaluating the efficacy of psychological therapies

Chapter 4

Psychological Therapies for People with Intellectual Disabilities: A Systematic Review and Meta-Analyses

The work presented in this chapter have been published in:

Vereenooghe, L., & Langdon, P. E. (2013). Psychological therapies for people with intellectual disabilities: A systematic review and meta-analysis. *Research in Developmental Disabilities*, *34*(11), 4085–4102. doi:10.1016/j.ridd.2013.08.030

Note. The work and analysis presented in this chapter were undertaken by L. Vereenooghe. The co-author on this publication is my PhD supervisor and provided guidance and suggestions regarding the analysis and results.

4.1 Objectives

Recent developments in mental health policy, such as the Improving Access to Psychological Therapies scheme, promote the delivery of psychological therapies to people with intellectual disabilities (IDs) who experience mental health problems. Reasonable adjustments are considered necessary to improve their accessibility, yet little is known regarding the overall efficacy of psychological therapies for people with IDs due to the methodological constraints of conducting research in this area and the methodological considerations of previous reviews in this area.

This review therefore has four aims: (a) to identify and evaluate controlled outcome studies of psychological therapies with people with IDs, excluding approaches such as applied behavioural analysis, (b) to critically appraise the methods of identified intervention studies and their impact on study outcomes, (c) to conduct a meta-analysis to determine overall efficacy of treatment, as well as the efficacy of various psychotherapies for different mental health problems where possible, and (d) to identify areas with limited available evidence to suggest directions for future research.

4.2 Methods

4.2.1 Study Eligibility Criteria

A systematic search of the literature was conducted to identify all independent group trials examining the efficacy of psychological therapy for people with IDs. Eligible studies were published in English and in a peer-reviewed journal.

The psychotherapeutic approach adopted by studies had to encompass the systematic application of interventions based on well-established psychological principles and techniques aimed at the prevention or treatment of emotional, behavioural or mental health problems (Norcross, 1990, p.218-220). Studies which aimed to evaluate treatments targeting behavioural problems and interventions using applied behavioural analysis were excluded. Primary outcomes of interest were measures of intensity and/or frequency of emotional and mental health problems.

Participants within studies should have a diagnosed intellectual disability in accordance to the DSM-IV criteria (American Psychiatric Association, 1994), or ICD-10 definition (World Health Organisation, 1992). These criteria include an intelligence quotient (IQ)-score below 70 and impairments in social and adaptive functioning, whereby age of onset is before the age of 18. The full inclusion and exclusion criteria are found in Table 4.1.

Table 4.1. Systematic review eligibility criteria

Inclusion criteria	
	Intellectual disability: IQ < 70
	Age > 5 years of age (targeting 'talking' therapies and interventions)
	Psychotherapy: the systematic application of interventions based on well-established psychological principles and techniques aimed at the prevention or treatment of emotional, behavioural or mental health problems (Norcross, 1990, p. 218-220), excluding interventions primarily using applied behavioural analysis
	Intervention studies: 2 or more independent groups
	Published in English in peer-reviewed journals
Exclusion criteria	
	'Strict' behavioural interventions, unless embedded in wider psychotherapeutic treatment. For example: applied behavioural analysis, behaviour modification, behavioural relaxation only, restraint, differential reinforcement of other behaviour, and token economy.
	Problem behaviours and challenging behaviour. For example: drooling, sleeping problems, and self-injurious behaviour.
	Non-traditional and other psychotherapeutic interventions. For example: life skills training, vocational rehabilitation, electro-convulsion therapy, biofeedback training, occupational therapy, play therapy, milieu therapy, pharmacotherapy, community management.
	Intervention based on well-established psychological principles aimed at teaching or improving behavioural patterns. For example: social skills training and assertiveness training.

4.2.2 Search Strategy

Studies were identified through systematic searches of PsychINFO, MedLine and CINAHLplus databases in July 2012. The search strategy combined population search terms for IDs with intervention search terms for psychological therapy, as illustrated in Table 4.2. References of key articles were examined and the ancestry method was used with key journals to identify additional studies.

Table 4.2. Systematic review search strategy.

Search Terms in Title and Abstract
1. mental* NEAR/2 (handicap* OR retard* OR disab* OR impair*)
2. (learning OR intellect* OR develop*) N2 (difficult* OR disab* OR impair*)
3. imbecile OR subnormal
4. 1 OR 2 OR 3
5. psycho* NEAR/2 (therap* OR treatment* OR intervention*)
6. training OR management OR counsel*
7. psychotherap*
8. 5 OR 6 OR 7
9. 4 AND 8

4.2.3 Data Collection and Quality Appraisal

Data was collected regarding study methodology, study quality and reported outcome measures. The data were entered in a database and prepared for meta-analysis.

The use of quality assessment scales in systematic reviews has been both recommended and discouraged. The lack of objectivity in scoring methods makes it difficult to interpret the extent of bias in each study, as well as across the sample of studies. Furthermore, nearly half of the published systematic reviews fail to incorporate the findings of their critical appraisal of methodological quality in the overall interpretation and discussion of intervention effects (Moja et al., 2005). Therefore, this review identified, but did not score, the potential sources of bias in each study in the table of study characteristics, hence facilitating the interpretation of the evidence in light of the critical appraisal. Study quality was reviewed for potential bias in the selection and allocation of participants, masked assessment, the process for dealing with incomplete outcome data, attrition of participants and selective reporting. Hence, both study and reporting quality were addressed.

4.2.4 Meta-analysis

Studies comparing at least one intervention arm to a control, waiting-list control, or no-treatment control arm were included in the meta-analysis. Studies for which the results were included in a later study were excluded from the meta-analysis to avoid double counting of the evidence (Senn, 2009). For the same reason, data from various intervention arms was pooled when only one control arm was available.

A random-effects meta-analysis was conducted for standardised mean differences of independent groups for outcomes assessed immediately post intervention. The primary outcomes entered in the analysis are printed in bold in Table 4.3. The random-effects model was preferred because variations in treatment effect are likely to be associated not only with the 'common factors' in therapy, but also with differences in study designs and clinical populations. Therefore, the resulting heterogeneity cannot be accounted for by sampling error alone and a fixed-effects model would be unsatisfactory.

Effect sizes for each study were corrected using correction factor *J*, resulting in Hedges' *g* (Hedges, 1981) as the estimate of effect size; hence, taking into account the likeliness of small study samples. Study weight was calculated using inverse variance methods to assign greater value to more precise studies with large samples or small variances. The treatment effect was estimated using DerSimonian and Kacker's (2007) two-step approach based on the random-effects model estimate for τ^2 (DerSimonian & Laird, 1986). This adjusted model is believed to provide a more accurate and conservative estimate of between-study heterogeneity and overall treatment effect.

Subgroup meta-analysis was conducted providing at least two studies fulfil the requirements for meta-analysis. Planned analyses included random-effects meta-analyses of randomised and non-randomised trials, individual and group therapy, and different clinical characteristics. Positive estimated effects should indicate improved mental health or reduction of mental health symptomatology. Therefore, the direction of computed effect-sizes of individual studies was reversed where appropriate. Intention-to-treat analysis was not possible because the majority of studies did not provide sufficient data. The reported analysis is therefore based on participants who completed outcome assessments.

Table 4.3. Study characteristics of independent group trials evaluating psychological therapies for people with IDs.

First author (Year)	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Benson (1986)[‡]	4 independent groups EG1: combined anger-management (EG2 + EG3 + EG4) EG2: problem solving group EG3: self-instruction group EG4: relaxation training	N = 54 Mean age = 32, 37 M / 17 F IDs: only data for receptive vocabulary Anger control difficulties Country: USA	All EGs: 12 weekly 90-min sessions EG1: EG2 + EG3 + EG4 EG2: four-step plan to anger solving, role-plays EG3: discriminating coping and trouble statements, role-plays EG4: relaxation based on Jacobson tension release Group size: 5 – 9 Setting: vocational centre	All EGs: reduced aggressive gestures, reduced length of responses, and more appropriate responding as assessed by Self-report anger inventory (AI), Conflict Situations Test, videotaped role-play and supervisor ratings. No significant between-group differences.	4-5 weeks Effects maintained, except for aggressive gestures.	Selection: groups balanced on verbal ability, anger inventory score, gender, race and vocational training centre. Performance & detection: independent and masked raters. Attrition: 68 % of approached participants consented. Other: treatment fidelity not assessed; no control arm.
Dowling (2006)[‡]	2 independent groups EG1: integrated interventions by carers EG2: traditional counselling by bereavement counsellors	EG1: N = 11 EG2: N = 23 Age = +18 IDs: mild – moderate – severe Bereaved adults Country: UK	EG1: Integrated support by family carer and day centre staff using bereavement-oriented activities, and discouraging continued grief at day centre. EG2: approximately 15 weekly or fortnightly 1-hour sessions with volunteer. Setting: at home or day centre.	EG2 improved more than EG1regarding display of aberrant behaviour (Aberrant Behaviour Checklist – Community, and Health of Nation Outcome Scales for People with Learning Disabilities), as recorded by staff informants.	No follow-up conducted	Selection: cluster and individual randomisation, allocation sequence human generated and concealed. Performance & detection: no blinding. Attrition: 8% and 63% completion rate for consenting participants in EG1 and EG2 respectively, analysis on ‘intention-to-treat’ Other: 2-day training and supervision available to lay therapists; high withdrawal rate by carers in high-demand EG1; treatment fidelity not assessed; no control arm.

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Hagiliassis (2005)	2 independent groups EG: cognitive-behavioural anger management CG: waiting-list, treatment as usual	EG: N = 14, Mean age = 45 CG: N = 15, Mean age = 44 IDs: none or borderline (8), mild (2), moderate (8), severe (11) Anger control difficulties Country: Australia	EG: 12-weekly 2-hour individual anger management training sessions, including physiological and cognitive components, based on Novaco's theory of anger (1975).	Novaco Anger Scale: significant group x time interaction, anger control improved for EG only. Outcome Rating Scale: no main or interaction effects, but slightly better outcomes for EG.	4 months Improved anger control for EG maintained, no change for CG.	Selection: randomisation stratified by region and gender, concealed allocation. Performance & detection: no blinding, but assessment by independent researcher. Attrition: 85% of referred participants were offered and completed treatment. Other: treatment manual referenced, treatment fidelity not assessed.
Hassiotis (2013)	2 independent groups EG: individual cognitive-behavioural treatment for depression and anxiety + treatment as usual CG: treatment as usual	EG: N = 16, Mean age = 34, 5 M / 11F CG: N = 16, Mean age = 38, 7 M / 9 F IDs: mild (30), moderate (2) Anxiety and/or depression Country: UK	EG: 16 weekly 1-hour sessions of manualised individual cognitive-behavioural therapy for anxiety and depression Setting: IDs service	Beck Depression Inventory – Youth, Beck Anxiety Inventory – Youth: no treatment effect, slight non-significant improvement for CG, not for EG. EG showed positive change only for participants with depression, but without anxiety.	6 months EG and CG improved slightly, yet non-significant, and CG fared better than EG.	Selection: permuted block randomisation, concealed allocation. Performance & detection: assessment by masked researchers. Attrition: 48 referrals, 32 entered of which 27 completed. Data-analysis based on N = 15 in EG and CG. Other: secondary outcome to assess quality of life inadequate for use with people with IDs; study protocol published, treatment manual available; treatment fidelity recorded as high.
Lawrence (2004) ǂ	2 independent groups EG1: reality therapy group EG2: mutual support group	EG1: N = 16, Mean age = 40 EG2: N = 14, Mean age = 46 M/F: equal between groups IDs: no data presented Country: USA	Six-weekly 1-hour group sessions Group size: max. 8 Setting: vocational service	Arc's Self-Determination Scale: Improved self-determination self-regulation, and self-realisation for EG1 compared to EG2, but no effects on autonomy and psychological empowerment.	No follow-up conducted	Selection: randomised allocation, but not concealed. Performance & detection: no blinding. Attrition: 6% drop-out rate. Other: clear description of treatment plan and session contents; treatment fidelity not assessed; no control arm.

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Lindsay (2004)	2 independent groups EG: Group CB anger management CG: 6-month waiting-list	EG: N = 33, Mean age = 28, 75 % M CG: N = 14, Mean age = 24, 57 % M EG mean IQ = 65 CG mean IQ: 66 Anger control difficulties Country: UK	EG: 40 group sessions, 40-60 minutes. Includes behavioural relaxation, stress inoculation, group discussions about anger responses, and role-plays. Group size:	**Dundee Provocation Inventory**: reduced anger response for EG, but not for CG Anger provoking role-plays: reduction in anger responses (only data reported for EG, N = 21) Daily reports of anger: reduced feelings of anger in self-reports of EG, but not CG	3 months, sometimes also at 9, 15, 21 or 30 months. Further reduction on all outcome measures at 3 months. Then stabilizes at post-test or 3 month follow-up level.	Selection: referrals-based randomisation. Recruitment/referral over +10 year period. Performance & detection: masked raters for role-plays. Attrition: attrition acknowledged but rates not reported, anger-provoking role-plays and anger reports missing for some participants. Reporting: no information on group size. Other: no baseline scores CG for anger-provoking role plays as considered inappropriate by authors; treatment fidelity not assessed.
Matson (1981)[#]	2 independent groups EG: group intervention of participant modelling for fear CG: no-treatment, waiting-list control	N= 24 Age: not reported 50 % M IDs: mild to moderate Phobia Country: USA	EG: 3-weekly 1-hr group sessions over 3 months. Training based on behaviour modelling and in vivo sessions. Group size: 5 Setting: mental health service, sheltered workshop	Fear, as measured by approach behaviour, substantially decreased and number of adaptive verbal and non-verbal shopping skills performed improved for EG. Less phobic avoidance registered by staff for EG.	4 months No follow-up specific data reported.	Selection: matched pairs: degree of fear, sex. Performance & detection: 2 independent but not masked raters. Attrition: not reported. Reporting: only results of ANCOVAs presented, no group means and standard deviations. No data on age, or level of ID. Other: Raters received training. 96% inter-rater agreement. Treatment plan detailed, but treatment fidelity not assessed.

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Matson and Senatore (1981)	2 independent groups EG1: traditional group psychotherapy EG2: group social skills training CG: no treatment	EG1: N = 11, EG2: N = 11, CG: N = 10 Mean age = 34, range 28-49 21 M / 11 F IDs: mild to moderate Socially inadequate behaviour Country: USA	EG1: twice weekly 1-hr sessions discussing empathy, respect, concreteness and genuineness. EG2: twice weekly 1-hr sessions with direct teaching of 3 target behaviours, role-play and modelling. Group size: 3-5 Setting: workshop	Behaviour in role-plays and during group meetings: significant improvements for EG2, only role-plays improved for EG1. **Nurses' Observation Scale for Inpatient Evaluation – 30**: significant improvements for EG2. No changes on Social Performance Survey Schedule.	3 months. Behavioural improvements for EG2, although lower than posttest. EG1: only improved for role-plays	Selection: randomising triads matched on pretest skills. Performance & detection: masked raters. Attrition: 35 consented; insufficient outcome data for one person in each group (reasons specified). Other: Raters received training to reach 90% inter-rater agreement. Group attendance rates reported; treatment fidelity not assessed.
McCabe (2006)	2 quasi-independent groups EG: cognitive-behavioural group intervention CG: no-treatment control	EG: N = 19, Mean age = 34, 10 M / 9 F CG: N = 15, Mean age = 40, 6 M / 9 F IDs: mild to moderate Depression Country: Australia	EG: 5 weekly 2-hr sessions. Session contents cover social support, activity setting, core beliefs, negative thoughts, problem solving and setting future goals. Group size: 3-5 Setting: workplace	**Beck Depression Inventory – II**, Social Comparison Scale, and Automatic Thoughts Questionnaire: significant improvements for EG on all measures (for N=34). Rosenberg Self-esteem Scale: no significant change noted.	3 months (for N=18) Gains maintained at follow-up but no further improvement	Selection: participants randomised Performance & detection: no blinding. Attrition: 1 person lost to follow-up, reason not specified. Other: data of 15 CG participants who completed intervention after 3-month follow-up included in analysis. For N=15 these participants acted as own control. Session outlines reported, but treatment fidelity not assessed

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
McGaw (2002)	2 independent groups EG: cognitive-behavioural group intervention CG: control parent group	EG: N = 12, Mean age = 29, 3M / 9 F CG: N = 10, Mean age = 30, 4 M / 6 F EG mean IQ = 73 CG mean IQ = 72 Parents with IDs Country: UK	EG: 14 weekly 2-hr sessions. home-based teaching program + group intervention to improve relationships and self-concept of parents with ID. CG: home-based teaching intervention Group size:	**Judson rating scale (self-concept subscale)**. Behaviour problem index, Malaise Inventory. No improvement for EG or CG on parental relationships and parental self-concept.	13 weeks Improved self-concept from posttest to follow-up for EG. Social Changes Questionnaire showed increased parental support for EG.	Selection: Not randomised, allocation on first-come, first-serve basis. Performance & detection: no reports of blinding procedures. Attrition: not reported. Other: no information on session content or treatment fidelity.
McGillivray (2008)	2 independent groups EG: staff-administered group CBT CG: waiting-list	EG: N = 20, Mean age = 38, 13 M / 7 F CG: N = 27, Mean age = 31, 19 M / 8 F IDs: mild, IQ range 50-70 Depression Country: Australia	EG: 12 weekly 2-hour sessions. Programme based on 'Think happy, feel happy, be happy'. Group size: 5-6	**Beck depression inventory-II**; Automatic thoughts questionnaire – Revised; Social readjustment rating scale; Social comparison scale. Decrease in depressive symptoms and automatic thoughts for EG	3 months Gains maintained at follow-up.	Selection: cluster randomisation of 2 vocational agencies. Performance & detection: staff naïve to design, but not masked during delivery; assessment by independent research assistant. Attrition: 2 people removed from analysis due to illness. no follow-up data for further 2 people from CG who continued to receive treatment. Other: 2-day training for staff to act as lay-therapists. Session content outlined, but treatment fidelity not assessed.
Rose (2000) [##]	Data included in Rose 2005.					

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Rose (2005)	2 quasi-independent groups EG: group cognitive-behavioural interventions for anger CG: waiting-list, treatment as usual	EG: N = 50, Mean age = 39, 40 M / 10 F CG: N = 36, Mean age = 35, 31 M / 5 F IDs: only data for receptive vocabulary Anger control difficulties Country: UK	EG: 16 weekly 2-hour group sessions to reduce aggressive behaviour. Group size: not reported	**Anger inventory**: lower expressed anger for EG, and increased expressed anger for CG. Post-hoc: presence of staff and receptive vocabulary associated with better treatment outcomes.	3 – 6 months Gains of EG maintained. No follow-up data for CG.	Selection: no randomisation or concealed allocation, allocation based on availability of treatment. Performance & detection: no reports of blinding procedures. Attrition: 11 out of 61 recruited participants dropped-out of EG1. Other: includes data from Rose (1999) and Rose (2000); data for CG N = 11 included in data-analysis for EG; assessed clinical relevance of outcomes; treatment content referenced and reported, but treatment fidelity not assessed.
Rose (2008)	2 independent groups EG: Individual cognitive-behavioural intervention for anger CG: waiting-list	EG: N = 20, Mean age = 37 13 M / 7 F CG: N = 21, Mean age = 37 16 M / 5 F IDs: mild – borderline Aggressive behaviour UK study	EG: 14-18 individual sessions of 30-60 minutes of cognitive behavioural interventions to reduce aggressive behaviour.	Adapted **Anger Inventory**: EG showed significant decrease in self-reports of anger intensity. Decrease more pronounced for people with higher anger intensity at baseline.	3 – 6 months. Decreased anger intensity maintained for EG.	Selection: no randomisation or concealed allocation, allocation based on availability of treatment. Performance & detection: no reports of blinding procedures. Attrition: no drop-outs occurred. Other: assessed clinical relevance of outcomes; brief outline of sessions presented, but treatment fidelity not assessed.

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Rose (2009)	3 independent groups EG1: individual cognitive-behavioural intervention for anger EG2: group cognitive-behavioural intervention for anger CG: waiting-list, treatment as usual	EG1: N = 18, 12 M / 6 F EG2: N = 23, 14 M / 9 F CG: N = 21, 16 M / 5 F IDs: only data for receptive vocabulary Aggressive behaviour Country: UK	EG1: 14-18 individual sessions of 30-60 minutes of cognitive behavioural interventions to reduce aggressive behaviour EG2: 16 weekly 2-hour sessions of cognitive behavioural interventions to reduce aggressive behaviour. 3 groups. Group size:	**Anger Provocation Inventory**: EG1 & EG2 showed significant reductions; no difference in efficacy of EG1 and EG2.	No follow up conducted	Selection: not randomised, allocation based on availability of treatment. Performance & detection: no reports of blinding procedures. Attrition: EG2 had 2 drop-outs. Other: assessed clinical relevance of outcomes; treatment content referenced (Rose, 2000, 2008), but treatment fidelity not assessed.
Silvestri (1977) #	3 independent groups EG1: implosive therapy EG2: pseudo-treatment oriented discussions CG: no-treatment control	EG1, EG2, CG: N = 8 average 5 M / 3 F Mean age = 21 IDs: mild to borderline, Mean IQ = 70.3 Anxiety Country: USA	EG1: 10 45-minute sessions of individual implosive therapy over 3 weeks. Therapy includes imagery exposure and role-plays to reduce anxiety. EG2: 10 45-minute sessions where people discussed dreams and fantasies.	Brief Psychiatric Rating Scale; Nurses' Observational Scale for Inpatient Evaluation (NOSIE-30); Modified version of Adjective Checklist; Occupational Rating Scale. EG1 improved on all outcomes compared to EG2 and CG.	6 weeks Gains of EG1 on NOSIE-30 not maintained at follow-up, deterioration occurred but not below pretest level. CG improved significantly from pretest and posttest to follow-up.	Selection: randomised allocation based on age, sex, race and IQ. Performance & detection: no blinding. Attrition: follow-up data for 2 people from EG2 not available due to drop-out. Reporting: NOSIE-30 data based on 7/30 items. Other: treatment procedures referenced, but treatment fidelity not assessed.
Taylor (2002) ##	Data included in Taylor (2005)					

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Taylor (2004)	2 independent groups EG: individual cognitive-behavioural treatment for anger CG: waiting-list, routine care	EG: N = 9, Mean age = 29 CG: N = 8, Mean age = 29 100 % M EG mean IQ = 69.3 CG mean IQ = 66.4 Anger control difficulties Country: UK	EG: 18 individual cognitive-behavioural sessions over 3 months, including stress inoculation training Setting: in-patient forensic service	**Imaginal Provocation Test**: EG showed significant improvement on anger reaction, behavioural reaction, and **anger composite subscales**. EG also improved anger regulation, not significant but large effect.	No follow-up conducted	Selection: no randomised allocation, allocation procedures not specified Performance & detection: assessment by independent but not masked research assistant. Attrition: 1 person in each arm did not complete study, attrition rate 2/19; data not included in analysis. Other: therapists supervised by developer of treatment, treatment content referenced, but treatment fidelity not assessed.
Taylor (2005)	2 independent groups EG: individual cognitive-behavioural treatment for anger CG: waiting-list, routine care	EG: N = 16, Mean age = 29 CG: N = 20, Mean age = 30 100 % M EG mean IQ = 67.1 CG mean IQ = 70.7 Anger control difficulties Country: UK	EG: 18 individual cognitive-behavioural sessions over 3 months, including stress inoculation training Setting: in-patient forensic service	Novaco Anger Scale (NAS), **Provocation Inventory (PI)**, Anger Expression Scale, Ward Anger Rating Scale. Significant treatment x time interaction for Novaco Anger Scale. No significant differences between trends of EG and CG on NAS or PI. EG trend appears positive.	4 months EG1 improvements maintained	Selection: randomised concealed allocation based on date of referral; EG significantly lower IQ than CG. Performance & detection: assessment by independent but not masked research assistant. Attrition: data of 2 drop-outs in EG and 2 people in EG lost to follow-up are not included in analysis; demographic data of these 4 people is reported. Other: therapists supervised; treatment content referenced; random reviews of treatment files to check treatment fidelity.

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Willner (2002)	2 independent groups EG: cognitive-behavioural anger management group CG: waiting-list control	EG: N = 7, Mean age = 31, 4 M / 3 F CG: N = 7, Mean age = 30, 5 M / 2 F EG mean IQ = 63.9, CG mean IQ = 65.3 Anger control difficulties Country: UK	EG: 9 weekly 2-hour group sessions of cognitive-behavioural anger management; minimal attendance 5/9 sessions. Group size: 5 – 7.	Carer and client ratings on Anger Inventory, **Provocation Index** All anger ratings decreased significantly for EG and increased (non-significantly) for CG. Improved anger ratings highly correlated with verbal IQ and full-scale IQ. Improvements greater for participants accompanied by carers	3 months Treatment gains maintained and further improved at follow-up for EG. No follow-up conducted for CG.	Selection: randomised allocation based on alternate referrals Performance & detection: client & carer ratings not masked; some carer-ratings at baseline and post-treatment not by same staff. Attrition: 16 out of 21 referrals were allocated to study arms, 2 further participants swapped groups but later dropped-out. Other: treatment content referenced, but fidelity not assessed.
Willner (2005) #	2 independent groups EG: staff-delivered cognitive-behavioural anger-management group CG: no-treatment control	N = 17 EG: N = 9, Mean age = 45, 7 M / 2 F CG: N = 8, Mean age = 32, 5 M / 3 F IDs: only data for receptive vocabulary Anger control difficulties Country: UK	EG: 12 weekly 2-hour group sessions; intervention delivered by 2 staff; minimal attendance 8/12 sessions. Group size: 8 – 9	EG significantly lower scores than CG for both participant and carer ratings on Provocation Index and significantly better anger coping skills.	6 months EG maintained gains for carer ratings and increased gains for client ratings of Provocation Index. Anger coping skills maintained for EG.	Selection: allocation not randomised, but based on preference of participants and staff Performance & detection: no blinding, some staff involved in both delivering intervention and assessment of outcomes. Attrition: no drop-outs reported; missing data at baseline and follow-up replaced with post-treatment data for 2 participants Other: EG significantly lower PACS scores at baseline; staff lay-therapists trained and supervised by clinical psychologist; treatment content referenced.

First author	Study design	Participants	Intervention	Outcome	Follow-up	Quality Appraisal - Sources of Bias
Willner (2013)	2 independent groups EG: cognitive-behavioural group anger management CG: treatment as usual	EG: N = 91, Median age 37, 71% M CG: N = 90, Median age 39, 70% M EG median IQ = 59.0 CG median IQ = 55.0 Anger control difficulties Country: UK	EG: 12 weekly 2-hour psycho-educational cognitive-behavioural group sessions on anger-management delivered by lay-therapists. Group size: 5 + 2 lay therapists	**Client ratings on Provocation Index** EG showed small, but non-significant improvement for client ratings on Provocation Index. Key-workers' ratings showed significant improvements in anger management. Home carers' ratings showed less improvement.	6 months Treatment gains maintained for all ratings, except home carers' ratings.	Selection: cluster randomisation, clusters balanced on anger scores. Performance & detection: assessments by independent and masked researchers. Attrition: 179 participants randomised, 143 completed; intention-to-treat analysis. Other: Study protocol published; treatment content referenced; treatment fidelity 68.8 % (range: 19 – 86 %)

Note. Studies and outcome measures printed in bold were included in the meta-analysis.

[ǂ] Excluded from meta-analysis because no control, waiting-list control, or no-treatment control arm was included.

[ǂǂ] Excluded from meta-analysis because study did not provide sufficient data to calculate between-group effect sizes from post-treatment scores.

[ǂǂǂ] Excluded from meta-analysis because data included in later study.

EG, experimental group; CG, comparison group; N, number of participants included in the study's data-analysis; M/F, male-female ratio; IDs, level of intellectual disabilities

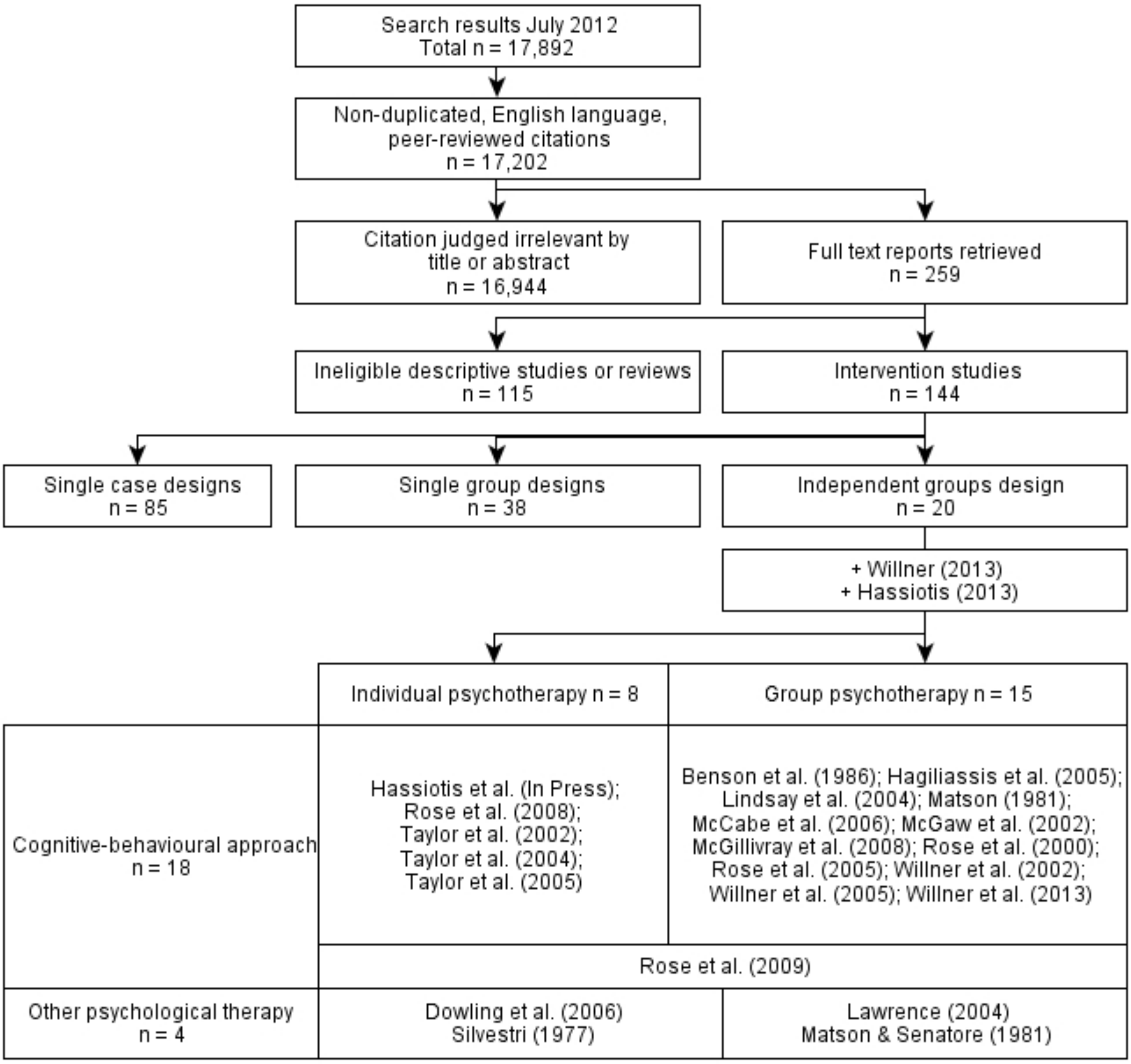
4.3 Results

The search strategy identified 259 studies requiring full text review, of which twenty-two met all review eligibility criteria. The review process is illustrated in Figure 4.1. The main reasons for excluding studies were because they were single-armed studies or they lacked intervention outcome data. Table 4.3 provides an overview of the characteristics of included studies.

The search results in Figure 4.1 illustrated the large quantity of research in this area. However, the majority of these were excluded because they concerned interventions for challenging behaviour or life skills training programmes. Nearly half of the relevant published work concerning psychological therapy with people with IDs comprised descriptive studies, narrative reviews and expert opinion. Single case studies made up nearly sixty percent of intervention studies, whereas only fifteen percent employed an independent groups design.

Cognitive-behavioural interventions, and group CBT in particular, make up the vast majority of studies. Rose, O’Brien, and Rose (2009) compared the efficacy of individual and group CBT for anger and therefore this study was classified as making use of both individual and group therapy (Figure 4.1).

Figure 4.1. Flowchart of study selection for systematic review.



4.3.1 Methodological Issues

There was marked variation within the included studies regarding participant information, treatment length, delivery mode, and outcome measures.

4.3.1.1 Participants

The reported demographic information varied widely between studies. McGaw, Ball, and Clark (2002) and Silvestri (1977) reported an average IQ in the borderline IDs range for their intervention groups, whilst Dowling, Hubert, White, and Hollins (2006) included people with “severe” IDs. However, the majority of studies included samples of people with “mild” IDs. Only eight studies reported measures of intelligence for the treatment and control group, and one study (Lawrence, 2004) omitted any information regarding level of intellectual functioning.

Recruitment of research participants was mainly based on people being referred for psychotherapeutic interventions, rather than active recruitment by the researchers. These clinical referrals may be associated with the relatively small sample sizes found in most studies, ranging from as little as 14 (Willner et al., 2002) to 162 (Willner et al., 2013).

4.3.1.2 Study design

Ethical concerns in psychological therapy research for people with IDs encourage the use of treatment as usual (TAU) control groups as opposed to a no-treatment control group, whilst some studies opted to deliver two or more independent treatment packages, without a wait-list control group. For example, Benson, Rice, and Miranti (1986) compared the effects of four types of self-control training: relaxation, self-instruction, problem solving or a combined anger management package. The effects of reality therapy group counselling on self-determination were examined by Lawrence (2004), who employed a mutual support group as the independent comparison group. Finally, Dowling et al. (2006) delivered either an integrated bereavement intervention or traditional counselling to bereaved adults with IDs.

The eligibility criteria for this review required studies to employ an independent groups design. However, the study by McCabe, McGillivray, and

Newton (2006) combined the baseline and outcome data of the intervention arm with intervention data from the waiting-list control group who had continued to receive treatment. Data from this study are hence not fully independent, as the waiting-list arm contributed data to both the intervention arm and the control arm. This semi-independence should be taken into account when interpreting results from the meta-analysis. Similarly, the study arms of Rose, Loftus, Flint and Carey (2005) are not fully independent because data from participants on the waiting-list who continued to receive treatment were included in their analysis.

Allocation to the treatment or control groups was mostly randomised based on setting, sex, date of referral, intensity of the mental health problem, or geographic location, to create balanced study arms. However, allocation procedures in Rose, Dodd, and Rose (2008) and Rose et al. (2009) were based on the availability of a group treatment starting within two months upon referral, or the availability of a therapist for individual therapy; when this was not possible, participants were allocated to a waiting-list control group. Similarly, McGaw et al. (2002) did not randomise participants, but rather allocated them to the intervention arm on a first-come first-serve basis.

There are issues associated with the lack of blinding across studies, with only five studies reporting that they attempted to blind the researchers who were responsible for measuring treatment outcomes (Benson et al., 1986; Hassiotis et al., 2013; Lindsay et al., 2004; Matson & Senatore, 1981; Willner et al., 2013). Six studies also reported the use of independent raters where masked assessment could not be guaranteed. Nearly half of the studies either did not employ blinding procedures or did not provide details regarding masked assessment.

4.3.1.3 Treatment mode

The majority of studies evaluated group-based interventions, and the majority of individually delivered treatments were conducted by the same authors (e.g. Rose et al., 2008, 2009; Taylor, Novaco, Gillmer, Robertson, & Thorne, 2005; Taylor, Novaco, Gillmer, & Thorne, 2002; Taylor, Novaco, Guinan, & Street, 2004). Treatment was delivered by clinical psychologists, or by staff who were given training to deliver the treatment. Staff and carers who served as lay therapists generally received a two day training and were supervised by a clinical psychologist

(Dowling et al., 2006; McGillivray, McCabe, & Kershaw, 2008; Willner et al., 2013; Willner, Brace, & Phillips, 2005).

Substantial variations were found in treatment length and time of follow-up. Fourteen studies conducted follow-up measurements within three to six months post treatment, whereas four studies did not collect any follow-up data. Lindsay et al. (2004) conducted the longest intervention with approximately forty group sessions of anger treatment over nine months which included up to thirty months of follow-up data for some participants.

Treatment integrity was likely to be best in anger management trials because of the use of treatment manuals and associated methods for monitoring treatment delivery. Treatment fidelity was only assessed by the more recent studies of Willner et al. (2013) and Hassiotis et al. (2013) and indicated that both lay-therapists and practicing therapists showed moderate to high levels of adherence to the respective treatment manuals.

4.3.1.4 Treatment outcomes

Outcome measures of anger treatments typically included the Novaco Anger Scale, Anger Inventory, and the Provocation Index. Trials providing psychological therapy for depression used either the Beck Depression Inventory -II or the Beck Depression Inventory – Youth to assess clinical symptoms of depression. In addition to outcome scales, studies employed idiographic measures such as participant behaviour in role-plays and direct behavioural observations by therapist or staff, which at times may make comparisons across studies problematic. Reasons for attrition were not consistently reported, whilst one study by Rose et al. (2008) recorded that no participants dropped out. The majority of studies reviewed did not undertake an analysis of intervention data based on intention-to-treat.

4.3.2 Meta-Analyses

An initial meta-analysis was conducted for controlled trials with either a no-treatment or a waiting-list control group, employing cluster, matched or full randomisation procedures. Additional eligibility criteria were applied to exclude studies if data were included in a later study (Rose et al., 2000; Taylor et al., 2002), or if insufficient data were reported to perform the meta-analysis (Matson, 1981;

Willner et al., 2005). Finally, the study by Silvestri (1977) was excluded because twenty-three out of thirty items of its primary outcome measure had been excluded from the original data-analysis. The selective reporting of outcomes in this study, if included, would have led to confounding results.

The inclusion of Rose et al. (2009) is based on a comparison of the combined interventions arms, individual and group therapy, versus the control group. This approach is recommended to avoid double counting the evidence of the comparison group, and is preferred over selecting a single intervention arm for data-analysis as this might result in a loss of information or biased data-selection (Senn, 2009). The combination of data within the two intervention groups followed the recommendations of the Cochrane Handbook (Higgins, Deeks, & Altman, 2011).

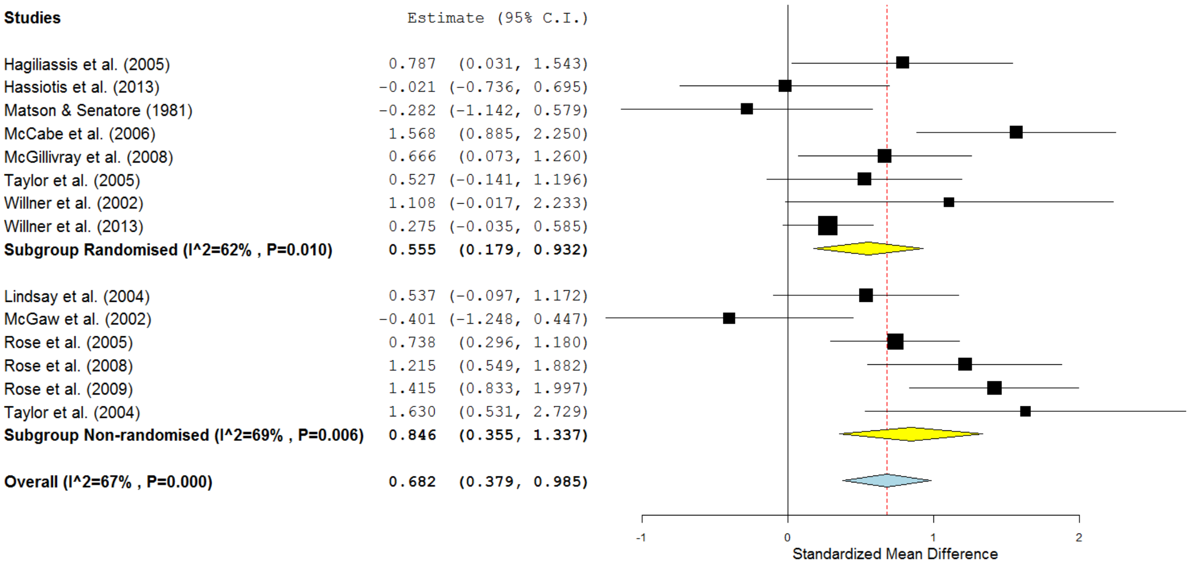
The Beck Depression Inventory – Youth data was included as the outcome data from the study by Hassiotis et al., (2013). This study concerned the treatment of both depression and anxiety with one manualised intervention. However, it could be argued that their respective treatments require different clinical formulations and as a consequence different cognitive-behavioural interventions could have been indicated. The data pertaining to outcomes for depression were included as this increased the data available to evaluate the cognitive-behavioural treatment of depression, from two to three trials.

4.3.2.1 Randomised versus non-randomised studies

The meta-analysis of randomised trials yielded an average treatment effect of, $g = .555$, 95% CI [.178, .932], $N = 388$, which is regarded as a moderate treatment effect (Cohen, 1988). The analysis highlighted a substantial amount of heterogeneity with 62 %, $p < .05$, of the variability in estimated treatment effect not explained by sampling error alone. The meta-analysis of non-randomised studies revealed an average large treatment effect, $g = .846$, 95% CI [.355, 1.337], $N = 275$, while the heterogeneity increased to 69%, $p < .01$. Combining randomised and non-randomised trials in the revealed a moderate treatment effect, $g = .682$, 95% CI [.379, .985], $N = 663$, and the heterogeneity was 67 %, $p < .001$. The Forest plots in Figure 4.2 included studies with their standardised mean differences and corresponding confidence intervals, as well as the estimated treatment effect and corresponding confidence interval for both the subgroup analysis and the overall meta-analysis. When adopting the two-step DerSimonian and Laird method (DerSimonian & Kacker, 2007) across all studies then the treatment effect increased to $g = .700$, 95% CI [.386, 1.015], $N = 663$. The adjusted τ^2 measure of heterogeneity also increased from $\tau^2 = .207$ to $\tau^2 = .249$.

Leave-one-out analysis for the eight randomised studies highlighted the impact of the McCabe et al. (2006) depression trial. Exclusion of this study resulted in a small estimated treatment effect of, $g = .386$, 95% CI [.116, .656], $N = 339$. However, the estimated average effect increased to $g = .647$, 95% CI [.262, 1.031], $N = 367$, and to $g = .636$, 95% CI [.228, 1.044], $N = 358$, when excluding the study on interpersonal functioning by Matson and Senatore (1981) and the small-scale RCT by Hassiotis et al. (2013) respectively.

Figure 4.2. Forest plot of estimated treatment effect of psychological therapy for people with IDs in randomised and non-randomised studies.



Studies	Estimate (95% C.I.)
Hagiliassis et al. (2005)	0.787 (0.031, 1.543)
Hassiotis et al. (2013)	-0.021 (-0.736, 0.695)
Matson & Senatore (1981)	-0.282 (-1.142, 0.579)
McCabe et al. (2006)	1.568 (0.885, 2.250)
McGillivray et al. (2008)	0.666 (0.073, 1.260)
Taylor et al. (2005)	0.527 (-0.141, 1.196)
Willner et al. (2002)	1.108 (-0.017, 2.233)
Willner et al. (2013)	0.275 (-0.035, 0.585)
Subgroup Randomised (I^2=62% , P=0.010)	**0.555 (0.179, 0.932)**
Lindsay et al. (2004)	0.537 (-0.097, 1.172)
McGaw et al. (2002)	-0.401 (-1.248, 0.447)
Rose et al. (2005)	0.738 (0.296, 1.180)
Rose et al. (2008)	1.215 (0.549, 1.882)
Rose et al. (2009)	1.415 (0.833, 1.997)
Taylor et al. (2004)	1.630 (0.531, 2.729)
Subgroup Non-randomised (I^2=69% , P=0.006)	**0.846 (0.355, 1.337)**
Overall (I^2=67% , P=0.000)	**0.682 (0.379, 0.985)**

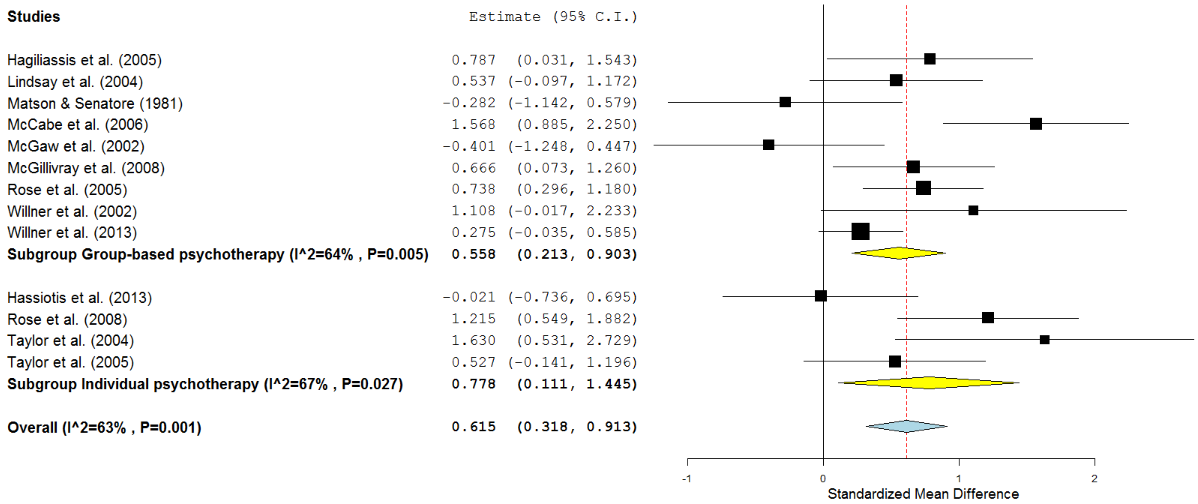
Note. Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

4.3.2.2 Individual versus group-based psychological therapy

Subgroup meta-analysis of combined randomised and non-randomised trials indicated individually delivered therapy, $g = .778$, 95% CI [.110, 1.445], $N = 124$, was more effective than group-based therapy, $g = .558$, 95% CI [.212, .903], $N = 477$, as illustrated in the Forest plot in Figure 4.3. It should be noted, however, that only half the number of trials delivering individual therapy were identified compared to those delivering group therapy. Furthermore, the large variability in the effectiveness of individual therapy is likely to be associated with differences in clinical diagnosis and primary outcome measures, as well as with the large within-study variance of Taylor et al. (2004). Rose et al. (2009) was not included in the analysis to avoid double counting of the control group. The shared control arm for both intervention arms in this study would induce correlated multiple comparisons that cannot be accounted for in the meta-analysis (Higgins et al., 2011).

Studies making use of individual therapy had a moderate to large effect size, while group-based therapy, regardless of clinical disorder, had a moderate effect. Within the group-based studies the average treatment effect and heterogeneity are negatively affected by McGaw et al. (2002), Matson and Senatore (1981) and Willner et al. (2013). It should be noted, however, that McGaw et al. (2002) provided group intervention to support parents with IDs in the forming and maintaining of relationships, and to improve their self-concept. Likewise, Matson and Senatore (1981) delivered group therapy to improve interpersonal functioning. The latter two studies are therefore quite distinct from the other group interventions which are aimed to treat mental health problems.

Figure 4.3. Forest plot of subgroup meta-analysis for group-based and individual psychological therapy.



Studies	Estimate (95% C.I.)
Hagiliassis et al. (2005)	0.787 (0.031, 1.543)
Lindsay et al. (2004)	0.537 (-0.097, 1.172)
Matson & Senatore (1981)	-0.282 (-1.142, 0.579)
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McGaw et al. (2002)	-0.401 (-1.248, 0.447)
McGillivray et al. (2008)	0.666 (0.073, 1.260)
Rose et al. (2005)	0.738 (0.296, 1.180)
Willner et al. (2002)	1.108 (-0.017, 2.233)
Willner et al. (2013)	0.275 (-0.035, 0.585)
Subgroup Group-based psychotherapy (I^2=64% , P=0.005)	**0.558 (0.213, 0.903)**
Hassiotis et al. (2013)	-0.021 (-0.736, 0.695)
Rose et al. (2008)	1.215 (0.549, 1.882)
Taylor et al. (2004)	1.630 (0.531, 2.729)
Taylor et al. (2005)	0.527 (-0.141, 1.196)
Subgroup Individual psychotherapy (I^2=67% , P=0.027)	**0.778 (0.111, 1.445)**
Overall (I^2=63% , P=0.001)	**0.615 (0.318, 0.913)**

Note. Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

4.3.2.3 Clinical presentation.

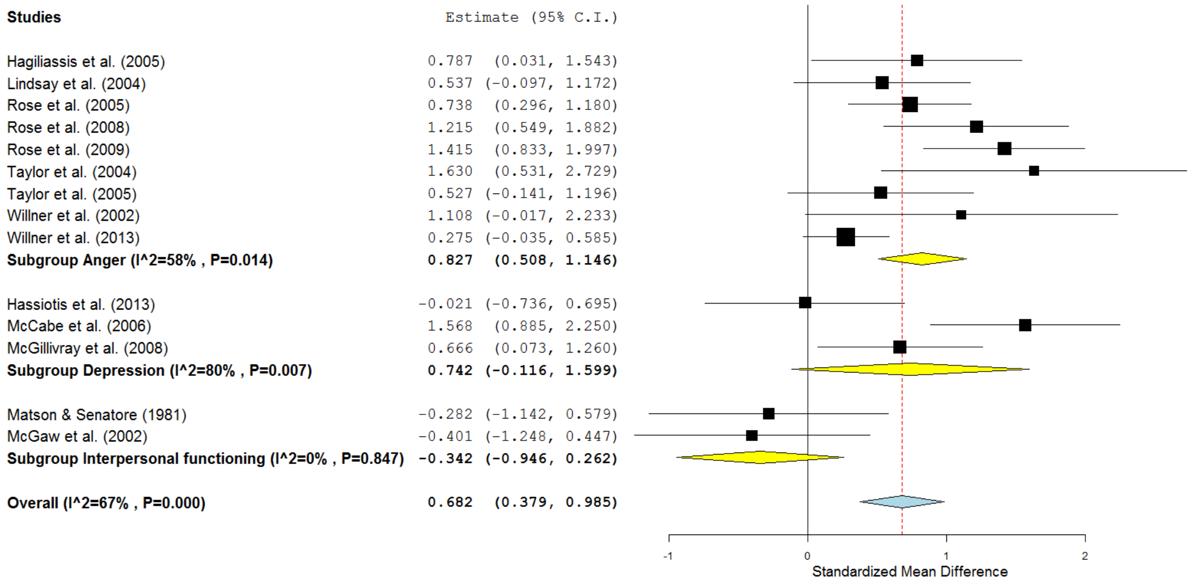
The variability in study samples supported a subgroup meta-analysis based on clinical presentation. These were completed for anger, interpersonal functioning and depression. The forest plots in Figure 4.4 show that the average treatment effect ranges from a null-effect for interpersonal functioning to a large treatment effect for people with IDs suffering from depression.

CBT for anger and aggression had an average estimated effect size of g = .827, 95% CI [.508, 1.146], N = 494. The inclusion of some studies with relatively large samples resulted in a narrow confidence interval, although there is considerable between-study variance, and individual and group therapy were combined (Figure 4.4).

Psychological therapy for interpersonal functioning was not supported by the analysis of data from Matson and Senatore (1981) and McGaw et al. (2002). Results are inconsistent from these studies and hence do not provide sufficient evidence that treatment is efficacious, as evidenced by the negative effect of g = -0.342, 95% CI [-.946, .262], N = 43. However, participants in the intervention arm of both studies did show improvements from pre-test to follow-up and from post-test to follow-up, indicating that treatment effects might take longer to establish for these therapies.

Turning to depression, studies evaluating group CBT generated a moderate to large effect size, g = .742, 95% CI [-.116, 1.599, N = 126. The between-study variance is high, as only three studies with distinct study designs were identified. The feasibility study of Hassiotis et al. (2013) caused methodological concerns due to its use of a single therapy for two separate clinical disorders. Meanwhile, McGillivray et al. (2008) employed a staff-administered treatment programme, but did not investigate whether the inclusion of staff is likely to increase efficacy.

Figure 4.4. Forest plot of subgroup meta-analysis based on clinical presentation.



Studies	Estimate (95% C.I.)
Hagiliassis et al. (2005)	0.787 (0.031, 1.543)
Lindsay et al. (2004)	0.537 (-0.097, 1.172)
Rose et al. (2005)	0.738 (0.296, 1.180)
Rose et al. (2008)	1.215 (0.549, 1.882)
Rose et al. (2009)	1.415 (0.833, 1.997)
Taylor et al. (2004)	1.630 (0.531, 2.729)
Taylor et al. (2005)	0.527 (-0.141, 1.196)
Willner et al. (2002)	1.108 (-0.017, 2.233)
Willner et al. (2013)	0.275 (-0.035, 0.585)
Subgroup Anger (I^2=58% , P=0.014)	**0.827 (0.508, 1.146)**
Hassiotis et al. (2013)	-0.021 (-0.736, 0.695)
McCabe et al. (2006)	1.568 (0.885, 2.250)
McGillivray et al. (2008)	0.666 (0.073, 1.260)
Subgroup Depression (I^2=80% , P=0.007)	**0.742 (-0.116, 1.599)**
Matson & Senatore (1981)	-0.282 (-1.142, 0.579)
McGaw et al. (2002)	-0.401 (-1.248, 0.447)
Subgroup Interpersonal functioning (I^2=0% , P=0.847)	**-0.342 (-0.946, 0.262)**
Overall (I^2=67% , P=0.000)	**0.682 (0.379, 0.985)**

Note. Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

4.4 Summary of findings

The results of the systematic search of the peer-reviewed literature indicate that CBT has the widest evidence-base, whereas little evidence is available for other psychological therapies. Furthermore, the findings of the meta-analyses suggest that psychological therapy with people who have IDs is efficacious with a moderate effect size of *g* = .682 when calculated using all the studies included within the current review. However, this effect size varied depending on whether the studies made use of randomisation, individual or group based interventions, and also varied according to the type of problem being treated.

Randomised studies were associated with a lower, but moderate effect size, *g* = .555, compared to non-randomised studies which had a large effect size, *g* = .846. Individual therapy, *g* = .778, appeared superior to group-based interventions, *g* = .558; treatment for depression, *g* = .742, and anger, *g* = .827, was associated with moderate and large effect sizes, while there was no evidence that therapy had an effect on interpersonal functioning, *g* = -.342.

Finally, there is a poignant lack of controlled outcome studies involving psychological therapies other than CBT, for example systemic or psychodynamic therapies, and for non-anger related mental health problems, including depression and psychosis.

Part 2

Improving the suitability for CBT

Chapter 5

Can a computerised training paradigm assist people with intellectual disabilities to learn cognitive mediation skills?
A randomised experiment.

The work presented in this chapter has been published in:

Vereenooghe, L., Reynolds, S., Gega, L., & Langdon, P. E. (2015). Can a computerised training paradigm assist people with intellectual disabilities to learn cognitive mediation skills? A randomised experiment. *Behaviour Research and Therapy*, *71*, 10–19. doi:10.1016/j.brat.2015.05.007

Note. The work and analysis presented in this chapter were undertaken by L. Vereenooghe. The co-authors on this publication provided guidance and suggestions regarding the analysis and results, and were PhD supervisors.

5.1 Objectives

The majority of research into psychological therapies for people with intellectual disabilities (IDs) has focused on cognitive behavioural therapies (CBT). Chapter 2 illustrated that people with IDs are likely to have some of the skills to take part in CBT, whereas the findings of the meta-analysis presented in Chapter 4 also indicate it to be the most efficacious with the strongest evidence-base of all the traditional ‘talking’ therapies for this population. Hence, it would seem plausible that if we could improve these prerequisite skills through training programmes that the accessibility of CBT for people with IDs would increase, which might further improve its efficacy.

To date, only one study evaluated a training intervention to improve the ability of people with IDs to perform CBT specific tasks, setting aside emotion recognition training, with mixed results (Bruce et al., 2010). However, it can be argued that their training programmes lacked accessibility for people with IDs due to the verbal nature of the tasks. It could then be expected that implementing reasonable adjustments would increase the accessibility and efficacy of such training programmes.

Therefore, the aim of the following two intervention studies was to improve the skills required for CBT through an accessible training programme using a computerised paradigm supported with a magnitude of visual, rather than verbal information. Given that certain CBT tasks are difficult, as discussed in Chapter 2, this first study will focus on the ability to link situations, thoughts and feelings. The specific objective was to compare the effects of training in linking situations, thoughts and feelings compared to an attention-control intervention. It was hypothesised that:

1. Training in linking situation to feelings, and vice versa, would significantly improve ability to (a) link pairs of situations and mediating beliefs to appropriate emotional responses, whereby (b) congruent items, but not incongruent items, will be significantly associated with this ability to link pairs of situations and mediating beliefs to appropriate emotional responses.
2. Training in linking situation to feelings, and vice versa, would significantly improve ability to (a) link pairs of situations and emotions to appropriate mediating beliefs, whereby (b) congruent items, but not incongruent items,

will be significantly associated with this ability to link pairs of situations and emotions to appropriate mediating beliefs.

5.2 Methods

5.2.1 Participants

Seventy-five participants consented to take part in the study, of which 65 completed the study. The specific inclusion criteria were (a) minimum age of 18 years old, (b) IQ below 70. The exclusion criteria were (a) additional sensory impairments, (b) pervasive developmental disorder, (c) acute psychosis, or (d) currently receiving CBT. A flowchart depicting participant flow through the study is shown in Figure 5.1. Outcome data are available for 23 men and 42 woman who had been randomly assigned to the training or attention-control condition, stratified by intellectual functioning. Seven people were not retained at post-test assessment: two participants lost interest during the WASI-II assessment, one participant left on holiday before pre-test assessments were administered, three participants did not want to continue the pre-test assessments, and one participants had become frustrated during the intervention and eventually dropped out during post-test assessments. Three were unable to take part in the computer task without significant assistance.

Mann-Whitney tests yielded no significant difference between the training and attention-control groups on age, U = 506.000, $p = .773$; sex, χ^2 (1) = .028, $p = .867$. Similarly, a one-way ANOVA showed no group differences in Full Scale IQ, $F(1, 63) = < 1$, $p = .717$, indicating that the groups were well matched (Table 5.1).

Figure 5.1. Flowchart of participants in the study

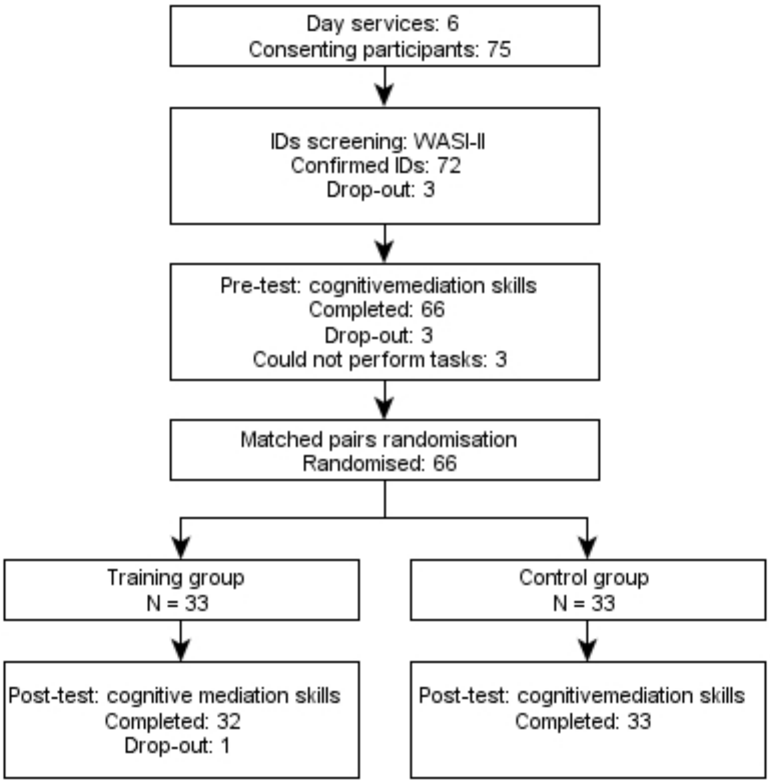


Table 5.1. Participant characteristics per intervention group.

	Training group *N* = 32	Control group *N* = 33
Gender	11 Male, 21 Female	12 Male, 21 Female
Age	38.53 (12.0)	38.15 (14.1)
WASI FSIQ	53.3 (8.4)	52.5 (8.5)
WASI VCI	56.6 (9.3)	56.0 (7.7)
WASI PRI	55.9 (8.3)	55.0 (10.3)

Note. Mean (SD) scores for Wechsler Abbreviated Scale of Intelligence – II Full Scale IQ (WASI FSIQ), Verbal Comprehension Index (WASI VCI) and Perceptual reasoning Index (WASI PRI).

5.2.2 Design

A 2 (Group: training or attention-control) x (2 (Time: 1 or 2) x *S*) mixed experimental design was used to evaluate whether training improved ability to link situations to feelings on two tasks of cognitive mediation skills. Randomisation was masked and allocation was concealed from the researcher. This was achieved by using a randomisation script, written in PsychoPy (Peirce, 2007), and run at the start of the intervention. The researcher entered the participants' Full Scale IQ into the computer, and the participant was assigned to one of the two group using matched-pairs randomisation. Randomisation was stratified based on IQ. There was no information regarding allocation presented to the researcher or the participant, and the researcher did not have sight of the computer once the IQ had been entered. Participants would wear headphones to ensure the researcher would not become aware of the nature of the intervention task through the audio prompts of the programmes. Participants completed computerised pre- and post-training assessments of cognitive mediation skills.

5.2.3 Measures

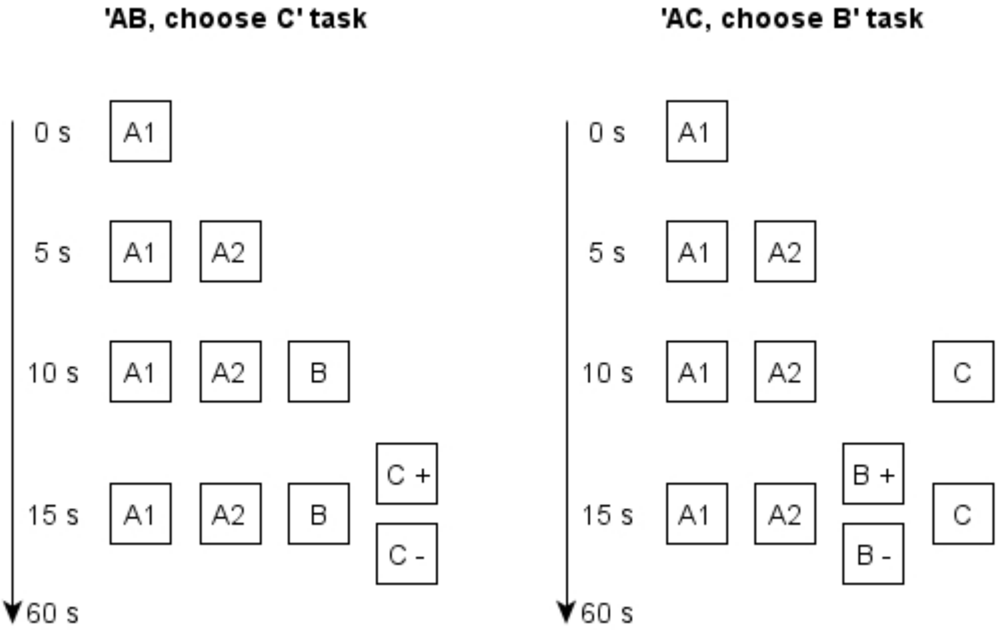
5.2.3.1 Intellectual and verbal functioning

The Wechsler Abbreviated Scale of Intelligence – 2nd edition (WASI-II; Wechsler, 2011) was used to provide a reliable estimate of Full Scale IQ based on verbal comprehension and perceptual reasoning subscales. It can be used with people aged from 6 – 89 and takes approximately 30 minutes to complete. The WASI-II has good reliability and validity (Wechsler, 2011).

5.2.3.2 Linking situations, thoughts and feelings

Two computer based tasks were used to assess different types of cognitive mediation skills: the 'AB, choose C' task and the 'AC, choose B' task. This was based on materials developed by Dagnan and Chadwick (1997) and Dagnan et al. (2000). These tasks were counterbalanced between participants and were used as measures of performance at pre- and post-training. Figure 5.2 illustrates how task items were presented. Pictures were created using an online computer package called Pixton Comics (2013). Task items of the 'AB, choose C' task started with the presentation of picture A1, and after 5 seconds, picture A2. Pictures A1 and A2 depicted the situation, or antecedent (A). Next, a picture of a belief (B in Figure 2) was presented, followed five seconds later, by a picture of a positive emotion, or consequence (C +), and then a negative emotion, or consequence (C -). The presentation of each picture was accompanied by audio telling the participant what was happening in each picture. Figure 5.3 presents a sample task item.

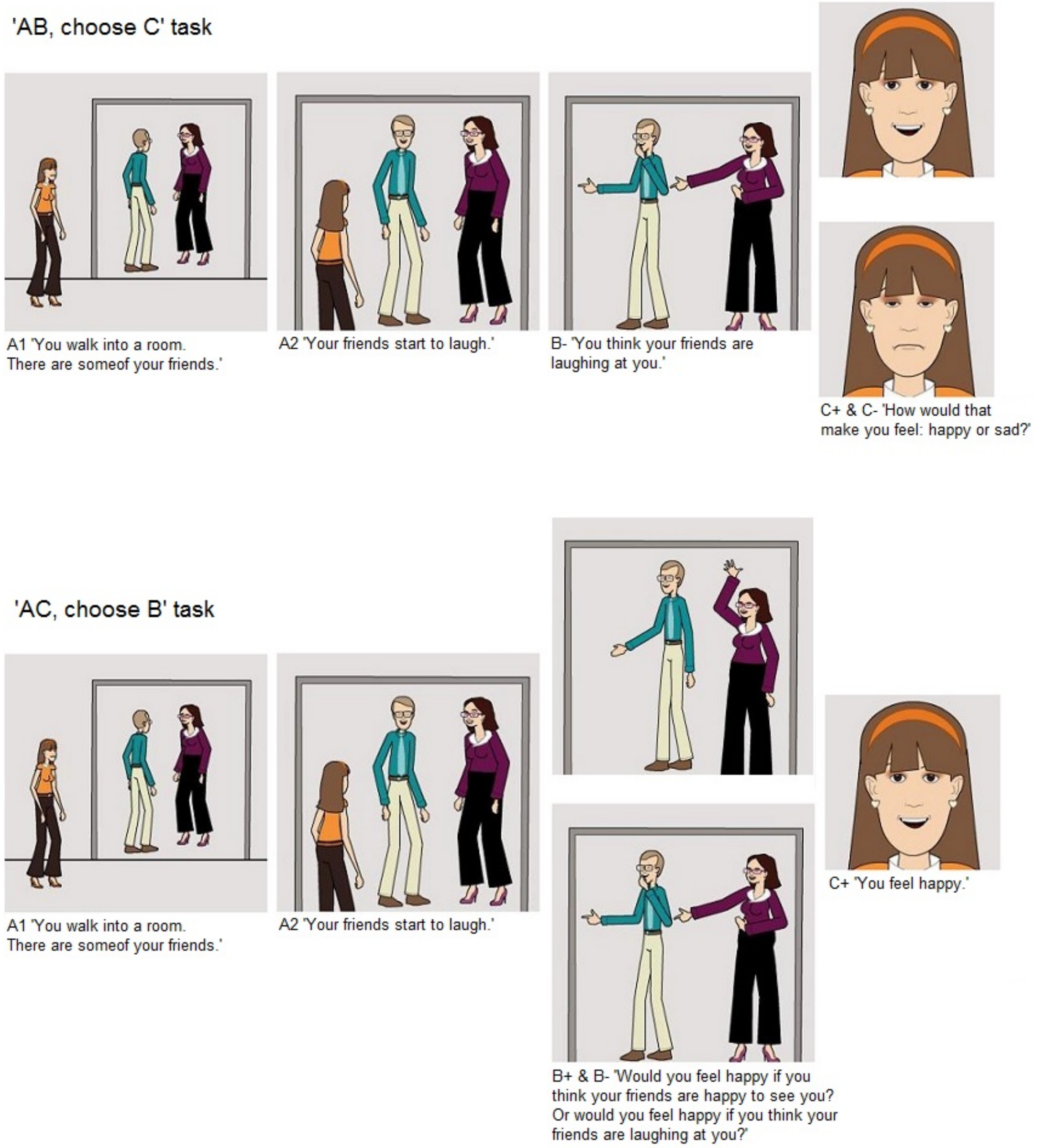
Figure 5.2. Schematic presentation of a single item of the cognitive mediation tasks



Note. A = antecedent, B = belief, C = consequence. A1 and A2 present different elements of the antecedent. B + and B – are positive and negative beliefs, respectively. C + and C – are a happy and a sad face, respectively. The vertical line presents the time from presentation of the first picture, at time 0 s, to the end of the task item, at 60 s.

For example, one scenario involved pictures of a person walking into a room where some friends were located. The presentation of pictures A1, accompanied by the audio, ‘You walk into a room’ was initially presented; picture A2 is then presented, where a group of people are laughing, accompanied by the speech, ‘Your friends start to laugh’; picture B is then presented accompanied by, ‘You think your friends are laughing at you’; and finally, picture C +, a happy face, and C -, a sad face is presented. Participants were asked how the situation and thought would led them to feel and used the external response box to select either C +, or C - as their response.

Figure 5.3. Sample items from the cognitive mediation tasks.



Note. The text under each picture indicates whether it present the antecedent, belief or consequence; as well as the description of each component as it was recorded in the programme. These pictures were created using Pixton®.

For the ‘AC, choose B’ task a situation was presented using both the A1 and A2 pictures, followed by the presentation of a feeling, C+ or C-, where a person’s positive or negative facial expression was depicted, and the audio description told the person how the character was feeling. Participants were then asked to select one of two mediating beliefs, B+ or B-. For example, in the above described item ‘Your friends start to laugh’, B+ was ‘You think your friends are happy to see you’, and B- ‘You think your friends are laughing at you’. Items were presented for a maximum duration of sixty seconds. Participants could respond after the two response options (C+ and C- , or B+ and B-, depending on the task) were presented. Hence, participants were given 45 seconds to respond.

Each task comprised twelve items. Items were created using six situations paired once with a positive belief, or feeling, and once with a negative belief, or feeling. Hence, congruent and incongruent situation-belief (AB) and situation-feeling (AC) pairs were created. The maximum score on each task was 12; scores were converted to percentages for data analyses. In addition, scores of 10 or more were designated as ‘pass’; this score is associated with a probability of being obtained by chance of .016.

Two scenarios were replaced because they were difficult to unambiguously present in pictures (‘being asked to meet the day centre manager’, and ‘the first day of a new job’). These were replaced with the new situations of ‘You are sitting in the waiting room. You have to see the dentist’, and ‘You are sitting at the table, painting a picture for a friend’. From the Dagnan et al. (2000) tasks, the forced choice responding and formation of congruent and incongruent items were adopted. It was anticipated that forced choice responding could potentially reduce the impact of verbal ability associated with the original open ended questions (Dagnan & Chadwick, 1997).

Maximum time required to complete both tasks was 30 minutes.

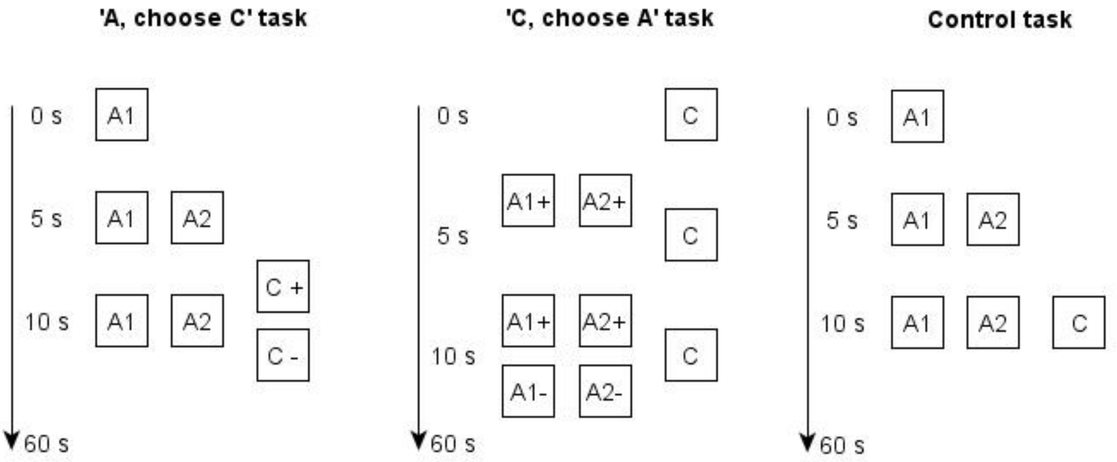
5.2.4 Training and control interventions

5.2.4.1 Training condition

Training comprised two tasks derived from the Reed and Clements (1989) assessment of linking situations to feelings which were different, in terms of content, from the assessment tasks. The ‘A, choose C’ and ‘C, choose A’ training tasks both consisted of six randomised items and presentation of the tasks was counterbalanced between participants.

The ‘A, choose C’ training task presented participants with six scenarios of which the antecedent was depicted by two pictures, A1 and A2. For example, ‘You are walking home’, A1, ‘when you get caught in the rain’, A2. Next, pictures of a happy face, positive consequence C+, and sad face, negative consequence C-, appeared and participants were prompted to indicate how they would feel in the given situation by pressing the corresponding button on the external response box. The ‘C, choose A’ training task saw participants presented with a pictured happy face or sad face, followed by the presentation of two possible antecedents, A1 A2 + and A1 A2 -, pictured left of the emotional consequence, as presented schematically in Figure 5.4.

Figure 5.4. Schematic presentation of a single item of the training tasks and control task.



Note. A = antecedent, C = consequence. A1 and A2 present different elements of the antecedent. C + and C – are a happy and a sad face, respectively. The vertical line presents the time from presentation of the first picture, at time 0 s, to the end of the task item, at 60 s.

Task items for the training intervention were adapted from the original items used by Reed and Clements (1989). However, one original item ('You entered a competition and won the first prize.') had been replaced with an item more suitable for presentation in two simple line drawings ('Some time ago you planted seeds. They grew into beautiful flowers.').

Each training task was conducted over a maximum of three rounds. In round 1, all six items were presented. Upon completing round 1, any incorrect items were randomised and presented again in round 2, after which any remaining incorrect items were randomised and presented a final time in round 3. Rounds 2 and 3 were introduced as follows: 'Well done. Now, let's look at some of the stories again.' Participants received automated feedback in rounds two and three as follows: for the 'A, choose C' task correct responses were followed by the feedback, 'That's right, I would feel happy too if [insert antecedent, e.g. my flowers had grown]', whereas incorrect responses were followed by the feedback 'Really? I would feel happy if [insert antecedent, e.g. my flowers had grown]'. Correct items were not re-presented in rounds 2 and 3 to keep the time of the tasks limited as well as to ensure that participant motivation and concentration would not decrease due to repeated presentation. Maximum duration of the training intervention was 20 minutes.

It was anticipated that improved understanding of the connection between situations and feelings would enhance participants' ability to understand cognitive mediation when the belief component was re-introduced during post-test assessments.

5.2.4.2 Attention-control intervention

The control task comprised an attention-control task requiring interaction with the computer programme. Participants were presented with twelve scenarios consisting of two images picturing a situation, A1 and A2, and one image of an emotion, C. The six scenarios were identical to the task items of the 'A, choose C' training items, whereas six new scenarios were added for the control task. Each scenario was presented in three steps: picture A1, followed after five seconds by picture A2, followed after an additional five seconds by picture C (see Figure 5.4). The scenarios included audio descriptions, but did not include any questions and at no point were participants required to make a decision regarding which situation would elicit a given emotional response or how a given situation would make them feel. However, to ensure that the duration of the task would match that of the training intervention participants were given the option to press a button to have a scenario repeated. Scenarios could be repeated up to five times.

5.2.5 Ethical considerations

A favourable ethical opinion for the study was given by a National Health Service (NHS) Research Ethics Committee and the study protocol was registered with ClinicalTrials.gov, registration number NCT01652963. Study information sheets and consent forms were presented in an easy to read format and explained to potential participants. Participants were encouraged to discuss their participation with staff and carers. Particular attention was given to the right to withdraw, confidentiality and consent. Ability to give informed consent was assessed through consultation with service staff and by asking yes or no questions about the study information sheets. All participants were judged to have capacity to make a decision as to whether they would like to take part or not.

5.2.6 Procedure

Six local authority and charity organisations that provided activities for people with IDs in Norfolk and Suffolk supported the recruitment process. Staff were informed about the study and were asked to suggest potential participants. At pre-test, participants completed the WASI-II and both cognitive mediation tasks. Randomisation was computerised using matched pairs and stratified based on IQ-score. After the intervention, the cognitive mediation tasks were presented again. Breaks of maximum half an hour were given between the tasks. All assessments and intervention tasks were programmed and presented using PsychoPy2, v1.74.00, software (Peirce, 2007) and responses were recorded with an external response box, DirectIN Button Box (Empirisoft). The programme and its content is freely available from the authors. Task components – pictures of situations, thoughts, and emotions – were presented visually in coloured line drawings created with Pixton® Comics (2013). A Toshiba TECRA R850-119 laptop with Windows 7 operating system was used for this study. A registered speech and language therapist recorded voice commands to provide task instructions and support. The researcher provided assistance for the first six items during pre-test to ensure participants understood the task requirements and were able to perform the response procedures independently.

5.2.7 Data-collection and analysis

Pre-test scores were inspected for normality and found to be negatively skewed for both cognitive mediation tasks. Descriptive data will be presented alongside non-parametric analyses of potential between-group differences. Participants whose scores had reached ceiling level at pre-test (100 % accuracy) were subsequently excluded from the data-analysis as they could no longer benefit from a potential training effect. Removal of these data points did not improve the skewed distributions. Linear regression analyses could be performed, however, because assumptions regarding multicollinearity between predictors, homogeneity of regression slopes and the normal distribution of residuals were not violated. Hence, the main effect of training was investigated using regression analyses, whilst controlling for variability in pre-test scores and IQ. Additional regression analyses were performed for congruent and incongruent items of each task separately. The association between verbal ability and cognitive mediation skills was assessed at pre-test using spearman correlations. In addition, a linear regression model was fitted to examine the impact of verbal skills on pre-test scores.

5.3 Results

5.3.1 Hypothesis 1a: Training in linking situation to feelings, and vice versa, will significantly improve ability to link pairs of situations and mediating beliefs to appropriate emotional responses

The average percentage of correct responses in the training group and the control group at pre-test was 82.55 percent, *SD* = 15.7, and 77.53 percent, *SD* = 14.4, respectively (Table 5.2) for the ‘AB, choose C’ task; this difference was not significant, Mann-Whitney $U = 397.000$, $p = .080$.

Table 5.3 shows the results of the regression analysis of post-test scores. Eight participants were excluded from this analysis: three participants in the control group and five in the training group reached 100 percent accuracy level at pre-test and hence could not benefit from training. Pre-test performance: $\beta = .330$, $p = .005$; IQ: $\beta = .347$, $p = .003$, and training: $\beta = .299$, $p = .005$, made significant contributions in predicting post-test performance and together, explained 42 percent (i.e. adjusted R square) of the variability in performance after the intervention. These results indicate that training significantly improved participants' ability to correctly identify emotions associated with situation-belief pairs.

Table 5.2. Pre-test and post-test cognitive mediation skills

	Training ($N = 32$)	Control ($N = 33$)	Mann-Whitney U
AB, choose C			
Pre-test	82.55 (15.7)	77.53 (14.4)	397.000 ($p = .080$)
Post-test	90.36 (11.2)	78.54 (16.8)	300.000 ($p = .002$)
AC, choose B			
Pre-test	80.99 (16.2)	76.26 (15.6)	431.500 ($p = .199$)
Post-test	87.76 (14.2)	80.05 (16.7)	385.000 ($p = .054$)

Note. Mean percentage correct responses (SD) and Mann-Whitney U test for between group differences at pre-test and post-test.

Table 5.3. Regression of pre-test performance, IQ and intervention on ‘AB, choose C’ task scores (N = 57).

	B (St. Error) [a]	beta [a]	t [a]	Adjusted R square [b]	Change R square [b]
‘AB, choose C’ task: total [a]					
Intercept	17.326 (11.038)	-	1.570	-	-
Pre-test	.365 (.125)	.330	2.920**	.256	.269**
IQ	.625 (.202)	.347	3.096**	.340	.095**
Intervention	9.208 (3.165)	.299	2.909**	.420	.088**
‘AB, choose C’ task: congruent items [a]					
Intercept	-.075 (.770)	-	-.097	-	-
Pre-test: congruent	.394 (.112)	.384	3.508**	.271	.284***
IQ	.044 (.015)	.314	2.875**	.345	.084*
Intervention	.754 (.243)	.312	3.097**	.435	.097**
‘AB, choose C’ task: incongruent items [a]					
Intercept	2.394 (.678)	-	3.533**		
Pre-test: incongruent	.120 (.104)	.146	1.154	.011	.029
IQ	.023 (.011)	.268	2.109*	.071	.076*
Intervention	.331 (.184)	.227	1.801	.108	.052

Note. *, $p < .05$; **, $p < .01$; ***, $p < .001$; [a], regression model includes all predictors; [b], model includes this predictor and all predictors above.

5.3.2 Hypothesis 1b: Congruent items, as opposed to incongruent items, will be significantly associated with ability to link pairs of situations and mediating beliefs to appropriate emotional responses following training.

Participants' performance on congruent and incongruent items is presented in Table 5.4. Regardless of intervention group, overall post-test performance was correlated with pre-test performance on the congruent items, $r(32)_{\text{Training}} = .538$, $p = .001$; $r(33)_{\text{Control}} = .618$, $p < .001$), but not on incongruent items $r(32)_{\text{Training}} = .334$, $p = .062$; $r(33)_{\text{Control}} = -.084$, $p = .642$. Separate regression analyses of congruent items indicated that their respective pre-test scores: $\beta = .384$, $p =.001$; IQ: $\beta = .314$, $p = .006$, and training: $\beta = .312$, $p = .003$, predicted post-test performance. Performance on incongruent items, however, was only predicted by IQ: $\beta = .268$, $p = .040$, and not by pre-test performance: $\beta = .146$, $p = .254$; or training: $\beta = .227$, $p = .077$. These results indicate that training significantly improved participants' ability to correctly identify emotions associated with situation-belief pairs, but only for congruent items.

Table 5.4. Pre-test and post-test performance on congruent and incongruent items of the cognitive mediation tasks for the training group and the control group.

	Training (*N* = 27)	Control (*N* = 30)
AB, choose C - Congruent		
Pre-test	68.75 (18.3)	64.65 (20.7)
Post-test	77.60 (10.0)	63.64 (23.7)
AB, choose C - Incongruent		
Pre-test	68.75 (16.8)	68.18 (13.4)
Post-test	75.00 (11.2)	67.68 (12.5)
AC, choose B - Congruent		
Pre-test	66.15 (18.2)	59.09 (21.3)
Post-test	72.92 (14.5)	65.66 (20.0)
AC, choose B - Incongruent		
Pre-test	67.71 (18.4)	69.19 (18.7)
Post-test	71.35 (17.6)	69.19 (13.9)

Note. Mean percentage correct responses (SD) for between group differences at pre-test and post-test.

5.3.3 Hypothesis 2a: Training in linking situation to feelings, and vice versa, will significantly improve ability to link pairs of situations and emotions to appropriate mediating beliefs.

Pre-test performance of the training group $M_{\%} = 80.99$, $SD = 16.2$, and control group $M_{\%} = 76.26$, $SD = 15.6$, did not differ significantly for the 'AC, choose B' task: Mann-Whitney $U = -431.500$, $p = .199$, see Table 5.2

A linear regression analysis of post-test performance excluding participants with perfect pre-tests scores (Control group, $n = 30$; Training group, $n = 27$) was conducted. Pre-test scores: $\beta = .296$, $p = .027$; IQ: $\beta = .226$, $p = .088$; and training: $\beta = .147$, $p = .246$, were entered as predictors, adjusted $R^2 = .157$. Hence, the regression analysis did not yield a significant effect of training on post-test performance.

5.3.4 Hypothesis 2b: Congruent items, as opposed to incongruent items, will be significantly associated with ability to link pairs of situations and emotions to appropriate mediating beliefs.

Performance on congruent and incongruent items for participants included in the regression analysis is presented in Table 5.4. Overall post-test performance of the training group was correlated with pre-test performance on both congruent, $r(32)_{\text{Training}} = .527$, $p = .002$, and incongruent items $r(32)_{\text{Training}} = .454$, $p = .002$. For the control group, however, congruency of task items had little impact on task performance with no association found between pre-test congruent, $r(33)_{\text{Control}} = .119$, $p = .511$, and incongruent items $r(33)_{\text{Control}} = .332$, $p = .059$, and overall post-test performance. Separate regression analyses for congruent items showed only pre-test performance on congruent items to be a significant predictor of their respective post-test performance, $\beta = .368$, $p = .006$. No significant predictors could be identified for post-test performance on incongruent items.

5.3.5 Additional analyses

The computer based assessment tasks, though adapted from earlier tasks developed by Dagnan and Chadwick (1997) and Dagnan et al. (2000), are nevertheless novel. Additional analyses were performed to examine whether performance on each task was close to floor-level or ceiling-level, and to what extent intellectual or verbal functioning was associated with performance.

5.3.5.1 Baseline ability to link situations, thoughts and feelings.

A Wilcoxon Signed Rank test revealed no differences in pre-test performance between the two cognitive mediation tasks, indicating they had similar difficulty levels, $z = -.795$, $p = .427$. Fifty nine percent of participants passed the 'AB, choose C' task and 45 % passed the 'AC, choose B' task.

5.3.5.2 Ability to link situations to feelings.

Data were available for 33 participants allocated to the training group. Average accuracy rates at the first presentation of the training tasks (or Time 1) were 89.4 for the A, choose C' and 82.3 percent for the 'C, choose A' task. The Wilcoxon signed rank test indicated this was a significant between-task difference: $z = -2.523$, $p < .012$. For the 'A, choose C' task, errorless performances were recorded for 65.6 % of participants in round 1. Seventy-two percent of participants who proceeded to round 2 had errorless performance at this stage, and all 3 participants who continued to round 3 succeeded in answering all remaining items correctly. Likewise, 46.9 % of participants performed errorlessly at round 1 of the 'C, choose A' task; with 64.7 % of remaining participants performing errorlessly at round 2, and three out of six participants in round 3 answering the remaining items correctly.

5.3.5.3 Association of intellectual and verbal functioning with CBT skills.

Spearman correlations were slightly higher between IQ and cognitive mediation tasks involving the selection of emotions, $r(65) = .392$, $p = .001$, than between IQ and cognitive mediation tasks involving the selection of beliefs, $r(65) = .320$, $p = .009$. The verbal comprehension index of the WASI –II correlated significantly with performance on the congruent items, $r(65) = .578$, $p < .001$, but not the incongruent items, $r(65) = .172$, $p = .170$, on the 'AB, choose C' task. However, the verbal comprehension index correlated significantly with the incongruent items, $r(65) = .350$, $p = .004$, but not the congruent items, $r(65) = .147$, $p = .242$, of the 'AC, choose B' task.

5.4 Summary of findings

The results of this study suggested that training in linking situations to feelings may improve some aspects of cognitive mediation skills for people with mild to moderate IDs. Training effects were found for the ability to select appropriate emotional responses for situation-belief pairs, when compared to an attention-control intervention (Hypothesis 1a). This effect remained when controlling for variability in baseline scores and IQ. However, congruency of situations and beliefs is a determining factor, with congruent, but not incongruent items improving significantly following the training intervention (Hypothesis 1a). The findings further suggested that training did not improve the ability to select appropriate mediating beliefs when presented with a situation and feeling when controlling for variability in pre-test scores and IQ (Hypothesis 2a), nor when considering the congruency and incongruency of task items levels (Hypothesis 2b).

Chapter 6

Training people with intellectual disabilities in the component skills of CBT: A computerised experiment

The work presented in this chapter has been submitted for publication and is currently under review as follows:

Vereenooghe, L., Gega, L., Reynolds, S., & Langdon, P. E. (2015) Using computers to teach people with intellectual disabilities to perform some of the tasks used within cognitive behavioural therapy: A randomised experiment. Behaviour Research and Therapy. doi: 10.1016/j.brat.2015.11.002

Note. The work and analysis presented in this chapter were undertaken by L. Vereenooghe. The co-authors on this publication provided guidance and suggestions regarding the analysis and results, and were PhD supervisors.

6.1 Objectives

The mixed results from Chapter 5 were encouraging and indicated that computerised training can be a useful tool to improve the skills of people with IDs to perform certain CBT tasks. The absence of a significant training effect on the selection of appropriate mediating thoughts to link situations and beliefs suggested that training interventions should actively and explicitly target people's understanding of cognitions.

In recent years, two tasks have been used to assess the ability of people with IDs to discriminate between thoughts, feelings and behaviours using either short statements (Oathamshaw & Haddock, 2006) or short stories (Sams et al., 2006), whereas the training intervention used by Bruce et al. (2010) to improve this ability did not yield a significant effect. Given the apparent difficulty of people with IDs to discriminate between these components and given the relative success of the computerised training paradigm presented in Chapter 5, this study will use a new computerised training programme aimed to improve these prerequisite skills for people to undertake CBT.

Using a 2 (Group: Training or Attention-Control Condition) x (2 (Pre- or Post-Test) x *S*) experimental design, it was predicted that training, when compared to an attention-control condition, would improve the ability of people with IDs to:

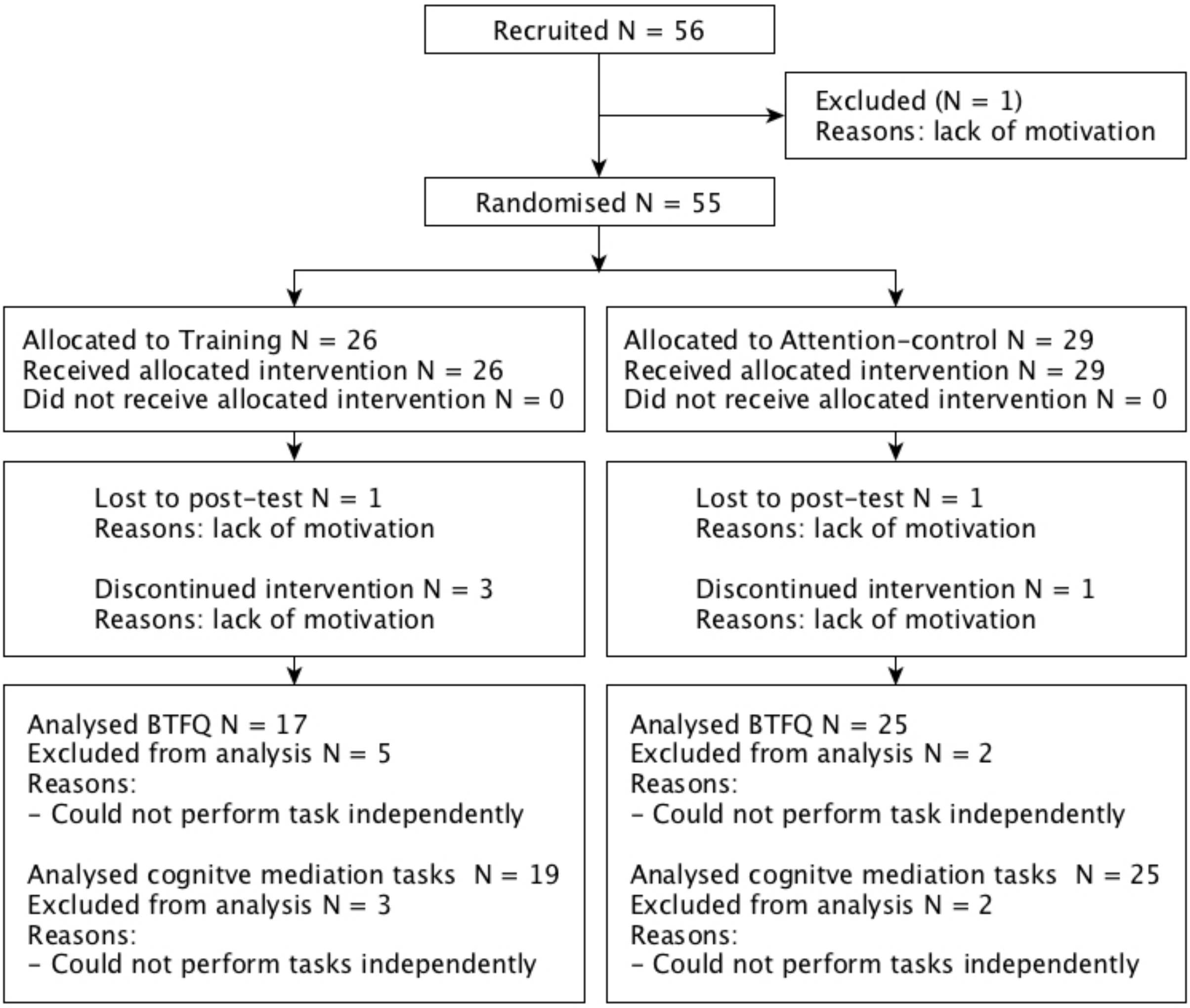
1. discriminate between behaviours (a), thoughts (b) and feelings (c), separately and pooled together (d)
2. understand cognitive mediation through the selecting of (a) appropriate emotions as consequences to given thoughts, and (b) appropriate thoughts as mediators of given emotions.

6.2 Methods

6.2.1 Participants

Participants were recruited from six organisations providing social, recreational and vocational day services in the East of England. Managers gave permission for recruitment and staff signposted their users to the study. Service users were eligible to participate if they (a) were 18 years old and above, and (b) had IQ below 70 as assessed by the Wechsler Abbreviated Scale of Intelligence, 2nd Edition (WASI-II; Wechsler, 2011). Participants were not eligible for this study if they had a diagnosis of a pervasive developmental disorder, acute psychosis, or if they were receiving CBT at the time. Service users with additional sensory impairments were eligible in so far that the degree of the impairment enabled them to complete the tasks independently. For example, service users could take part if they wore glasses or a hearing aid. Participant flow in the study is illustrated in Figure 6.1. People who had taken part in the previous study using computerised training (see Chapter 5) were eligible to participate in this second study. It was expected that there would be no carry-over effects from having participated in a similar study more than twelve months ago.

Figure 6.1. CONSORT diagram of participant flow through the study.



6.2.2 Design

The study used a randomised controlled comparison with a 2 (Group: Training or Attention-Control Condition) x (2 (Pre- or Post-Test) x *S*) single blind design. Participants' intelligence was assessed before randomisation, to allow for stratification by full-scale IQ. Masked randomisation was achieved through a computer script, written in PsychoPy (Peirce, 2007), that prompted the researcher to enter participants' full scale IQ at the start of the intervention. Randomisation was completed using matched-pairs, and group assignment was hidden from the researcher. The researcher was not able to see the computer screen while the participants were taking part in the study, although was able to offer assistance for the first few items of the assessment tasks without compromising masking.

Participants were not explicitly told the condition to which they were assigned. Assessments at pre- and post-test evaluated participants' performance on three CBT component skills by measuring their ability to: (a) differentiate between behaviours, thoughts, and feelings (b) identify emotions as consequences of thoughts, and (c) identify thoughts as mediators of emotions. The last two skills will be referred to as 'cognitive mediation' skills.

6.2.3 Measures

6.2.3.1 WASI-II.

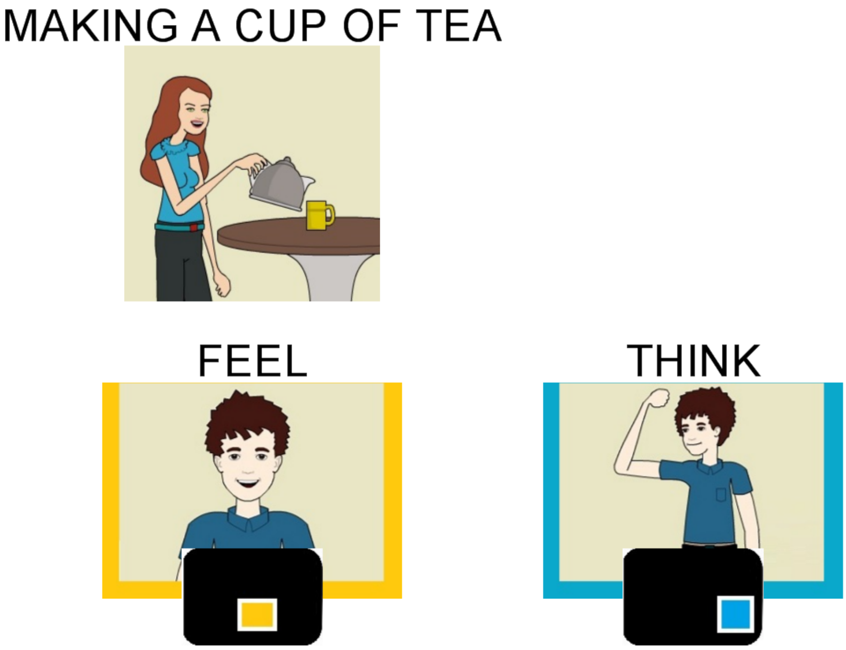
The Wechsler Abbreviated Scale of Intelligence – 2nd edition (WASI-II; Wechsler, 2011) provides a reliable estimate of Full Scale IQ based on verbal comprehension and perceptual reasoning subscales. It can be used with people aged from 6 – 89 and takes approximately 30 minutes to complete. The WASI-II has good reliability and validity (Wechsler, 2011).

6.2.3.2 Behaviour-Thought-Feeling Questionnaire (BTFQ).

Originally developed by Greenberger and Padesky (1985), the BTFQ was adapted for use with people with IDs by Oathamshaw and Haddock (2006). The measure consists of 24 items with equal numbers of behaviours, thoughts and feelings. The present study adapted the BTFQ so that its items were presented in coloured line-drawings and large print text (figure 6.2). The items appeared in screen in random order and the participants had 50 seconds to determine whether the item should be identified as a behaviour, a thought, or a feeling.

As illustrated in Figure 6.2, participants gave their answer by pressing a button on their response box which corresponded to the colour of their selected on-screen option: i.e. pressing the black button if the answer was ‘behaviour’, a yellow button for a ‘feeling’, and a blue button for a ‘thought’. The response options and pictures were introduced prior to the assessment as follows: (a) for behaviours: ‘These are things you can do. For example, you can walk, you can talk, or you can wave. Behaviours go in the black box.’; (b) for feelings: ‘They describe how we are feeling. For example, you can feel happy, you can feel sad, or you can feel angry. Feelings go in the yellow box.’; (c) for thoughts: ‘They describe what we are thinking. For example, you can think that you are strong, you can think that you are not sure about something, or you can think that someone likes you. Thoughts go in the blue box.’

Figure 6.2. BTFQ sample item as presented to participants on screen.

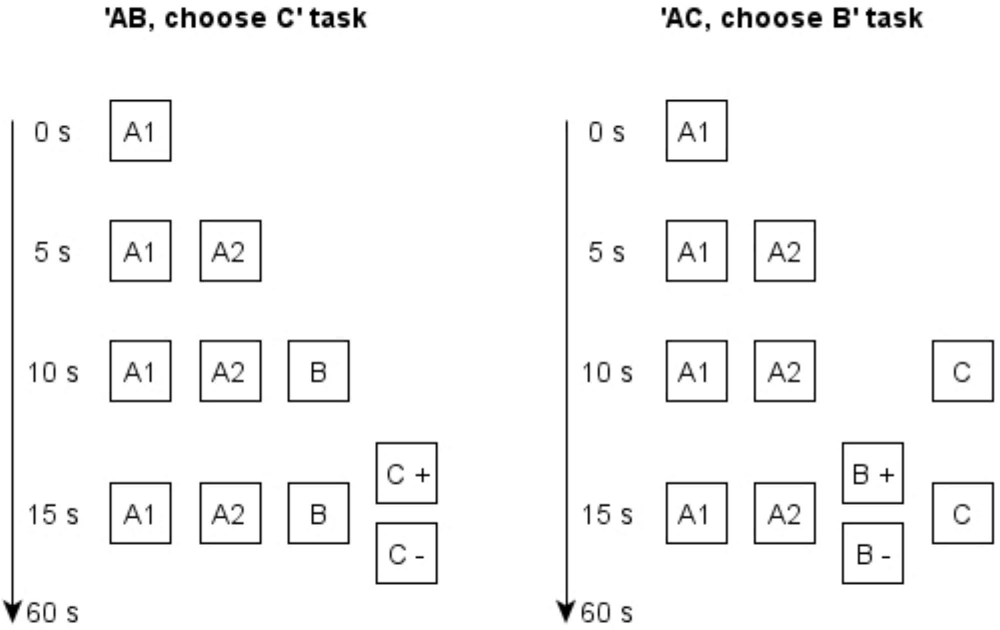


Note. Task item 'Making a cup of tea' presented on top of screen first, followed after 5 seconds by the black, yellow, and blue boxes depicting behaviours (e.g. 'You can walk'), feelings (e.g. 'You feel happy') and thoughts (e.g. 'You think you are strong'). The small black boxes at the bottom represent the response box and highlight the button participants should press to select this response. Printed with permission of Pixton ®.

6.2.3.3 Assessment Tasks for Cognitive Mediation Skills.

Drawing on materials by Dagnan et al. (2000), which have been adapted for computerised delivery in a previous study by Vereenooghe et al. (2015), we used two assessment tasks to evaluate participants' cognitive mediation skills: i.e. their ability to recognise emotions as consequences of thoughts, and thoughts as mediators of emotions. Each assessment task comprised 12 one-minute scenarios with three components: a situation (antecedent, A) presented in two parts (A1, A2), a belief (B), and a feeling (consequence, C). The components of each scenario were presented in three steps (AB, choose C, or AC, choose B) by means of pictures and audio narratives, so that the participants could see and hear what was happening in the scenario. Figure 6.3 illustrates the timeline of how the components of each task appeared on screen.

Figure 6.3. Schematic illustration of how cognitive mediation tasks were presented on screen.



Note. A1, A2: Antecedents; B+, B-: positive and negative belief; C+, C-: happy and sad. Sample item 'AB, choose C' task: A1, 'You walk into a room'; A2, 'Your friends are laughing'; B, 'You think they are laughing at you'; C+, 'Would you feel happy?'; C-, 'Or would you feel sad?'. The vertical line presents the time from presentation of the first picture, at time 0 s, to the end of a task item, at 60 s.

The ‘AB, choose C’ task comprised 12 scenarios generated by combining six situations or antecedents (A), once with a positive belief (B+), and once with a negative belief (B-). Three antecedents were positively valenced (A+) and three negatively valenced (A-). When combined with positive and negative beliefs this resulted in six congruent (A+B+, A-B-) and six incongruent (A+B-, A-B+) scenarios. Participants were then shown pictures of a happy face as a positive feeling or consequence (C+) and a sad face as a negative feeling or consequence (C-) They were prompted to identify how they would feel in the scenario by pressing the corresponding button of the happy or sad face on an external response box.

Similarly, the ‘AC, choose B’ task comprised 12 scenarios generated by combining the same six antecedents (A), once with a positive feeling or consequence (C+) (i.e. a happy face) and once with a negative feeling or consequence (C-) (i.e. sad face). Participants then chose between a positive and a negative belief (B+ and B-) and identified the appropriate mediating belief by pressing the corresponding button on the response box.

6.2.4 Intervention and Attention Control Conditions

6.2.4.1 Training Intervention.

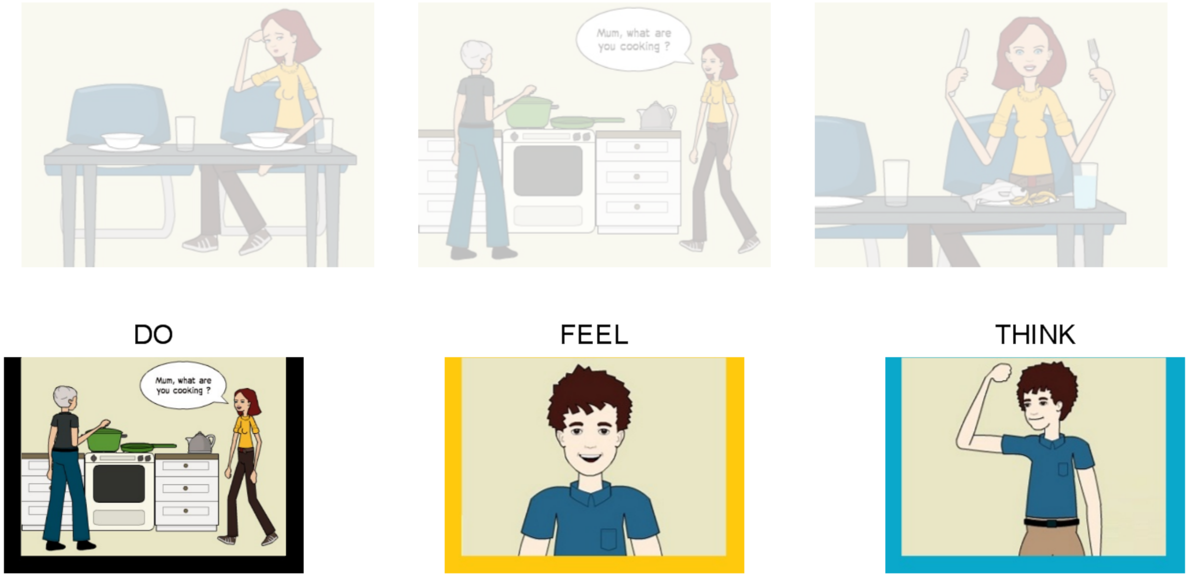
The Thought/Feeling/Behaviour card sorting task (TFB task; Quakley, Reynolds, & Coker, 2004) was originally developed to assess children’s ability to discriminate between thoughts, feelings, and behaviours. It has since been used with people with IDs (Bruce et al., 2010; Sams et al., 2006), in which participants were presented with six stories revolving around one main character, three of which were mildly positively valenced and three mildly negative. Stories consisted of three sentences, each representing a thought, a feeling or a behaviour, read out to participants who then identified each sentence as a thought, feeling or behaviour.

This study adapted the TFB task for computerised delivery and for the purposes of training people with IDs in CBT component skills. The computerised training version of the TFB task presented the original six stories (Quakley et al., 2004) in pictures. The presentation order of the stories was random. While an audio recording narrated the stories, a picture was presented for each sentence. After the story had been presented, three coloured boxes appeared at the bottom of the screen, depicting a sample thought (blue box, ‘you think you are strong’), a feeling (yellow box, ‘you feel happy’), and a behaviour (black box, ‘you are walking’). The sentences describing the story were then highlighted one by one, accompanied by a voice recording, and participants were asked:

‘Is this something you can do, how you can feel, or what you can think? If you think [… insert sentence…] is something you can do, then press black. If you think […insert sentence…] is how you can feel, then press yellow. If you think […insert sentence…] is what you can think, then press blue.’

Figure 6.4 illustrates a screenshot of a task item. Participants had 60 seconds to press the coloured button that corresponds with their answer. The depicted sentence and accompanying picture then moved across the screen towards their chosen box at the bottom of the screen. The response was then either confirmed as correct, or incorrect, in which case the sentence and picture moved towards the appropriate box on the screen, demonstrating the correct response (Figure 6.4).

Figure 6.4. Training intervention sample item as presented to participants on screen.



Note. Sample item ‘Mary wonders what mum is cooking. She shouts into the kitchen to find out. Mary is very glad to hear she’s having chips, her favourite.’ In this example, the participant has pressed ‘black’ indicating that ‘Mary shouts into the kitchen to find out.’ is something Mary does, and thus a behaviour. The picture then gradually moved from its top centre position into the black box. Printed with permission of Pixton ®.

6.2.4.2 Attention-Control Intervention.

Participants in this condition were presented the six stories of the TFB task (Quakley et al., 2004), in the same way as they were presented to participants in the training task; however, when sentences and pictures were highlighted after the story had been presented, factual questions were posed about the story. For example, if a sentence read ‘Mary went shopping with her mum’, the corresponding question was ‘Did Mary go shopping with her mum?’. The three response options in coloured boxes at the bottom of the screen were: ‘yes’ (black box), ‘no’ (yellow box), and ‘not sure’ (blue box). Participants had 60 seconds to respond; upon pressing a response button the pictured sentence moved across the screen towards the respective coloured box. Again, the answer was confirmed as correct or incorrect, with incorrect responses being corrected by moving the pictured sentence towards the correct coloured box.

6.2.5 Ethical considerations

A favourable ethical opinion was obtained from a National Health Service (NHS) Research Ethics Committee. All study information for participants was presented in an easy to read format and explained until they fully understood the consequences of agreeing to participate in the study, with particular attention given to issues surrounding confidentiality, right to withdraw, right to consult a third party for an independent opinion, and informed consent. Organisation staff were consulted to provide information regarding a potential participants’ ability to consent. All participants were judged to be able to give informed consent.

6.2.6 Procedure

At baseline before randomisation, the WASI-II was completed. Participants then sat in front of a laptop and completed the BTFQ and both cognitive mediation tasks. The order of presentation of these tasks was counterbalanced between participants and the researcher could give participants assistance for the first six items of each task to ensure they understood the task instructions and were able to independently provide their answers. Following randomisation, participants completed the computerised intervention task. At post-test, participants completed again the BTFQ and two cognitive mediation tasks in the same order as they did at pre-test. Participants could opt for a break between tasks.

The BTFQ and assessment tasks for cognitive mediation skills, as well as the training and attention-control tasks, were all computerised and delivered on a Toshiba TECRA R850-119 laptop with a Windows 7 operating system running PsychoPy, v1.76.00, software (Peirce, 2007). The computerised line-drawings of task components were generated using Pixton® Comic Software (2013). An external USB numeric keypad, Targus AKP10EU, modified with coloured buttons, served as the response box. A picture of the response box appeared on screen next to every response option with the corresponding button highlighted in the picture.

6.2.7 Data-collection and analysis

Participants were excluded from the analysis if they were unable to understand and perform the required computerised tasks independently, as evidenced by: (i) pressing a single response button only, (ii) requiring continuous assistance to highlight the response options and clarify response procedures, or (iii) pressing buttons seemingly at random in between task items.

Each correct answer on the BTFQ was awarded 1 point with a maximum score of 24 for the overall task and a maximum score of 8 for the identification of the behaviours, thoughts, and feelings respectively. Each correct response on the assessment tasks for cognitive mediation skills was awarded 1 point with a maximum total score of 12 per task.

In accordance with previous studies, we calculated the "pass" grade for each assessment task by estimating the cut-off score that could be obtained by chance with a probability of less than 0.05. For the BTFQ, a "pass" was a cut-off score of 6 or higher for each component and 12 or higher for the overall task, whereas for the cognitive mediation tasks, the same cut-off score was 10 out of 12.

Scores on the pre-test and post-test assessments were converted to percentages. We also calculated the percentage of participants who "passed" each assessment task. The converted pre- and post-test scores were assessed for normality and homogeneity of variances. Where residuals were normally distributed and assumptions for multicollinearity and homogeneity of regression slopes were not violated, parametric tests (e.g. independent t-tests) and linear regression analysis were conducted, otherwise non-parametric analyses were performed. All regression analyses controlled for variability in pre-test performance and IQ.

6.3 Results

6.3.1 Participant Flow and Characteristics

Figure 6.1 illustrates the participant flow through the study according to CONSORT guidelines. Although we recruited 56 participants, one participant dropped out pre-randomisation. Table 6.1 presents some demographic information for the 55 (17 men, 38 women) participants randomised to the training (n=26) or attention-control condition (n=29). The groups were well-matched on age, *t* (*47*)=-*.641* (*p*=.525) and IQ, Mann-Whitney U=368.5 (*p*=.886), but there were proportionally fewer women in the training group. Two participants were lost to follow-up before completing post-test assessment tasks, whereas 4 people dropped out before completing all post-test assessments. Participants who dropped out indicated that they were not interested in continuing with the research tasks in addition to their other scheduled regular activities for that day. Seven participants were excluded from the BTFQ analysis, and 5 from the cognitive mediation tasks analysis because they could not perform the tasks independently. We included 42 participants (training: n=17; attention control: n=25) in the analysis of the BTFQ scores and 44 (training: n=19; attention control: n=25) in the analysis of cognitive mediation skills scores.

Table 6.1. Demographic information for participants randomised to the training and attention-control condition.

	Training condition (*N*=26)	Attention-control condition (*N*=29)
Male / female ratio	11/15	6/23
Age	41 (14)	36 (13)
IQ	50 (40 - 69)	50 (40 - 67)
Participated in previous study	12	13

Note. Age, mean age in years (SD); IQ, median WASI-II full-scale IQ (range)

6.3.2 Objective 1: Computerised training improves the ability to differentiate between behaviours, thoughts, and feelings, when compared to an attention-control intervention

1a. Effects of training vs. attention-control on ability to identify behaviours

The mean score for correct responses increased from 71 % (SD=28), at pre-test to 83 % (SD=25) at post-test for the training condition, but remained unchanged for the attention-control group (pre-test: 57 %, SD=33; post-test 57 %, SD=35). The proportion of participants who achieved a "pass" on identifying behaviours was much lower in the attention-control than the training group post-test (36% vs. 82%), although participants in the attention-control group had started with a disadvantage because their pass rate was much lower than that of the training group at baseline (44% vs. 71%). A linear regression analysis found a significant effect of pre-test performance (β=.627, *t*=4.688, $p < .001$), and a trend for a positive effect of training (β=.237, *t*=1.916, *p*=.06) on post-test performance (see Table 6.2).

1b. Effects of training vs. attention-control on ability to identify thoughts

The training group correctly identified 25 % of thoughts at both pre-test (SD=19) and post-test (SD=15), whereas for the attention-control group these were 32 % (SD=24) and 29 % (SD=21) pre- and post-test respectively. Linear regression analysis yielded no significant effect of training on post-test identification of thoughts (see Table 6.2). Similarly, pre-test performance and IQ were not found to be substantial predictors of post-test performance. Notably, "pass" rates for correctly identifying thoughts were very low. Only one participant passed the pre-test and two the post-test assessment, all of whom were assigned to the attention-control condition.

1c. Effects of training vs. attention-control on ability to identify feelings

Participants' performance on correctly identifying feelings in the training condition increased from 74% (SD=21) to 80% (SD=26). Performance in the attention-control condition remained level with 63% (SD=29) and 64% (SD=33) at pre- and post-test, respectively. In relation to "pass" rates, 44% of participants in the attention-control condition passed the task at both pre- and post-test, as opposed to 65% pre-test and 77% post-test of those in the training condition. In a subsequent linear regression analysis, only pre-test performance, and not group allocation, significantly contributed to the post-test performance (β=.781, t=7.297, $p < .001$) (see Table 6.2).

1d: Effects of training vs. attention-control on collective ability to identify behaviours, thoughts, and feelings

Taking into account the aggregate scores of the BTFQ, the percentage of participants who "passed" the task at baseline was much higher for training group (71%) than the attention-control group (48%). At post-test, 82% of participants from the training group passed the task compared to 44% in the attention-control group. The average percentage of correct responses increased in the training condition from 57% (SD=16) to 63% (SD=14), whereas it remained unchanged in the attention-control group with average scores of 50% (SD=19) at pre-test and 50% (SD=17) at post-test. When controlling for pre-test scores and IQ, a linear regression yielded a significant effect of training on the participants' ability to collectively identify behaviours, thoughts and feelings (β=0.2, t=2.1, $p < .05$) (see Table 6.2)

Table 6.2. Regression analyses evaluating the effects of training on BTFQ performance.

	B (St. Error)	β	*t*	Adjusted R²
Thoughts Subtest				
Intercept	20.975 (9.875)	-	2.124*	
Pre-test Thoughts	.166 (.138)	.195	1.204	
IQ	1.878 (6.069)	.050	.310	.000
Intervention	-2.673 (6.049)	-.071	-.442	-.021
Feelings Subtest				
Intercept	16.304 (11.168)	-	1.460	
Pre-test Feelings	.910 (.125)	.781	7.297***	
IQ	-6.376 (6.506)	-.103	-.980	.590
Intervention	4.886 (6.469)	.079	.755	.586
Behaviours Subtest				
Intercept	32.517 (12.750)	-	2.550*	
Pre-test Behaviours	.666 (.142)	.627	4.688***	
IQ	-9.494 (8.756)	-.141	-1.084	.394
Intervention	15.883 (8.289)	.237	1.916	.433
BTFQ Total				
Intercept	21.152 (6.345)	-	3.334**	
Pre-test BTFQ	.737 (.112)	.759	6.577***	
IQ	-5.852 (3.949)	-.169	-1.482	.543
Intervention	7.589 (3.635)	.219	2.088*	.580

Notes. IQ, split at mean of 53.10 and categorised as low or high; *, $p < .05$; **, $p < .01$; ***, $p < .001$; R^2, applies to regression model that includes this predictor and all of the above.

6.3.3 Objective 2: Computerised training improves cognitive mediation skills compared to an attention-control condition

2a. Effects of training vs. attention-control on ability to select an emotion as a consequence to a given thought

Performance on the 'AB, choose C' task is presented in Table 6.3. Non-parametric analyses on change scores (post-test – pre-test) were performed due to the non-normal distribution of the pre-test scores and residuals in a regression analysis. The mean change score for the training condition was 6% (SD=11) compared to 2% (SD=15) for the attention-control group; however, this difference was not significant, Mann-Whitney *U*=211 (*p*=.517).

The proportion of participants who "passed" the task pre- to post-test was stable at 74% in the training group and increased from 52% to 72% in the attention-control group. An increase in pass-scores does not indicate the magnitude of the change in scores.

2b. Effects of training vs. attention-control on ability to select a mediating thought for a given emotion

Table 6.3 presents the mean scores for the training and attention-control group at pre- and post-test. There was no significant difference in mean change scores between the training group (mean change=4%, SD=19) and the attention-control group (mean change=9%, SD=21): Mann-Whitney *U*=221, *p*=.692. Turning to the proportion of participants "passing" the task at pre- and post-test respectively, there was a slight increase for the training group from 58% to 63%, but no change for the attention-control group with 48% passing the task at both pre- and post-test.

Table 6.3. Pre- and post-test performance on the assessment tasks of cognitive mediation skills

	Training condition (*N*=19)	Attention-control condition (*N*=25)
AB, choose C		
Pre-test	81.14 (12.69)	81.33 (13.02)
Post-test	87.28 (10.89)	83.67 (17.09)
AC, choose B		
Pre-test	81.14 (16.40)	75.00 (19.39)
Post-test	85.53 (13.84)	83.67 (17.09)

Note. Mean percentage correct responses (SD).

6.3.4 Additional Analyses

Spearman correlations tested for associations between IQ and baseline performance on the two cognitive mediation tasks and on the BTFQ (three subtasks and aggregate scores) and are presented in Table 6.4. The analyses indicated that full-scale IQ had a strong positive association with aggregate scores of the BTFQ (r=.565, $p < .001$) and the behaviours (r=.468, $p < .05$) and feelings (r=.345, $p < .05$) subtests, but not the thoughts subtest. Between-task correlations were observed between the 'AC, choose B' task and both the aggregate BTFQ scores (r=.341, $p < .05$) and the feelings subtest (r=.394, $p < .05$).

Table 6.4. Inter-task correlation matrix at pre-test.

	AB, choose C	AC, choose B	BTFQ	Behaviours	Thoughts	Feelings
Full-Scale IQ	.045 (44)	.219 (44)	.565** (42)	.468** (42)	.295 (42)	.345* (42)
AB, choose C	1.00	.356* (43)	.267 (39)	.017 (39)	.081 (39)	.305 (39)
AC, choose B		1.00	.341* (38)	-.029 (38)	.239 (38)	.394* (38)
BTFQ			1.00	.718*** (42)	.434** (42)	.822*** (42)
Behaviours				1.00	.114 (42)	.450** (42)
Thoughts					1.00	.175 (42)

Note. Spearman correlations (*N*); *, $p < .05$; **, $p < .01$; ***, $p < .001$.

Further analyses of the response patterns for the BTFQ revealed that, on average, participants correctly identified 5 behaviours at pre-test and misidentifications were biased towards feelings. Likewise, when asked to identify feelings, of they identified 5 feelings correctly, with misidentification biased towards thoughts, as shown in Table 6.5. Thoughts, however, were more likely to be identified as feelings or behaviours, as only 2 thoughts were correctly identified.

Table 6.5. Cross-table of response patterns for identifying behaviours, thoughts and feelings.

	Participants' response		
	Behaviour	Thought	Feeling
Correct response			
Behaviours	5 (2.51)	1.26 (1.23)	1.52 (1.86)
Thought	2.57 (1.64)	2.14 (1.56)	3.07 (2.01)
Feeling	1.19 (1.49)	1.31 (1.62)	5.26 (2.76)

Note. Mean number of responses (SD); $N = 42$.

6.4 Summary of findings

These results suggested that computerised training using CBT-related scenarios can improve the ability of people with IDs to identify behaviours, thoughts and feelings, when these are pooled together, compared to an attention-control task (objective 1d). When examining behaviours, thoughts, and feelings separately (objectives 1a, 1b, and 1c), it was observed that participants in the training group performed better than those in the attention-control group at identifying behaviours and feelings (and not thoughts), although there was no significant between-group difference.

Participants' cognitive mediation skills, (objectives 2a and 2b) were similar between the training and control groups both at pre- and post-test. This means that training in discriminating between behaviours, thoughts and feelings may not generalise to making links between them

Part 3

Exploring the acceptability of reasonable adjustments

Chapter 7

Potential of Computerised CBT Programmes in Therapy for People with Intellectual Disabilities: Service User and Clinician Perspectives

7.1 Objectives

Computerised training programmes can be used in people with IDs to improve some of the skills required for CBT, as the studies in Chapter 5 and 6 have shown. However, it is not yet clear what the impact of such training programmes is on subsequent therapy engagement and therapy outcomes. This study is a first step in bridging the gap between research and practice.

Using semi-structured interviews, this study explored the general attitudes of clinicians, who routinely work with people with IDs but have never used computerised CBT (cCBT) in their practice, to help identify potential challenges, benefits and concerns. Similarly, people with IDs, who have experienced the CBT training programme described in Chapter 6, were interviewed to explore their attitudes and to identify important features concerning the design, accessibility and usability of therapy-supporting computer programmes.

The overarching aim is to elicit stakeholder-driven information that will feed into the further development of computer programmes for therapeutic use with people with IDs, and generate hypotheses and a framework for future studies evaluating these programmes. Specifically, the objectives of this study were to identify:

1. Potential functions and benefits of computer programmes in therapy for people with IDs;
2. Potential challenges and barriers to using computer programmes in therapy with people with IDs;
3. Important features relating to the design and usability of computer programmes for therapeutic use with people with IDs.
4.

7.2 Methods

7.2.1 Participants

Three service users and three clinicians were recruited, representing both genders, a range of ages, different levels of working experience for the clinicians, and different levels of IDs for the service users. Clinical psychologists who had some experience working with people with IDs were recruited from learning disability services in the east of England and given an information sheet about the study.

Service users with IDs were recruited from a sample of participants who had taken part in the computerised CBT skills training in the study described in Chapter 6 and who had given consent to being contacted for potential future research. The decision to recruit participants from a previous study was so that they could draw on their experiences of using a computerised programme. Service users had confirmed intellectual disabilities, were over 18 years old, and had sufficient verbal skills to understand the study consent form.

7.2.2 Data Collection and Analysis

Qualitative semi-structured interviews were conducted using separate interview schedules for service users with IDs and for clinical psychologists. The interviews required 30-45 minutes to complete and took place in either a quiet room at the day service for the service users or at their workplace for the clinicians. The interviews were recorded using a digital voice recorder and field notes were taken during and after the interviews with notable non-verbal interaction and points of interest to be considered during the data analysis and interpretation.

7.2.2.1 Interview schedules

Clinical psychologists were first asked about their current use of computers in therapy and their attitudes towards cCBT in the context of their work with people with IDs but also in relation to their generic practice. The second part of the interview addressed the specific use of using computer in therapy with people with IDs patients in terms of: a) their potential content and function in therapy, b) important features to be considered for programme design, c) potential challenges and benefits of computer programmes, d) the role of the clinician, and e) their recommendations for potential use in therapeutic practice.

Interviews conducted with service users with IDs explored a) their access to and use of computer technologies, and b) general attitudes towards using computers. Next, participants were introduced to the theme of psychological therapy through questions aimed at c) exploring how people cope with emotional experiences and their understanding of psychological therapy. In the third part of the interview, participants were asked to consider e) how computers can be used in therapy, and f) their attitudes towards computers and therapists.

7.2.2.2 Data Management

Interviews were transcribed and sent to the participating clinician, thus providing them with an opportunity to revise or clarify their opinion. People with IDs were contacted again in person to go through the interview questions, and their responses, whilst continuously checking whether they wanted to make any amendments.

Following the participants' approval of the transcribed interviews, the data was anonymised and subsequently organised using NVivo 10.1.3 software.

7.2.2.3 Data Analysis

Thematic analysis was used to analyse the data and identify recurrent themes. Using an inductive approach, thematic codes were assigned to distinct pieces of information, and through multiple iterations, these codes were developed into a hierarchical structure of identified themes and subthemes resulting in a data-driven analysis.

The guidelines for performing a thematic analysis, as described by Braun and Clark (2006), were followed. In a first step, all transcripts were read and reread to ensure familiarisation with the data and to generate awareness of patterns of interest appearing in the data. Next, line by line, the transcripts were read and initial codes were generated to describe distinct pieces of information that were meaningful in light of the study's objectives. Following the assignment of the initial codes, these were compared according to their distinctiveness and consequently either collated into a higher-level code, or reworked into new distinct codes that would better reflect their content. This process was repeated until a data structure emerged that would enable the answering of the initial research questions. The identified themes were then reviewed to ensure they reflected the underlying data. Finally, extracts were collected that gave an accurate impression of the essence of each theme.

Participants were contacted again, either per email (clinicians) or in person (service users) to request their feedback regarding the identified themes and whether these themes adequately reflected their opinion.

7.2.3 Ethical Approval

A favourable ethical opinion for this study was received from a National Research Ethics Committee. Clinicians received the study's information sheet by email, whereas people with IDs were contacted through the day services manager. An easy–to-read version of the study's information sheet was given and explained to the participants with IDs, with caution taken to ensure participants understood the implications of taking part, including their right to withdraw from the study and confidentiality of data. Service managers assisted in assessing participants' ability to give informed consent, whilst the researcher asked yes/no questions to ensure participants understood all aspects of the study. No participant had to be excluded because of a lack of ability to consent.

7.3 Results

7.3.1 Participant Characteristics and Engagement with the Study

Two male and one female service user with IDs were initially recruited; however, an additional two female participants were recruited after the first male and female participants were unable to provide sufficient information for analysis. In the end, interviews were available for one male and two female service users with IDs, whose characteristics are described on Table 7.1. Also, one male and two female clinicians, all clinical psychologists, were interviewed; their characteristics are described on Table 7.2.

Table 7.1. Characteristics of interviewed service users with intellectual difficulties (IDs)

User (U)	Age	Gender	Full-scale IQ	Verbal IQ	Familiarity with computers
U1	43	Male	56	54	Owns a desktop
U2	29	Female	57	60	Owns a tablet
U3	31	Female	67	70	Owns a laptop

Table 7.2. Characteristics of interviewed clinicians working with people with intellectual difficulties (IDs)

Clinician (C)	Age	Gender	Work setting	Years working with IDs
C1	31	Male	LD team	3
C2	52	Female	LD team	19
C3	34	Female	LD CAMHS	10

Note. LD team: local community learning disability team; LD CAMHS, Learning Disability Children and Adolescent Mental Health Service.

The three service users showed different verbal abilities and length of responses. Also, two participants (U1, U2) spent 5-10 min of the interview talking about a particular situation that had caused them previous upset, therefore requiring an interruption to the planned interview schedule to validate their experiences and shift the focus to the interview questions. All three participants had access to computer technologies, in addition to owning a smartphone. Computer use was mainly internet-based and centred around social media usage, online games, accessing multimedia, and email; for example service user U1 said: *"*I like watching films on YouTube and listening music.*"*

None of the interviewed clinical psychologists used computerised cCBT at the time of interview. They primarily used computers for administrative purposes and for limited therapeutic contact with their clients. One clinician (C1) integrated a tablet computer in their practice to facilitate understanding of therapeutic concepts, whereas another (C3) joined their patient in using the patient's preferred computer technologies, such as game consoles, as a means of engaging with the patient.

"It was some videos on YouTube [...] that I thought might be quite useful to describe metaphors from acceptance and commitment therapy. [...] It's kind of a bit abstract. In acceptance and commitment therapy they use a lot of metaphors to explain concepts [...] and it took quite a lot of talking about to try and [understand it]." (C1)

7.3.2 Potential functions and benefits of cCBT for people with IDs

7.3.2.1 Clinicians perspectives

We identified 15 themes regarding clinicians' perspectives of the potential function and benefits of computer programmes in therapy with service users with IDs. These themes were grouped into 4 super-ordinate themes: 'assessing readiness for therapy', 'improving knowledge and understanding', 'developing and practising skills', and 'facilitating therapy process', as illustrated in Figure 7.1.

Assessing readiness for therapy.

Clinicians favoured the use of computer programmes at the early stages of therapy as a means of assessing patients' feelings towards the referral, their motivation and their understanding of therapy.

“How the person feels about the referral. What their motivation to engage is, is it about them, you know, or is it about the environment around them that might be creating the problem. […] Then I guess anything like that would be really good as a way of gaging where someone might be in terms of their ability to undertake cognitive behaviour therapy. […] I think people with learning disabilities, who may not refer themselves for therapy, it’s probably quite an alien strange thing for them to come and talk about stuff that people might not have spoken to them about before. So maybe something that assesses where they are in the process perhaps.” (C1)

“I think that, might my sense is, especially initially where people are starting to get used to therapy and what therapy is about, because often the people we see, they never had people talk to them in a way therapists do, that ask them about how they are feeling, you know, and be interested in their history and trying to make sense of how that’s, you know, but because you know or contributed to how they may be feeling.” (C1)

Improving knowledge and understanding

From a psycho-educational perspective, clinicians emphasised the potential benefits of computer programmes in introducing therapeutic concepts and emotional states, such as ‘aggressive’, ‘passive’ and ‘assertive’. In addition to clarifying therapeutic concepts, the programmes could also be used to continually assess clients’ understanding of them.

“Things to do with assertiveness [...] I think that would be a very good one because there’s a lot of need for that. [...] Learning about the difference between assertive, and aggressive, and passive.” (C3)

“Something, you know, that assesses where, how much sense they’re making of it you know.” (C1)

Developing and practising skills

Clinicians thought that computers could assist in acquiring and practising a range of skills that would enable clients to better engage with therapy. These would include skills specific to the theoretical framework underlying CBT, and believed necessary to undertake CBT, such as emotion recognition and accessibility of automatic thoughts.

“(a programme) for identifying, recognising and understanding emotions. [...] So many people can distinguish between I feel OK or I don’t feel OK, but perhaps separating between whether that’s cross or sadness or worry. I see some work around that.” (C2)

“I think if you say to people ‘this is the situation, if you thought this, how might you feel?’ people can do that. But if you’re talking to somebody about their own experiences and saying ‘this happened last week’ and you know ‘I’ve heard that you were really upset. What were you thinking?’ that’s much harder. So identifying their own thoughts and being able to access them [...] that would be really useful.” (C2)

Furthermore, the versatility of computer programmes in creating a variety of scenarios could help clients develop problem-solving skills to apply in their own lives.

“When there are some gaps and you think the person might be able to achieve and learn then it would be really good to have sort of a training programme.

[…] Thinking about skills that people benefit from, problem solving, I think, that would fit quite well." (C3)

Clinicians also recognised that skills developed in therapy should be practised in a different environment, as well, to facilitate clients to continuing to apply these skills when therapy ends. In CBT, homework is often used as a means to help people transfer their skills from therapy to practice. The interactivity provided in therapeutic computer programmes was considered to be particularly useful for the completion of homework tasks.

"It might encourage and it might actually facilitate people to do homework tasks because it is a real issue, the homework tasks." (C3)

"Perhaps with things like CBT, in homework tasks it can be much easier if there was an app on an ipad or something for a homework task. That might be a lot easier for someone to achieve, like pressing a few buttons, than it would perhaps writing out a thought record." (C1)

Facilitating therapy process

Clinicians expressed the view that computer programmes could potentially facilitate the therapy process with people with IDs through the following seven mechanisms: a) promoting user independence, enablement and responsibility; b) improving concentration, engagement, appeal, interest and attention; c) championing equitable and inclusive practice; d) offering a safe, non-intimidating, predictable environment; e) providing individualised and relevant materials; f) helping build relationships; g) supporting treatment of specific mental health conditions. An explanation and the indicative quotes for each mechanism are given below.

a) Promoting user independence, enablement and responsibility.

Computerised programmes have the ability to provide people with IDs with positive experiences of self-efficacy. Clinicians suggested that adapting therapeutic computer programmes to the clients' intellectual ability could give them an opportunity to perform tasks independently and thereby increase clients' ownership of the therapeutic process.

"It would feel really enabling. [...] It would feel like we're giving them responsibility. [...] If someone could do it independent that's a good thing as well, we shouldn't shy away from that." (C2)

"There's some real advantages [...] I think about what the computer can generate to enable that person to take part in therapy."(C2)

"I think it would be helpful [...] to be more independent in doing the therapy. I think that might help people to actually do it on their own and actually do it, [...] because homework is an issue, a real issue. [...] I can see a benefit there for homework." (C3)

Furthermore, the use of smaller computerised therapy tasks suited to the individual's ability would lead them to experience success, which may motivate them to adhere to therapy.

"Someone might you know ... perhaps if they can do well at a task, it might be something that they can be quite successful at, experience some success with it." (C1)

"Depending on the feedback you can build into it. [...] I think most clients like that, so it's not just coming from you. It's, yeah, 'well done', it's that feedback, instant feedback that you get." (C3)

b) Improving concentration, engagement, appeal, interest and attention.

All clinicians expressed the belief that computers could support therapy by providing the clinician and the client with a joint focus. The visual appeal of computer programmes may be more effective in keeping a clients' attention than verbal explanations and typical black and white drawings.

"I think there's some real advantages about having a computer as a focus for people with learning disabilities." (C2)

"I think that a lot of the materials for children and young people are very boring so black and white sheets you know quite mechanical drawings and not necessarily something that's engaging and grabs their interest so yeah something that something that looks appealing and engaging as well." (C2)

Incorporating interactive elements in therapeutic computer programmes was recognised as potentially the most useful feature of using computers in therapy.

"I can see benefits for engagement [...] so that they have that interaction which will help them." (C3)

c) Championing equitable and inclusive practice.

Service users with IDs should be included in the use of new technologies and any adaptations should be made on the basis of their skills and level of intellectual functioning. One clinician expressed their concern whether all staff would be welcoming this technology, but continued to caution against the ongoing exclusion of people with IDs from new advances in mental health care.

"I think people (staff) might get a bit anxious and say 'oh gosh, that's not right for people with learning disabilities'." (C2)

"It would be something that I can't think we would exclude anybody from. [...] If we look at history of research or therapy, research came in non-LDs first and then years later we start talking about therapy so I think it's good that people are talking and researching computerised therapy for people with LD and that they're not excluded. I also think that it's good that there's a recognition that the impact of the disability means that we might need to do things slightly different but we might not. We shouldn't assume that we always have to do things differently either. We risk of going quite far the other way and say learning disabilities have always been excluded in this way, but now we're going to exclude them and that's not OK either, is it?" (C2)

d) Offering a safe, non-intimidating, predictable environment.

Through the shared focus of clinician and client on the computer, therapeutic computer programmes can defuse the potential build-up of tension and anxiety associated with therapy. Clinicians acknowledged that therapeutic contact may initially feel uncomfortable for clients and that using computers in therapy could motivate a client to attend therapy while gradually building a trusting environment.

"People with learning disabilities can be a bit scared of talking sometimes and it takes the focus away a bit. It's (the computer) quite useful because it makes it a bit less intense." (C1)

"That (therapeutic computer programmes) would be a really safe and predictable way for them to engage in some tasks. [...] It would feel quite private as well." (C2)

"I can think of a number of people who would quite happily sit next to me and work at a computer screen and would find that much more comfortable than sit in a room and not knowing whether to look at me and what to do." (C2)

e) Providing individualised and relevant materials.

Clinicians thought that the merit of therapeutic computer programmes would lie in its ability to provide a suite of standardised materials that can be easily selected according to patients' preferences, personal relevance and intellectual level of functioning, or adapted to suit individual needs and circumstances.

"I suppose if there were things that you could then tailor a little bit, as well. I mean that would be, that might be a bit more useful if you got a bit further down therapy [...] (something) that might be more relevant to the person and something that's happened in their life." (C1)

"Generating scenarios that are appropriate [...] making it relevant to the person you're working with." (C3)

f) Helping build relationships.

Clinicians thought that therapeutic computer programmes could facilitate building a relationship with the therapist.

"I don't know if the tasks are quite instructional or if it is a bit more of a guided discovery sort of thing, you know, but I think it would be better, I think, if it would be more of a collaborative guided discovery kind of thing perhaps." (C1)

"Using a computer could in the right way sometimes help the relationship." (C1)

Also, computer programmes were thought to have the potential of making the therapy process accessible to supporting third parties, such as carers, who may gain understanding of both the therapeutic processes and the behaviour of the person with IDs they are supporting.

"The other thing, that I think in learning disabilities is really important, is that the carers or the family and teachers, whoever it might be, often benefit from having a greater understanding of what that person's thought processes are. So often the descriptions are around behaviour and focusing on a CBT type model. People have a greater understanding if actually this is how they're interpreting the

world, this is how they're seeing the world. And that's really important in how they support that person." (C2)

g) Supporting treatment of specific mental health conditions.

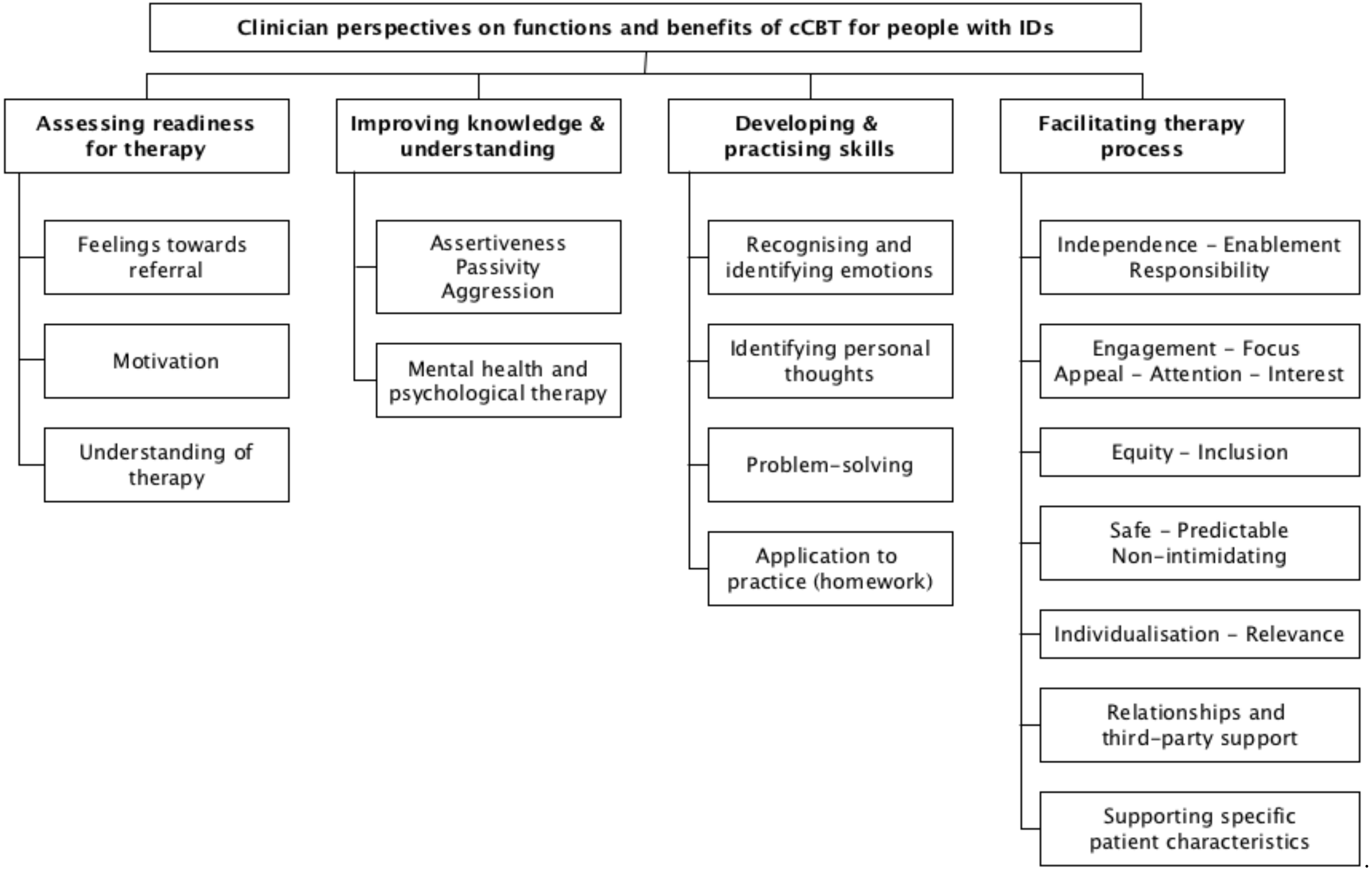
When considering the application of computer programmes in therapy with specific client characteristics, clinicians suggested that psycho-education and interventions concerning emotion regulation, anxiety and depression might be the most suitable for a computerised approach.

"Anxiety I think would be a huge one which would probably, if I had to pick one, that would probably be the one that I think would be most useful to start with." (C2)

"I think certainly mild to moderate anxiety and depression would be what I would think would be a good use of computerised CBT for people with LD." (C1)

"I think that the CBT type approach via computer could work really well for, I don't know how you'd class it as a mental health problem, but what I would describe as someone who has difficulties in regulating their own emotions: so somebody who has periods of distress and has difficulty recognising that and regulating that." (C2)

Figure 7.1. Clinician perspectives on functions and benefits of cCBT for people with IDs



7.3.2.2 Service user perspectives

The three service users interviewed for this study were positive about using computers and expected that most people with IDs would enjoy using a computer. We identified eight themes, see Figure 7.2, that reflected service users' perspectives of the potential functions and benefits of using computers in therapy with people with IDs. These themes were grouped into four super-ordinate themes: 'facilitating communication and relationships, 'having ready access', 'learning skills', and 'making therapy more fun and less difficult".

Facilitating communication and relationships

Participants thought computers could be used in therapy to answer questions, either by writing, clicking or drawing.

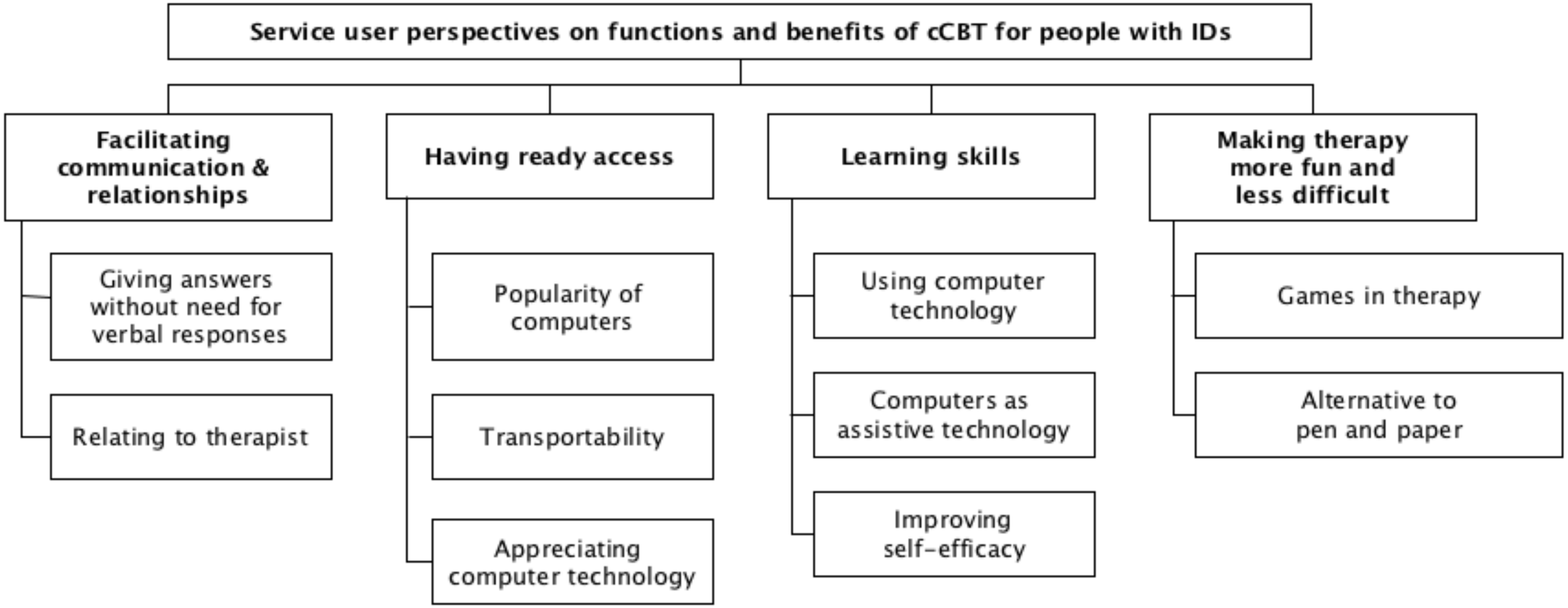
"You can communicate with computer. Like if you write things down on the computer maybe psychologist write it down on computer what you said, then the computer might understand a bit what you were saying." (U1)

"I'd draw a circle and what colour I want. It's like dark colour, me, I feel sad. Light colour, I feel happy." (U2)

They also recognised the potential of computers to help them relate to the therapist.

"Because the therapist can help me like spelling words on a computer I can't spell and sometimes I worry too much about the wrong words and the therapist can help me get the words on it." (U1)

Figure 7.2. Service user perspectives on functions and benefits of cCBT for people with IDs.



Having ready access

People with IDs were confident that computer programmes could be useful in therapy because many already use computers in everyday life: *"Many people can do [use computers]." (U1),* or at least learned how to work with them in college or at a day service organisation: *"I learned IT at (service organisation)" (U2).*

Despite the ready access to these technologies, *"I take my tablet with me" (U2)*, there was some disagreement whether all people with IDs would enjoy working with them:

"What, some people do, some people don't." (U2)
"Yes, they all do." (U3)

Learning skills

One of the potential benefits of using computers in therapy, according to people with IDs, lies in the opportunity for people to develop and practice certain skills through positive experiences and which could improve self-efficacy.

"(computer) Let's them use skills. [...] Computer can help them a bit." (U1)
"Learn how to do it (use computers)." (U3)
"It's (using computers) very interesting, and lots of skills." (U1)
"Like maybe some questionnaires." (U1)
"Pictures for learning how to send email." (U2)

Making therapy more fun and less difficult

Participants thought that therapists could use the computer to suggest playing games to make therapy more fun and less difficult: *"Maybe a few games [...] Any game." (U3)*. Preference was given to completing therapeutic tasks on a tablet or computer rather than using pen and paper: *"With tablet. [...] Play games. With the therapist." (U3)*.

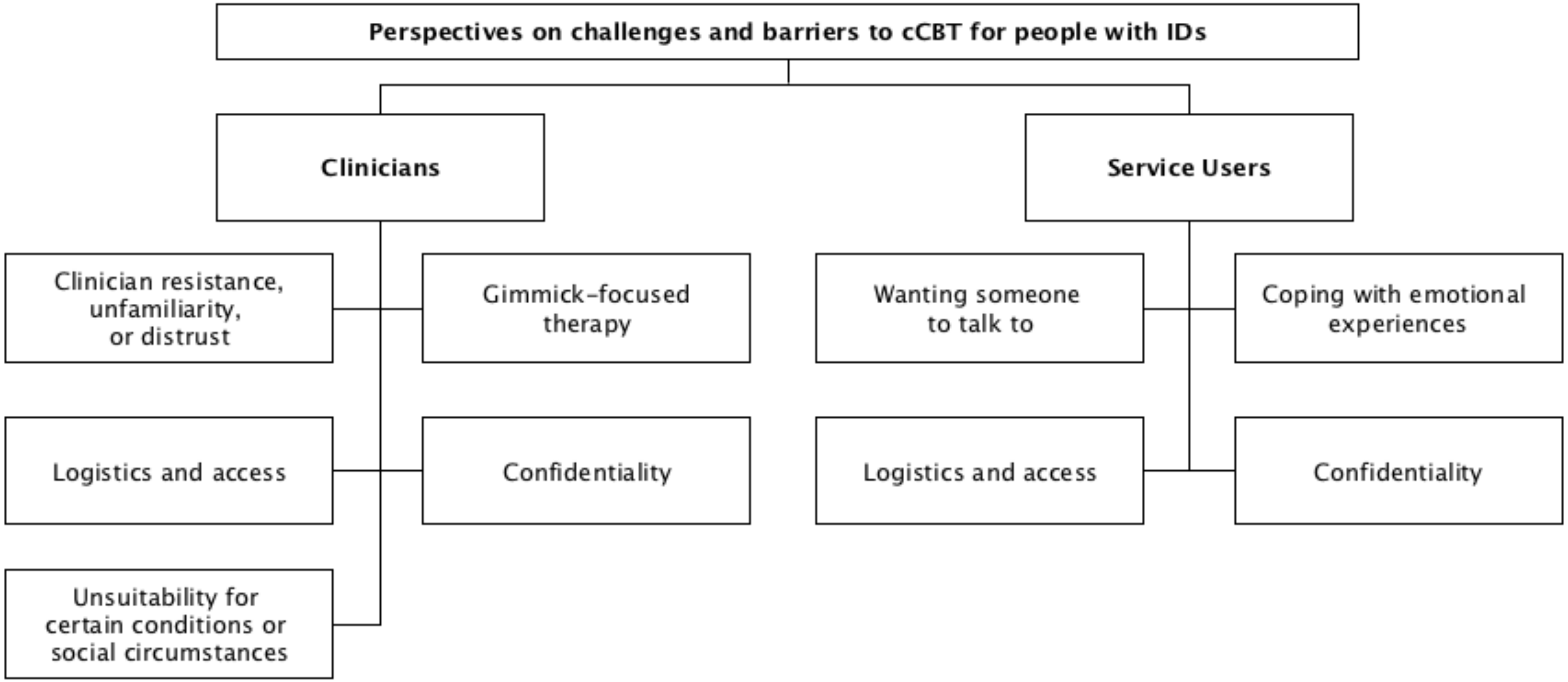
One participant also suggested using computers to help keep a diary to talk about what happened with the therapist.

"If some people like have fun, they like go out with your friends and things, some people just write them down, and things like that, what have you done today, what are you doing today, what are you up to. Just write down in the diary." (U2)

7.3.3 Potential challenges and barriers to using computers in therapy for people with IDs

We identified respectively five and four themes relating to the concerns of clinicians and service users associated with the potential challenges and barriers of using computers in therapy, as illustrated in Figure 7.3. There were some shared concerns regarding confidentiality of information collected or shared using computers and regarding the importance of having someone to talk to (service users' theme) or ensuring sufficient attention is given to the therapeutic relationship (clinicians' theme).

Figure 7.3. Clinician and service user perspectives on the potential challenges and barriers to cCBT for people with IDs.



7.3.3.1 Clinician perspectives

Clinician resistance, unfamiliarity or distrust

Clinicians appeared wary as to whether other clinicians would equally welcome these new developments or if they would render the therapist redundant.

"If we carry on like that, then there's no need for us anymore. They can use it and fix it by the computer or therapy." (C3)

In addition, one of the clinical psychologists raised awareness about the technical competencies of staff who may require training and whose potential scepticism should be acknowledged and addressed.

"I think there'll be some resistance from people wondering if this was a shift away from individual delivering therapy and a shift toward delivering manualised therapy via a computer. [...] I think in the current climate in the NHS people are worried about those sorts of things, worried that it might be a cost cutting exercise." (C2)

"I think staff can feel a bit overwhelmed and feel that it's a bit too technical and therefore not ever quite get to using it, whereas I imagine that with most things it's something that you need to try a few times before it was really familiar. So I think that would be a challenge." (C2)

Gimmick-focused therapy

Clinicians raised the issue that therapy should not be primarily focused on a computer or on training people in specific skills, but also on validating patients' experiences and building a therapeutic alliance.

"The empathic side and the listening side and the making sense of stuff side. If there's too much of a focus on you know the more change-based strategies without paying too much attention to [...] the therapeutic relationship." (C1)

"It's also about validating how someone's, you know, their experience and paying attention to those. And I suppose that that might be a slight drawback." (C1)

"Is the client going to build rapport with that laptop or with you?" (C3)

"I guess all the non-task based stuff of therapy like the attunement and the engagement and the containment we would be concerned about whether that is or isn't present." (C2)

Logistics and access

The majority of clinicians' concerns were associated with the practical and financial challenges posed by computer programmes, such as the provision of and responsibility for the necessary hardware and software.

"With an ipad, a laptop perhaps, taking that around everywhere, starting it up, you know, five minutes for it to load up and everything. And software, you know, are they compatible [...] I think there are some sort of financial difficulties with that, yes." (C1)

"The actual computer and the actual technology and how we would do that. [...] I guess the reason that that strikes me first is because we are a service that works on electronic health records so we've had lots of difficulties with accessing them from other places and being out in the community and needing computers but not getting access." (C2)

"For clients to have access to things if we are using it as part of as part of homework." (C3)

Confidentiality

Clinicians highlighted potential confidentiality issues when people would require support to complete computerised homework tasks. Also, they expressed the opinion that people with IDs would be more vulnerable to breaches of confidentiality by technology.

"So obviously issues around consent would be important. So it's really important that the person doing the computerised stuff knows that the content is about thoughts and feelings and that might then be shared if they were to involve somebody else in that process." (C2)

"I suppose as people do therapy using computers and they would be filling in just mood diaries or doing a test online and sharing that with you, where is everything saved? I think that would be my concern. People with learning disabilities wouldn't worry too much about, I think they might not have the awareness." (C3)

Unsuitability for certain conditions or social circumstances

Ambivalence was expressed regarding the use of computers in therapy with people who experienced complex trauma and bereavement, whereas the use of computer programmes was considered inappropriate for patients living in aversive environments.

"I think, possibly, I don't know about trauma, actually, as it depends how complex the trauma is. If the trauma is so … is so bad that they can't even think about it, then that obviously that needs to be handled a bit more sensitively. Or although it may be that actually having a computer package might be a bit less, you know, it might take the focus away from talking, you know, it actually might help and think about it in a way that is perhaps a little less intense." (C1)

"People in very aversive environment or circumstances […] That's where we can usually put in our social care colleagues and you can pull that person out, you know, it's very aversive circumstances and put them in a better environment, you know, that they can really thrive. I think it could be a bit invalidating if someone's in quite not a nice place to be get your computer out and you know doing all these tasks with them." (C1)

7.3.3.2 Service user perspectives

Coping with emotional experiences

People with IDs described various coping mechanisms in response to previous experiences of upset, including withdrawing from the situation, talking to someone to help resolve the situation, diverting their attention to a more happy activity or even self-harming. When asked whether people could learn to be happier, participants responded positive but could not identify specific strategies.

"Maybe just stop for few seconds. Just have a walk around and then maybe ten minutes walk and sit down and have fun and then still and go back again and see how you feel. If you don't feel it, do it, then maybe wait until next day then you feel much better." (U1)

"Do something happy." (U3)

Wanting someone to talk to

Participants indicated that, when faced with mental health problems, support from talking face-to-face to a therapist would be preferred over seeking help online or from a computer. As one service user said: *"Computers is OK, but therapy; you* *have to talk to people face to face when problems you've got." (U2)*. They also emphasised the importance of being listened to:

"Listen. Listen to my problems, how I felt, how I feel, why I feel like that, why I feel scared. Mixed up emotions, you just want to talk to someone and I need someone to talk to sometimes." (U2)

Logistics and access

Although participants previously indicated that they enjoyed working with a computer, they were aware of potential restrictions associated with certain features that could be required for using computers for therapy purposes: ranging from internet access to how the computer is operated.

"I haven't used it yet cause I need to get a broadband on it" (U1)

"Sometime people like to use the keyboard or somebody that use the mouse if somebody can't use sometime their hand is a problem and that someone you can help with the mouse to move things around and they can feel as well." (U1)

Confidentiality

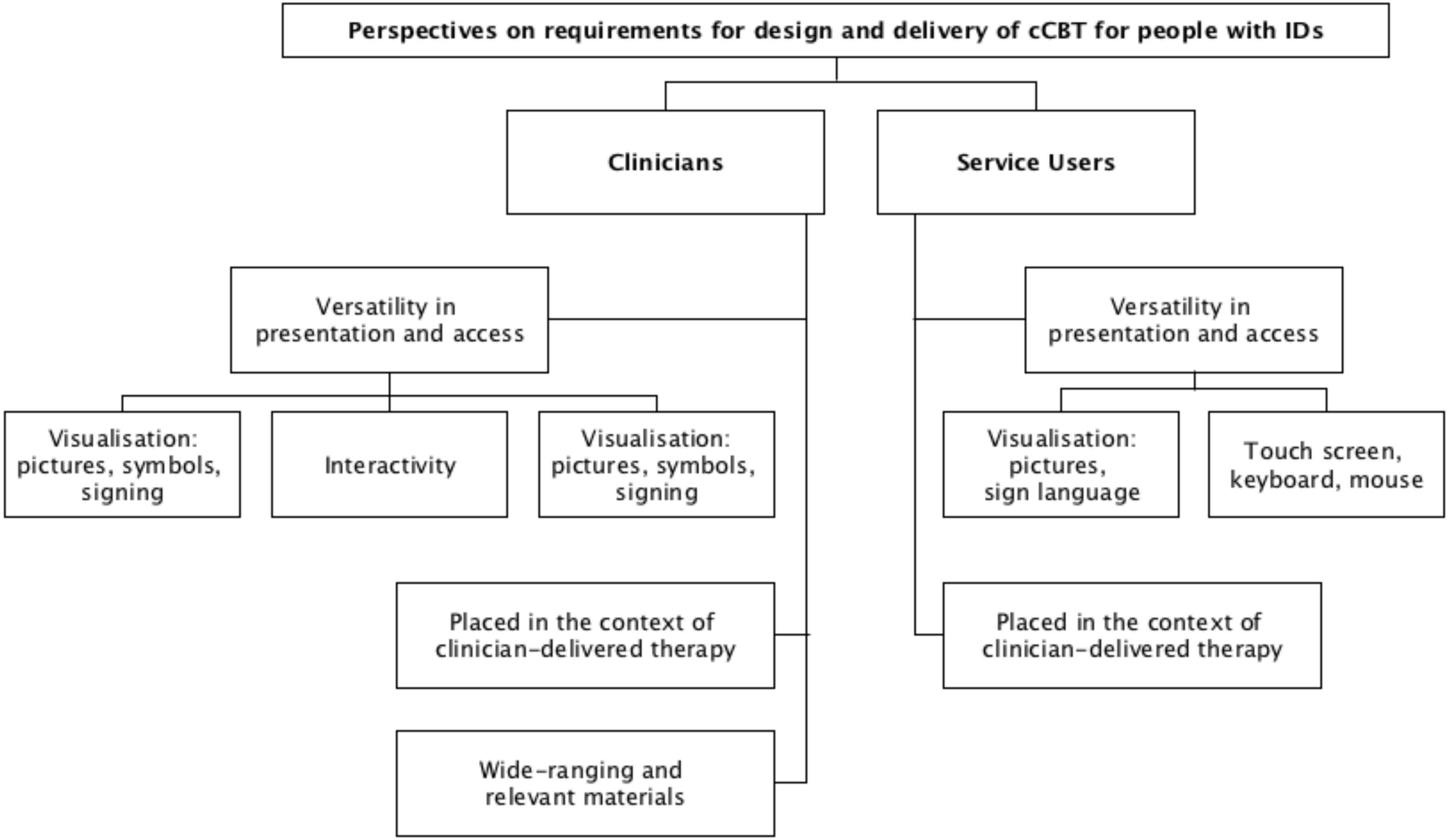
Service users were generally aware of the dangers of sharing personal information online: *"Have to be careful on Facebook." (U2)* One participant also expressed that they needed assurance that private information will not be exposed.

"Someone might be thinking what they say. That is why I say something really private, I don't want that on a computer 'cause it might send it out to people to see it [...] Would be alright if computer can keep it secret."(U1)

7.3.4 Usability and design

Both the clinicians and the service users have identified versatility in the presentation and access of materials as an important feature of computer programmes for people with IDs, see Figure 7.4. They have also highlighted the importance of placing such programmes in the context of clinician-delivered therapy as opposed to delivering it as a standalone intervention. Clinicians also mentioned the need for therapeutic computer programmes' materials to be diverse enough so that they are relevant to different service users.

Figure 7.4. Clinician and service user perspectives on important features for design and delivery of cCBT for people with IDs.



7.3.4.1 Clinician perspectives

Versatility in presentation and access

Clinicians mentioned various requirements for both the presentation of computerised materials and the means by which users can access them. First, they had consensus regarding the need for stimuli to be visually appealing: "*Obviously as many pictures as* possible." (C1); "*Using symbols and signing*" *(C2).* Second, they stated that "*Touch screens would really* work." (C3). Third, they mentioned that computer tasks would have to be interactive and dynamic to facilitate user engagement.

"Where the current packages are limited, as far as these things go at the moment, it's on paper or you've got worksheets. [...] On a CD-ROM, in a way, you've got sort of an electronic version of the paper stuff, but that's all very static. I think that is where the computerised programmes can come in because these things have moving images." (C3)

Placed in the context of clinician-delivered therapy

Clinicians saw themselves as facilitators and motivators for using computers in therapy so that these therapeutic computer programmes would become a tool for clinician-delivered interventions and not self-help.

"I'd hope to use it in a way that wasn't necessarily as an instructor. [...] I suppose it would be perhaps as a facilitator." (C1)

Clinical expertise was seen as essential in determining whether a patient might benefit from a therapeutic computer programme, and in subsequently selecting the appropriate programmes and monitoring the patient's progress.

"I think we, and I don't think any psychologist would do it differently, we wouldn't be in a position where we have a referral for a young person who has some difficulties and is very distressed at the moment therefore we deliver a computerised programme. That's not what psychologists do and that's not formulation." (C2)

Furthermore, clinicians spoke of the balance between skills-based computer programmes and maintaining an effective therapeutic relationship. The concern about patients building rapport with the computer was raised again under this themes and clinicians concluded that a collaborative approach should be taken to ascertain that patients would not disregard the therapists.

"When you're really using it in therapy, I think you still need skilful therapists to deal and to deal with anything that comes up and address that with the client. It's not a mechanical process, it can't be. [...] I'm just wondering how descriptive things will be when it's like that. Now, where as a clinician you make those decisions along the way and when you've got steps in a digital programme, how things would be predictive: if that, do that, if that, do that. [...] Now I'm starting to think about rapport: Is the client going to build rapport with you or with the laptop? I'd like to think that especially for therapy, you would still need skilful experienced clinicians." (C3)

Wide-ranging and relevant materials

Clinicians suggested a large database of pictures, videos and exercises which are realistic, relevant, and appropriate for the individual patients' level of understanding so that they can be used by people with varying degrees of intellectual functioning. In addition, all clinicians agreed that personal relevance of task materials is essential when using computers to teach skills generalisable outside therapy.

"If it is around the cognitive mediation sort [...] absolutely it would need to be situations that were relevant to that person, that they could make sense of." (C2)

"Language that is presented in a way that makes sense to that individual [...] whether that's a computerised voice or a recording of their own voice or a parent's voice or somebody's voice that they understand and that they know well." (C2)

"You have to be able to customise it. [...] When you start using it in a therapeutic way, there needs to be quite a lot of flexibility." (C3)

One clinician noted that combining photographic and computer technologies could prove more time-efficient:

"Photoshop, it's that sort of thing. Like you're standing at the bus stop, you know, you're painting that, you're creating that scenario 'You're standing at the bus stop', so you've got that bus stop image. Are you able to photoshop, you know, in a way the person into it because then they're standing at the bus stop. [...] Things like that will be helpful instead of going out and taking photos of all these places that you need with the client actually in them, which we sometimes ask people to do." (C3)

7.3.4.2 Service user perspectives

Versatility in presentation and access

First, service users suggested that information is presented in a range of formats, such as *"pictures for learning." (U1)* and sign language *"If someone is deaf like my friend and hard understand people, if can't read lips use sign language."(U2).*

Second, service users recognised the varying needs and preferences of people with IDs in accessing information: One of the interviewees said: *"Now I prefer the touch screen." (U2),* whereas another highlighted the value of using a keyboard and mouse.

"Sometime people like to use the keyboard or somebody that use the mouse. If somebody can't use, sometime their hand is a problem, and that someone you can help with the mouse to move things around and they can feel, as well."(U1)

Placed in the context of clinician-delivered therapy

Two participants (U1, U2) had previous experiences with psychologists, whereas one person (U3) required clarification regarding the role of a psychologist and the purpose and procedures of psychological therapy. Turning to their expectations and preferences regarding psychological therapy, gender of the therapist appeared an important concern with participants, who had experienced therapy before, favouring a female therapist to talk to.

"I think female more understand what I'm saying." (U1)

"Some people, when I talk to you, I like to talk to lady, like you, you're not men. If I talk to men, I find that really difficult if I talk to men and doctors men." (U2)

Overcoming initial discomfort in talking to a relative stranger was an additional requirement for engaging with computers in therapy.

"It's sometimes very difficult to talk to somebody because you never met them before and because they're not everyone's thing." (U1)

7.4 Summary of Findings

The thematic analysis of the semi-structured interviews identified numerous themes regarding the potential functions and benefits of computer programmes in therapy for people with IDs. Common themes amongst clinicians and service users were associated with the use of computers in developing skills and their potential to increase interest in and appeal of therapy. When considering the challenges and barriers to using therapeutic computer programmes, there was a shared concern between clinicians and service users regarding the confidentiality of data and the requirement for a therapeutic relationship that extends the monitoring of computer-based activities. Furthermore, the thematic analysis highlighted the need for visualisation and interactivity in the design and delivery of computer programmes for use in therapy with people with IDs. Therapeutic materials in the context of a computerised approach should be relevant to the individual and presented in a way that is easy for that person to understand and interact with. Again, the delivery of computerised therapy tasks was considered in the context of clinician-delivered therapy rather than as a standalone activity. Taken together, the findings of this thematic analysis indicate that the clinicians and service users have similar perspectives regarding the potential benefits of and barriers to using computers in therapy for people with IDs, with an overall positive reception of these new technologies.

Chapter 8

Discussion

"Now is no time to think of what you do not have.
Think of what you can do with what there is."
- Ernest Hemingway

8.1 Summary of Findings

The objectives of the research described in this thesis were threefold: to evaluate the efficacy of psychological therapies for mental health problems in people with IDs, to improve the suitability of people with IDs for CBT, and to explore the acceptability of computer programmes as a means to make psychological therapies more accessible to people with IDs.

8.1.1 The efficacy of psychological therapies for people with IDs

The systematic review presented in Chapter 4 aimed to identify evidence-based treatments, as well as interventions in need of more empirical research. The findings of the meta-analyses indicated that psychological therapy has a moderate effect in treating symptoms of mental health problems amongst people with IDs. This effect was biased by studies where allocation was not randomised. The results further suggested CBT to be at least moderately effective in the treatment of anger and depression. Individual therapy may be more effective than group psychotherapy, but this conclusion must remain tentative until further research is completed. Furthermore, it is clear that further robust and well-designed clinical trials are needed which involve a range of mental health problems, involving not only adults with IDs, but also children and adolescents with IDs, and involving other psychotherapeutic approaches such as psychodynamic therapy.

8.1.2 The suitability of people with IDs for CBT

Next, the two intervention studies of Chapters 5 and 6 aimed to train CBT skills in people with IDs by using a computer-based paradigm. The first of these studies used a training programme in linking situations to feelings to improve participants' ability to link situations, thoughts and feelings as part of two cognitive mediation tasks. The findings of this study confirmed the first two hypotheses that training, when compared to an attention-control condition, improves the ability of people with mild to moderate IDs to link feelings to situations and thoughts (hypothesis 1a), and that the impact of training is greater for congruent than for incongruent items (hypothesis 1b). The hypothesis (2a) that training, when compared to an attention-control group, would improve participants' ability to link thoughts to situations and feelings was rejected, despite a significant pre-post difference reported for the training group only. Likewise, the lack of a differential impact of training on congruent or incongruent items of the 'AC, choose B' task signalled that the final hypothesis (2b) had to be rejected, as well.

In the second intervention study, computerised training in discriminating thoughts, feelings and behaviours as part of a story was used to try to improve overall ability to differentiate between thoughts, feelings and behaviours, and the ability to link situations, thoughts and feelings. Again, the results suggested that computerised training can improve certain CBT skills in people with IDs and we accepted the hypothesis (1d) that the use of stories to train people in differentiating between thoughts, feelings and behaviours improves overall ability to discriminate between these components when pooled together. However, the training intervention did not improve the ability to discriminate between behaviours, thoughts, and feelings when examining these components separately and we therefore rejected hypotheses 1a, 1b and 1c, respectively. Closer inspection of the outcome data further showed improved performance following training on identifying feelings and behaviours, although no significant difference with the attention-control group was found. The findings also suggest that discrimination training does not affect cognitive mediation skills, as no between-group difference were found at pre- and post-test on participants' ability to link feelings to situations and thoughts or their ability to link thoughts to situations and feelings. The hypotheses that training improves cognitive mediation skills when assessed by the 'AB, choose C' task (hypothesis 2a) and the 'AC, choose B' task (hypothesis 2b) were thus rejected.

8.1.3 The acceptability of computerised reasonable adjustments to therapies

Finally, in a qualitative study using semi-structured interviews and thematic analysis, the perspectives of previous participants, as well as of clinicians who work therapeutically with people with IDs, about using computers in therapy, for example, for training therapy skills, supporting homework assignments, and psycho-education were examined. People with IDs saw the potential of integrating computers into therapy as a means to facilitate communication and to make therapy more fun and less difficult, while also considering their potential in terms of learning skills. Clinicians shared the idea that computers can be used for developing and practising skills and facilitating the therapy process in terms of alliance building, but saw further potential in using them to assess readiness for therapy and to improve general knowledge and understanding of therapy. Service user and clinician perspectives on the challenges and barriers to using computer programmes in therapy focused on concerns regarding confidentiality, logistics and access, and the need for a personal approach involving face-to-face contact. Turning to usability and design, all participants indicated that programmes should be visually appealing, with clinicians further highlighting the necessity of wide-ranging and relevant materials that can be adapted, both in content and presentation form, to the individual service user.

8.2 Theoretical Interpretation and Clinical Implications

8.2.1 Findings from the systematic review and meta-analyses

There are some similarities and differences between the present study and some of the previous systematic reviews that have also attempted to synthesise the evidence for the efficacy of psychological therapies for people with IDs. First, non-traditional psychotherapeutic interventions, such as relaxation or social skills training, were excluded in the current study, but were included in the analysis by Prout and Nowak-Drabik (2003). By contrast, staff-delivered treatments, excluded in that review, were included in the current analysis when staff had received training to act as lay therapists. Furthermore, all but one study in the present meta-analysis had been published in the last decade, whereas the previous meta-analysis conducted by Prout and Nowak-Drabik (2003) mainly comprised research published in the 1980s.

Second, the subgroup meta-analysis for anger problems is comparable to the anger-specific reviews of Hamelin et al. (2013), Nicoll et al. (2013) and Hassiotis and Hall (2008). The estimated treatment effect of $g = 0.827$ was slightly lower than the estimated 0.88 reported by Nicoll et al. (2013), and the un-weighted estimate of 0.89 presented by Hamelin et al. (2013), while Hassiotis and Hall (2004) did not perform such an analysis. However, there were some differences in how the effect size was calculated across these different studies; Hamelin et al. (2013) calculated standardised mean differences of pre-post changes in each arm to estimate the treatment effect, while Nicoll et al. (2013) relied on a fixed-effects analysis of uncontrolled mean differences calculated within the intervention arm. Nevertheless, the findings of these two reviews and the current study are remarkably comparable, despite the different inclusion criteria and methodology.

It is also worth noting that the methodological quality of psychological therapy research for children and adolescents with IDs is much lower than that involving adults, as no independent groups designs or RCTs were identified, bearing in mind that there are some RCTs involving children with autistic spectrum disorders (Sofronoff, Attwood, & Hinton, 2005; Wood et al., 2009), which have been reviewed elsewhere (Sukhodolsky, Bloch, Panza, & Reichow, 2013). Ethical concerns in the recruitment of young people with IDs for intervention studies may partially explain the current lack of research, but should not be seen as justification for the lack of controlled outcome studies. It is unclear whether evidence from psychotherapy research with adults with IDs, or young people without IDs, can be adequately generalised to this young population. Related to this, the search results indicated the proportion of single case studies involving adults has steadily increased over time and provide evidence for the trend towards more controlled psychotherapy research for adults with IDs.

There were no studies of psychodynamic therapy identified that fulfilled the eligibility criteria for inclusion within the current study. Expanding the inclusion criteria to single-armed pre–post studies revealed few psychodynamic intervention studies. Their analysis falls outside the scope of this review, but the apparent lack of well-conducted primary research in this area does not seem to support psychodynamic therapy as an empirically supported treatment for people with IDs. Following the guidelines for empirically validated treatments, at least two well-conducted group design studies, conducted by different research groups, should be identified (Chambless et al., 1998). Although the search results did not yield two studies with a sufficiently large sample size, which also reported both detailed participant characteristics, as well as information regarding the treatment protocol, the criteria for probably efficacious treatments appear to be met for cognitive-behavioural interventions for both anger and depression. As a consequence, both individual and group psychotherapy are likely to be efficacious treatments for mental health problems in adults with IDs, but further studies are still needed.

8.2.2 Computerised training in CBT skills in research and practice

The findings of the first intervention study are consistent with Dagnan et al. (2000) and confirm the association between verbal ability and task performance for both the cognitive mediation assessments and the adapted Reed and Clements (1989) task (Dagnan et al., 2000; Joyce et al., 2006; Oathamshaw & Haddock, 2006). However, with at least 50 per cent of participants passing the two cognitive mediation assessments at baseline in both intervention studies, participants' performance on these adapted computerised versions far exceeded previously reported pass-rates of 10 and 25 per cent (Dagnan et al., 2000), 12 and 13 per cent (Joyce et al., 2006) and 12 and 10 per cent (Oathamshaw & Haddock, 2006) for the 'AB, choose C' and 'AC, choose B' tasks respectively. It is unlikely that the higher pass-rates in our studies were a result of sampling, because no cut-off scores for verbal comprehension skills were applied to exclude participants, as has been used in some previous studies (Joyce et al., 2006; Oathamshaw & Haddock, 2006).

For the BTFQ, by contrast, pass rates in this study were remarkably lower than those reported by Oathamshaw and Haddock (2006). It should be noted that some participants who did not pass the post-test assessment did show considerable improvements following training, but remained under the cut-off score for a pass grade, whereas some participants in the attention-control condition may have shown non-significant improvements that pushed them above the cut-off score for a "pass". The lower pass rates in our study may be due to how the task was presented to participants. While it was anticipated that the visual aspect of this task and the introduction of behaviours, thoughts and feelings in pictures at the beginning of the task would facilitate participants' understanding of the task, it may actually have increased the difficulty of this task. Indeed, Sams et al. (2006) found that participants were not better at identifying behaviours, thoughts and feelings when presented with a cue picture for each component than when no visual cue was presented. It could be the presentation of visual cues led participants to match the visual aspects of the target item to those of the cues, rather than considering what each picture represents. Hence, it is important for future studies to consider not only the benefits of visual cues, but also their potential limitations.

A possible explanation for the higher pass-rates found for the adapted computerised cognitive mediation tasks is the use of inferential rather than evaluative beliefs in the cognitive mediation tasks. Indeed, Dagnan and Chadwick (1997) found that people with IDs are more likely to respond with inferential beliefs when asked what they could be thinking in a given situation-feeling pair, and later reported that inferential beliefs are expected to have more clinical utility than evaluative beliefs (Dagnan et al., 2009). Alternatively, the use of pictures accompanied by audio presented to participants using a computer is likely to have facilitated understanding. Observations and feedback from participants suggested that they experienced the study as engaging and fun, which may have increased their motivation, and thus resulted in better attendance and performance.Participants' engagement with the computerised tasks may reflect an increase in accessibility. The accessibility of the task was demonstrated by relatively good performance of participants at baseline, considering that the sample included had an average full-scale IQ that fell towards the bottom of the "mild" range of IDs. In addition, all participants successfully passed the control questions prior to the baseline tasks, and very few (4%) could not complete the tasks independently. Furthermore, across all participants and task items of the first intervention study, only four missing data points, due to responding out of time, were identified. Three of these occurred during the

‘AC, choose B’ task. However, a potential drawback of computerised training is the use of automated feedback that lacks individualisation. Further research is needed to explore the role of therapist feedback alongside computerised assessment and training programmes in therapy.

Turning to the training of CBT skills, both Bruce et al.’s (2010) and the present findings indicated that some CBT skills can be trained and further diversification and development of training interventions is desirable. Our findings also suggested that gains from training in a specific skill do not generalise to other, related CBT skills, as evidenced by the lack of a training effect on cognitive mediation skills following training in discriminating between behaviours, thoughts and feelings. Further research should clarify whether component skills should be trained separately, or whether people would benefit more if multiple CBT skills were integrated in a single training intervention.

In the current studies participants completed the study in one day rather than over 2 weeks as in Bruce et al. (2010). This quick succession of tasks, and familiarisation with the computer, may explain the improved performance noted within the attention-control groups on the cognitive mediation assessments.

Other factors may have contributed to the observed improvements in the attention-control groups. Unlike the relaxation control group in the Bruce et al. (2010) study, the present control groups offered an experience similar to the training group through the use of the same task items. For the first study, the opportunity to attend to these stories without additional task demands may have freed more cognitive resources for participants to implicitly reflect on the CBT tasks, thereby improving their post-test performance. Furthermore, the absence of specific questions in the control task used in the first intervention study may have indirectly impacted on participants' attention and motivation throughout the rest of the study. However, we did not examine if any gains were maintained over time or if generalisation of learning occurred.

From a theoretical perspective, suitability for CBT would require the ability to both link and discriminate between the components of the A-B-C model. Hence, it would be expected that the ability to link situations and feelings, would be associated with the ability to link mediating thoughts to feelings (AB-C link), as well as with the ability to discriminate between thoughts and feelings (B >< C). This would lead to the contrasting hypotheses that either (a), training in one particular skill would also affect associated skills, or (b) that to improve a particular skill a more holistic approach incorporating all or some of the associated skills may be required. The findings of Bruce et al.’s (2010) and our computerised studies do not support the first hypothesis, whereas more research is needed to test the second hypothesis.

While there seems to be agreement on which CBT skills are essential in CBT, it is less clear how these skills should be assessed, and in particular cognitive mediation skills. The assessment format based on a forced-choice between two given beliefs or emotions has advantages in terms of scoring and standardisation between studies, including experimenter control. However, from a clinical perspective it could be argued that participants would perform better on meaningful tasks with items relating to their lived experiences. In two studies using open-ended questions prompting participants to formulate thoughts, people with IDs were able to provide appropriate mediating thoughts for approximately half of the scenarios of the 'AC, choose B' type (Dagnan & Chadwick, 1997; Dagnan et al., 2009). Although participants' performance in these studies was better than for the paper-based forced-choice assessments of cognitive mediation skills (Dagnan et al., 2000), it is still lower than performance on our computer-based forced-choice assessments. Nevertheless, when focusing on the personal relevance of such assessments, it was found that people with IDs find it easier to identify thoughts for situations they have experienced and are recalling as part of a cognitive-emotive interview rather than when asked to identify appropriate mediating beliefs for situations that are proposed by a researcher (Hebblethwaite et al., 2011). Furthermore, the choice of stimuli may also have affected task performance. While the emotions presented in the cognitive mediation tasks were accompanied by contextual information provided by the antecedent pictures, there was no contextual information for the feelings pictured in the BTFQ, which may have affected emotion identification skills in this task (see also McKenzie et al., 2001). It is possible that richer imagery may have led to improved outcomes.

8.2.3 Beyond the interviews: Wider perspectives on using computers in therapy

Both the interviewed clinicians and service users in the qualitative exploratory study offered a remarkably astute and positive account of the potential functions and benefits of using computers in therapy for people with IDs. In sum, they suggested that computer programmes can potentially be used to assess readiness for therapy, improve knowledge and understanding, help skills development and practice, and facilitate many aspects of the therapeutic process, especially engagement, motivation, communication and relationships.

This is important given the suspected association between motivation, therapy adherence and outcomes with people with IDs (Willner, 2006).

Clinicians in this study underestimated how accessible computers are for people with IDs, whereas the service users indicated that they, and most of their friends, had access to and enjoyed working with computers. This is consistent with previous research demonstrating that people with IDs are able to use and enjoy computer technologies for a wide range of purposes (Carey, Friedman, & Bryen, 2005). In the context of Improving Access to Psychological Therapies (IAPT) and the Positive Practice Guide for people with IDs (Department of Health, 2009a), our studies on using computers in therapy were a step in the right direction, as they included people with IDs in the development and evaluation of a relatively new intervention.

The interviewed clinicians made an important distinction between using computers in therapy for people with IDs as a tool for clinician-delivered therapy and the conventional use of cCBT as a "self-help" intervention. This is a noteworthy distinction in light of the small effects of media-delivered CBT as a self-help intervention for the general population (Mayo-Wilson & Montgomery, 2013), especially when offered without therapist support (Cuijpers et al., 2011). Service users spoke about the use of computers in therapy with reference to a "therapist", thereby implicitly placing cCBT and the use of computers in therapy in the context of clinician-delivered therapy. In that respect, the perceived requirements for the delivery of computer programmes in therapy for people with IDs were no different to those of conventional therapy: service users with IDs need to have an understanding of CBT and be comfortable with the clinician who delivers it.

It was neither expected nor desired by both the clinicians and the service users that computer programmes would replace the therapeutic encounter. Clinicians warned against a 'gimmick-focused therapy" in which the computer, and not the therapeutic relationship, takes centre-stage. Service users highlighted their need to talk to someone and be listened to in order to cope with emotional experiences. Both clinicians and service users suggested that computerised programmes could support the development of therapeutic relationships between people with IDs and clinicians or other third-parties, such as carers.

The interviewed participants demonstrated a surprising insight into how the standardisation of computerised programmes could be used in favour of individualised therapy by offering a comprehensive menu of materials, scenarios and audio-visual aids to meet the different clinical presentations, intellectual abilities and preferences of their service users. This comment is important because it pre-empts a limitation of using computers in therapy as identified by service users without IDs in previous studies about conventional cCBT programmes being too generic or irrelevant (Gega, Smith, & Reynolds, 2013).

People with IDs were mindful of the potential danger in disclosing personal information via a computer, but, interestingly, clinicians in this study thought that the risk of using computers in therapy for people with IDs was that service users would not be able to recognise and be aware of data protection issues while using digital media. We need to pre-empt these concerns by clarifying at the onset of therapy that computerised programmes used for therapeutic skills practice is different to social networking, and that personal information is not shared with anyone apart from the clinician who delivers therapy.

Comparing the perspectives of clinicians and service users with IDs on using computers in therapy, as reported in our study, to those of patients without IDs and their clinicians who are experienced with cCBT yields similar findings. People without IDs indicated that cCBT programmes improved their knowledge and understanding of CBT, therapy skills and techniques, as well as increased insight in their mental health problems (Bendelin et al., 2011; Gega et al., 2013). Users also reported feeling empowered when using cCBT by having the flexibility and privacy to reflect upon their problems (Knowles, Toms, Sanders, & et al., 2014). However, people without IDs did not appreciate standardised content that was not applicable to their own experiences and the lack of personal warmth that can be found in a strong therapeutic alliance with a clinician (Gega et al., 2013; Hind et al., 2010). Clinicians working in the mainstream mental health services were generally more neutral or slightly positive about e-therapies, with only 2.4 per cent of UK therapists using cCBT but more considering using computer-assisted therapies in addition to face-to-face therapy (Stallard, Richardson, & Velleman, 2010; Wangberg, Gammon, & Spitznogle, 2007; Whitfield & Williams, 2004). These perspectives offered by clinicians and patients without IDs are remarkably similar to those reported in our study, suggesting that the development of therapeutic computer programmes can draw on the research findings and clinical experiences of those without IDs.

8.3 Strengths and Weaknesses

8.3.1 Systematic review methods

The main strength of the presented systematic review, in comparison to previous reviews, was its scope in terms of psychological therapies under review and the absence of restrictions regarding patient characteristics such as presenting mental health problems and age.

However, there was variability in the methodological quality of the studies included within this review. For example, the inclusion of participants with varying levels of intellectual functioning, ranging from borderline to severe, and the absence of reported measures of general intellectual functioning made it difficult to compare study samples and led to an increase in heterogeneity. General intellectual functioning varied widely between studies, but more than half of the studies reported including samples with a mean IQ above 65, indicating that people with ‘‘borderline’’ IDs were frequently included. Varying levels of intellectual functioning may affect the outcomes from cognitive therapy, at least theoretically, but the existing literature did not provide sufficient data to include general intellectual functioning as a covariate in the analysis.

Similarly, therapy setting and treatment intensity were important factors that were not controlled in this review or any previous reviews. When providing psychological therapy to people with IDs, many may attempt to make changes to the intervention in an attempt to improve efficacy, and it remains unclear whether or not these changes are genuinely associated with improvements in treatment outcome. As a consequence, the results presented within this study do not account for differences in assessment or treatment, but rather yielded a general indication of psychological therapy efficacy including both its common and specific factors (Kazdin, 1985).

The inclusion of non-randomised studies in a meta-analysis is often contested. In the present study, their inclusion induced a bias in the overall meta-analysis due to the higher effect sizes reported in non-randomised studies. However, this discrepancy between the reported efficacy of intervention in randomised and non-randomised studies may have less to do with randomisation but more with the relative comparability of the different intervention groups. In small and moderate-sized samples, a common characteristic of studies involving people with IDs, simple randomisation techniques may not be sufficient in reducing bias (Saint-Mont, 2015). When comparability of small-sized intervention groups becomes more important, stratified randomisation may be preferred over simple randomisation (Saint-Mont, 2015). The present systematic review, however, did not systematically investigate how randomised allocation was performed. In spite of this, it could be argued that if primary studies did not match their intervention groups on comparability, then the results of the meta-analysis of studies using randomisation would not carry more weight than the analysis of non-randomised studies and all studies could be included a single meta-analysis.

Overall, the variability in methodological quality of the primary studies, and often poor reporting standards, increased the heterogeneity in the different meta-analyses and negatively impacted upon the strength of our conclusions. Concerns were raised where intervention groups were not fully independent, there was a lack of an appropriate control condition, allocation procedures were based on availability of treatment rather than comparability of treatment groups, masked assessment could not be guaranteed or attrition was not appropriately reported. Taken together, these methodological limitations of the primary studies affected the strength of the presented meta-analyses.

8.3.2 Computerised experiments

The experimental design of the computerised intervention studies does not allow us to demonstrate generalisation, which has both clinical and methodological implications. From a clinical perspective, it would be important to assess whether gains made in training are translated into an improved understanding of the cognitive rationale when applied to experiences relevant to the individual. Ideally, people would demonstrate generalisation to relevant experiences discussed in therapy, as well as to situations they encounter outside of therapy (Beck, 1976). From a research perspective, generalisation was facilitated by using different items for the assessment and training tasks, thereby requiring participants to apply the skills learned in training to the items of the cognitive mediation task. However, generalisation to other situations, which can be achieved by adding new items at post-test, was not assessed. Hence, future studies should evaluate whether training gains generalise to new items at post-test, to personal experiences, and to situations experienced outside of therapy (Green & Glasgow, 2006). Linked to this, we also do not know whether training leads to improvements in therapy outcomes for people with IDs.

In addition to generalising training gains to other, more personally relevant, experiences, successful training interventions should consider the duration of its effect. The computerised experiments did not include follow-up assessments, however, making it impossible to determine whether training effects were retained over time. This is important for further research, especially in light of the small gains made from training. While it is encouraging to observe training effects of a brief ten minute intervention, it is not yet clear whether similar gains can be made without a computerised paradigm and which approach leads to better retention. Furthermore, if future research shows that training effects are limited in time and do not generalise to new materials, then the cost-benefit ratio of computerised training programmes should be questioned. The dose-effect relation therefore requires further investigation.

A more considerable limitation of the first intervention study was the absence of cognitive components in the training condition, and this may be why the ability to correctly choose mediating beliefs did not improve. Indeed, the use of the Reed and Clements (1989) task taught participants to link situations to feelings, and vice versa, but did not actively target the mediating role of cognitions. While the 'C, choose A' task involved some degree of perspective taking, it is likely that this was insufficient to have led to substantial improvements on the 'AC, choose B' task, and this should be addressed further in a future study.

Moreover, it could be argued that the presented beliefs in the cognitive mediation tasks were not recognised as cognitions, but interpreted as a fact, similar to the antecedent. Further inspection of the data, however, shows that performance is generally lower for tasks that include a belief component (i.e. the baseline cognitive mediation tasks and the BTFQ) than for tasks without a belief component (i.e. the Reed and Clements training tasks). This would suggest that the added belief component increased task demands and was not interpreted by participants as part of the original antecedent.

Taken together, these limitations question the appropriateness of the current tasks for assessing and training cognitive mediation skills. However, the Reed and Clements (1989) task did target a necessary component of this process, namely linking antecedent to consequent. Similarly, the 'AB, choose C' and 'AC, choose B' tasks and the BTFQ assess separate components of the cognitive mediation process, albeit not the entire process. These assessments were chosen for the current studies because they have been used by other studies that have attempted to assess CBT skills in people with IDs. Nevertheless, some further work is needed to develop tasks that assess all domains of cognitive mediation, bearing in mind that Dagnan et al. (2009) evaluated whether beliefs offered by people with IDs to link a situation and emotion were actual mediating beliefs or were responses to the activating event, restatements of the event or emotion, or other non-mediating beliefs.

A further limitation of the intervention studies lies in their respective sample sizes. Although sample sizes were sufficient for detecting large training effects, participant attrition after randomisation reduced the sample size, which would have reduced power. Some participants were excluded from the analysis because they were unable to perform the tasks independently or dropped out without giving post-test data. A possible explanation for this attrition is the inclusion of people with moderate level of IDs in our study as opposed to previous studies that mainly included mild IDs. This might have also lowered the observed strength of training effect; the negative impact of lower intellectual functioning on performance has been previously reported by Oathamshaw & Haddock (2006) and was supported by the strong correlation we found between IQ and performance on all assessment tasks.

The key strengths of the presented intervention studies lie in their experimental design, including concealed allocation and masked assessment, allowing for an examination of causation. The participants were representative of the IDs population and the stratification ensured that they were well matched in terms of IQ.

The novel computerised assessment and training tasks are an additional strength in comparison to previous assessment and training studies. The use of pictures throughout the study, to present task instructions, task items and feedback, may have improved the accessibility of the tasks and their ability to engage participants; which may consequently had a positive impact upon task performance. In addition, a computerised presentation ensured that assessment and training procedures were standardised between participants and meanwhile limited the potential impact of suggestive questions or prompting by researchers in the assessment phase.

Finally, the effects found for a brief training intervention suggest that more substantial training programmes including items relevant to participants' experiences could have stronger effects.

8.3.3 Exploratory semi-structured interviews

While the aim of the final study was to explore the perspectives of clinicians and service users on the use of computers in therapy, the sample was not representative of all service users with IDs or of the wide range of clinicians working with them. Service user participants were selected with respect to their verbal skills to formulate their opinion, whereas the premise of the developed computerised programmes was to ensure accessibility to people with limited verbal skills. Turning to the clinicians, there was variability in their experience in working therapeutically with children or adults with IDs, although no children with IDs were interviewed as service users. However, our study makes a meaningful contribution to the field of psychological therapies for people with IDs, as there are no previous studies on the perspectives of the service users or of the clinicians who routinely work with them, on how we can potentially use technologies to improve the access, outcomes and experiences of therapy with this population. Our emerging themes serve as a starting point for generating hypotheses and building a framework to inform the development and evaluation of computerised interventions for this population.

The study explored the perspectives on the use of computers in therapy, but the interviewed clinicians had limited experiences in using computers for therapeutic purposes or in using cCBT, so their perspectives reflect their expectations rather than their experiences of it. It may have been useful to let the clinicians experience the computerised programmes of our intervention studies afterwards and then interview them again to investigate any differences in their expectations and experiences and to gain more valuable feedback to inform the further development of such programmes.

On the contrary, the interviewed service users had used a computerised CBT skills training programme as part of a previous study, so their perspectives were informed by their experiences. The service users used the computer programme several weeks before the interview, but we might have obtained a more accurate and a richer account of those experiences if the interviews took place immediately after completing the programme.

Finally, the findings of the thematic analysis would gain strength if the interviews were coded and analysed by a second researcher. The lack of a second analysis may induce a researcher bias in the thematic analysis if it were presented as an independent study; however, the main objective of this study was to gather stakeholder views to guide and support the development of research proposals to take the intervention studies further.

8.4 Future Directions

As more controlled psychotherapy research continues with people with IDs, it is expected that sufficient evidence will be available in the future to determine whether various psychological therapies can actually be regarded as empirically validated treatments. Meanwhile, the findings of the systematic review lead to three recommendations that should be considered by researchers undertaking clinical trials of psychological therapies with people who have IDs. First, researchers should measure and report the general level of intellectual functioning of their participants within publications. This will allow for a greater understanding of the participant sample and help to reduce heterogeneity across studies. Second, researchers need to describe their methods and their interventions thoroughly, and third, changes to psychological therapies, which are made in order to improve engagement, understanding, and outcomes for this population should be described. There is a literature that has attempted to elucidate some of these issues (Bruce et al., 2010; Dagnan et al., 2000; Dagnan & Chadwick, 1997; Hatton, 2002; Joyce et al., 2006; Sams et al., 2006; Stenfert-Kroese et al., 1997), but further research is needed, not only to generate further evidence for the effectiveness of psychological therapies, but for the effectiveness of any adaptations and changes that are made to psychological therapies for people with IDs.

The findings of the two intervention studies suggest that people with mild and moderate IDs have some of the skills required for CBT and that computerised training can further improve certain skills. Similar and further research will hopefully lead to the development of effective training programmes that can be used with people with IDs before they begin therapy, or during therapy. It is advised, however, that in the development of new assessments of cognitive mediations skills attention is given to their clinical usability, as well as their applicability for research studies. This is made evident by the recent finding that understanding of cognitive mediation and ability to discriminate between behaviours, thoughts and feelings of people with IDs, two skills we trained in the computerised intervention studies, improved during therapy (Barrowcliff, Jones, Oathamshaw, & McConachie, 2013). Furthermore, a review of the potential mediating effects of CBT skills on therapy outcome in people without IDs found that while the use of certain CBT skills, such as behavioural activation and cognitive restructuring, increased during therapy, it was the quality of these skills in the second half of therapy that predicted therapy outcome for people with depression (Hundt, Mignogna, Underhill, & Cully, 2013). To date, the impact of skill quality on therapy outcome has not been assessed in people with IDs, but interventions that improve skill quality and are integral to therapy, are likely to be associated with better outcomes for people with IDs.

Although it may be possible to broadly examine the utility of adaptations to CBT for people with IDs, including training in therapy skills, psychological therapies are formulation-driven. Considering the heterogeneity within the population of people with IDs, individually tailored formulations will reflect this heterogeneity in presentation and ability, and as a consequence, any adaptations should be tailored to this formulation in order to meet individual need. This requirement was also evident from the clinicians' responses in the final study. Consequently, it would be appropriate to consider these issues within any future trial involving participants with IDs.

The clinical implications of a shift towards computerised assessments and training programmes have yet to be examined, together with the more practical and conceptual concerns about implementing such programmes in practice. Although the computerised approach appears feasible, clinical expertise cannot be replaced by a computer, and is desirable, especially when working with clients with complex presentations. It would be of particular importance to assess whether gains made in training can generalise to situations experienced outside of therapy, as this will be essential for people in developing effective coping strategies when therapy ends. It would be helpful to have a package of adjunctive interventions that could be used by clinicians when working with people with IDs to help adapt and improve the accessibility of psychological therapies.

Considerably more research is needed to establish an evidence-base regarding the short and long-term effects of computerised training and its feasibility for use prior to, or during, therapy with people with IDs, especially with reference to improved engagement and outcomes. For a population with high rates of mental health problems but limited access to evidence-based treatments, we can use technology to maximise the chances of people of IDs enjoying positive mental health.

Finally, service users with IDs and clinicians working with them suggested that computers in therapy for people with IDs should not be used as a "self-help" intervention like conventional cCBT is with the general population, but as a standardised fit-for-purpose tool in the context of clinician-delivered interventions. Using computer technologies in therapy with people with IDs encourages novel - almost disruptive - thinking about the possibilities that these technologies can open up for people who are traditionally under-represented in the provision of psychological therapies in routine care.

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Appendices

A. Published and submitted papers

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Research in Developmental Disabilities

Review article

Psychological therapies for people with intellectual disabilities: A systematic review and meta-analysis

Leen Vereenooghe[a], Peter E. Langdon[a,b,*]

[a] Department of Psychological Sciences, Norwich Medical School, University of East Anglia, Norwich, United Kingdom
[b] Broadland Clinic, Hertfordshire Partnership University NHS Foundation Trust—Norfolk, United Kingdom

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ABSTRACT

The aim of this study was to evaluate the efficacy of psychological therapies for people with intellectual disabilities (IDs) through a systematic review and meta-analysis of the current literature. A comprehensive literature search identified 143 intervention studies. Twenty-two trials were eligible for review, and 14 of these were subsequently included in the meta-analysis. Many studies did not include adequate information about their participants, especially the nature of their IDs; information about masked assessment, and therapy fidelity was also lacking. The meta-analysis yielded an overall moderate between-group effect size, $g = .682$, while group-based interventions had a moderate but smaller treatment effect than individual-based interventions. Cognitive-behaviour therapy (CBT) was efficacious for both anger and depression, while interventions aimed at improving interpersonal functioning were not effectual. When CBT was excluded, there was insufficient evidence regarding the efficacy of other psychological therapies, or psychological therapies intended to treat mental health problems in children and young people with IDs. Adults with IDs and concurrent mental health problems appear to benefit from psychological therapies. However, clinical trials need to make use of improved reporting standards and larger samples.

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[*] Corresponding author Tel.: +441603593599.
E-mail address: P.Langdon@uea.ac.uk (P.E. Langdon).

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1. Psychological therapies for people with intellectual disabilities: A systematic review and meta-analysis

Disadvantageous life events and genetic vulnerability are believed to increase the risk of mental health problems amongst people with intellectual disabilities (IDs; Clarke, 2003; Emerson & Hatton, 2007; Hulbert-Williams & Hastings, 2008). The prevalence of psychiatric disorders amongst this population is difficult to determine because epidemiological studies have made use of different diagnostic criteria and assessment methods, but are also based on different subpopulations. As a consequence, prevalence estimates range between 10% and 39% (Borthwick-Duffy, 1994; Deb, Thomas, & Bright, 2001; Emerson & Hatton, 2007).

Available mental health treatment for people with IDs generally constitutes pharmacological and behavioural approaches, with a recent trend towards providing more psychotherapeutic interventions. However, the increasing demand for psychotherapy for people with IDs has been met with both practical and theoretical concerns. These include the perceived lack of appropriate training amongst mental health practitioners (Royal College of Psychiatrists, 2004) and perceived "therapeutic disdain" towards this population (Bender, 1993). Theoretical concerns regarding whether people with IDs actually suffer from mental illnesses, as well as assumptions that IDs is associated with cognitive problems that prevent engagement in therapy, further constrain the provision of psychotherapy to this population (Adams & Boyd, 2010; Butz, Bowling, & Bliss, 2000).

The assumption that cognitive problems render therapy ineffective with this population has been successfully challenged, and there has been an increase in therapy research with people who have IDs. There is a case study literature demonstrating that psychotherapy for various types of psychopathology including mood disorders (Fernandez, Tom, Stadler, Cain, & Knudsen, 2005), anxiety disorders (Arntzen & Almas, 1997; Chiodo & Maddux, 1985; Hurley, 2004), symptoms of obsessive-compulsive disorder (Klein-Tasman & Albano, 2007), post-traumatic stress disorder (PTSD; Fernando & Medlicott, 2009; Lemmon & Mizes, 2002; Mevissen, Lievegoed, & de Jongh, 2011; Stenfert-Kroese & Thomas, 2006), psychosis (Barrowcliff, 2008; Haddock, Lobban, Hatton, & Carson, 2004), and anorexia nervosa (Cottrell & Crisp, 1984) may be effective. There is also emerging evidence from single group studies as well as controlled clinical trials.

However, considering the literature within this area, there are issues associated with the methodological quality of studies; many studies have a small number of participants and lack comparison groups or randomised allocation (Bhaumik, Gangadharan, Hiremath, & Russell, 2011). Sampling bias is likely due to recruitment through gatekeepers, such as family members, carers, service providers or disability groups. Some gatekeepers may actively try to prevent people with IDs from taking part in research, in an attempt to "protect" them, because of unfounded fears and concerns that researchers may not be acting in the best interests of people with IDs. Therefore, recruitment strategies such as these may not adequately capture those not receiving formal services or people without supportive gatekeepers (Becker, Roberts, Morrison, & Silver, 2004).

Furthermore, the capacity of people with IDs to give or withhold informed consent is highly relevant within clinical trials. Arscott, Dagnan, and Stenfert-Kroese (1998, 1999) assessed the ability of participants to consent to different treatment options. Their findings indicated that participants had a sufficient understanding of treatment procedures, but found it more difficult to consider the potential risks and benefits of treatment. Similar difficulties were reported regarding the right to withdraw from a study and the understanding of randomisation. The appropriateness of the inclusion of a treatment-as-usual (TAU) control group for people who seek help for mental health needs has also been questioned (Oliver et al., 2002).

The scarcity of controlled outcome studies within this area can partially be explained by a combination of recruitment strategies, concerns about treatment effectiveness, and ethical concerns regarding consent and randomisation. However, considering the marked prevalence of psychiatric disorders amongst people with IDs, there is a clear need for further clinical trials within this area. Others have attempted to undertake both narrative and meta-analytic reviews in order to examine the effectiveness of psychological therapy with people who have IDs who have mental health problems, including forensic mental health problems. For example, in a survey of reviews, Gustafsson et al. (2009) identified 55 reviews of therapy for people with IDs and concurrent mental health problems, and the evaluation of theoretical aspects of psychological therapy provision was sparse. Primary research was considered to lag behind due to the lack of randomised control trials (RCTs); however, it could be argued that evidence from non-RCTs should not be disregarded due to the ethical challenges associated with undertaking psychological research within this area.

Several other reviews have been undertaken in this area. First, Prout and Nowak-Drabik (2003) conducted a comprehensive literature review identifying ninety-two intervention studies of which thirty-five comprised a control group. Half of these controlled trials were published dissertations. Nevertheless, the diversity in psychotherapeutic techniques, and approaches under review, which included accounts of relaxation and social skills training, led to the conclusion that there was a moderate treatment effect. Also, approximately one third of the included studies omitted details regarding the underlying psychotherapeutic theory.

Second, evidence for the treatment of post-traumatic stress disorder (PTSD) in people with IDs was evaluated by Mevissen and De Jongh (2010). They found prevalence rates of PTSD difficult to estimate due to the absence of valid and reliable diagnostic measures, and a symptomatology differing from that in the general population. Only case studies reporting on the successful treatment of PTSD could be identified and it was concluded that currently no empirically validated treatment is available.

Third, and turning to forensic mental health problems, there have been several attempts to review interventions for people with IDs who have forensic mental health problems, such as criminal offending or anger problems. For example, a systematic review by Ashman and Duggan (2009) aimed to evaluate the efficacy of interventions for sex offenders with IDs but failed to identify published randomised controlled trials. An update of their Cochrane review in 2009 still yielded no results.

Behavioural and cognitive-behavioural interventions to reduce aggressive behaviours were evaluated by Hassiotis and Hall (2008) and found to have some temporary effect. Outcome data were available for three studies but the considerable between-study heterogeneity in the population and outcomes prevented estimations of treatment effect across studies. The inclusion of behavioural modification interventions in this review may be a confounding factor and therefore the results do not provide sufficient support for the efficacy of traditional psychological therapies.

Another review of cognitive-behavioural interventions for anger, by Hamelin, Travis, and Sturmey (2013), presented a large between-group effect size for randomised controlled trials of approximately 1.5. This estimate was based on the analysis of two trials, and the inclusion of studies that were not fully randomised reduced the effect size to 0.9. The lower limit of the 95% confidence interval then dropped from 1.49 to 0.16. However, double counting of evidence occurred in this second analysis, as both the individual and group therapy arms of Rose, O'Brien, and Rose (2009) were included.

The final and most recent review was conducted by Nicoll, Beail, and Saxon (2013). They completed a meta-analysis of cognitive-behavioural interventions for anger yielding large treatment effects for individual and group therapy. Estimates of treatment efficacy were based on uncontrolled effect sizes as studies with uncontrolled designs were included in the analysis. Their rationale was that the variety of comparison groups across studies would result in increased and potentially problematic heterogeneity in the analyses. Taking the small sample sizes into account the estimated treatment effect is likely to be more conservative.

Some authors have criticised the evaluation of cognitive therapy with people with IDs as being biased due to confounding with behavioural interventions that frequently constitute treatment packages (Sturmey, 2004, 2005). Beail (2005) argued that contrasting the efficacy of behavioural and cognitive-behavioural interventions would be problematic because they have been evaluated with different groups of people with IDs. For example, most "pure" behavioural interventions have been evaluated for challenging behaviour (CB) in people with severe to profound IDs, whereas CBT evaluation has focused on people with "mild-to-moderate" IDs and mental health problems living in the community. Hurley (2005) and Taylor (2005) further contend that relaxation and assertiveness training require cognitive skills, such as self-monitoring, in addition to the use of behavioural techniques; many other common techniques within CBT are grounded within learning theory (e.g. graded exposure).

The efficacy of behavioural interventions for CB has been well-documented, but predominantly behavioural approaches may not be sufficient to address the mental health problems of people with IDs (King, 2005). The Royal College of Psychiatrists (2004) noted that psychological therapies, whilst employing disorder- or theory-specific psychotherapeutic interventions, should also aim to address the emotional needs of people with IDs. Self-reports of emotional regulation have proven to be a valuable predictor of emotional adjustment, whilst dysfunctional adjustment to a situation may cause behavioural problems (Berking, Orth, Wupperman, Meier, & Caspar, 2008). The prevention and treatment of mental health problems will hence have to address emotion regulation processes, a component of many psychotherapeutic interventions.

As a consequence, considering the problems with some of the previous reviews in this area, it was considered timely to undertake a meta-analysis of the current literature in order to examine whether or not structured psychological therapy, such as cognitive behaviour therapy, is efficacious when used with people who have IDs. This review therefore has three aims: (a) identify and evaluate controlled outcome studies of psychological therapies with people with IDs, excluding approaches such as applied behavioural analysis, (b) conduct a meta-analyses to determine overall efficacy of treatment, as well as the efficacy of various psychotherapies for different mental health problems where possible, and (c) identify areas with limited available evidence to suggest directions for future research.

2. Methods

2.1. Study eligibility criteria

A systematic search of the literature was conducted to identify all independent group trials examining the efficacy of psychological therapy for people with IDs. Eligible studies were published in English and in a peer-reviewed journal.

The psychotherapeutic approach adopted by studies had to encompass the systematic application of interventions based on well-established psychological principles and techniques aimed at the prevention or treatment of emotional, behavioural or mental health problems (Norcross, 1990, pp. 218–220). Studies which aimed to evaluate treatments targeting behavioural problems and interventions using applied behavioural analysis were excluded. Primary outcomes of interest were measures of intensity and/or frequency of emotional and mental health problems.

Participants within studies should have a diagnosed intellectual disability in accordance to the DSM-IV criteria (American Psychiatric Association, 1994), or ICD-10 (World Health Organisation, 1992). These criteria include an intelligence quotient (IQ)-score below 70 and impairments in social and adaptive functioning, whereby age of onset is before the age of 18. The full inclusion and exclusion criteria are found in Table 1.

2.2. Search strategy

Studies were identified through systematic searches of PsychINFO, MedLine and CINAHLplus databases in July 2012. The search strategy combined population search terms for IDs with intervention search terms for psychological therapy, as illustrated in Table 1. References of key articles were examined and the ancestry method was used with key journals to identify additional studies. If the authors identified studies that were in press, these were appraised for inclusion.

2.3. Data collection

Data collection and extraction was performed by the first author. Studies were reviewed regarding methodology, study quality and reported outcome measures. The data were entered in a database and prepared for meta-analysis.

2.4. Quality appraisal

The use of quality assessment scales in systematic reviews has been both recommended and discouraged. The lack of objectivity in scoring methods makes it difficult to interpret the extent of bias in each study, as well as across the sample of studies. Furthermore, nearly half of the published systematic reviews fail to incorporate the findings of their critical appraisal of methodological quality in the overall interpretation and discussion of intervention effects (Moja et al., 2005). The current review will therefore identify, but not score, the potential sources of bias in each study in the table of study characteristics, hence facilitating the interpretation of the evidence in light of the critical appraisal. Study quality will be reviewed for potential bias in the selection and allocation of participants, blinding during assessment, the process for dealing with incomplete outcome data, attrition of participants and selective reporting. Hence, both study quality and reporting quality were addressed.

2.5. Meta-analysis

Studies comparing at least one intervention arm to a control, waiting-list control, or no-treatment control arm were included in the meta-analysis. Studies for which the results are included in a later study were excluded from the meta-analysis to avoid double counting of the evidence (Senn, 2009). For the same reason, data from various intervention arms was pooled when only one control arm was available.

A random-effects meta-analysis was conducted for standardised mean differences of independent groups for outcomes assessed immediately post intervention. The primary outcomes entered in the analysis are printed in bold in Table 2. The

Table 1
Systematic review search strategy and eligibility criteria.

Search terms in title and abstract	Mental* N2 (handicap* OR retard* OR disab* OR impair*) (learning OR intellect* OR develop*) N2 (difficult* OR disab* OR impair*) imbecile OR subnormal psycho* N2 (therap* OR treatment* OR intervention*) training OR management OR counsel* psychotherap* (1 OR 2 OR 3) AND (4 OR 5 OR 6)
Inclusion criteria	Intellectual disability: IQ < 70 Age >5 years of age Psychotherapy: the systematic application of interventions based on well-established psychological principles and techniques aimed at the prevention or treatment of emotional, behavioural or mental health problems (Norcross, 1990, pp. 218–220), excluding interventions primarily using applied behavioural analysis Intervention studies: two or more independent groups Published in English, and in peer-reviewed journals
Exclusion criteria	'Strict' behavioural interventions, unless embedded in wider psychotherapeutic treatment. For example: applied behavioural analysis, behaviour modification, behavioural relaxation only, restraint, differential reinforcement of other behaviour, and token economy Problem behaviours and challenging behaviour. For example: sleeping problems, and self-injurious behaviour Non-traditional and other psychotherapeutic interventions. For example: life skills training, vocational rehabilitation, electro-convulsion therapy, biofeedback training, occupational therapy, play therapy, milieu therapy, pharmacotherapy, community management Intervention based on well-established psychological principles aimed at teaching or improving behavioural patterns. For example: social skills training and assertiveness training

Table 2
Independent group trials evaluating psychological therapies for people with IDs.

First author (year)	Study design	Participants	Intervention	Outcome	Follow-up	Quality appraisal—Sources of bias
Benson (1986) (Benson et al., 1986)[a]	Four independent groups EG1: combined anger-management (EG2 + EG3 + EG4) EG2: problem solving group EG3: self-instruction group EG4: relaxation training	$N = 54$ Mean age = 32 37 M/17 F IDs: only data for receptive vocabulary Anger control difficulties Country: USA	All EGs: 12 weekly 90-min sessions EG1: EG2 + EG3 + EG4 EG2: four-step plan to anger solving, role-plays EG3: discriminating coping and trouble statements, role-plays EG4: relaxation based on Jacobson tension release Group size: 5–9 Setting: vocational centre	All EGs: reduced aggressive gestures, reduced length of responses, and more appropriate responding as assessed by self-report anger inventory (AI), conflict situations test, videotaped role-play and supervisor ratings No significant between-group differences	4–5 weeks Effects maintained, except for aggressive gestures	Selection: groups balanced on verbal ability, anger inventory score, gender, race and vocational training centre Performance & detection: independent and masked raters. Attrition: 68% of approached participants consented Other: treatment fidelity not assessed; no control arm
Dowling (2006) (Dowling et al., 2006)[a]	Two independent groups EG1: integrated interventions by careers EG2: traditional counselling by bereavement counsellors	EG1: $N = 11$ EG2: $N = 23$ Age = +18 IDs: mild–moderate–severe Bereaved adults Country: UK	EG1: integrated support by family carer and day centre staff using bereavement-oriented activities, and discouraging continued grief at day centre EG2: approximately 15 weekly or fortnightly 1-h sessions with volunteer Setting: at home or day centre	EG2: improved more than EG1: regarding display of aberrant behaviour (aberrant behaviour checklist–community, and health of nation outcome scales for people with learning disabilities), as recorded by staff informants	No follow-up conducted	Selection: cluster and individual randomisation, allocation sequence human generated and concealed Performance and detection: no blinding Attrition: 8% and 63% completion rate for consenting participants in EG1 and EG2 respectively, analysis on 'intention-to-treat' Other: 2-day training and supervision available to lay therapists; high withdrawal rate by careers in high-demand EG1: treatment fidelity not assessed; no control arm
Hagiliassis (2005) (Hagiliassis et al., 2005)	Two independent groups EG: cognitive-behavioural anger management CG: waiting-list, treatment as usual	EG: $N = 14$, mean age 45 CG: $N = 15$, mean age 44 IDs: none or borderline (8), mild (2), moderate (8), severe (11) Anger control difficulties Country: Australia	EG: 12-weekly 2-h individual anger management training sessions, including physiological and cognitive components, based on Novaco's theory of anger (1975)	**Novaco Anger Scale**: significant group × time interaction, anger control improved for EG only Outcome Rating Scale: no main or interaction effects, but slightly better outcomes for EG	4 months Improved anger control for EG maintained, no change for CG	Selection: randomisation stratified by region and gender, concealed allocation Performance and detection: no blinding, but assessment by independent researcher Attrition: 85% of referred participants were offered and completed treatment Other: treatment manual referenced, treatment fidelity not assessed
Hassiotis et al. (in press)	Two independent groups EG: individual cognitive-behavioural treatment for depression and anxiety + treatment as usual CG: treatment as usual	EG: $N = 16$, mean age 34, 5 M/11 F CG: $N = 16$, mean age 38, 7 M/9 F IDs: mild (30), moderate (2) Anxiety and/or depression Country: UK	EG: 16 weekly 1-h sessions of manualised individual cognitive-behavioural therapy for anxiety and depression Setting: IDs service	**Beck Depression Inventory—Youth**, Beck Anxiety Inventory–Youth: no treatment effect, slight non-significant improvement for CG, not for EG. EG showed positive change only for participants with depression, but without anxiety	6 months EG and CG improved slightly, yet non-significant, and CG fared better than EG	Selection: permuted block randomisation, concealed allocation Performance and detection: assessment by masked researchers Attrition: 48 referrals, 32 entered of which 27 completed. Data-analysis based on $N = 15$ in EG and CG Other: secondary outcome to assess quality of life inadequate for use with people with IDs; study protocol published, treatment manual available; treatment fidelity recorded as high
Lawrence (2004)[a]	Two independent groups EG1: reality therapy group EG2: mutual support group	EG1: $N = 16$, mean age 40 EG2: $N = 14$, mean age 46 M/F: equal between groups IDs: no data presented Country: USA	Six-weekly 1-h group sessions Group size: max. 8 Setting: vocational service	Arc's Self-Determination Scale: Improved self-determination self-regulation, and self-realisation for EG1 compared to EG2, but no effects on autonomy and psychological empowerment	No follow-up conducted	Selection: randomised allocation, but not concealed Performance and detection: no blinding Attrition: 6% drop-out rate Other: clear description of treatment plan and session contents; treatment fidelity not assessed; no control arm

Table 2 (*Continued*)

First author (year)	Study design	Participants	Intervention	Outcome	Follow-up	Quality appraisal—Sources of bias
Lindsay (2004) (Lindsay et al., 2004)	Two independent groups EG: Group CB anger management CG: 6-month waiting-list	EG: $N = 33$, mean age 28, 75% M CG: $N = 14$, mean age 24, 57% M IDs: EG mean IQ: 65 CG mean IQ: 66 Anger control difficulties Country: UK	EG: 40 group sessions, 40–60 min. Includes behavioural relaxation, stress inoculation, group discussions about anger responses, and role-plays Group size:	**Dundee Provocation Inventory**: reduced anger response for EG, but not for CG Anger provoking role-plays: reduction in anger responses (only data reported for EG, $N = 21$) Daily reports of anger: reduced feelings of anger in self-reports of EG, but not CG	3 months, sometimes also at 9, 15, 21 or 30 months Further reduction on all outcome measures at 3 months. Then stabilizes at post-test or 3 month follow-up level	Selection: referrals-based randomisation. Recruitment/referral over +10 year period Performance and detection: masked raters for role-plays Attrition: attrition acknowledged but rates not reported, anger-provoking role-plays and anger reports missing for some participants Reporting: no information on group size Other: no baseline scores CG for anger-provoking role plays as considered inappropriate by authors; treatment fidelity not assessed
Matson (1981)[b]	2 independent groups EG: group intervention of participant modelling for fear CG: no-treatment, waiting-list control	$N = 24$ Age: not reported 50% M IDs: mild to moderate Phobia Country: USA	EG: 3-weekly 1-h group sessions over 3 months. Training based on behaviour modelling and in vivo sessions Group size: 5 Setting: mental health service, sheltered workshop	Fear, as measured by approach behaviour, substantially decreased and number of adaptive verbal and non-verbal shopping skills performed improved for EG Less phobic avoidance registered by staff for EG	4 months No follow-up specific data reported	Selection: matched pairs: degree of fear, sex Performance and detection: 2 independent but not masked raters Attrition: not reported Reporting: only results of ANCOVAs presented, no group means and standard deviations. No data on age, or level of ID Other: Raters received training. 96% inter-rater agreement. Treatment plan detailed, but treatment fidelity not assessed
Matson and Senatore (1981)	2 independent groups EG1: traditional group psychotherapy EG2: group social skills training CG: no treatment	EG1: $N = 11$, EG2: $N = 11$, CG: $N = 10$ Age: mean 34, range 28–49 21 M/11 F IDs: mild to moderate Socially inadequate behaviour Country: USA	EG1: twice weekly 1-h sessions discussing empathy, respect, concreteness and genuineness EG2: twice weekly 1-h sessions with direct teaching of 3 target behaviours, role-play and modelling Group size: 3–5 Setting: workshop	Behaviour in role-plays and during group meetings: significant improvements for EG2, only role-plays improved for EG1 **Nurses' Observation Scale for Inpatient Evaluation—30**: significant improvements for EG2 No changes on Social Performance Survey Schedule	3 months Behavioural improvements for EG2, although lower than posttest EG1: only improved for role-plays	Selection: randomising triads matched on pretest skills Performance and detection: masked raters Attrition: 35 consented; insufficient outcome data for one person in each group (reasons specified) Other: Raters received training to reach 90% inter-rater agreement. Group attendance rates reported; treatment fidelity not assessed
McCabe (2006) (McCabe et al., 2006)	2 quasi-independent groups EG: cognitive-behavioural group intervention CG: no-treatment control	EG: $N = 19$, mean age 34, 10 M/9 F CG: $N = 15$, mean age 40, 6 M/9 F IDs: mild to moderate Depression Country: Australia	EG: 5 weekly 2-h sessions. Session contents cover social support, activity setting, core beliefs, negative thoughts, problem solving and setting future goals Group size: 3–5 Setting: workplace	**Beck Depression Inventory—II**, Social Comparison Scale, and Automatic Thoughts Questionnaire: significant improvements for EG on all measures (for $N = 34$) Rosenberg Self-esteem Scale: no significant change noted	3 months (for $N = 18$) Gains maintained at follow-up but no further improvement	Selection: participants randomised Performance and detection: no blinding Attrition: 1 person lost to follow-up, reason not specified Other: data of 15 CG participants who completed intervention after 3-month follow-up included in analysis. For $N = 15$ these participants acted as own control. Session outlines reported, but treatment fidelity not assessed

McGaw (2002) (***McGaw et al., 2002***)	2 independent groups EG: cognitive-behavioural group intervention CG: control parent group	EG: $N = 12$, mean age 29, 3 M/9 F CG: $N = 10$, mean age 30, 4 M/6 F IDs: borderline or mild EG mean IQ 73 CG mean IQ 72 Parents with IDs Country: UK	EG: 14 weekly 2-h sessions. home-based teaching program + group intervention to improve relationships and self-concept of parents with ID CG: home-based teaching intervention Group size:	**Judson rating scale (self-concept subscale)** Behaviour problem index, Malaise Inventory No improvement for EG or CG on parental relationships and parental self-concept	13 weeks Improved self-concept from posttest to follow-up for EG Social Changes Questionnaire showed increased parental support for EG	Selection: Not randomised, allocation on first-come, first-serve basis Performance and detection: no reports of blinding procedures Attrition: not reported Other: no information on session content or treatment fidelity
McGillivray (2008) (**McGillivray et al., 2008**)	2 independent groups EG: staff-administered group CBT CG: waiting-list	EG: $N = 20$, mean age 38, 13 M/7 F CG: $N = 27$, mean age 31, 19 M/8 F IDs: mild, IQ range 50–70 Depression Country: Australia	EG: 12 weekly 2-h sessions. Programme based on 'Think happy, feel happy, be happy' Group size: 5–6	**Beck depression inventory—II**; Automatic thoughts questionnaire–Revised; Social readjustment rating scale; Social comparison scale Decrease in depressive symptoms and automatic thoughts for EG	3 months Gains maintained at follow-up	Selection: cluster randomisation of 2 vocational agencies Performance and detection: staff naïve to design, but not masked during delivery; assessment by independent research assistant Attrition: 2 people removed from analysis due to illness. no follow-up data for further 2 people from CG who continued to receive treatment Other: 2-day training for staff to act as lay-therapists. Session content outlined, but treatment fidelity not assessed
Rose (2000) (Rose et al., 2000)[c]	Data included in Rose et al. (2005)					
Rose (2005) (Rose et al., 2005)	2 quasi-independent groups EG: group cognitive-behavioural interventions for anger CG: waiting-list, treatment as usual	EG: $N = 50$, mean age 39, 40 M/10 F CG: $N = 36$, mean age 35, 31 M/5 F IDs: only data for receptive vocabulary Anger control difficulties Country: UK	EG: 16 weekly 2-h group sessions to reduce aggressive behaviour Group size: not reported	**Anger inventory**: lower expressed anger for EG, and increased expressed anger for CG Post-hoc: presence of staff and receptive vocabulary associated with better treatment outcomes	3–6 months Gains of EG maintained No follow-up data for CG	Selection: no randomisation or concealed allocation, allocation based on availability of treatment Performance & detection: no reports of blinding procedures Attrition: 11 out of 61 recruited participants dropped-out of EG1 Other: includes data from Rose et al. (2009) and Rose et al. (2000); data for CG $N = 11$ included in data-analysis for EG; assessed clinical relevance of outcomes; treatment content referenced and reported, but treatment fidelity not assessed
Rose (2008) (Rose et al., 2008)	2 independent groups EG: Individual cognitive-behavioural intervention for anger CG: waiting-list	EG: $N = 20$, mean age 37 13 M/7 F CG: $N = 21$, mean age 37 16 M/5 F IDs: mild–borderline Aggressive behaviour UK study	EG: 14-18 individual sessions of 30–60 min of cognitive behavioural interventions to reduce aggressive behaviour	Adapted **Anger Inventory**: EG showed significant decrease in self-reports of anger intensity. Decrease more pronounced for people with higher anger intensity at baseline	3–6 months. Decreased anger intensity maintained for EG	Selection: no randomisation or concealed allocation, allocation based on availability of treatment Performance and detection: no reports of blinding procedures Attrition: no drop-outs occurred Other: assessed clinical relevance of outcomes; brief outline of sessions presented, but treatment fidelity not assessed

Table 2 (*Continued*)

First author (year)	Study design	Participants	Intervention	Outcome	Follow-up	Quality appraisal—Sources of bias
Rose (2009) (Rose et al., 2009)	3 independent groups EG1: individual cognitive-behavioural intervention for anger EG2: group cognitive-behavioural intervention for anger CG: waiting-list, treatment as usual	EG1: *N* = 18, 12 M/6 F EG2: *N* = 23, 14 M/9 F CG: *N* = 21, 16 M/5 F IDs: only data for receptive vocabulary Aggressive behaviour Country: UK	EG1: 14-18 individual sessions of 30–60 min of cognitive behavioural interventions to reduce aggressive behaviour EG2: 16 weekly 2-h sessions of cognitive behavioural interventions to reduce aggressive behaviour. 3 groups. Group size:	**Anger Provocation Inventory**: EG1 & EG2 showed significant reductions; no difference in efficacy of EG1 and EG2	No follow up conducted	Selection: not randomised, allocation based on availability of treatment Performance and detection: no reports of blinding procedures Attrition: EG2 had 2 drop-outs Other: assessed clinical relevance of outcomes; treatment content referenced (Rose et al., 2000, 2008), but treatment fidelity not assessed
Silvestri (1977)[b]	3 independent groups EG1: implosive therapy EG2: pseudo-treatment oriented discussions CG: no-treatment control	EG1, EG2, CG: *N* = 8 average 5 M/3 F Mean age 21 IDs: mild to borderline, mean IQ 70.3 Anxiety Country: USA	EG1: 10 45-min sessions of individual implosive therapy over 3 weeks. Therapy includes imagery exposure and role-plays to reduce anxiety EG2: 10 45-min sessions where people discussed dreams and fantasies	Brief Psychiatric Rating Scale; Nurses' Observational Scale for Inpatient Evaluation (NOSIE-30); Modified version of Adjective Checklist; Occupational Rating Scale EG1 improved on all outcomes compared to EG2 and CG	6 weeks Gains of EG1 on NOSIE-30 not maintained at follow-up, deterioration occurred but not below pretest level. CG improved significantly from pretest and posttest to follow-up	Selection: randomised allocation based on age, sex, race and IQ Performance and detection: no blinding. Attrition: follow-up data for 2 people from EG2 not available due to drop-out Reporting: NOSIE-30 data based on 7/30 items. Other: treatment procedures referenced, but treatment fidelity not assessed
Taylor (2002) (Taylor et al., 2002)[c]	Data included in Taylor (2005)					
Taylor (2004) (**Taylor et al., 2004**)	2 independent groups EG: individual cognitive-behavioural treatment for anger CG: waiting-list, routine care	EG: *N* = 9, mean age 29 CG: *N* = 8, mean age 29 100% M IDs: EG mean IQ 69.3 CG mean IQ 66.4 Anger control difficulties Country: UK	EG: 18 individual cognitive-behavioural sessions over 3 months, including stress inoculation training Setting: in-patient forensic service	**Imaginal Provocation Test**: EG showed significant improvement on anger reaction, behavioural reaction, and **anger composite subscales**. EG also improved anger regulation, not significant but large effect	No follow-up conducted	Selection: no randomised allocation, allocation procedures not specified Performance and detection: assessment by independent but not masked research assistant. Attrition: 1 person in each arm did not complete study, attrition rate 2/19; data not included in analysis Other: therapists supervised by developer of treatment, treatment content referenced, but treatment fidelity not assessed
Taylor (2005)	2 independent groups EG: individual cognitive-behavioural treatment for anger CG: waiting-list, routine care	EG: *N* = 16, mean age 29 CG: *N* = 20, mean age 30 100% M IDs: EG mean IQ 67.1 CG mean IQ 70.7 Anger control difficulties Country: UK	EG: 18 individual cognitive-behavioural sessions over 3 months, including stress inoculation training Setting: in-patient forensic service	Novaco Anger Scale (NAS), **Provocation Inventory (PI)**, Anger Expression Scale, Ward Anger Rating Scale Significant treatment × time interaction for Novaco Anger Scale. No significant differences between trends of EG and CG on NAS or PI. EG trend appears positive	4 months EG1 improvements maintained	Selection: randomised concealed allocation based on date of referral; EG significantly lower IQ than CG Performance and detection: assessment by independent but not masked research assistant Attrition: data of 2 drop-outs in EG and 2 people in EG lost to follow-up are not included in analysis; demographic data of these four people is reported Other: therapists supervised; treatment content referenced; random reviews of treatment files to check treatment fidelity

Willner (2002) (Willner et al., 2002)	2 independent groups EG: cognitive-behavioural anger management group CG: waiting-list control	EG: $N=7$, mean age 31, 4 M/3 F CG: $N=7$, mean age 30, 5 M/2 F IDs: EG mean IQ 63.9, CG mean IQ 65.3 Anger control difficulties Country: UK	EG: 9 weekly 2-h group sessions of cognitive-behavioural anger management; minimal attendance 5/9 sessions Group size: 5–7	Carer and client ratings on Anger Inventory, **Provocation Index** All anger ratings decreased significantly for EG and increased (non-significantly) for CG. Improved anger ratings highly correlated with verbal IQ and full-scale IQ. Improvements greater for participants accompanied by careers	3 months Treatment gains maintained and further improved at follow-up for EG. No follow-up conducted for CG	Selection: randomised allocation based on alternate referrals Performance and detection: client and career ratings not masked; some career-ratings at baseline and post-treatment not by same staff Attrition: 16 out of 21 referrals were allocated to study arms, 2 further participants swapped groups but later dropped-out Other: treatment content referenced, but fidelity not assessed
Willner (2005) (Willner et al., 2005)[b]	2 independent groups EG: staff-delivered cognitive-behavioural anger-management group CG: no-treatment control	$N=17$ EG: $N=9$, mean age 45, 7 M/2 F CG: $N=8$, mean age 32, 5 M/3 F IDs: only data for receptive vocabulary Anger control difficulties Country: UK	EG: 12 weekly 2-h group sessions; intervention delivered by 2 staff; minimal attendance 8/12 sessions Group size: 8–9	EG significantly lower scores than CG for both participant and carer ratings on Provocation Index and significantly better anger coping skills	6 months EG maintained gains for carer ratings and increased gains for client ratings of Provocation Index. Anger coping skills maintained for EG	Selection: allocation not randomised, but based on preference of participants and staff Performance and detection: no blinding, some staff involved in both delivering intervention and assessment of outcomes Attrition: no drop-outs reported; missing data at baseline and follow-up replaced with post-treatment data for two participants Other: EG significantly lower PACS scores at baseline; staff lay-therapists trained and supervised by clinical psychologist; treatment content referenced
Willner (2013) (Willner et al., 2013)	2 independent groups EG: cognitive-behavioural group anger management CG: treatment as usual	EG: $N=91$, median age 37, 71% M CG: $N=90$, median age 39, 70% M IDs: EG median IQ 59.0 CG median IQ 55.0 Anger control difficulties Country: UK	EG: 12 weekly 2-h psycho-educational cognitive-behavioural group sessions on anger-management delivered by lay-therapists Group size: 5 + 2 lay therapists	**Client ratings on Provocation Index** EG showed small, but non-significant improvement for client ratings on Provocation Index. Key-workers' ratings showed significant improvements in anger management. Home carers' ratings showed less improvement	6 months Treatment gains maintained for all ratings, except home carers' ratings	Selection: cluster randomisation, clusters balanced on anger scores Performance and detection: assessments by independent and masked researchers Attrition: 179 participants randomised, 143 completed; intention-to-treat analysis Other: Study protocol published; treatment content referenced; treatment fidelity 68.8% (range: 19–86%)

Note. Studies and outcome measures printed in bold were included in the meta-analysis.

[a] Excluded from meta-analysis because no control, waiting-list control, or no-treatment control arm was included.

[b] Excluded from meta-analysis because study did not provide sufficient data to calculate between-group effect sizes from post-treatment scores.

[c] Excluded from meta-analysis because data included in later study.

EG, experimental group; CG, comparison group; *N*, number of participants included in the study's data-analysis; M/F, male-female ratio; IDs, level of intellectual disabilities.

random-effects model was preferred because variations in treatment effect are likely to be associated not only with the ‘common factors’ in therapy, but to differences in study designs and clinical populations. Therefore, the resulting heterogeneity cannot be accounted for by sampling error alone and a fixed-effects model would be unsatisfactory.

Effect sizes for each study were corrected using correction factor J, resulting in Hedges' g (Hedges, 1981) as the estimate of effect size; hence, taking into account the likeliness of small study samples. Study weight was calculated using inverse variance methods to assign greater value to more precise studies with large samples or small variances. The treatment effect was estimated using DerSimonian and Kacker's (2007) two-step approach based on the random-effects model estimate for τ^2 (DerSimonian & Laird, 1986). This adjusted model is believed to provide a more accurate and conservative estimate of between-study heterogeneity and overall treatment effect.

Subgroup meta-analysis was conducted provided at least two studies fulfilled the requirements for meta-analysis. Planned analyses included random-effects meta-analyses of randomised and non-randomised trials, individual and group therapy, and different clinical characteristics. Positive estimated effects should indicate improved mental health or reduction of mental health symptomatology. Therefore, the direction of computed effect-sizes of individual studies will be reversed where appropriate. Intention-to-treat analysis was not possible because the majority of studies did not provide sufficient data. The reported analysis is therefore based on participants who completed outcome assessments.

3. Results

The search strategy identified 259 studies requiring full text review, of which twenty-two met all review eligibility criteria. The review process is illustrated in Fig. 1. The main reasons for excluding studies were because they were single-armed studies or they lacked intervention outcome data. Table 2 provides an overview of the characteristics of included studies. The data from Willner et al. (2013) and Hassiotis et al. (in press) were obtained from the authors following the publication of their respective study protocols (Hassiotis et al., 2011; Willner et al., 2011).

The search results in Fig. 1 illustrate the large quantity of research in this area. However, the majority of these were excluded because they concerned interventions for challenging behaviour or life skills training programmes. Nearly half of

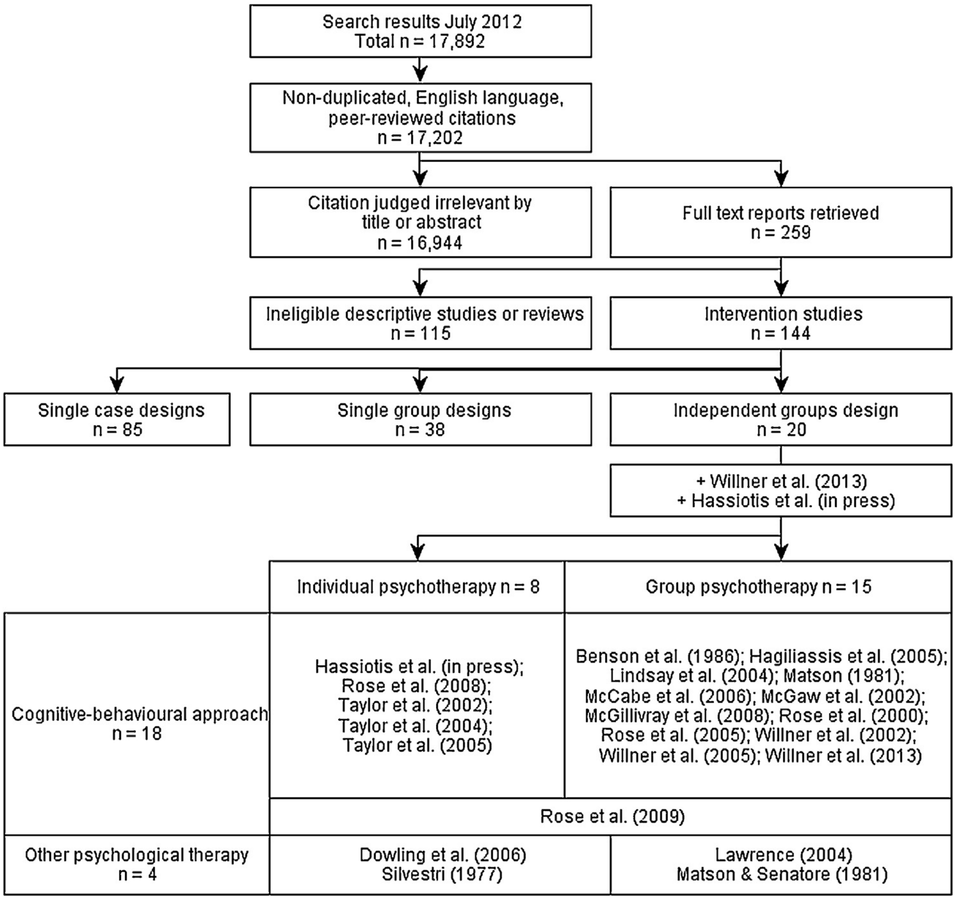

Fig. 1. Flowchart of study selection for systematic review.

the relevant published work concerning psychological therapy with people with IDs comprised descriptive studies, narrative reviews and expert opinion. Single case studies made up nearly 60% of intervention studies, whereas only 15% employed an independent groups design.

Cognitive-behavioural interventions, and group CBT in particular, make up the vast majority of studies. Rose et al. (2009) compared the efficacy of individual and group CBT for anger and therefore this study was classified as making use of both individual and group therapy (Fig. 1).

3.1. *Methodological issues*

There was marked variation within the included studies, which varied according to participant information, treatment length, delivery mode, and outcome measures.

3.1.1. *Participants*

The reported demographic information varied widely between studies. McGaw, Ball, and Clark (2002) and Silvestri (1977) reported an average IQ in the borderline IDs range for their intervention groups, whilst Dowling, Hubert, White, and Hollins (2006) included people with "severe" IDs. However, the majority of studies included samples of people with "mild" IDs. Only eight studies reported measures of intelligence for the treatment and control group, and one study (Lawrence, 2004) omitted any information regarding level of intellectual functioning.

Recruitment of research participants was mainly based on people being referred for psychotherapeutic interventions, rather than active recruitment by the researchers. These clinical referrals may be associated with the relatively small sample sizes found in most studies, ranging from as little as 14 (Willner, Jones, Tams, & Green, 2002) to 162 (Willner et al., 2013).

3.1.2. *Study design*

Ethical concerns in psychological therapy research for people with IDs encourage the use of TAU control groups as opposed to a no-treatment control group, whilst some studies opted to deliver two or more independent treatment packages, without a wait-list control group. For example, Benson, Rice, and Miranti (1986) compared the effects of four types of self-control training: relaxation, self-instruction, problem solving or a combined anger management package. The effects of reality therapy group counselling on self-determination were examined by Lawrence (2004), who employed a mutual support group as the independent comparison group. Finally, Dowling et al. (2006) delivered either an integrated bereavement intervention or traditional counselling to bereaved adults with IDs.

The eligibility criteria for this review required studies to employ an independent groups design. However, within the study by McCabe, McGillivray, and Newton (2006) the groups do not appear to be entirely independent as those allocated to the waiting-list control arm received the intervention six weeks after those allocated to the intervention arm. Hence, it appears that participants who were allocated to the waiting-list control arm, also appeared in the intervention arm, meaning that the data may not be entirely independent. This apparent semi-independence should be aken into account when interpreting results from the meta-analysis. Similarly, Rose, Loftus, Flint, and Carey (2005) reported that some of the participants within the waiting-list control arm may have been included within the intervention arm.

Allocation to the treatment or control groups was mostly randomised based on setting, sex, date of referral, intensity of the mental health problem, or geographic location, to create balanced study arms. However, allocation procedures in Rose, Dodd, and Rose (2008) and Rose et al. (2009) were based on the availability of a group treatment starting within two months upon referral, or the availability of a therapist for individual therapy; when this was not possible, participants were allocated to a waiting-list control group. Similarly, McGaw et al. (2002) did not randomise participants, but rather allocated them to the intervention arm on a first-come first-serve basis.

There were issues associated with the lack of blinding across studies, with only five studies reporting that they attempted to blind the researchers who were responsible for measuring outcome (Benson et al., 1986; Hassiotis et al., in press; Lindsay et al., 2004; Matson & Senatore, 1981; Willner et al., 2013). Six studies reported the use of independent raters where masked assessment could not be guaranteed. Nearly half of the studies either did not employ blinding procedures or did not provide details regarding masked assessment.

3.1.3. *Treatment mode*

The majority of studies evaluated group-based interventions, and the majority of individually delivered treatments were conducted by the same authors (e.g. Rose et al., 2008, 2009; Taylor, Novaco, Gillmer, Robertson, & Thorne, 2005; Taylor, Novaco, Gillmer, & Thorne, 2002; Taylor, Novaco, Guinan, & Street, 2004). Treatment was delivered by clinical psychologists, or by staff who were given training to deliver the treatment. Staff and carers who served as lay therapists generally received a two day training and were supervised by a clinical psychologist (Dowling et al., 2006; McGillivray, McCabe, & Kershaw, 2008; Willner et al., 2013; Willner, Brace, & Phillips, 2005).

Substantial variations were found in treatment length and time of follow-up. Fourteen studies conducted follow-up measurements within three to six months post treatment, whereas four studies did not collect any follow-up data. Lindsay et al. (2004) conducted the longest intervention with approximately forty group sessions of anger treatment over nine months which included up to thirty months of follow-up data for some participants.

Treatment integrity was likely to be best in anger management trials because of the use of treatment manuals and associated methods for monitoring treatment delivery. Treatment fidelity was assessed by Willner et al. (2013) and Hassiotis et al. (in press) only and indicated that both lay-therapists and practicing therapists showed moderate to high levels of adherence to the respective treatment manuals.

3.1.4. Treatment outcomes

Outcome measures of anger treatments typically included the Novaco Anger Scale, Anger Inventory, and the Provocation Index. All trials providing psychological therapy for depression used either the Beck Depression Inventory-II or the Beck Depression Inventory—Youth to assess clinical symptoms of depression. In addition to outcome scales, studies employed idiographic measures such as participant behaviour in role-plays and direct behavioural observations by therapist or staff, which at times made comparisons across studies problematic. Reasons for attrition were not consistently reported, whilst one study by Rose et al. (2008) recorded that no participants dropped out. The majority of studies reviewed did not undertake an analysis of intervention data based on intention-to-treat.

3.2. Meta-analyses

An initial meta-analysis was conducted for controlled trials with either a no-treatment or a waiting-list control group, employing cluster, matched or full randomisation procedures. Additional eligibility criteria were applied to exclude studies if data were included in a later study (Rose, West, & Clifford, 2000; Taylor et al., 2002), or if insufficient data were reported to perform the meta-analysis (Matson, 1981; Willner et al., 2005). Finally, the study by Silvestri (1977) was excluded because twenty-three out of thirty items of its primary outcome measure had been excluded from the original data-analysis. The selective reporting of outcomes in this study, if included, would have led to confounding results.

The inclusion of Rose et al. (2009) is based on a comparison of the combined interventions arms, individual and group therapy, versus the control group. This approach is recommended to avoid double counting the evidence of the comparison group, and is preferred over selecting a single intervention arm for data-analysis as this might result in a loss of information or biased data-selection (Senn, 2009). The combination of data within the two intervention groups followed the recommendations of the Cochrane Handbook (Higgins, Deeks, & Altman, 2011).

The Beck Depression Inventory—Youth data was included as the outcome data from the study by Hassiotis et al. (in press). This study concerned the treatment of both depression and anxiety with one manualised intervention. However, it could be argued that anxiety and depression may have different clinical formulations, and as a consequence, require different interventions. The data pertaining to outcomes for depression were included as this increased the data available to evaluate the cognitive-behavioural treatment of depression, from two to three trials.

3.2.1. Randomised versus non-randomised studies

The meta-analysis of randomised trials yielded an average treatment effect of, $g = .555$, 95% CI [.178, .932], $N = 388$, which is regarded as a moderate treatment effect (Cohen, 1988). The analysis highlighted a substantial amount of heterogeneity with 62%, $p < .05$, of the variability in estimated treatment effect not explained by sampling error alone. The meta-analysis of non-randomised studies revealed an average large treatment effect, $g = .846$, 95% CI [.355, 1.337], $N = 275$, while the heterogeneity increased to 69%, $p < .01$. Combining randomised and non-randomised trials revealed a moderate treatment effect, $g = .682$, 95% CI [.379, .985], $N = 663$, and the heterogeneity was 67%, $p < .001$. The forest plots in Fig. 2 included studies with their standardised mean differences and corresponding confidence intervals, as well as the estimated treatment effect and corresponding confidence interval for both the subgroup analysis and the overall meta-analysis. When adopting the two-step DerSimonian and Laird method (DerSimonian & Kacker, 2007) across all studies the treatment effect increased to $g = .700$, 95% CI [.386, 1.015], $N = 663$. The adjusted τ^2 measure of heterogeneity also increased from $\tau^2 = .207$ to $\tau^2 = .249$.

Leave-one-out analysis for the eight randomised studies highlighted the impact of the McCabe et al. (2006) depression trial. Exclusion of this study resulted in a small estimated treatment effect of, $g = .386$, 95% CI [.116, .656], $N = 339$. However, the estimated average effect increased to $g = .647$, 95% CI [.262, 1.031], $N = 367$, and to $g = .636$, 95% CI [.228, 1.044], $N = 358$, when excluding the study on interpersonal functioning by Matson and Senatore (1981) and the small-scale RCT by Hassiotis et al. (in press), respectively.

3.2.2. Individual versus group-based psychological therapy

Subgroup meta-analysis of combined randomised and non-randomised trials indicated individually delivered therapy, $g = .778$, 95% CI [.110, 1.445], $N = 124$, was more effective than group-based therapy, $g = .558$, 95% CI [.212, .903], $N = 477$, as illustrated in the forest plot in Fig. 3. It should be noted, however, that there were fewer trials involving individual therapy than group therapy available for the analysis. Furthermore, the large variability in the effectiveness of individual therapy is likely to be associated with differences in clinical diagnosis and primary outcome measures, as well as the large within-study variance of Taylor et al. (2004). Rose et al. (2009) was not included in the analysis to avoid double counting of the control group. The shared control arm for both intervention arms in this study would have led to correlated multiple comparisons that cannot be accounted for in the meta-analysis (Higgins et al., 2011).

Studies making use of individual therapy had a moderate to large effect size, while group-based therapy, regardless of clinical disorder, had a moderate effect. Within the group-based studies the average treatment effect and heterogeneity are

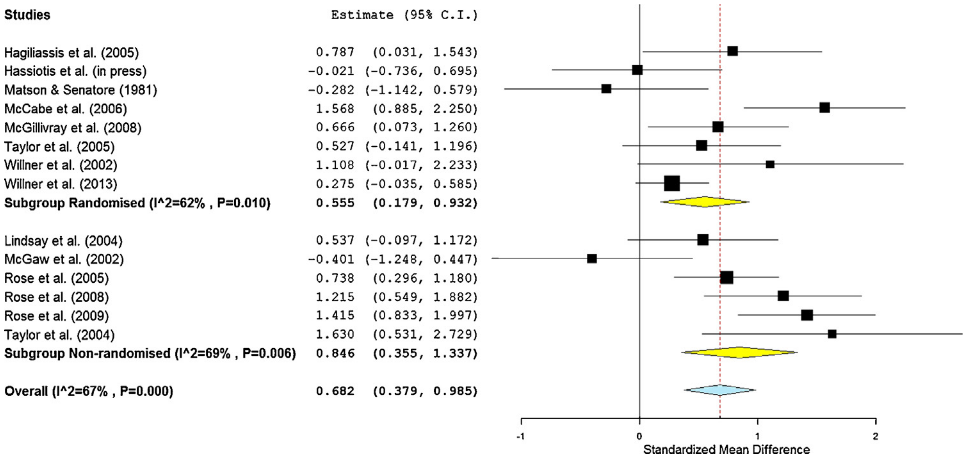

Fig. 2. Forest plot of estimated treatment effect of psychological therapy for people with IDs. Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

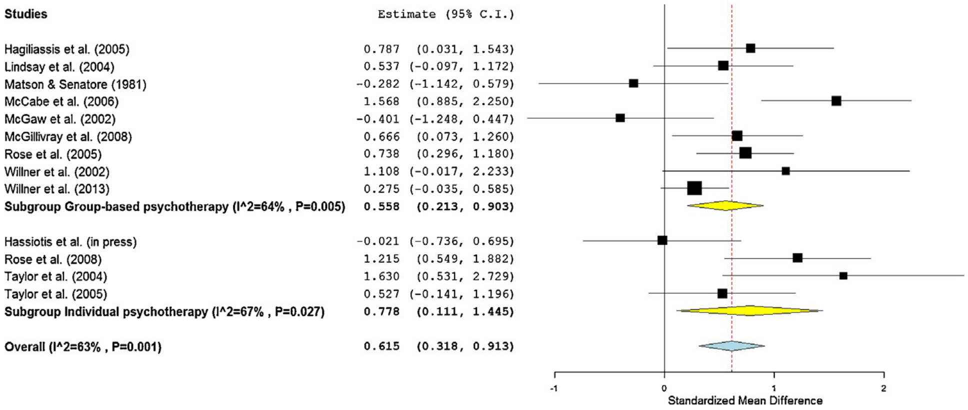

Fig. 3. Forest plot of subgroup meta-analysis for group-based and individual psychological therapy.Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

negatively affected by McGaw et al. (2002), Matson and Senatore (1981) and Willner et al. (2013). It should be noted, however, that McGaw et al. (2002) provided group interventions to support parents with IDs in the forming and maintaining of relationships, and to improve their self-concept. Likewise, Matson and Senatore (1981) delivered group therapy to improve interpersonal functioning. The latter two studies are therefore quite distinct from the other group interventions which aimed to treat mental health problems.

3.2.3. Clinical presentation

The variability in study samples supported a subgroup meta-analysis based on clinical presentation. These were completed for anger, interpersonal functioning and depression. The forest plots in Fig. 4 show that the average treatment effect ranges from a null-effect for interpersonal functioning to a large treatment effect for people with IDs suffering from depression.

CBT for anger and aggression had an average estimated effect size of $g = .827$, 95% CI [.508, 1.146], $N = 494$. The inclusion of some studies with relatively large samples resulted in a narrow confidence interval, although there is considerable between-study variance, and individual and group therapy were combined (Fig. 4).

Psychological therapy for interpersonal functioning was not supported by the analysis of data from Matson and Senatore (1981) and McGaw et al. (2002). Results are inconsistent from these studies and hence do not provide sufficient evidence that treatment is efficacious, as evidenced by the negative effect of $g = -0.342$, 95% CI [$-.946$, .262], $N = 43$. However, participants in the intervention arm of both studies did show improvements from pre-test to follow-up and from post-test to follow-up, indicating that treatment effects might take longer to establish for these therapies.

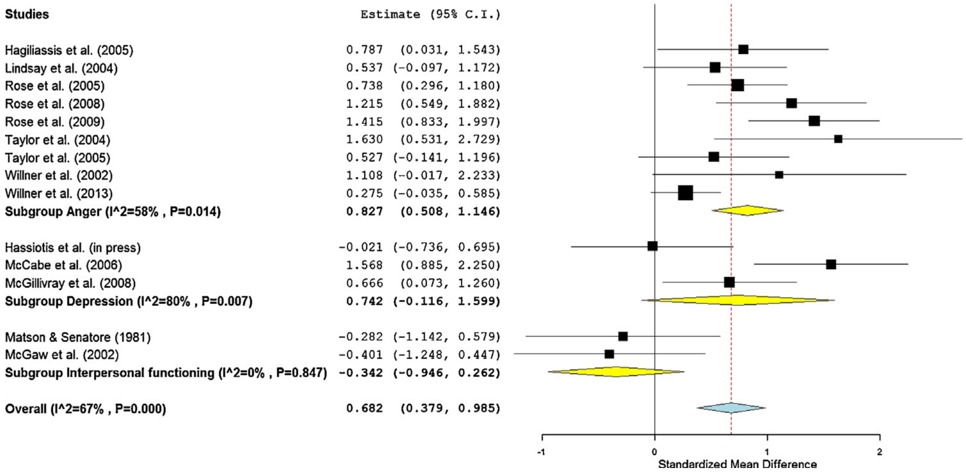

Fig. 4. Forest plot of subgroup meta-analysis based on clinical presentation.
Horizontal lines represent the confidence interval for the standardised mean difference (black squares) of each study. The size of the black square is indicative of the study's sample size. The centre of the diamonds indicates the effect size for that subgroup analysis, while the width of the diamond covers the 95% CI. The vertical dashed line and bottom diamond indicate the overall size and its corresponding 95% CI.

Turning to depression, studies evaluating CBT generated a moderate to large effect size, $g = .742$, 95% CI [−.116, 1.599, $N = 126$. The between-study variance is high, as only three studies with distinct study designs were identified. The feasibility study of Hassiotis et al. (in press) caused methodological concerns due to its use of a single therapy for two separate clinical disorders. McGillivray et al. (2008) employed a staff-administered treatment programme, but there were no attempts to investigate whether or not the inclusion of staff within such an intervention increased efficacy.

4. Discussion

The results of the meta-analysis indicated that psychological therapy with people who have IDs is efficacious with a moderate effect size of $g = .682$ when calculated using all the studies included within the current review. However, this effect size varied depending on whether the studies made use of randomisation, individual or group based interventions, and also varied according to the type of problem being treated. Randomised studies were associated with a lower, but moderate effect size, $g = .555$, compared to non-randomised studies which had a large effect size, $g = .846$. Individual therapy, $g = .778$, appeared superior to group-based interventions, $g = .558$; treatment for depression, $g = .742$, and anger, $g = .827$, was associated with moderate and large effect sizes, while there was no evidence that therapy had an effect on interpersonal functioning, $g = -.342$.

There are some similarities and differences between the current analysis and some of the previous systematic reviews that have also attempted to synthesise the evidence for the efficacy of psychological therapies for people with IDs. Non-traditional psychotherapeutic interventions, such as relaxation or social skills training, were included in the analysis by Prout and Nowak-Drabik (2003), but were excluded from the current study. By contrast, staff-delivered treatments, excluded in that review, were included in the current analysis because staff had received training and acted as lay therapists. All but one study in the present meta-analysis had been published in the last decade, whilst the previous meta-analysis conducted by Prout and Nowak-Drabik (2003) mainly comprised research published in the 1980s.

The subgroup meta-analysis for anger problems is comparable to the anger-specific reviews of Hamelin et al. (2013), Nicoll et al. (2013) and Hassiotis and Hall (2008). The estimated treatment effect of $g = 0.827$, presented in Fig. 4, is slightly lower than the estimated 0.88 reported by Nicoll et al. (2013), and the un-weighted estimate of 0.89 presented by Hamelin et al. (2013), whereas Hassiotis and Hall (2004) did not perform such an analysis. However, there were some differences in how the effect size was calculated across these different studies; Hamelin et al. (2013) calculated standardised mean differences of pre-post changes in each arms to estimate the treatment effect, while Nicoll et al. (2013) relied on a fixed-effects analysis of uncontrolled mean differences calculated within the intervention arm. Nevertheless, the findings of these two reviews and the current study are remarkably comparable, despite the different inclusion criteria and methodology.

It is also worth noting that the methodological quality of psychological therapy research for children and adolescents with IDs is much lower than that involving adults, as no independent groups designs or RCTs were identified, bearing in mind that there are some RCTs involving children with autistic spectrum disorders (Sofronoff, Attwood, & Hinton, 2005; Wood et al., 2009). Ethical concerns in the recruitment of young people with IDs for intervention studies may partially explain the current lack of research, but should not be seen as justification for the lack of controlled outcome studies. It is unclear whether evidence from psychotherapy research with adults with IDs, or young people without IDs, can be adequately generalised to this young population. Related to this, the search results indicated the proportion of single case studies involving adults has steadily increased over time and provide evidence for the trend towards more controlled psychotherapy research for adults with IDs.

There were no studies of psychodynamic therapy identified that fulfilled the eligibility criteria for inclusion within the current study. Expanding the inclusion criteria to single-armed pre–post studies revealed few psychodynamic intervention studies. Their analysis falls outside the scope of this review, but the apparent lack of well-conducted primary research in this area does not seem to support psychodynamic therapy as an empirically supported treatment for people with IDs.

Following the guidelines for empirically validated treatments, at least two well-conducted group design studies, conducted by different research groups, should be identified (Chambless et al., 1998). Although the search results did not yield two studies with a sufficiently large sample size, which also reported both detailed participant characteristics, as well as information regarding the treatment protocol, the criteria for probably efficacious treatments appear to be met for cognitive-behavioural interventions for both anger and depression. As a consequence, both individual and group psychotherapy are likely to be efficacious treatments for mental health problems in adults with IDs, but further studies are still needed.

However, there is variability in the methodological quality of the studies included within this review. For example, the inclusion of participants with varying levels of intellectual functioning, ranging from borderline to severe, and the absence of reported measures of general intellectual functioning make it difficult to compare study samples and lead to an increase in heterogeneity. General intellectual functioning varied widely between studies, but more than half of the studies reported including samples with a mean IQ above 65, indicating that people with "borderline" IDs were frequently included. Varying levels of intellectual functioning may affect the outcomes from cognitive therapy, at least theoretically, but the existing literature does not provide sufficient data to include general intellectual functioning as a covariate in the analysis. Similarly, therapy setting and treatment intensity are important factors that were not controlled in this review or any previous reviews. When providing psychological therapy to people with IDs, many may attempt to make changes to the intervention in an attempt to improve efficacy, and it remains unclear whether or not these changes are genuinely associated with improvements in treatment outcome. As a consequence, the results presented within this study do not account for differences in assessment or treatment, but rather yield a general indication of psychological therapy efficacy including both its common and specific factors (Kazdin, 1985).

These problems can be translated into four recommendations which should be considered by researchers undertaking clinical trials of psychological therapies with people who have IDs. First, researchers should measure and report the general level of intellectual functioning of their participants within publications. This will allow for a greater understanding of the participant sample and help to reduce heterogeneity across studies. Second, researchers need to describe their methods and their interventions thoroughly, and third, changes to psychological therapies, which are made in order to improve engagement, understanding, and outcomes for this population should be described. There is a literature that has attempted to elucidate some of these issues (Bruce, Collins, Langdon, Powlitch, & Reynolds, 2010; Dagnan & Chadwick, 1997; Dagnan, Chadwick, & Proudlove, 2000; Hatton, 2002; Joyce, Globe, & Moody, 2006; Sams, Collins, & Reynolds, 2006; Stenfert-Kroese, Dagnan, & Loumidis, 1997), but further research is needed, not only to generate further evidence for the effectiveness of psychological therapies, but for the effectiveness of any adaptations and changes that are made to psychological therapies for people with IDs. However, although it may be possible to broadly examine the utility of adaptations to CBT for people with IDs, psychological therapies, including CBT, are formulation-driven. Considering the heterogeneity within the population of people with IDs, individually tailored formulations will reflect this heterogeneity in presentation and ability, and as a consequence, any adaptations should be tailored to this formulation in order to meet individual need. As a consequence, it would be appropriate to consider these issues within any future trial involving participants with IDs. Fourth and finally, it is clear that further robust and well-designed clinical trials are needed which involve a range of mental health problems, involving not only adults with IDs, but also children and adolescents with IDs.

5. Conclusions

The current meta-analysis evaluated the available evidence and indicated that psychological therapy has a moderate effect in treating symptoms of mental health problems amongst people with IDs. This effect is biased by studies where allocation was not randomised. The results further suggest CBT to be at least moderately effective in the treatment of anger and depression. Individual therapy may be more effective than group psychotherapy, but this conclusion must remain tentative until further research is completed. As more controlled psychotherapy research continues with people with IDs, it is expected that sufficient evidence will be available in the future to determine whether various psychological therapies can actually be regarded as empirically validated treatments.

Author note

Leen Vereenooghe, Department of Psychological Sciences, Norwich Medical School, University of East Anglia, UK; Peter E. Langdon, Department of Psychological Sciences, Norwich Medical School, University of East Anglia, UK and Broadland Clinic, Hertfordshire Partnership University NHS Foundation Trust—Norfolk, UK.

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Can a computerised training paradigm assist people with intellectual disabilities to learn cognitive mediation skills? A randomised experiment

Leen Vereenooghe [a], Shirley Reynolds [b], Lina Gega [a], Peter E. Langdon [c, d, *]

[a] *Department of Psychological Sciences, Norwich Medical School, University of East Anglia, UK*
[b] *Charlie Waller Institute, University of Reading, UK*
[c] *Tizard Centre, University of Kent, UK*
[d] *Broadland Clinic, Hertfordshire Partnership University NHS Foundation Trust, Norfolk, UK*

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ABSTRACT

Aims: The aim was to examine whether specific skills required for cognitive behavioural therapy (CBT) could be taught using a computerised training paradigm with people who have intellectual disabilities (IDs). Training aimed to improve: a) ability to link pairs of situations and mediating beliefs to emotions, and b) ability to link pairs of situations and emotions to mediating beliefs.
Method: Using a single-blind mixed experimental design, sixty-five participants with IDs were randomised to receive either computerised training or an attention-control condition. Cognitive mediation skills were assessed before and after training.
Results: Participants who received training were significantly better at selecting appropriate emotions within situation–beliefs pairs, controlling for baseline scores and IQ. Despite significant improvements in the ability of those who received training to correctly select intermediating beliefs for situation-feelings pairings, no between-group differences were observed at post-test.
Conclusions: The findings indicated that computerised training led to a significant improvement in some aspects of cognitive mediation for people with IDs, but whether this has a positive effect upon outcome from therapy is yet to be established.

Prevalence rates of mental health problems among people with intellectual disabilities (IDs) vary widely depending on the diagnostic criteria and assessments used, with recent estimates suggesting that between thirteen and forty percent of people with IDs are affected (Cooper, Smiley, Morrison, Williamson, & Allan, 2007; Deb, Thomas, & Bright, 2001; Emerson & Hatton, 2007). The high prevalence rates, when compared to the general population, can be partly explained by the genetic vulnerability of people with IDs, and disadvantageous life events such as stigmatisation and isolation (Clarke, 2003; Cooper et al., 2007; Emerson & Hatton, 2007; Hulbert-Williams & Hastings, 2008; Reiss & Benson, 1984).

Even though people with IDs have an elevated risk of developing mental health problems, the evidence regarding the efficacy of psychological therapies for this population has only been emerging slowly. A recent meta-analysis concluded that cognitive behavioural therapy was at least moderately effective for the treatment of anger regulation problems and depression (Vereenooghe & Langdon, 2013), and previous reviews have also supported the potential benefits of cognitive-behavioural therapy (CBT) for anger management (Hamelin, Travis, & Sturmey, 2013; Nicoll, Beail, & Saxon, 2013). However, there is insufficient evidence to conclude that psychological treatments for mental health problems amongst people with IDs are empirically validated (Vereenooghe & Langdon, 2013). One of the reasons for this is that people with IDs are thought to have difficulty grasping some of the concepts presented within CBT (Biza Stenfert-Kroese, Dagnan, & Loumidis, 1997), and while suitability criteria for CBT have been described in terms of the potential to form a therapeutic alliance, motivation for change, ability to remain problem-focused, accessibility of (negative) automatic thoughts, ability to differentiate between emotional states and general affinity with the cognitive rationale (Safran,

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* Corresponding author. Tizard Centre, University of Kent, Canterbury CT2 7LR, UK.
E-mail address: P.E.Langdon@kent.ac.uk (P.E. Langdon).

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Segal, Vallis, Shaw, & Samstag, 1993; Safran, Vallis, Segal, & Shaw, 1986), there has been little work looking at these variables within therapy for people with IDs.

The antecedent-belief-consequent (A–B–C) model (Ellis, 1977; Trower, Jones, Dryden, & Casey, 2011) has helped inform clinicians about the necessary skills that are needed in order to successfully take part in cognitive-behavioural therapy. The model asserts that emotional and behavioural responses or consequences (C) to an activating event or antecedent (A) are shaped by the person's interpretation or beliefs (B). These three components reflect three component skills needed in order to take part in CBT: (a) accessibility of automatic thoughts, (b) ability to differentiate emotions, and (c) understanding of the cognitive rationale (Safran et al., 1993, 1986). Accessibility of automatic thoughts corresponds with the belief component, while differentiation of emotions corresponds to the consequences component, and the cognitive rationale is reflected within the cognitive mediation process, which hypothesises that the relationship between situations and emotions are mediated by cognition.

Several authors have examined whether people with IDs have difficulties with some of the component skills needed to take part in CBT. Reed and Clements (1989) examined whether people with IDs could link situations and feelings using six simple pictured scenarios and pictures of a happy face and a sad face. Approximately two thirds of participants made correct links for each scenario; incorrect responses were associated with lower levels of verbal comprehension. This task has since been used by Dagnan, Chadwick, and Proudlove (2000), Joyce, Globe, and Moody (2006) and Oathamshaw and Haddock (2006) with people with IDs, yielding very similar results.

Oathamshaw and Haddock (2006), rather than just focus on emotions, assessed the ability of people with IDs and psychosis to differentiate between emotions, thoughts, and behaviours, reporting that behaviours and feelings were more easily identified than thoughts. A similar finding was reported by Quakley, Reynolds, and Coker (2004) in relation to the abilities of young children to learn the skills required for CBT.

Dagnan and Chadwick (1997) assessed the ability of people with IDs to supply mediating beliefs that would link each of six simple scenarios to an emotion, which was a picture of a sad or angry face. They prompted participants to formulate a mediating belief which linked the given situation and emotion. Twenty percent of participants were able to produce mediating beliefs.

In a subsequent study, Dagnan et al. (2000) introduced a revised assessment of cognitive mediation skills. Five scenarios were presented twice, once with a belief or emotion that matched or was congruent with the situation, while at other times the belief or emotion did not match the situation, i.e., was incongruent. For example, the antecedent ‘You walk past a group of friends and they don't say hello’ is negatively valenced and was followed with the negatively valenced belief, ‘I'm not likeable’, to form a negatively valenced congruent pair. When the same antecedent was followed by the positvely valenced belief, ‘I am likeable’, it formed an incongruent pair. For congruent pairs the consequential emotion, happy or sad, should have the same valence as both the antecedent and the belief, whereas for incongruent pairs the consequential emotion should have the same valence as the mediating belief. The findings indicated that people with IDs found incongruent pairings to be particularly difficult. Other studies have reported similar results (Oathamshaw and Haddock (2006) and Joyce et al. (2006)).

To examine if training improved the cognitive mediation skills of people with IDs, Bruce, Collins, Langdon, Powlitch, and Reynolds (2010) randomised people with IDs to a graded training programme in CBT skills or a relaxation intervention. Training led to improvements in the ability to link thoughts and feelings, as measured by the Thought to Feeling task (Doherr, Reynolds, Wetherly, & Evans, 2005) but participants' ability to distinguish amongst thoughts, feelings and behaviours did not improve, as measured using the Thought-Feeling-Behaviour discrimination task (Quakley et al., 2004).

Together, these studies suggest that people with IDs have some understanding that emotions are linked to situations, but find it harder to understand how cognitions mediate this connection. However, while there is evidence that an understanding of the A–B–C model is associated with outcome from CBT (Safran et al., 1993), we still do not know whether this is also the case for people with IDs. Furthermore, various studies have shown strong links between verbal ability, and both readiness for CBT (Dagnan & Chadwick, 1997; Dagnan et al., 2000; Joyce et al., 2006; Reed & Clements, 1989; Sams, Collins, & Reynolds, 2006), as well as therapeutic gains (Willner, Jones, Tams, & Green, 2002). The currently available assessments and training methods (Dagnan et al., 2000; Joyce et al., 2006; Reed & Clements, 1989) rely heavily on verbal comprehension and may be too difficult for some people with moderate IDs. They also use abstract symbols of emotions that do not conform to the recommendations of McKenzie, Matheson, McKaskie, Hamilton, and Murray (2000). Hence, there is scope to make further adaptations to existing assessment and training methods which aim to improve CBT skills. This may improve the accessibility of therapy (Vereenooghe & Langdon, 2013) for a population with a high prevalence of mental health problems (Clarke, 2003; Emerson & Hatton, 2007; Hulbert-Williams & Hastings, 2008; Reiss & Benson, 1984).

The present study evaluated cognitive mediation training for people with IDs skills using a computer-based paradigm. The specific objective was to compare the effects of training in cognitive mediation skills compared to an attention-control intervention. It was hypothesised that:

1. Training in linking situation to feelings, and vice versa, would significantly improve ability to (a) link pairs of situations and mediating beliefs to appropriate emotional responses, whereby (b) congruent items, but not incongruent items, will be significantly associated with this ability to link pairs of situations and mediating beliefs to appropriate emotional responses.
2. Training in linking situation to feelings, and vice versa, would significantly improve ability to (a) link pairs of situations and emotions to appropriate mediating beliefs, whereby (b) congruent items, but not incongruent items, will be significantly associated with this ability to link pairs of situations and emotions to appropriate mediating beliefs.

1. Methods

1.1. Participants

Twenty-three men and 42 women were recruited and randomly assigned to the training or attention-control condition, stratified by general intellectual functioning. The specific inclusion criteria were (a) minimum age of 18 years old, (b) IQ below 70. The exclusion criteria were (a) additional sensory impairments, (b) pervasive developmental disorder, (c) acute psychosis, or (d) currently receiving CBT. A flowchart depicting participant flow through the study is shown in Fig. 1. Seven people were not retained at post-test assessment: two participants lost interest during the WASI-II assessment, one participant left on holiday before pre-test assessments were administered, three participants did not want to continue the pre-test assessments, and one participants had

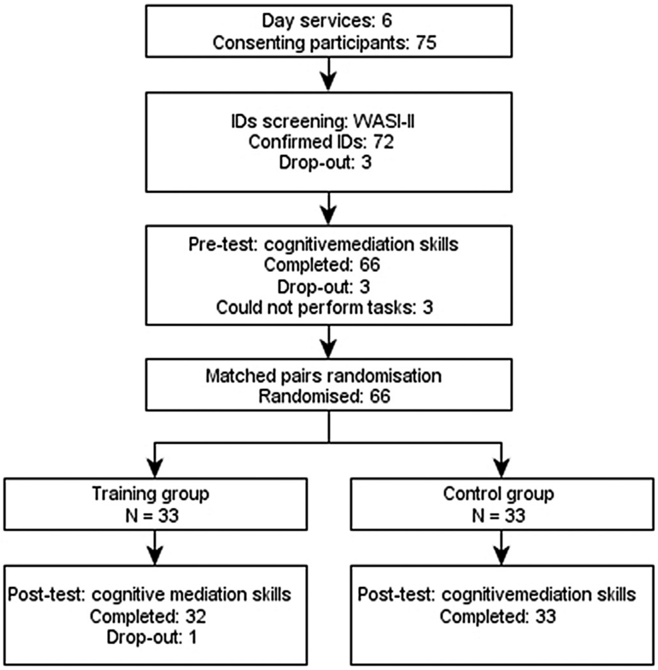


Fig. 1. Flowchart of participants in the study.

become frustrated during the intervention and eventually dropped out during post-test assessments. Three were unable to take part in the computer task without significant assistance. Mann–Whitney tests yielded no significant difference between the training and attention-control groups on age, U = 506.000, $p = .773$, or sex, $\chi^2(1) = .028$, $p = .867$. Similarly, a one-way ANOVA showed no group differences in Full Scale IQ, $F(1, 63) = < 1$, $p = .717$, indicating that the groups were well matched (Table 1).

1.2. Design

A 2 (Group: training or attention-control) × (2 (Time: 1 or 2) × S) mixed experimental design was used to evaluate whether training improved ability to link situations to feelings on two tasks of cognitive mediation skills. Randomisation was masked and allocation was concealed from the researcher. This was achieved by using a randomisation script, written in PsychoPy (Peirce, 2007), and run at the start of the intervention. The researcher entered the participants' Full Scale IQ into the computer, and the participant was assigned to one of the two group using matched-pairs randomisation. Randomisation was stratified based on IQ. There was no information regarding allocation presented to the researcher or the participant, and the researcher did not have sight of the computer once the IQ had been entered. Participants completed computerised pre- and post-training assessments of cognitive mediation skills.

Table 1
Participant characteristics per group.

	Training group $N = 32$	Control group $N = 33$
Gender	11 Male, 21 Female	12 Male, 21 Female
Age	38.53 (12.0)	38.15 (14.1)
WASI FSIQ	53.3 (8.4)	52.5 (8.5)
WASI VCI	56.6 (9.3)	56.0 (7.7)
WASI PRI	55.9 (8.3)	55.0 (10.3)

Note. Mean (SD) scores for Wechsler Abbreviated Scale of Intelligence – II Full Scale IQ (WASI FSIQ), Verbal Comprehension Index (WASI VCI) and Perceptual reasoning Index (WASI PRI).

1.3. Measures

1.3.1. Intellectual and verbal functioning

The Wechsler Abbreviated Scale of Intelligence – 2nd edition (WASI-II; Wechsler, 2011) was used to provide a reliable estimate of Full Scale IQ based on verbal comprehension and perceptual reasoning subscales. It can be used with people aged from 6 to 89 and takes approximately 30 min to complete. The WASI-II has good reliability and validity (Wechsler, 2011).

1.3.2. Cognitive mediation skills

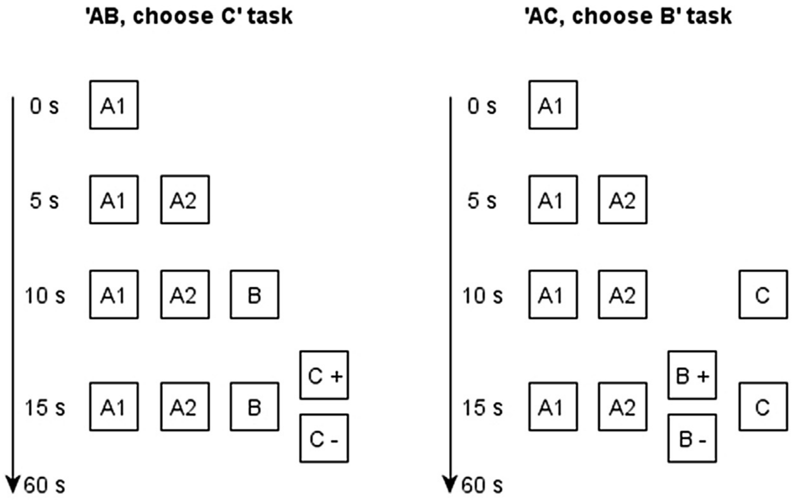
Two computer based tasks were used to assess different types of cognitive mediation skills: the 'AB, choose C' task and the 'AC, choose B' task. This was based on materials developed by Dagnan and Chadwick (1997) and Dagnan et al. (2000). These tasks were counterbalanced between participants and were used as measures of performance at pre- and post-training. Fig. 2 illustrates how task items were presented. Pictures were created using an online computer package called Pixton® Comics (http://www.pixton.com/uk/). Task items of the 'AB, choose C' task started with the presentation of picture A1, and after 5 s, picture A2. Pictures A1 and A2 depicted the situation, or antecedent (A). Next, a picture of a belief (B in Fig. 2) was presented, followed 5 s later, by a picture of a positive emotion, or consequence (C+), and then a negative emotion, or consequence (C−). The presentation of each picture was accompanied by audio telling the participant what was happening in each picture. Fig. 3 presents a sample task item.

For example, one scenario involved pictures of a person walking into a room where some friends were located. The presentation of pictures A1, accompanied by the audio, 'You walk into a room' was initially presented; picture A2 is then presented, where a group of people are laughing, accompanied by the speech, 'Your friends start to laugh'; picture B is then presented accompanied by, 'You think your friends are laughing at you'; and finally, picture C +, a happy face, and C−, a sad face is presented. Participants were asked how the situation and thought would led them to feel and used the external response box to select either C +, or C− as their response.

For the 'AC, choose B' task a situation was presented using both the A1 and A2 pictures, followed by the presentation of a feeling, C+ or C−, where a person's positive or negative facial expression was depicted, and the audio description told the person how the character was feeling. Participants were then asked to select one of two mediating beliefs, B+ or B−. For example, in the above described item 'Your friends start to laugh', B+ was 'You think your friends are happy to see you', and B− 'You think your friends are laughing at you'. Items were presented for a maximum duration of 60 s. Participants could respond after the two response options (C+ and C−, or B+ and B−, depending on the task) were presented. Hence, participants were given 45 s to respond.

Each task comprised twelve items. Items were created using six situations paired once with a positive belief, or feeling, and once with a negative belief, or feeling. Hence, congruent and incongruent situation-belief (AB) and situation-feeling (AC) pairs were created. The maximum score on each task was 12; scores were converted to percentages for data analyses. In addition, scores of 10 or more were designated as 'pass'; this score is associated with a probability of being obtained by chance of .016.

Two scenarios were replaced because they were difficult to unambiguously present in pictures ('being asked to meet the day centre manager', and 'the first day of a new job'). These were replaced with the new situations of 'You are sitting in the waiting room. You have to see the dentist', and 'You are sitting at the table, painting a picture for a friend'. From the Dagnan et al. (2000) tasks, the forced choice responding and formation of congruent and incongruent items were adopted. It was anticipated that forced



Note. A = antecedent, B = belief, C = consequence. A1 and A2 present different elements of the antecedent. B + and B – are positive and negative beliefs, respectively. C + and C – are a happy and a sad face, respectively. The vertical line presents the time from presentation of the first picture, at time 0 s, to the end of the task item, at 60 s.

Fig. 2. Schematic presentation of a single item of the cognitive mediation tasks.

choice responding could potentially reduce the impact of verbal ability associated with the original open ended questions (Dagnan & Chadwick, 1997).

1.4. *Training and control interventions*

1.4.1. *Training condition*

Training comprised two tasks derived from the Reed and Clements (1989) assessment of linking situations to feelings which were different, in terms of content, from the assessment tasks. The ‘A, choose C’ and ‘C, choose A’ training tasks both consisted of six randomised items and presentation of the tasks was counterbalanced between participants.

The ‘A, choose C’ training task presented participants with six scenarios of which the antecedent was depicted by two pictures, A1 and A2. For example, ‘You are walking home’, A1, ‘when you get caught in the rain’, A2. Next, pictures of a happy face, positive consequence C+, and sad face, negative consequence C−, appeared and participants were prompted to indicate how they would feel in the given situation by pressing the corresponding button on the external response box. The ‘C, choose A’ training task saw participants presented with a pictured happy face or sad face, followed by the presentation of two possible antecedents, A1 A2 + and A1 A2 −, pictured left of the emotional consequence, as presented schematically in Fig. 4.

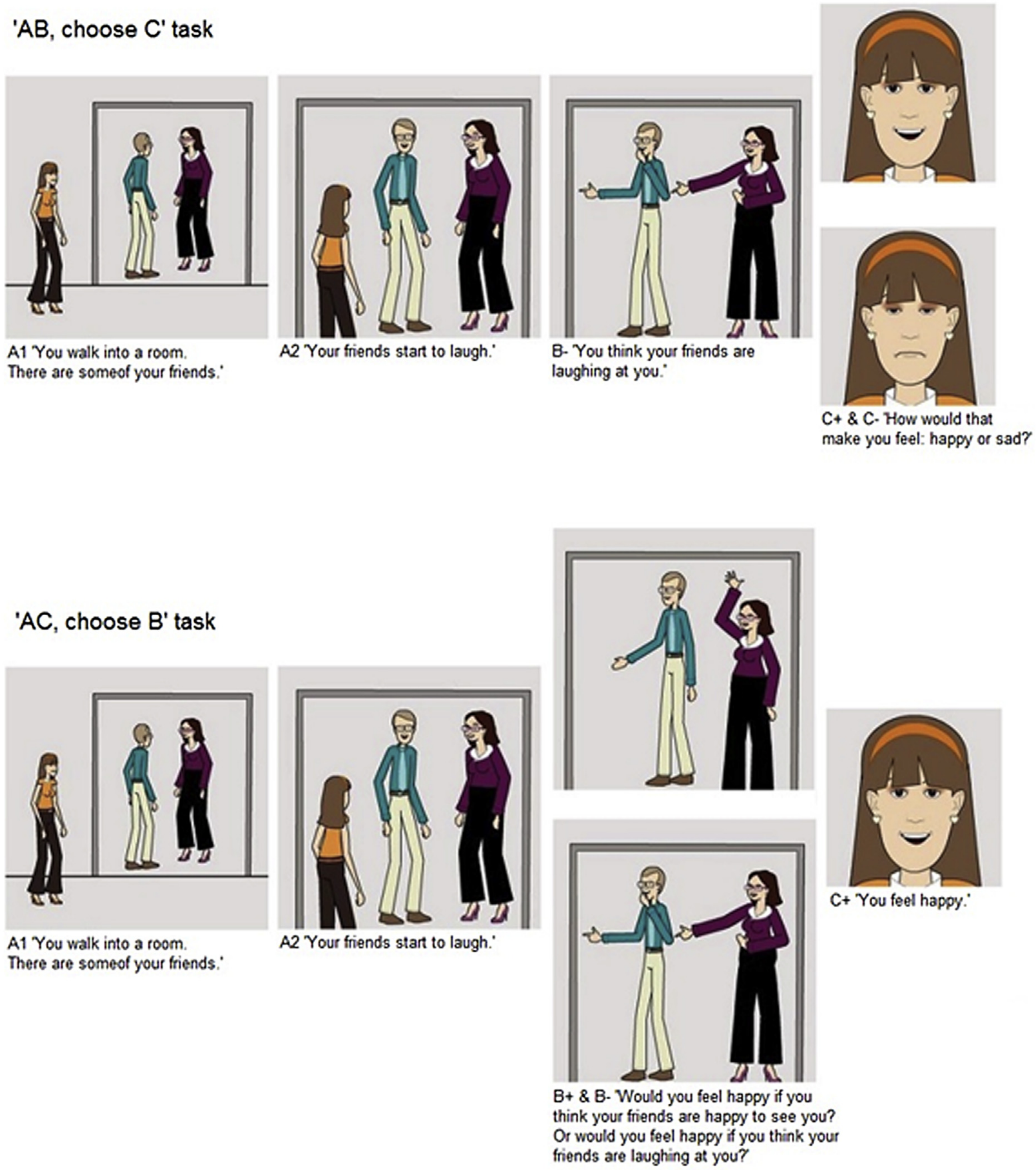
Task items for the training intervention were adapted from the original items used by Reed and Clements (1989). However, one original item (‘You entered a competition and won the first prize.’) had been replaced with an item more suitable for presentation in two simple line drawings (‘Some time ago you planted seeds. They grew into beautiful flowers.’).

Each training task was conducted over a maximum of three rounds. In round 1, all six items were presented. Upon completing round 1, any incorrect items were randomised and presented again in round 2, after which any remaining incorrect items were randomised and presented a final time in round 3. Rounds 2 and 3 were introduced as follows: ‘Well done. Now, let's look at some of the stories again.’ Participants received automated feedback in rounds two and three as follows: for the ‘A, choose C’ task correct responses were followed by the feedback, ‘That's right, I would feel happy too if [insert antecedent, e.g. my flowers had grown]’, whereas incorrect responses were followed by the feedback ‘Really? I would feel happy if [insert antecedent, e.g. my flowers had grown]’. Correct items were not re-presented in rounds 2 and 3 to keep the time of the tasks limited as well as to ensure that participant motivation and concentration would not decrease due to repeated presentation.

It was anticipated that improved understanding of the connection between situations and feelings would enhance participants' ability to understand cognitive mediation when the belief component was re-introduced during post-test assessments.

1.4.2. *Attention control task*

The control task comprised an attention-control task requiring interaction with the computer programme. Participants were presented with twelve scenarios consisting of two images picturing a situation, A1 and A2, and one image of an emotion, C. The six scenarios were identical to the task items of the ‘A, choose C’ training items, whereas six new scenarios were added for the control task. Each scenario was presented in three steps: picture A1, followed after 5 s by picture A2, followed after an additional 5 s by picture C (see Fig. 4). The scenarios included audio descriptions, but did not include any questions and at no point were participants required to make a decision regarding which situation would elicit a given emotional response or how a given situation would make them feel. However, to ensure that the duration of the task would match that of the training intervention participants were given the option to press a button to have a scenario repeated. Scenarios could be repeated up to five times.

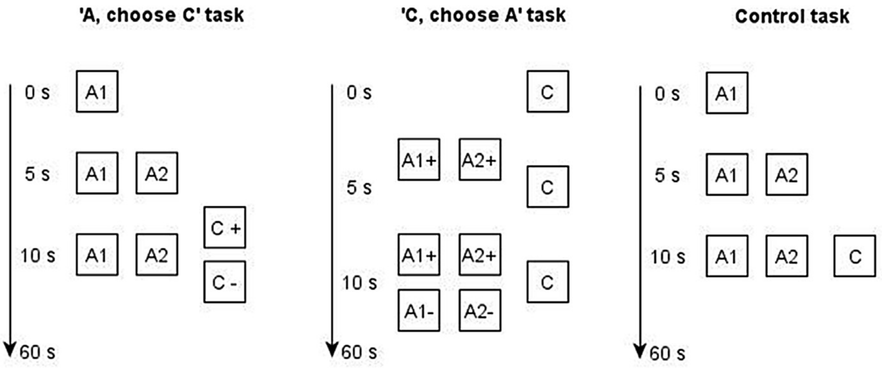


Note. The text under each picture indicates whether it present the antecedent, belief or consequence; as well as the description of each component as it was recorded in the programme. These pictures were created using Pixton®.

Fig. 3. Sample items from the cognitive mediation tasks.

1.5. *Ethical considerations*

A favourable ethical opinion for the study was given by a National Health Service (NHS) Research Ethics Committee and the study protocol was registered with ClinicalTrials.gov, registration number NCT01652963. Study information sheets and consent forms were presented in an easy to read format and explained to potential participants. Participants were encouraged to discuss their participation with staff and carers. Particular attention was given to the right to withdraw, confidentiality and consent. Ability



Note. A = antecedent, C = consequence. A1 and A2 present different elements of the antecedent. C + and C – are a happy and a sad face, respectively. The vertical line presents the time from presentation of the first picture, at time 0 s, to the end of the task item, at 60 s.

Fig. 4. Schematic presentation of a single item of the training tasks and control task.

to give informed consent was assessed through consultation with service staff and by asking yes or no questions about the study information sheets. All participants were judged to have capacity to make a decision as to whether they would like to take part or not.

1.6. Procedure

Six local authority and charity organisations that provided activities for people with IDs in Norfolk and Suffolk supported the recruitment process. Staff were informed about the study and were asked to suggest potential participants. At pre-test, participants completed the WASI-II and both cognitive mediation tasks. After randomisation and the intervention, the cognitive mediation tasks were presented again. Breaks of maximum half an hour were given between the tasks. All assessments and intervention tasks were programmed and presented using PsychoPy2, v1.74.00, software (Peirce, 2007) and responses were recorded with an external response box, DirectIN Button Box (Empirisoft). The programme and its content is freely available from the authors. Task components – pictures of situations, thoughts, and emotions – were presented visually in coloured line drawings created with Pixton® Comics (http://www.pixton.com/uk/). A Toshiba TECRA R850-119 laptop with Windows 7 operating system was used for this study. A registered speech and language therapist recorded voice commands to provide task instructions and support. The researcher provided assistance for the first six items during pre-test to ensure participants understood the task requirements and were able to perform the response procedures independently.

1.7. Data-collection and analysis

Pre-test scores were inspected for normality and found to be negatively skewed for both cognitive mediation tasks. Descriptive data will be presented alongside non-parametric analyses of potential between-group differences. Participants whose scores had reached ceiling level at pre-test (100% accuracy) were subsequently excluded from the data-analysis as they could no longer benefit from a potential training effect. Removal of these data points did not improve the skewed distributions. Linear regression analyses could be performed, however, because assumptions regarding multicollinearity between predictors, homogeneity of regression slopes and the normal distribution of residuals were not violated. Hence, the main effect of training was investigated using regression analyses, whilst controlling for variability in pre-test scores and IQ. Additional regression analyses were performed for congruent and incongruent items of each task separately. The association between verbal ability and cognitive mediation skills was assessed at pre-test using spearman correlations. In addition, a linear regression model was fitted to examine the impact of verbal skills on pre-test scores.

2. Results

Hypothesis 1a. Training in linking situation to feelings, and vice versa, will significantly improve ability to link pairs of situations and mediating beliefs to appropriate emotional responses.

The average percentage of correct responses in the training group and the control group at pre-test was 82.55 percent, $SD = 15.7$, and 77.53 percent, $SD = 14.4$, respectively (Table 2) for the ‘AB, choose C’ task; this difference was not significant, Mann-Whitney $U = 397.000$, $p = .080$.

Table 3 shows the results of the regression analysis of post-test scores. Eight participants were excluded from this analysis: three participants in the control group and five in the training group

Table 2
Pre-test and post-test cognitive mediation skills.

	Training ($N = 32$)	Control ($N = 33$)	Mann–Whitney *U*
AB, choose C			
Pre-test	82.55 (15.7)	77.53 (14.4)	397.000 ($p = .080$)
Post-test	90.36 (11.2)	78.54 (16.8)	300.000 ($p = .002$)
AC, choose B			
Pre-test	80.99 (16.2)	76.26 (15.6)	431.500 ($p = .199$)
Post-test	87.76 (14.2)	80.05 (16.7)	385.000 ($p = .054$)

Note. Mean percentage correct responses (SD) and Mann–Whitney U test for between group differences at pre-test and post-test.

reached 100 percent accuracy level at pre-test and hence could not benefit from training. Pre-test performance: $\beta = .330$, $p = .005$; IQ: $\beta = .347$, $p = .003$, and training: $\beta = .299$, $p = .005$, made significant contributions in predicting post-test performance and together, explained 42 percent (i.e. adjusted R square) of the variability in performance after the intervention. These results indicate that training significantly improved participants' ability to correctly identify emotions associated with situation-belief pairs.

Hypothesis 1b. Congruent items, as opposed to incongruent items, will be significantly associated with ability to link pairs of situations and mediating beliefs to appropriate emotional responses following training.

Participants' performance on congruent and incongruent items is presented in Table 4. Regardless of intervention group, overall post-test performance was correlated with pre-test performance on the congruent items, $r(32)_{\text{Training}} = .538$, $p = .001$; $r(33)_{\text{Control}} = .618$, $p < .001$, but not on incongruent items $r(32)_{\text{Training}} = .334$, $p = .062$; $r(33)_{\text{Control}} = -.084$, $p = .642$. Separate regression analyses of congruent items indicated that their respective pre-test scores: $\beta = .384$, $p = .001$; IQ: $\beta = .314$, $p = .006$, and training: $\beta = .312$, $p = .003$, predicted post-test performance. Performance on incongruent items, however, was only predicted by IQ: $\beta = .268$, $p = .040$, and not by pre-test performance: $\beta = .146$, $p = .254$; or training: $\beta = .227$, $p = .077$. These results indicate that training significantly improved participants' ability to correctly identify emotions associated with situation-belief pairs, but only for congruent items.

Hypothesis 2a. Training in linking situation to feelings, and vice versa, will significantly improve ability to link pairs of situations and emotions to appropriate mediating beliefs.

Pre-test performance of the training group $M_{\%} = 80.99$, $SD = 16.2$, and control group $M_{\%} = 76.26$, $SD = 15.6$, did not differ significantly for the 'AC, choose B' task: Mann–Whitney $U = -431.500$, $p = .199$.

A linear regression analysis of post-test performance excluding participants with perfect pre-tests scores (Control group, $n = 3$; Training group, $n = 7$) was conducted. Pre-test scores: $\beta = .296$, $p = .027$; IQ: $\beta = .226$, $p = .088$; and training: $\beta = .147$, $p = .246$, were entered as predictors, adjusted $R^2 = .157$. However, within-group changes were tested using Wilcoxon signed rank tests and a significant change in cognitive mediation skills was found for the training group $z = -2.600$, $p = .009$, but not for the attention control group, $z = -1.207$, $p = .227$.

Table 4
Pre-test and post-test performance on congruent and incongruent items of the cognitive mediation tasks for the training group and the control group.

	Training ($N = 32$)	Control ($N = 33$)	Mann–Whitney U
AB, choose C – Congruent			
Pre-test	68.75 (18.3)	64.65 (20.7)	472.000 ($p = .434$)
Post-test	77.60 (10.0)	63.64 (23.7)	341.500 ($p = .006$)
AB, choose C – Incongruent			
Pre-test	68.75 (16.8)	68.18 (13.4)	490.500 ($p = .600$)
Post-test	75.00 (11.2)	67.68 (12.5)	357.000 ($p = .015$)
AC, choose B – Congruent			
Pre-test	66.15 (18.2)	59.09 (21.3)	426.500 ($p = .164$)
Post-test	72.92 (14.5)	65.66 (20.0)	425.000 ($p = .144$)
AC, choose B – Incongruent			
Pre-test	67.71 (18.4)	69.19 (18.7)	500.000 ($p = .693$)
Post-test	71.35 (17.6)	69.19 (13.9)	448.500 ($p = .258$)

Note. Mean percentage correct responses (SD) and associated Mann–Whitney U test for between group differences at pre-test and post-test.

Hypothesis 2b. Congruent items, as opposed to incongruent items, will be significantly associated with ability to link pairs of situations and emotions to appropriate mediating beliefs.

Congruency of task items had little impact on task performance of the control group with no association found between pre-test congruent, $r(33)_{\text{Control}} = .119$, $p = .511$, and incongruent items $r(33)_{\text{Control}} = .332$, $p = .059$, and overall post-test performance. For the training group, however, pre-test performance on both congruent, $r(32)_{\text{Training}} = .527$, $p = .002$, and incongruent items $r(32)_{\text{Training}} = .454$, $p = .002$, was associated with overall post-test performance. Separate regression analyses for congruent items showed only pre-test performance on congruent items to be a significant predictor of their respective post-test performance, $\beta = .368$, $p = .006$. No significant predictors could be identified for post-test performance on incongruent items.

2.1. *Additional analyses*

The computer based assessment tasks, though adapted from earlier tasks developed by Dagnan and Chadwick (1997) and Dagnan et al. (2000), are nevertheless novel. Additional analyses were performed to examine whether performance on each task was close to floor-level or ceiling-level, and to what extent intellectual or verbal functioning was associated with performance.

Table 3
Regression of pre-test performance, IQ and intervention on 'AB, choose C' task scores (N = 57).

	B (St. Error)[a]	Beta[a]	t[a]	Adjusted R square[b]	Change R square[b]
'AB, choose C' task: total[a]					
Intercept	17.326 (11.038)	–	1.570	–	–
Pre-test	.365 (.125)	.330	2.920^{**}	.256	$.269^{**}$
IQ	.625 (.202)	.347	3.096^{**}	.340	$.095^{**}$
Intervention	9.208 (3.165)	.299	2.909^{**}	.420	$.088^{**}$
'AB, choose C' task: congruent items[a]					
Intercept	–.075 (.770)	–	–.097	–	–
Pre-test: congruent	.394 (.112)	.384	3.508^{**}	.271	$.284^{***}$
IQ	.044 (.015)	.314	2.875^{**}	.345	$.084^{*}$
Intervention	.754 (.243)	.312	3.097^{**}	.435	$.097^{**}$
'AB, choose C' task: incongruent items[a]					
Intercept	2.394 (.678)	–	3.533^{**}		
Pre-test: incongruent	.120 (.104)	.146	1.154	.011	.029
IQ	.023 (.011)	.268	2.109^{*}	.071	$.076^{*}$
Intervention	.331 (.184)	.227	1.801	.108	.052

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

[a] , Regression model includes all predictors.

[b] Model includes this predictor and all predictors above.

2.1.1. *Baseline ability to link situations, thoughts and feelings*

A Wilcoxon Signed Rank test revealed no differences in pre-test performance between the two cognitive mediation tasks, indicating they had similar difficulty levels, $z = -.795$, $p = .427$. Fifty nine percent of participants passed the 'AB, choose C' task and 45% passed the 'AC, choose B' task.

2.1.2. *Ability to link situations to feelings*

Data were available for 33 participants allocated to the training group. Average accuracy rates at the first presentation of the training tasks (or Time 1) were 89.4 for the A, choose C′ and 82.3 percent for the 'C, choose A' task. The Wilcoxon signed rank test indicated this was a significant between-task difference: $z = -2.523$, $p < .012$. For the 'A, choose C' task, errorless performances were recorded for 65.6% of participants in round 1. Seventy-two percent of participants who proceeded to round 2 had errorless performance at this stage, and all 3 participants who continued to round 3 succeeded in answering all remaining items correctly. Likewise, 46.9% of participants performed errorlessly at round 1 of the 'C, choose A' task; with 64.7% of remaining participants performing errorlessly at round 2, and three out of six participants in round 3 answering the remaining items correctly.

2.1.3. *Association of intellectual and verbal functioning with CBT skills*

Spearman correlations were slightly higher between IQ and cognitive mediation tasks involving the selection of emotions, $r(65) = .392$, $p = .001$, than between IQ and cognitive mediation tasks involving the selection of beliefs, $r(65) = .320$, $p = .009$. The verbal comprehension index of the WASI –II correlated significantly with performance on the congruent items, $r(65) = .578$, $p < .001$, but not the incongruent items, $r(65) = .172$, $p = .170$, on the 'AB, choose C' task. However, the verbal comprehension index correlated significantly with the incongruent items, $r(65) = .350$, $p = .004$, but not the congruent items, $r(65) = .147$, $p = .242$, of the 'AC, choose B' task.

3. Discussion

The results of this study suggested that training in linking situations to feelings may improve some aspects of cognitive mediation skills for people with mild to moderate IDs. Training effects were found for the ability to select appropriate emotional responses for situation-belief pairs, when compared to an attention-control intervention (Hypothesis 1a). This effect remained when controlling for variability in baseline scores and IQ. However, congruency of situations and beliefs is a determining factor, with congruent, but not incongruent, items improving significantly following the training intervention (Hypothesis 1a). The findings also suggest that training improved the ability to select appropriate mediating beliefs when presented with a situation and feeling (Hypothesis 2a), although this effect was not maintained when controlling for variability in pre-test scores and IQ, nor when considering the congruency and incongruency of task items levels (Hypothesis 2b).

The findings of the study are consistent with Dagnan et al. (2000) and confirms the association between verbal ability and task performance for both the cognitive mediation assessments and the adapted Reed and Clements (1989) task (Dagnan et al., 2000; Joyce et al., 2006; Oathamshaw & Haddock, 2006). However, with 59 and 45 percent of participants passing the computerised 'AB, choose C' and the 'AC, choose B' task in this study, baseline performance far exceeded previously reported pass-rates of 10 and 25 percent (Dagnan et al., 2000), 12 and 13 percent (Joyce et al., 2006), and 12 and 10 percent (Oathamshaw & Haddock, 2006), respectively. It is unlikely that the higher pass-rates reported in this study are a result of sampling, because no cut-off scores for verbal comprehension skills were applied to exclude participants, as has been used in some previous studies (Joyce et al., 2006; Oathamshaw & Haddock, 2006). Furthermore, scores on the 'A, choose C' training task saw 65.6 percent of participants performing errorlessly compared to 75% (Dagnan et al., 2000), 72% (Oathamshaw & Haddock, 2006) and 50% (Joyce et al., 2006) on the associated Reed and Clements (1989) task in previous studies.

A possible explanation for the higher pass-rates found for the cognitive mediation tasks in this study is the use of inferential rather than evaluative beliefs in the cognitive mediation tasks. Indeed, Dagnan and Chadwick (1997) found that people with IDs are more likely to respond with inferential beliefs when asked what they could be thinking in a given situation-feeling pair, and later reported that inferential beliefs are expected to have more clinical utility than evaluative beliefs (Dagnan, Mellor, & Jefferson, 2009). Alternatively, the use of pictures accompanied by audio presented to participants using a computer is likely to have facilitated understanding. Observations and feedback from participants suggest that they experienced the study as engaging and fun, which may have increased their motivation, and thus resulted in better attendance and performance.

Participants' engagement with the computerised tasks may reflect an increase in accessibility. The accessibility of the task was demonstrated by relatively good performance of participants at baseline, considering that the sample included had an average Full Scale IQ that fell towards the bottom of the "mild" range of IDs. In addition, all participants successfully passed the control questions prior to the baseline tasks, and very few (4%) could not complete the tasks independently. Furthermore, across all participants and task items, only four missing data points, due to responding out of time, were identified. Three of these occurred during the 'AC, choose B' task. However, a potential drawback of computerised training is the use of automated feedback that lacks individualisation. Further research is needed to explore the role of therapist feedback alongside computerised assessment and training programmes in therapy.

Turning to the training of CBT skills, both Bruce et al.'s (2010) and the present findings indicated that some CBT skills can be trained and further diversification and development of training interventions is desirable. In the current study participants completed the study in one day rather than over 2 weeks as in Bruce et al., (2010). This quick succession of tasks, and familiarisation with the computer, may explain the improved performance noted within the attention-control group.

Other factors may have contributed to the observed improvements in the attention-control group. Unlike the relaxation control group in the Bruce et al. (2010) study, the present control group offered an experience similar to the training group through the use of the same task items. The opportunity to attend to these stories without additional task demands may have freed more cognitive resources for participants to implicitly reflect on the cognitive mediation task, thereby improving their post-test performance. Furthermore, the absence of specific questions in the control task may have indirectly may have impacted on participants' attention and motivation throughout the rest of the study. However, we did not examine if any gains were maintained over time or if generalisation of learning occurred.

The current experimental design does not allow us to demonstrate generalisation, which has both clinical and methodological implications. From a clinical perspective, it would be important to assess whether gains made in training are translated into an improved understanding of the cognitive rationale when applied to experiences relevant to the individual. Ideally, people would demonstrate generalisation to relevant experiences discussed in therapy, as well as to situations they encounter outside of therapy (Beck, 1976). From a research perspective, generalisation was facilitated by using different items for the assessment and training tasks, thereby requiring participants to apply the skills learned in training to the items of the cognitive mediation task. However, generalisation to other situations, which can be achieved by adding new items at post-test, was not assessed. Hence, future studies should evaluate whether training gains generalise to new items at post-test, to personal experiences, and to situations experienced outside of therapy (Green & Glasgow, 2006). Linked to this, we also do not know whether training leads to improvements in therapy outcomes for people with IDs.

A more considerable limitation of the present study was the absence of cognitive components in the training intervention, and this may be why the ability to correctly choose mediating beliefs did not improve. Indeed, the use of Reed and Clements (1989) task taught participants to link situations to feelings, and vice versa, but did not actively target the mediating role of cognitions. While the 'C, choose A' task involved some degree of perspective taking, it is likely that this was insufficient to have led to substantial improvements on the 'AC, choose B' task, and this should be addressed further in a future study.

Moreover, it could be argued that the presented beliefs were not recognised as cognitions, but interpreted as a fact, similar to the antecedent. Further inspection of the data from the training group, however, shows that performance is generally lower for tasks that include a belief component (i.e. the baseline cognitive mediation tasks) than for tasks without a belief component (i.e. the training tasks). This would suggest that the added belief component increased task demands and was not interpreted by participants as part of the original antecedent. The present study design does not allow for strong conclusions to be drawn regarding participants' ability to identify cognitions.

Taken together, these limitations question the appropriateness of the current tasks for assessing and training cognitive mediation skills. However, the Reed and Clements (1989) did target a necessary component of this process, namely linking antecedent to consequent. Similarly, the 'AB, choose C' and 'AC, choose B' tasks assess separate components of the cognitive mediation process, albeit not the entire process. These assessments were chosen for the current study because they have been used by other studies that have attempted to assess cognitive mediation skills. Nevertheless, some further work is needed to develop tasks that assess all domains of cognitive mediation, bearing in mind that Dagnan et al. (2009) evaluated whether beliefs offered by people with IDs to link a situation and emotion were actual mediating beliefs or were responses to the activating event, restatements of the event or emotion, or other non-mediating beliefs.

Future studies could address these concerns by having participants identify each task component as a situation, belief or emotion, as well as explore whether cognitions would be more accurately recognised prior, during or after completing a cognitive mediation task. It is advised, however, that in the development of new assessments of cognitive mediations skills attention is given to their clinical usability, as well as their applicability for research studies.

This study has a number of strengths. The use of an experimental design, including concealed allocation and masked assessment, allows for an examination of causation. The participants were representative of the population and the stratification ensured that they were well matched in terms of IQ. Furthermore, the use of pictures throughout the study, to present task instructions, task items and feedback, may have improved the accessibility of the tasks and their ability to engage participants; which may consequently had a positive impact upon task performance.

Similar and further research will hopefully lead to the development of effective training programmes that can be used with people with IDs before they begin therapy, or during therapy. Furthermore, some recent findings suggest that understanding of cognitive mediation and ability to identify thoughts, feelings and behaviours improves during therapy (Barrowcliff, Jones, Oathamshaw, & McConachie, 2013). However, more research is needed to understand how CBT skills link to therapeutic success for people with IDs. This is clearly important because of the extremely high rates of mental health problems amongst this population and their relatively poor access to evidence based treatments.

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Using computers to teach people with intellectual disabilities to perform some of the tasks used within cognitive behavioural therapy: A randomised experiment

Leen Vereenooghe, Lina Gega, Shirley Reynolds, Peter E. Langdon

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Using computers to teach people with intellectual disabilities to perform some of the tasks used within cognitive behavioural therapy: a randomised experiment

Leen Vereenooghe
University of East Anglia

Lina Gega
Northumbria University at Newcastle Upon Tyne

Shirley Reynolds
University of Reading

Peter E Langdon
University of Kent and
Hertfordshire Partnership University NHS Foundation Trust - Norfolk

Author Note

Leen Vereenooghe, Department of Clinical Psychology, Norwich Medical School, University of East Anglia, UK; Lina Gega, Faculty of Health and Life Sciences, Northumbria University, Newcastle Upon Tyne; Shirley Reynolds, School of Psychology and Clinical Language Sciences, University of Reading; Peter E. Langdon, Tizard Centre, University of Kent, UK and Broadland Clinic, Hertfordshire Partnership University NHS Foundation Trust - Norfolk, UK

Correspondence concerning this article should be addressed to Dr Peter E Langdon, Tizard Centre, University of Kent, Canterbury, CT2 7LR. Email: P.E.Langdon@kent.ac.uk (+44 1603) 711178

ABSTRACT

Aims: Training has been shown to improve the ability of people with intellectual disabilities (IDs) to perform some cognitive behavioural therapy (CBT) tasks. This study used a computerised training paradigm with the aim of improving the ability of people with IDs to: a) discriminate between behaviours, thoughts and feelings, and b) link situations, thoughts and feelings.

Methods: Fifty-five people with mild-to-moderate IDs were randomly assigned to a training or attention-control condition in a single-blind mixed experimental design. Computerised tasks assessed the participants' skills in: (a) discriminating between behaviours, thoughts and feelings (separately and pooled together), and (b) cognitive mediation by selecting appropriate emotions as consequences to given thoughts, and appropriate thoughts as mediators of given emotions.

Results: Training significantly improved ability to discriminate between behaviours, thoughts and feelings pooled together, compared to the attention-control condition, even when controlling for baseline scores and IQ. Large within-group improvements in the ability to identify behaviours and feelings were observed for the training condition, but not the attention-control group. There were no significant between-group differences in ability to identify thoughts, or on cognitive mediation skills.

Conclusions: A single session of computerised training can improve the ability of people with IDs to understand and practise CBT tasks relating to behaviours and feelings. There is potential for computerised training to be used as a "primer" for CBT with people with IDs to improve engagement and outcomes, but further development on a specific computerised cognitive mediation tasks is needed.

KEYWORDS: Cognitive Behavioural Therapy, Training, Learning Disabilities, Cognitive Mediation, Skills, Neurodevelopmental Disorders

Background

The last decade has seen an increase in research evaluating the efficacy of psychological therapies for people with intellectual disabilities (IDs), especially cognitive behavioural therapy (CBT) of anger regulation problems. Meanwhile, the proportion of case studies and single-armed trials has decreased, with more large-scale multi-site randomised controlled trials (RCTs) being completed (Brown, Duff, Karatzias, & Horsburgh, 2011; Vereenooghe & Langdon, 2013). This increase in the methodological quality of intervention studies enabled Vereenooghe and Langdon (2013) to complete a meta-analysis reporting moderate to large effect sizes for CBT of both anger regulation problems and depression.

The efficacy of psychological treatments is of particular importance given the high prevalence rates of mental health problems in this population. It is estimated that up to forty per cent of people with IDs suffer from mental health problems (Cooper, Smiley, Morrison, Williamson, & Allan, 2007), many of which may be associated with the higher occurrence of negative life events (Biswas & Furniss, 2009; Hulbert-Williams & Hastings, 2008). In spite of this, access to psychological therapies for people with IDs is still limited, in particular for young adults and people with mild to moderate IDs who often do not receive psychiatric assessments (Bhaumik, Tyrer, McGrother, & Ganghadaran, 2008).

Various barriers, both before and during therapy, may contribute to the lack of adequate provision in psychological therapies. Initial problems may arise in the assessment phase when mental health problems are not recognised as distinct from the IDs (Reiss, Levitan, & Szyszko, 1982) or misdiagnosed as challenging behaviour (Azam, Sinai, & Hassiotis, 2009). For those who continue to receive psychological therapy, being uninformed about the grounds for their referral may negatively impact upon their motivation to engage in therapy; hence, affecting treatment outcomes (Willner, 2006). Likewise, difficulties in establishing a therapeutic alliance may lead to clients engaging in a dependency-inducing relationship rather than taking ownership of the therapeutic process (Brechin & Swain, 1988; Jahoda et al., 2009). Furthermore, the perceived level of cognitive functioning may pose an additional barrier when therapists are more likely to use the cognitive aspects of CBT with more abled clients only (Willner, 2006).

The assumption that cognitive and verbal skills affect the ability of people with IDs to engage in and benefit from psychological therapy has since been widely investigated. Taylor et al. (2008) reviewed the evidence regarding the impact of full scale IQ and verbal IQ on therapy outcomes, reporting that while some studies reported better outcomes for clients with a higher verbal IQ (Rose, Loftus, Flint, & Carey, 2005; Willner, Jones, Tams, & Green, 2002), others reported greater improvements from pre-intervention to follow-up for clients with lower full scale IQ scores (Taylor, Novaco, Gillmer, Robertson, & Thorne, 2005). This discrepancy could be associated with mode of delivery, individual versus group-based treatments, and intensity or frequency of sessions (Taylor et al., 2008). Meta-analytic evidence supports the first assumption, with both Prout and Nowak-Drabik (2003) and later Vereenooghe and Langdon (2013) affirming greater therapy efficacy for individual rather than group therapy.

In addition to verbal ability, other skills may be desirable or required to participate in CBT successfully, some of which are likely to be related to general intellectual functioning. The Suitability of Short-term Cognitive Therapy (SSCT) scale identifies ten skills that would determine a person's suitability for therapy (Safran, Segal, Vallis, Shaw, & Samstag, 1993), including compatibility with the cognitive rationale and potential to form a therapeutic alliance. Our study targeted two of the four skills of the SSCT scale that are associated with capacity for participation in CBT and are predictive of therapy outcome for anxiety and depression: accessibility of automatic thoughts and awareness and differentiation of emotions (Renaud, Russell, & Myhr, 2014).

Suitability for CBT in terms of cognitive skills

Various cognitive, interpersonal and motivational factors have been identified that may affect therapy outcomes. The cognitive aspects, linked to the cognitive rationale of CBT, have been determined by the antecedent-belief-consequence model (ABC-model; Ellis, 1977) of rational-emotive therapy. The ABC-model explains behaviour and emotions as consequences, C, to how a situation or antecedent, A, has been interpreted or mediated by beliefs, B. Assessments derived from this model focused on identifying various emotional states, linking situations to feelings (Antecedent and Consequence components), linking thoughts to feelings (Belief and Consequence components), differentiating between thoughts, feelings, and behaviours (Belief and Consequence components), and understanding of how thoughts mediate the relationship between situations and consequential emotions, a process known as cognitive mediation (Antecedent, Belief and Consequence components).

Identifying emotional states, particularly your own, is essential to engaging in meaningful discussions about the causes and consequences that led to them. Many researchers have focused on whether people with IDs are able to successfully identify emotional states. However, the evidence indicates that differentiation between various positive and negative emotional states, other than happy and sad, is sometimes problematic for people with IDs (Dagnan & Chadwick, 1997; Joyce, Globe, & Moody, 2006; McKenzie, Matheson, McKaskie, Hamilton, & Murray, 2001).

In addition, performance on emotion recognition assessments has been associated with the type of assessment and stimuli used (McKenzie, Matheson, McKaskie, Hamilton, & Murray, 2000; McKenzie et al., 2001). For example, labelling emotions appears more difficult than identifying a given emotion from multiple stimuli, in which accuracy rates can be increased by reducing the range of forced-choice stimuli from six to two. Emotion recognition ability is also higher for photographs with more contextual information than line drawings when there are a greater number of stimuli presented. The value of photographs over line drawings tends to reduce, however, when fewer stimuli are presented.

While identifying emotional states is important for psychological therapies, the ability to link situations, or antecedents, to feelings, or consequences is also important. Reed and Clements (1989) examined this ability with adolescents and young adults who have IDs, and approximately two thirds of their sample showed substantial levels of emotional awareness as determined by errorless performance in linking happy and sad faces to six different pictured scenarios, leading them to report that an age equivalent score of 4 years and 5 months on the British Picture Vocabulary Scale (Dunn, Dunn, Whetton, & Pintillie, 1982) was necessary to complete the task successfully.

Replications of this task led to similar findings with pass rates ranging from fifty to seventy-five per cent (Dagnan, Chadwick, & Proudlove, 2000; Joyce et al., 2006), indicating that most people with IDs can determine the appropriate emotional response in various situations provided they demonstrate substantial verbal comprehension skills.

Next, Dagnan and Chadwick (1997) assessed cognitive mediation skills by verbally describing brief scenarios and presenting facial expressions of consequential emotions. All participants generated at least one thought that would mediate the association between the presented situation and emotion, although the task was considered difficult by some.

In a subsequent study, the cognitive mediation assessment was subdivided in two tasks focusing on different aspects of cognitive mediation (Dagnan et al., 2000). The ‘If A and B, choose C’ task presented participants verbally with a scenario comprising an antecedent, A, and a belief, B, and prompted participants to identify whether they would feel happy or sad (emotional consequence, C). Likewise, for the ‘If A and C, choose B’ task, participants had to select an appropriate mediating belief, B, for scenarios comprised of an antecedent, A, and its positive or negative emotional consequence, C. Respectively, ten and twenty-five per cent of participants managed to pass each task, a grade awarded to scores of eight out of ten or higher, and no differences were found in level of difficulty between the two tasks.

The above findings were replicated by Joyce et al. (2006) and again by Oathamshaw and Haddock (2006) in people with IDs and psychosis. Most of the above studies reported a significant correlation between cognitive mediation ability and level of verbal comprehension, but it is important to bear in mind that participants with limited verbal skills were excluded from these studies. More recently, Vereenooghe, Reynolds, Gega, and Langdon (2015) did not employ exclusion criteria based on verbal skills, but reported substantially higher pass-rates on these tasks using an adapted and computerised version of the tasks.

Turning to the ability to differentiate between the various components of the ABC model, Oathamshaw and Haddock (2006) adapted the Behaviour, Thought, Feeling Questionnaire (BTFQ; Greenberger & Padesky, 1985) for use with people with IDs and psychosis. A list of twenty-four items, one of which was omitted from the analyses, were read to 50 participants who had to identify each item as a behaviour, a thought or a feeling. On average, 67% and 52% of participants were able to identify at least 6 out of 8 behaviours and feelings, respectively, and 19% were able to identify at least 5 out of 7 thoughts correctly.

Finally, two studies evaluated training programmes aimed to improve some of the necessary CBT skills for people with IDs. Within the first study (Bruce, Collins, Langdon, Powlitch, & Reynolds, 2010), using an experimental methodology comparing a training programme to a relaxation condition, participants' ability to link thoughts to feelings significantly improved, but training had no significant effect on ability to discriminate between behaviours, thoughts and feelings. In another experimental study, Vereenooghe et al. (2015) used a computerised training programme which was based on the Reed and Clements

(1989) assessment, which led to improvements in ability to identify appropriate emotional consequences in a cognitive mediation task of the type ‘AB, choose C’. However, when compared to an attention-control condition, no training effect was found for the ability to identify appropriate mediating beliefs for a cognitive mediation task of the type ‘AC, choose B’.

The findings of both Bruce et al. (2010) and Vereenooghe et al. (2015) are encouraging and potentially offer a new approach to prepare people with IDs prior to accessing CBT, in addition to adaptations to the content and delivery of CBT itself (Whitehouse, Tudway, Look, & Stenfert-Kroese, 2006). Building on this, the current study developed and evaluated a computerised training programme to help people with IDs learn some of the component skills of CBT: i.e. differentiating between behaviours, thoughts and feelings, and identifying thoughts as mediators of emotions (cognitive mediation skills). Using a 2 (Group: Training or Attention-Control Condition) x (2 (Pre- or Post-Test) x *S*) experimental design, we predicted that training, when compared to an attention-control condition, would improve the ability of people with IDs to: 1) discriminate between, (a) behaviours, (b) thoughts and (c) feelings, separately and (d) pooled together, 2) understand cognitive mediation through the selecting of (a) appropriate emotions as consequences to given thoughts, and (b) appropriate thoughts as mediators of given emotions.

METHODS

Participants

We recruited 56 participants, of which one participant dropped out pre-randomisation (Figure 1). Table 1 presents some demographic information for the 55 (17 men, 38 women) participants randomised to the training (n=26) or attention-control condition (n=29). The groups were well-matched on age, t (47)=-.641 (p=.525) and IQ, Mann-Whitney U=368.5

(p=.886), but there were proportionally fewer women in the training group. Two participants were lost to follow-up before completing post-test assessment tasks, whereas 4 people dropped out before completing all post-test assessments. Participants who dropped out indicated that they were not interested in continuing with the research tasks in addition to their other scheduled regular activities for that day. Seven participants were excluded from the BTFQ analysis, and 5 from the cognitive mediation tasks analysis because they could not perform the tasks independently. We included 42 participants (training: n=17; attention control: n=25) in the analysis of the BTFQ scores and 44 (training: n=19; attention control: n=25) in the analysis of cognitive mediation skills scores.

We recruited participants from six organisations providing social, recreational and vocational day services for people with learning disabilities in the East of England. Managers gave permission for recruitment and staff signposted their users to the study. Service users were eligible to participate if they (a) were 18 years old or above, and (b) fulfilled the criteria for IDs in terms of limitations in intellectual and adaptive functioning. The Wechsler Abbreviated Scale of Intelligence, 2nd Edition (WASI-II; Wechsler, 2011) was used to provide an estimate of intellectual functioning and participants were included if they had an estimated full-scale IQ below 70. Difficulties with adaptive functioning were assumed present if the person was in receipt of publically funded social care interventions, specific for people with IDs. All potential participants who were approached for this study met these criteria. Participants were not eligible for this study if they had a diagnosis of a pervasive developmental disorder, acute psychosis, or if they were receiving CBT at the time. Service users with additional sensory impairments were eligible in so far that the degree of the impairment enabled them to complete the tasks independently. For example, service users could take part if they wore glasses or a hearing aid.

Design

The study used a randomised controlled comparison with a 2 (Group: Training or Attention-Control Condition) x (2 (Pre- or Post-Test) x *S*) single blind design. Participants' intelligence was assessed before randomisation, to allow for stratification by full-scale IQ. Masked randomisation was achieved through a computer script, written in PsychoPy (Peirce, 2007), that prompted the researcher to enter participants' full scale IQ at the start of the intervention. Randomisation was completed using matched-pairs, based on IQ, and group assignment was hidden from the researcher. The researcher was not able to see the computer screen while the participants were taking part in the study, although was able to offer assistance for the first few items of the assessment tasks without compromising masking.

Participants were not explicitly told the condition to which they were assigned. Assessments at pre- and post-test evaluated participants' performance on three CBT component skills by measuring their ability to: (a) differentiate between behaviours, thoughts, and feelings (b) identify emotions as consequences of thoughts, and (c) identify thoughts as mediators of emotions. We refer to the last two skills as 'cognitive mediation' skills.

Measures

WASI-II. The Wechsler Abbreviated Scale of Intelligence – 2nd edition (WASI-II; Wechsler, 2011) provides a reliable estimate of Full Scale IQ based on verbal comprehension and perceptual reasoning subscales. It can be used with people aged from 6 – 89 and takes approximately 30 minutes to complete. The WASI-II has good reliability and validity (Wechsler, 2011).

Behaviour-Thought-Feeling Questionnaire (BTFQ). Originally developed by Greenberger and Padesky (1985), the BTFQ was adapted for use with people with IDs by Oathamshaw and Haddock (2006). The measure consists of 24 items with equal numbers of behaviours, thoughts and feelings. Examples of behaviour items are *'Making a cup of tea'* and *'Working'*, examples for thoughts are *'I'm missing my friend'* and *'I'm a good person'*, and examples of feelings are *'Frustrated'* and *'Frightened'*.

The present study adapted the BTFQ so that its items were presented in coloured line-drawings and large print text (figure 2). The items appeared in screen in random order and the participants had 50 seconds to determine whether the item should be identified as a behaviour, a thought, or a feeling.

As illustrated in Figure 2, participants gave their answer by pressing a button on their response box which corresponded to the colour of their selected on-screen option: i.e. pressing the black button if the answer was 'behaviour', a yellow button for a 'feeling', and a blue button for a 'thought'. The response options and pictures were introduced prior to the assessment as follows: (a) for behaviours: 'These are things you can do. For example, you can walk, you can talk, or you can wave. Behaviours go in the black box.'; (b) for feelings: 'They describe how we are feeling. For example, you can feel happy, you can feel sad, or you can feel angry. Feelings go in the yellow box.'; (c) for thoughts: 'They describe what we are thinking. For example, you can think that you are strong, you can think that you are not sure about something, or you can think that someone likes you. Thoughts go in the blue box.'

Assessment Tasks for Cognitive Mediation Skills. Drawing on materials by Dagnan et al. (2000), which have been adapted for computerised delivery in a previous study by Vereenooghe et al. (2015), we used two assessment tasks to evaluate cognitive mediation skills: the 'AB, choose C' task assessed the ability to recognise emotions as consequences of thoughts, and the 'AC, choose B' task assessed the ability to recognise thoughts as mediators of emotions.

Each assessment comprised 12 items based on 6 different situations (Antecedent, A). Antecedents could be neutral or positively valenced, for example, 'You're sitting at the table. You are painting a picture for a friend' or 'It is winter. It has just started to snow', or negatively valenced, for example, ‘You see two of your friends. They don’t say hello’ or ‘You walk into a room. Your friends are laughing.’

In the ‘AB, choose C’ task each antecedent was paired once with a positive belief (B+), and once with a negative belief (B-). For example, the antecedent ‘Painting a picture for a friend’ was paired with both ‘You think your friend will hang it up the wall’ and with ‘You think your friend will put it in the bin.’ Participants were then shown pictures of a happy face as a positive feeling or consequence (C+) and a sad face as a negative feeling or consequence (C-). They were prompted to identify how they would feel in the scenario by pressing the corresponding button of the happy or sad face on an external response box.

In the ‘AC, choose B’ task, the same antecedents were paired once with a positive feeling (C+, i.e. happy face) and once with a negative feeling (C-, i.e. sad face). Participants then chose the appropriate mediating belief, having been given the choice between a positive and a negative belief (B+ and B-), by pressing the corresponding button on the response box. For example, when presented with the antecedent ‘You walk into a room. Your friends are laughing’ and the consequence ‘You feel happy’, the programme would ask participants ‘Would you feel happy if you thought your friends were happy to see you? Or would you feel happy if you thought your friends were laughing at you?’

Figure 3 illustrates the timeline of how the components of each task appeared on screen. Antecedents were presented as two consecutive pictures, whereas beliefs and consequences were presented as a single picture. Appearance of the pictures on screen was accompanied with audio narratives, so that the participants could see and hear what was happening in the scenario.

Intervention and Attention Control Conditions

Training Intervention. The Thought/Feeling/Behaviour card sorting task (TFB task; Quakley, Reynolds, & Coker, 2004) was originally developed to assess children’s ability to discriminate between thoughts, feelings, and behaviours. It has since been used with people with IDs (Bruce et al., 2010; Sams, Collins, & Reynolds, 2006), in which participants were presented with six stories revolving around one main character, three of which were mildly positively valenced and three mildly negative. Stories consisted of three sentences, each representing a thought, a feeling or a behaviour, read out to participants who then identified each sentence as a thought, feeling or behaviour.

This study adapted the TFB task for computerised delivery and for the purposes of training people with IDs in CBT component skills. The computerised training version of the TFB task presented the original six stories (Quakley et al., 2004) in pictures. The presentation order of the stories was random. While an audio recording narrated the stories, a picture was presented for each sentence. After the story had been presented, three coloured boxes appeared at the bottom of the screen, depicting a sample thought (blue box, ‘you think you are strong’), a feeling (yellow box, ‘you feel happy’), and a behaviour (black box, ‘you are walking’). The sentences describing the story were then highlighted one by one, accompanied by a voice recording, and participants were asked:

‘Is this something you can do, how you can feel, or what you can think? If you think [… insert sentence…] is something you can do, then press black. If you think […insert sentence…] is how you can feel, then press yellow. If you think […insert sentence…] is what you can think, then press blue.’

Figure 4 illustrates a screenshot of a task item. Participants had 60 seconds to press the coloured button that corresponds with their answer. The depicted sentence and accompanying picture then moved across the screen towards their chosen box at the bottom of the screen. The response was then either confirmed as correct, or incorrect, in which case the sentence and picture moved towards the appropriate box on the screen, demonstrating the correct response (Figure 4).

Attention-Control Intervention. Participants in this condition were presented the six stories of the TFB task (Quakley et al., 2004), in the same way as they were presented to participants in the training task; however, when sentences and pictures were highlighted after the story had been presented, factual questions were posed about the story. For example, if a sentence read ‘Mary went shopping with her mum’, the corresponding question was ‘Did Mary go shopping with her mum?’. The three response options in coloured boxes at the bottom of the screen were: ‘yes’ (black box), ‘no’ (yellow box), and ‘not sure’ (blue box). Participants had 60 seconds to respond; upon pressing a response button the pictured sentence moved across the screen towards the respective coloured box. Again, the answer was confirmed as correct or incorrect, with incorrect responses being corrected by moving the pictured sentence towards the correct coloured box.

Procedures

At baseline before randomisation, the WASI-II was completed. Participants then sat in front of a laptop and completed the BTFQ and both cognitive mediation tasks. The order of presentation of these tasks was counterbalanced between participants and the researcher could give participants assistance for the first six items of each task to ensure they understood the task instructions and were able to independently provide their answers. Following randomisation, participants completed the computerised intervention task. At post-test, participants completed again the BTFQ and two cognitive mediation tasks in the same order as they did at pre-test. Participants could opt for a break between tasks.

The BTFQ and assessment tasks for cognitive mediation skills, as well as the training and attention-control tasks, were all computerised and delivered on a Toshiba TECRA R850-119 laptop with a Windows 7 operating system running PsychoPy, v1.76.00, software (Peirce, 2007). The computerised line-drawings of task components were generated using Pixton® Comic Software (2013). An external USB numeric keypad, Targus AKP10EU, modified with coloured buttons, served as the response box. A picture of the response box appeared on screen next to every response option with the corresponding button highlighted in the picture.

Ethical Approval

A favourable ethical opinion was obtained from a National Health Service (NHS) Research Ethics Committee. All study information for participants was presented in an easy to read format and explained until they fully understood the consequences of agreeing to participate in the study, with particular attention given to issues surrounding confidentiality, right to withdraw, right to consult a third party for an independent opinion, and informed consent. Organisation staff were consulted to provide information regarding a potential participants' ability to consent. All participants were judged to be able to give informed consent.

Analysis

We excluded participants from the analysis if they were unable to understand and perform the required computerised tasks independently, as evidenced by: (i) pressing a single response button only, (ii) requiring continuous assistance to highlight the response options and clarify response procedures, or (iii) pressing buttons seemingly at random in between task items.

Each correct answer on the BTFQ was awarded 1 point with a maximum score of 24 for the overall task and a maximum score of 8 for the identification of the behaviours, thoughts, and feelings respectively. Each correct response on the assessment tasks for cognitive mediation skills was awarded 1 point with a maximum total score of 12 per task.

In accordance with previous studies, we calculated the "pass" grade for each assessment task by estimating the cut-off score that could be obtained by chance with a probability of less than 0.05. For the BTFQ, a "pass" was a cut-off score of 6 or higher for each component and 12 or higher for the overall task, whereas for the cognitive mediation tasks, the same cut-off score was 10 out of 12.

Scores on the pre-test and post-test assessments were converted to percentages. We also calculated the percentage of participants who "passed" each assessment task. The converted pre- and post-test scores were assessed for normality and homogeneity of variances. Where residuals were normally distributed and assumptions for multicollinearity and homogeneity of regression slopes were not violated, parametric tests (e.g. independent t-tests) and linear regression analysis were conducted, otherwise non-parametric analyses were performed. We intended to conduct linear regression analyses with three predictors: pre-test performance, IQ and intervention group. An *a priori* power calculation, using G*Power 3.1 (Faul, Erdfelder, Buchner & Lang, 2009), for an expected medium effect size, $f^2 = .15$, alpha $= .05$ and power $(1 - \beta) = .80$ yielded a required sample size of 55 participants.

RESULTS

Objective 1: Computerised training improves the ability to differentiate between behaviours, thoughts, and feelings, when compared to an attention-control intervention

1a. Effects of training vs. attention-control on ability to identify behaviours

The mean score for correct responses increased from 71 % (SD=28), at pre-test to 83 % (SD=25) at post-test for the training condition, but remained unchanged for the attention-control group (pre-test: 57 %, SD=33; post-test 57 %, SD=35). The proportion of participants who achieved a "pass" on identifying behaviours was much lower in the attention-control than the training group post-test (36% vs. 82%), although participants in the attention-control group had started with a disadvantage because their pass rate was much lower than that of the training group at baseline (44% vs. 71%). A linear regression analysis found a significant effect of pre-test performance (β=.627, *t*=4.688, *p* < .001), and a trend for a positive effect of training (β=.237, *t*=1.916, *p*=.06) on post-test performance (see Table 2).

1b. Effects of training vs. attention-control on ability to identify thoughts

The training group correctly identified 25 % of thoughts at both pre-test (SD=19) and post-test (SD=15), whereas for the attention-control group these were 32 % (SD=24) and 29 % (SD=21) pre- and post-test respectively. Linear regression analysis yielded no significant effect of training on post-test identification of thoughts (see Table 2). Similarly, pre-test performance and IQ were not found to be substantial predictors of post-test performance. Notably, "pass" rates for correctly identifying thoughts were very low. Only one participant passed the pre-test and two the post-test assessment, all of whom were assigned to the attention-control condition.

1c. Effects of training vs. attention-control on ability to identify feelings

Participants' performance on correctly identifying feelings in the training condition increased from 74% (SD=21) to 80% (SD=26). Performance in the attention-control condition remained level with 63% (SD=29) and 64% (SD=33) at pre- and post-test, respectively. In relation to "pass" rates, 44% of participants in the attention-control condition passed the task at both pre- and post-test, as opposed to 65% pre-test and 77% post-test of those in the training condition. In a subsequent linear regression analysis, only pre-test performance, and not group allocation, significantly contributed to the post-test performance (β=.781, *t*=7.297, *p* < .001) (see Table 2).

1d: Effects of training vs. attention-control on collective ability to identify behaviours, thoughts, and feelings

Taking into account the aggregate scores of the BTFQ, the percentage of participants who "passed" the task at baseline was much higher for training group (71%) than the attention-control group (48%). At post-test, 82% of participants from the training group passed the task compared to 44% in the attention-control group. The average percentage of correct responses increased in the training condition from 57% (SD=16) to 63% (SD=14), whereas it remained unchanged in the attention-control group with average scores of 50% (SD=19) at pre-test and 50% (SD=17) at post-test. When controlling for pre-test scores and IQ, a linear regression yielded a significant effect of training on the participants' ability to collectively identify behaviours, thoughts and feelings ($\beta=0.2$, $t=2.1$, $p < .05$) (Table 2). This linear regression model explained 58% of the variance in outcome scores, adjusted $R^2 = .580$ (Table 2).

Objective 2: Computerised training improves cognitive mediation skills compared to an attention-control condition

2a. Effects of training vs. attention-control on ability to select an emotion as a consequence to a given thought

Performance on the 'AB, choose C' task is presented in Table 3. Non-parametric analyses on change scores (post-test – pre-test) were performed due to the non-normal distribution of the pre-test scores and residuals in a regression analysis. The mean change score for the training condition was 6% (SD=11) compared to 2% (SD=15) for the attention-control group; however, this difference was not significant, Mann-Whitney $U=211$ ($p=.517$).

In spite of this, we observed a significant within-group difference for the training group only using the Wilcoxon Signed Ranks ($z=1.97$, $p=0.05$). The proportion of participants who "passed" the task pre- to post-test was stable at 74% in the training group and increased from 52% to 72% in the attention-control group.

2b. Effects of training vs. attention-control on ability to select a mediating thought for a given emotion

Table 3 presents the median scores for the training and attention-control group at pre- and post-test. There was no significant difference in mean change scores between the training group (mean change=4%, SD=19) and the attention-control group (mean change=9%, SD=21): Mann-Whitney U=221, p=.692. Turning to the proportion of participants "passing" the task at pre- and post-test respectively, there was a slight increase for the training group from 58% to 63%, but no change for the attention-control group with 48% passing the task at both pre- and post-test.

Additional Analyses

Spearman correlations tested for associations between IQ and baseline performance on the BTFQ (three subtasks and aggregate scores). The analyses indicated that full-scale IQ had a strong positive association with aggregate scores of the BTFQ (r=.565, $p < .001$) and the behaviours (r=.468, $p < .05$) and feelings (r=.345, $p < .05$) subtests, but not the thoughts subtest. Between-task correlations were observed between the 'AC, choose B' task and both the aggregate BTFQ scores (r=.341, $p < .05$) and the feelings subtest (r=.394, $p < .05$).

Further analyses of the response patterns for the BTFQ revealed that, on average, participants correctly identified 5 behaviours at pre-test and misidentifications were biased towards feelings. Similarly, when asked to identify feelings, participants correctly identified 5 feelings, on average, and misidentifications were biased towards thoughts. Thoughts, however, were more likely to be identified as feelings or behaviours, as only 2 thoughts were correctly identified.

Turning to the cognitive mediation tasks and the relative difficulty of individual task items, it was found that participants had least difficulty with linking the antecedent 'You paint a picture for friend' and the belief 'Your friend will hang it up the wall' to a consequential emotion, with 45 out of 46 participants choosing happy as the appropriate response. Likewise, 42 participants could link this antecedent and a happy face to the appropriate mediating belief. For the 'AB, choose C' task, participants had most difficulty with the antecedent-belief combination 'You see two of your friends. They don't greet you.'

Followed with the belief ‘You think they may not have seen you. They will come back and chat’. Only two thirds of participants (29 out of 46) correctly identified the happy face as the appropriate consequential emotions for the given belief. The most difficult item of the ‘AC, choose B’ task was the antecedent ‘It is winter. It just started snowing.’ when paired with a happy face, with only 28 participants identifying the appropriate mediating belief

DISCUSSION

Our results suggest that computerised training using CBT-related scenarios can improve the ability of people with IDs to identify behaviours, thoughts and feelings, when these are pooled together, compared to an attention-control task (objective 1d). When examining behaviours, thoughts, and feelings separately (objectives 1a, 1b, and 1c), we observed that participants in the training group performed better than those in the attention-control group at identifying behaviours and feelings (and not thoughts), but we were not able to detect a significant between-group difference. This was possible for two reasons. First, the sample size in our analysis was smaller than we anticipated due to attrition and the exclusion of participants from the analysis. Although we found a large training effect for overall BTFQ task performance, which was confirmed by, $R^2 = .580$, for the linear regression model that included pre-test scores, IQ and intervention as predictors, the training effect was less pronounced for the three BTFQ subtests, and it is possible that our sample size was too small to detect a medium effect size. Second, the control group started with lower scores at baseline performance compared to the training group and we found that baseline performance was a significant confounder for post-test performance.

Participants’ cognitive mediation skills, (objectives 2a and 2b) were similar between the training and control groups both at pre- and post-test. This means that training in discriminating between behaviours, thoughts and feelings may not generalise to making links between them. This finding is similar to other studies that evaluated training in CBT skills with people with IDs. Both Bruce et al. (2010) and Vereenooghe et al. (2015) reported specific training effects that did not generalise to other CBT-related skills. Further research should clarify whether component skills should be trained separately, or whether people would benefit more if multiple CBT skills were integrated in a single training intervention.

The pass rates for the computerised cognitive mediation assessments in this study were around or above 50%, similar to Vereenooghe et al. (2015), whereas previous studies reported pass rates for similar non-computerised tasks closer to 10% (Dagnan et al., 2000; Joyce et al., 2006; Oathamshaw & Haddock, 2006). For the BTFQ, by contrast, pass rates in this study were remarkably lower than those reported by Oathamshaw and Haddock (2006). It should be noted that some participants who did not pass the post-test assessment did show considerable improvements following training, but remained under the cut-off score for a pass grade, whereas some participants in the attention-control condition may have shown non-significant improvements that pushed them above the cut-off score for a "pass".

The strengths of the study lie in the use of a novel computerised training intervention, computerised assessment tasks and an appropriate computerised control task, the concealed allocation to each condition, and the masked assessment of outcomes. As already mentioned, the study had two main limitations: participant attrition and between-group differences in baseline performance. Some participants were excluded from the analysis because they were unable to perform the tasks independently or dropped out without giving post-test data. A possible explanation for this attrition is the inclusion of people with moderate level of IDs in our study as opposed to previous studies that mainly included mild IDs. This might have also lowered the observed strength of training effect; the negative impact of lower intellectual functioning on performance has been previously reported by Oathamshaw & Haddock (2006) and was supported by the strong correlation we found between IQ and performance on all assessment tasks.

The finding that IQ negatively affected BTFQ performance for participants who had received the training intervention, may be in line with the expectation that people with lower IQs benefit more from high-intensity approaches than people with higher IQs (Taylor et al., 2008). However, a note of caution is needed; while we used the WASI-II to assess general intellectual functioning, there is some evidence to indicate that this intelligence test is associated with high subtest variability, and potentially misleading results (Axelrod, 2002). Hence, further research is necessary to examine the potentially differential impact of IQ on training efficacy, as it might be associated with therapy efficacy, as well.

From a theoretical perspective, suitability for CBT would require the ability to both link and discriminate between the components of the A-B-C model. Hence, it would be expected that the ability to link situations and mediating thoughts to feelings (AB-C link) would be associated with the ability to discriminate between thoughts and feelings. This would lead to the contrasting hypotheses that either (a), training in one particular skill would also affect associated skills, or (b) that to improve a particular skill a more holistic approach incorporating all or some of the associated skills may be required. The findings of this and previous studies (Bruce et al., 2010; Vereenooghe et al., 2015) do not support the first hypothesis, whereas more research is needed to test the second hypothesis.

While there seems to be agreement on which CBT skills are essential in CBT, it is less clear how these skills should be assessed, and in particular cognitive mediation skills. On the one hand, in experimental studies, a forced-choice task that asks participants to select between two given beliefs or emotions has advantages in terms of experimental control, scoring and standardisation. On the other hand, in clinical practice, patients may find tasks relating to their lived experiences more meaningful and subsequently more helpful.

The literature suggests that people with IDs find it easier to identify thoughts for situations they have experienced and are recalling as part of a cognitive-emotive interview rather than when asked to identify appropriate mediating beliefs for situations proposed by a researcher (Hebblethwaite, Jahoda, & Dagnan, 2011). In two studies that used open-ended questions and prompted participants to formulate their own thoughts, rather than to choose between given thoughts, people with IDs were able to provide appropriate mediating thoughts for approximately half of the scenarios of the ‘AC, choose B’ type (Dagnan & Chadwick, 1997; Dagnan, Mellor, & Jefferson, 2009). This performance was better than that of a paper-based forced-choice task (Dagnan, Chadwick, & Proudlove, 2000); however, a computer-based forced-choice task outperformed all the above (Vereenooghe, Reynolds, Gega, & Langdon, 2015).

Furthermore, the choice of stimuli may also have affected task performance. While the emotions presented in the cognitive mediation tasks were accompanied by contextual information provided by the antecedent pictures, there was no contextual information for the feelings pictured in the BTFQ, which may have affected emotion identification skills in this task (see also McKenzie et al., 2001). It is possible that richer imagery may have led to improved outcomes.

These findings suggest that a computer-based training programme which includes items relevant to participants’ experiences could maximise the ability of people with IDs to develop cognitive mediation skills in preparation for, or alongside, mainstream CBT. This does not preclude the use of standardised, forced-choice tasks by presenting a menu of different scenarios to participants and asking them to point out which scenarios remind them of situations that happened to them, or which scenarios make them feel sad or stressed.

This would be in line with recent findings by Barrowcliff, Jones, Oathamshaw and McConachie (2013) who reported that understanding of cognitive mediation and ability to discriminate between behaviours, thoughts and feelings of people with IDs improved during therapy. Furthermore, a review of the potential mediating effects of CBT skills on therapy outcome in people without IDs found that while the use of certain CBT skills, such as behavioural activation and cognitive restructuring, increased during therapy, it was the quality of these skills in the second half of therapy that predicted therapy outcome for people with depression (Hundt, Mignogna, Underhill, & Cully, 2013). By implication, interventions that improve quality of CBT skills for people with IDs are likely to mediate better outcomes.

The clinical implications of a shift towards computerised assessments and training programmes have yet to be examined, together with the more practical and conceptual concerns clinicians may have about implementing such programmes in practice. Although the computerised approach appears feasible, clinical expertise cannot be replaced by a computer, and is desirable, especially when working with clients with complex presentations. It would be of particular importance to assess whether gains made in training can generalise to situations experienced outside of therapy, as this will be essential for people in developing effective coping strategies when therapy ends. It would be helpful to have a package of adjunctive interventions that could be used by clinicians when working with people with IDs to help adapt and improve the accessibility of psychological therapies.

Considerably more research is needed to establish an evidence-base regarding the short and long-term effects of computerised training and its feasibility for use prior to, or during, therapy with people with IDs, especially with reference to improved engagement and outcomes. For a population with high rates of mental health problems but limited access to evidence-based treatments, we can use technology to maximise the chances of people of IDs enjoying positive mental health.

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Figure 1. CONSORT diagram of participant flow through the study.

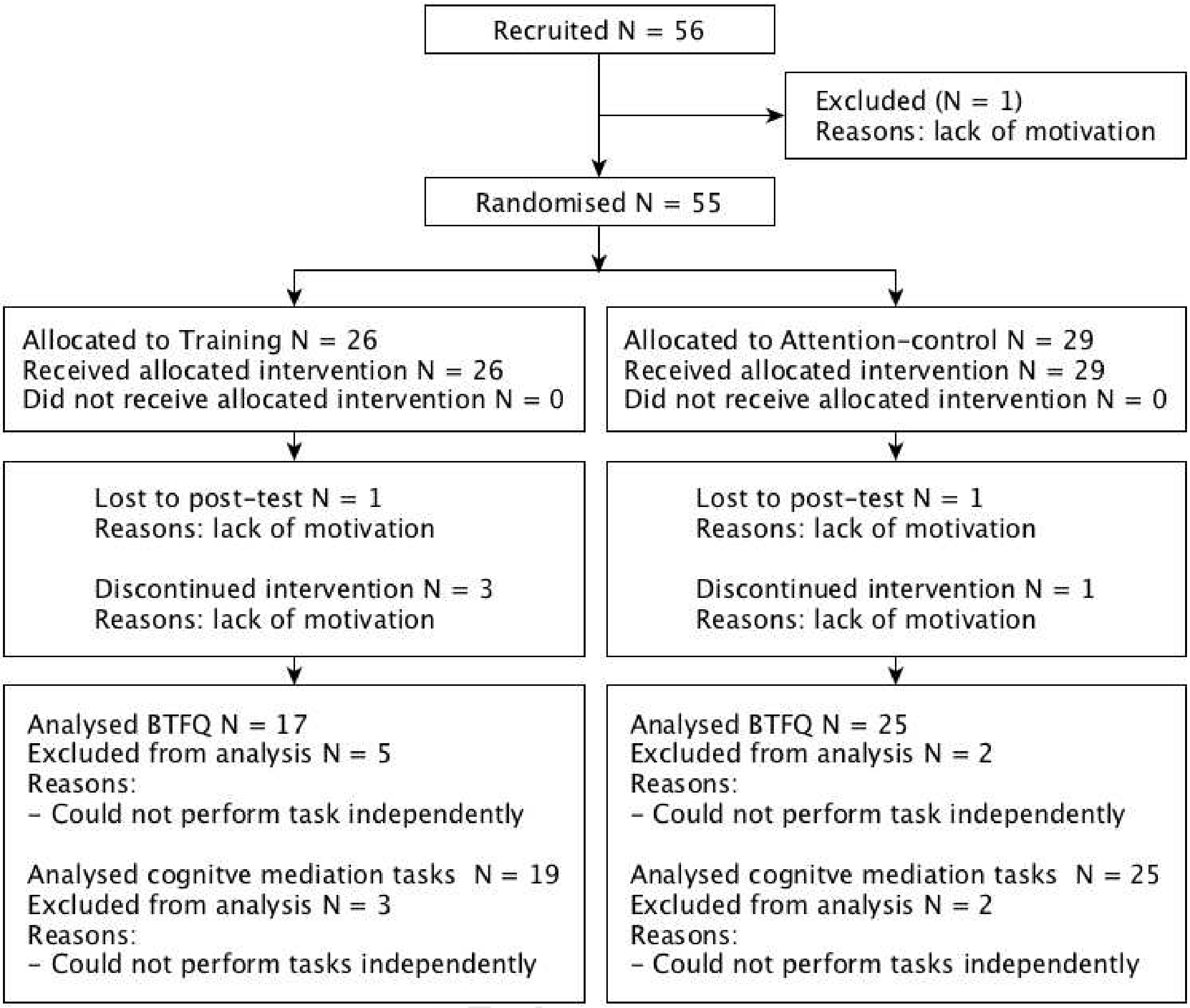


Table 1. Demographic information for participants randomised to the training and attention-control condition.

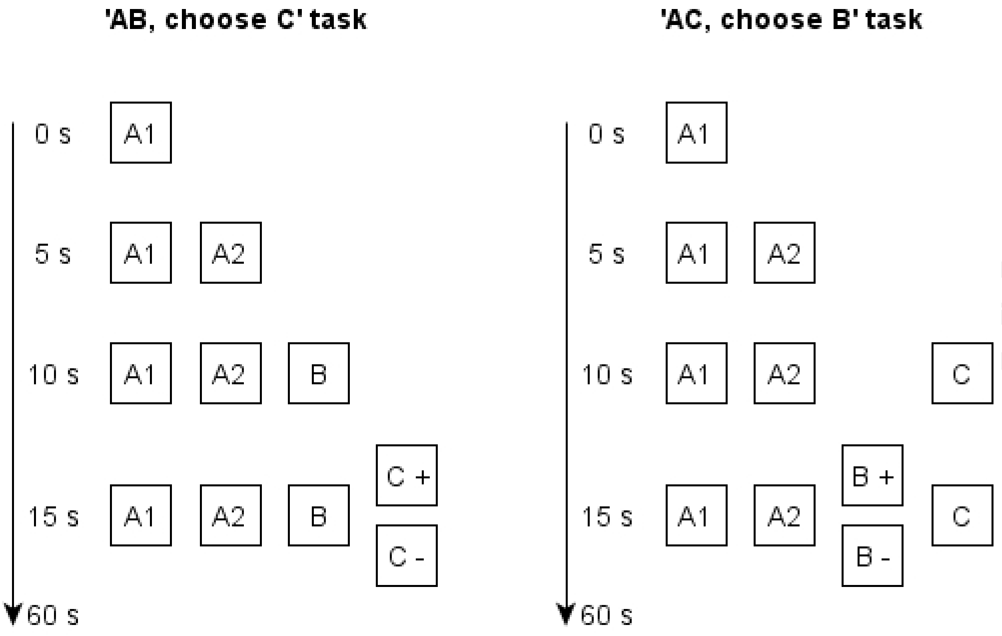
	Training condition (*N*=26)	Attention-control condition (*N*=29)
Male / female ratio	11/15	6/23
Age	41 (14)	36 (13)
IQ	50 (40 - 69)	50 (40 - 67)

Note. Age, mean age in years (SD); IQ, median WASI-II full-scale IQ (range)

Figure 2. BTFQ sample item as presented to participants on screen.

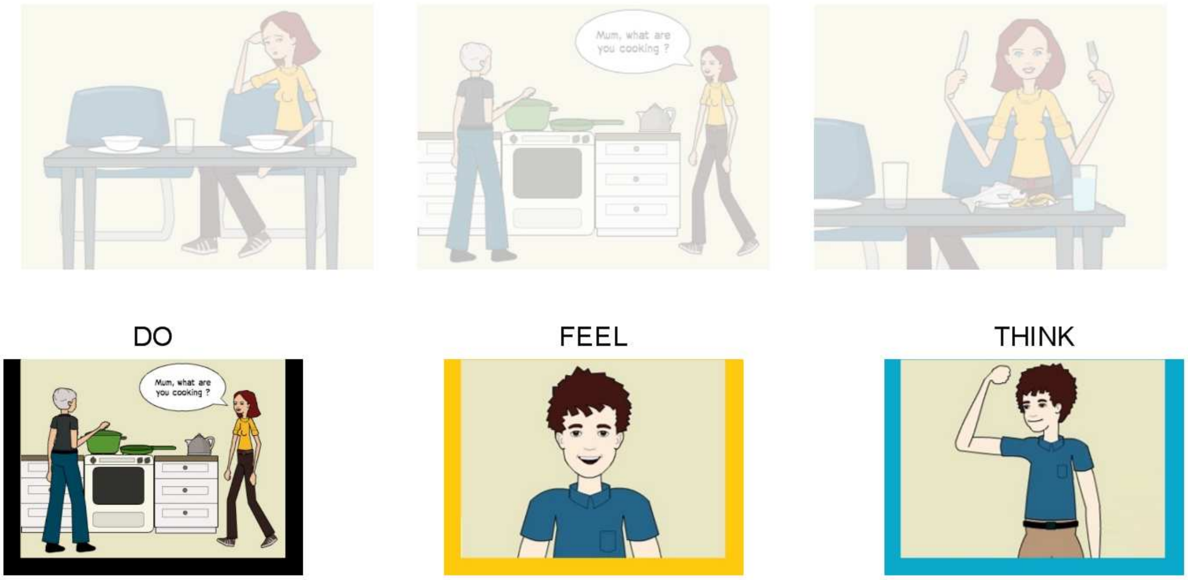
Note. Task item ‘Making a cup of tea’ presented on top of screen first, followed after 5 seconds by the black, yellow, and blue boxes depicting behaviours (e.g. ‘You can walk’), feelings (e.g. ‘You feel happy’) and thoughts (e.g. ‘You think you are strong’). The small black boxes at the bottom represent the response box and highlight the button participants should press to select this response. Printed with permission of Pixton ®.

Figure 3. Schematic illustration of how cognitive mediation tasks were presented on screen.



Note. A1, A2: Antecedents; B+, B-: positive and negative belief; C+, C-: happy and sad. Sample item 'AB, choose C' task: A1, 'You walk into a room'; A2, 'Your friends are laughing'; B, 'You think they are laughing at you'; C+, 'Would you feel happy?'; C-, 'Or would you feel sad?'. The vertical line presents the time from presentation of the first picture, at time 0 s, to the end of a task item, at 60 s.

Figure 4. Training intervention sample item as presented to participants on screen.



Note. Sample item ‘Mary wonders what mum is cooking. She shouts into the kitchen to find out. Mary is very glad to hear she’s having chips, her favourite.’ In this example, the participant has pressed ‘black’ indicating that ‘Mary shouts into the kitchen to find out.’ is something Mary does, and thus a behaviour. The picture then gradually moved from its top centre position into the black box. Printed with permission of Pixton ®.

Table 2. Regression analyses evaluating the effects of training on BTFQ performance.

	B (St. Error)	β	*t*	Adjusted R²
Thoughts Subtest				
Intercept	20.975 (9.875)	-	2.124*	
Pre-test Thoughts	.166 (.138)	.195	1.204	
IQ	1.878 (6.069)	.050	.310	.000
Intervention	-2.673 (6.049)	-.071	-.442	-.021
Feelings Subtest				
Intercept	16.304 (11.168)	-	1.460	
Pre-test Feelings	.910 (.125)	.781	7.297***	
IQ	-6.376 (6.506)	-.103	-.980	.590
Intervention	4.886 (6.469)	.079	.755	.586
Behaviours Subtest				
Intercept	32.517 (12.750)	-	2.550*	
Pre-test Behaviours	.666 (.142)	.627	4.688***	
IQ	-9.494 (8.756)	-.141	-1.084	.394
Intervention	15.883 (8.289)	.237	1.916	.433
BTFQ Total				
Intercept	21.152 (6.345)	-	3.334**	
Pre-test BTFQ	.737 (.112)	.759	6.577***	
IQ	-5.852 (3.949)	-.169	-1.482	.543
Intervention	7.589 (3.635)	.219	2.088*	.580

Notes. IQ, split at mean of 53.10 and categorised as low or high; *, $p < .05$; **, $p < .01$; ***, $p < .001$; R², applies to regression model that includes this predictor and all of the above.

Table 3. Pre- and post-test performance on the assessment tasks of cognitive mediation skills

	Training condition (*N*=19)	Attention-control condition (*N*=25)
AB, choose C		
Pre-test	83 (58-100)	83 (50-100)
Post-test	83 (67-100)	92 (41-100)
AC, choose B		
Pre-test	92 (50-100)	75 (33-100)
Post-test	83 (50-100)	92 (42-100)

Note. Median percentage correct responses (Min-Max).

Highlights

- Training improved ability to discriminate between thoughts, feelings & behaviours.
- Training had little effect on ability to correctly select mediating beliefs.
- Performance on the assessment task was related to intelligence.

B. Measures

Adapted Reed and Clements (1989) task

The original Reed and Clements task (1989) consists of six scenarios with either a male or female lead character. Participants are asked for each scenario whether the lead character would feel happy or sad. The task is adapted to serve as a training task in Study 1 and Study 2.
Adaptations include the replacement of one positive scenario by an item which is easier to present in pictures. The scenarios are presented with the participant as the lead character. The adapted task consists of two blocks of six exercises in which either the emotional response or the activating event should be identified. All scenarios are presented in the table below.

Items of the adapted Reed and Clements task (1989)

Antecedent or activating event	Consequence or emotional response
Positive scenarios	
1. You go into the living room. It's your birthday today. [‡]	- I would feel happy. - I would feel sad.
2. A friend rings you up. Your friend invites you for a special day out. [‡]	- I would feel happy. - I would feel sad.
3. You planted seeds some time ago. They became beautiful flowers. [‡‡]	- I would feel happy. - I would feel sad.
Negative scenarios	
4. You are walking home. You trip and fall. [‡]	- I would feel happy. - I would feel sad.
5. You take a friend's dog for a walk. The dog breaks the lead and runs off. [‡]	- I would feel happy. - I would feel sad.
6. You are walking to a friend's house. You get caught in the rain. [‡]	- I would feel happy. - I would feel sad.

Note. [‡] Original item from Reed and Clements (1989).
[‡‡] Newly created task item.

‘AB, choose C’ and ‘AC, choose B’ tasks

The tasks consists of two blocks of twelve exercises whereby participants are instructed to identify either the correct belief or the correct emotion. The exercises are based on six situations paired with a positive belief or emotion and six paired with a negative belief or emotion.
From the six original task items by Dagnan et al. (2000) three are retained and three are discarded because they could not be presented in clear and unambiguous pictures.
Three new items were created to complement the original three. All situations, beliefs and emotions are presented in the following table.

Items of the adapted cognitive mediation task

Antecedent or activating event	**Belief**	**Consequence or emotional response**
1. You walk into a room. Your friends start to laugh.[‡]	Pos: They are happy to see you. Neg: They are laughing at you.	Pos: You feel happy. Neg: You feel sad.
2. You are lying in bed. A noise wakes you up.[‡]	Pos: It is the post man with a post card. Neg: A cat jumped on the bin.	Pos: You feel happy. Neg: You feel sad.
3. You see a group of friends. They don’t say hello.[‡]	Pos: They will come and sit with you later. Neg: They don’t like you.	Pos: You feel happy. Neg: You feel sad.
4. You’re sitting at the table. You make a painting for a friend.[#]	Pos: Your friend will hang it against the wall. Neg: Your friend will put it in the bin.	Pos: You feel happy. Neg: You feel sad.
5. It is winter. It just started to snow.[#]	Pos: You will go out and build a snowman. Neg: You will be freezing outside.	Pos: You feel happy. Neg: You feel sad.
6. You are in a waiting room. You have an appointment with the dentist.[#]	Pos: You will get beautiful teeth. Neg: It’s going to hurt.	Pos: You feel happy. Neg: You feel sad.

Note.[‡] Item based on original task items from Dagnan and Chadwick (1997) and Dagnan, Chadwich and Proudlove (2000).
[#] Newly created task item.
Pos: positive, Neg: negative.

Adapted BTFQ (Oathamshaw & Haddock)

The task is based on the Behaviour Thought Feeling Questionnaire as used by Oathamshaw & Haddock (2006) who adapted it from the original version of Greenberger and Padesky (1985).

	Component	Item
1	Behaviour	Playing darts
2	Behaviour	Talking to a friend
3	Behaviour	Gardening
4	Behaviour	Washing up
5	Behaviour	Working
6	Behaviour	Answering the phone
7	Behaviour	Making a cup of tea
8	Behaviour	Washing your face[‡]
9	Feeling	Angry
10	Feeling	Happy
11	Feeling	Sad
12	Feeling	Upset
13	Feeling	Frightened
14	Feeling	Worried
15	Feeling	Miserable
16	Feeling	Frustrated
17	Thought	I don't know what to do for the best
18	Thought	I'm a good person
19	Thought	This is hard
20	Thought	I'm missing my friend
21	Thought	I'm good at things
22	Thought	I hope this works out
23	Thought	I've achieved something
24	Thought	I'm looking forward to my holiday

Note. [‡] Original item ‘Having a bath’ was adapted to facilitate presentation using Pixton.com® comics.

Thought-Feeling-Behaviour Discrimination task

The items from the Thought-Feeling-Behaviour Discrimination task were adapted from the original task by Quakley, Reynolds and Coker (2004).

	Component	Item
1	Feeling	Christmas is coming and Mary is very excited.
	Thought	Mary wished for a new puppy.
	Behaviour	She made a home for the puppy with blanket and cardboard.
2	Feeling	Last week at school Mary was very upset.
	Behaviour	Mary ran into the cloakroom to hide from everybody.
	Thought	Mary wondered if anybody would come and find her.
3	Behaviour	Mary walked into the car park to find her mum.
	Thought	Could it be that mum had forgotten to come pick her up?
	Feeling	Mary was very worried.
4	Behaviour	Mary went shopping with her mum.
	Feeling	Mary was very pleased with her new hat.
	Thought	Mary hoped her hat would match her scarf.
5	Thought	There was a thunderstorm. Thunder sounds a bit like fireworks to Mary.
	Feeling	Mary was frightened.
	Behaviour	Mary hid under the table.
6	Thought	Mary wondered what mum was cooking.
	Behaviour	Mary shouted into the kitchen to find out.
	Feeling	Mary was very glad to hear she had chips, her favourite.

Interview schedule service users

The semi-structured interview for people with IDs will make use of support materials to assist them with the interview. The questions will be presented in multiple formats: they will be written in large print as well as presented in pictures, and will be placed in front of the interviewee.

Computer experience:

a) What is your experience with computers?
b) Do you think people with IDs like to work with computers?

What is important for you to work with a computer?

c) Text, pictures, audio, video?
d) Watching and listening, or interacting?

There are computer programmes that help people with daily living skills: shopping, personal hygiene, cleaning, transport … We are interested in whether computers can help us when, for example, we feel upset. Can they help us understand our thoughts and feelings? Can they help us feel better or less afraid?

e) What do people do when they feel upset? Or when they are angry?

Sometimes, people need a bit of support to feel better again. We can turn to a parent, or a friend, or even a carer, key worker or a member of staff at a day service. These people know us well. Sometimes, we want someone who does not know about things we have done before and we want someone independent to turn to. Perhaps because we are not sure whether talking to someone would change the relationship we have with that person or change the service we receive. Other people you can talk to are social workers, people from your learning disability team, your GP …

If we feel particularly unwell and need extra support, we can undertake psychological therapy.

f) Do you know what psychological therapy is?

Therapy is when you talk to someone about your problems and try to find a way to make changes. For example, you can talk to a psychologist or a nurse. They will listen to your problems. Together, you will try to understand why there are problems and what you could do to clear them, or to prevent them from happening again in the future.

g) Have you undertaken psychological therapy before? What is your experience with therapy?
h) What would you expect from therapy and a therapist?
i) Do you think therapy is difficult?
    a. Communication: verbal, non-verbal …
    b. Do you need extra skills?

Some people find therapy a bit of a challenge. It makes us think about ourselves and why we feel, think and behave in certain ways. Some people find it hard to talk to someone they don’t know so well.

j) How would you see computers being used in therapy?
    a. Would it make therapy more fun?
    b. Or more difficult?
k) Would you feel more or less comfortable telling a computer how you feel than telling a therapist?
l) Would homework assignments be useful on a computer? (provided you have one at home or in the day centre)
m) If you would want extra support: would you prefer a computer programme to work on your own, a therapist, or a combination of both?

Finally,

n) Any additional comments on computers and therapy?

Interview schedule clinicians

a) To what extent do you currently use computers in your practice with your clients?
b) What experience do you have of using computerised therapy? What is your attitude towards computerised therapy in general?

A computer programme that trains specific CBT skills has been developed and evaluated. It takes approximately half an hour to an hour to administer, depending on the chosen skills. The programme uses a combination of pictures and voice commands. Turning to the implementation of it:

c) How would you see the use of such a training programme in practice:
    a. As a pre-therapy activity
    b. A skills learning session
    c. A homework assignment
d) The existing programmes train two separate skills: cognitive mediation (through the linking of situations, thoughts and feelings) and differentiation between thoughts, feelings and behaviours. Based on your clinical knowledge/experience: how relevant are these skills and are there any additional skills you think a computer programme may assist with?

Thinking of the applicability of computerised training programmes:

e) What do you expect the main challenges would be?
f) What do you expect the main benefits would be?
g) How do you see the role of the clinician in working with these training programmes?

Turning to the contents of a computer programme: What would you expect from a C-CBT programme for people with IDs?

h) Text, audio, pictures or photographs, videos, …?
i) Ability to self-select different scenarios, or to create videos / pictures in therapy or prior to a session?

Finally, cost-efficiency is important in clinical practice. To this extent, computerised CBT (C-CBT) and internet-based CBT (i-CBT) have been developed and evaluated for the general population.

j) What is your general view on these new methods for offering CBT with regards to people with IDs?
k) Which mental health problems should be targeted?

C. Documentation National Research Ethics Service

NHS
Health Research Authority
NRES Committee East of England - Hertfordshire
Victoria House
Capital Park
Fulbourn
Cambridge
CB21 5XB

Telephone: 01223 597733
Facsimile: 01223 597645

07 August 2012

Miss Leen Vereenooghe
Department of Psychological Sciences
Norwich Medical School, University of East Anglia
Norwich Research Park, Norwich
NR4 7TJ

Dear Miss Vereenooghe

Study title:	**Evaluating a picture-based computerised assessment and training paradigm for cognitive behaviour therapy skills in adults with intellectual disabilities**
REC reference:	**12/EE/0284**

Thank you for your letter of 30 July 2012, 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.

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*
Evidence of insurance or indemnity Letter from Yvonne Kirkham, University of East Anglia and Certificate from Zurich Municipal dated 28 June 2011		24 May 2012
Investigator CV Leen Vereenooghe		
Investigator CV Peter Langdon		
Other: Appendix B1: Study 1 - Study Flowchart	1	13 April 2012
Other: Appendix B2: Study 1 - Recruitment Procedures	1	13 April 2012
Other: Appendix B3: Study 1 - Randomisation Procedures	1	13 April 2012
Other: Appendix B4: Study 1 - Baseline and post-intervention assessment procedures	1	13 April 2012
Other: Appendix B5: Study 1 - Baseline and post-intervention examples	1	13 April 2012
Other: Appendix B6: Study 1 - Intervention procedures	1	13 April 2012
Other: Appendix B7: Study 1 - Intervention examples	1	13 April 2012
Other: Appendix C: Study 2 - Service Manager Information Sheet	1	29 February 2012
Other: Appendix C: Study 2 - Service Manager Consent Form	1	29 February 2012
Other: Appendix C: Study 2 - Participant Information Sheet	2	29 March 2012
Other: Appendix C: Study 2 - Participant Consent Form	2	13 April 2012
Other: Appendix C: Study 2 - Participant Leaflet	1	29 March 2012
Other: Appendix C: Study 2 - Patient Advice and Liaison Service Leaflet	1	13 April 2012
Other: Appendix D1: Study 2 - Study flowchart	1	13 April 2012
Other: Appendix D2: Study 2 - Recruitment procedures	1	13 April 2012
Other: Appendix D3: Study 2 - Randomisation Procedures	1	13 April 2012
Other: Appendix D4: Study 2 - Baseline and post-intervention assessment procedures	1	13 April 2012
Other: Appendix D5: Study 2 - Baseline and post-intervention assessment examples	1	13 April 2012
Other: Appendix D6: Study 2 - Intervention procedures	1	13 April 2012

Other: Appendix D7: Study 2 - Intervention examples	1	13 April 2012
Other: Appendix E : Study Measures - Adapted cognitive mediation task	2	13 April 2012
Other: Appendix E : Study Measures - Adapted Reed and Clements task (1989)	2	13 April 2012
Other: Appendix E : Study Measures - Intervention Record Sheet	2	13 April 2012
Other: Email from Leen Vereenooghe		06 August 2012
Participant Consent Form: Study 1: Service Manager Consent Form	1	29 February 2012
Participant Consent Form	3	05 July 2012
Participant Information Sheet: Study 1: Participant Leaflet	1	29 March 2012
Participant Information Sheet: Study 1: Patient Advice and Liaison Service Leaflet	1	13 April 2012
Participant Information Sheet	3	05 July 2012
Participant Information Sheet: Letter to Service Manager and Information Sheet	2	05 July 2012
Protocol	5	29 March 2012
REC application IRAS Parts A&B	96896/32751 5/1/458	15 May 2012
Response to Request for Further Information Letter from Leen Vereenooghe		30 July 2012

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

12/EE/0284 Please quote this number on all correspondence

With the Committee’s best wishes for the success of this project

Yours sincerely

pp

Dr Steve Eckersall
Chair

Email: Anna.Bradnam@eoe.nhs.uk

Enclosures: “After ethical review – guidance for researchers” *[SL-AR2]*

Email to: *L.Vereenooghe@uea.ac.uk*

Copy to:

Mrs Sue Steel (Sponsor Contact)
Sue.Steel@uea.ac.uk

Dr Paul Mills, (NHS R&D Contact)
paul.mills@norfolk.nhs.uk
NHS Norfolk & Waveney

NHS
Health Research Authority

NRES Committee East of England - Hatfield
Room 002, TEDCO Business Centre
Rolling Mill Road
Jarrow
Tyne and Wear
NE32 3DT

Tel: 0191 428 3387

04 September 2013

Miss Leen Vereenooghe
Department of Psychological Sciences
Norwich Medical School
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

Dear Miss Vereenooghe

Study title:	**Evaluating a picture-based computerised assessment and training paradigm for cognitive behaviour therapy skills in adults with intellectual disabilities**
REC reference:	**12/EE/0284**
Amendment number:	**Amendment 1**
Amendment date:	**31 July 2013**
IRAS project ID:	**96896**

Thank you for submitting the above amendment, which was received on 04 September 2013. I can confirm that this is a valid notice of a substantial amendment and will be reviewed by the Sub-Committee of the REC at its next meeting.

Documents received

The documents to be reviewed are as follows:

Document	Version	Date
Notice of Substantial Amendment (non-CTIMPs)	Amendment 1	31 July 2013
Protocol	6	31 July 2013

Notification of the Committee's decision

The Committee will issue an ethical opinion on the amendment within a maximum of 35 days from the date of receipt.

R&D approval

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval for the research.

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/

12/EE/0284: Please quote this number on all correspondence

Yours sincerely

S. Grimshaw

Miss Sarah Grimshaw
REC Manager

E-mail: nrescommittee.eastofengland-hatfield@nhs.net

Copy to: *Dr Paul Mills, NHS Norfolk & Waveney*
Mrs Sue Steel, University of East Anglia

WoSRES
West of Scotland Research Ethics Service

West of Scotland REC 5
Ground Floor - Tennent Building
Western Infirmary
38 Church Street
Glasgow
G11 6NT

Mrs Leen Vereenooghe
PhD student
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

Date	05 June 2014
Direct line	0141 211 2102
E-mail	WoSREC5@ggc.scot.nhs.uk

Dear Mrs Vereenooghe

Study title:	**Implementing computerised training programmes for CBT skills: An exploration of the attitudes of people with intellectual disabilities and clinical practitioners**
REC reference:	**14/WS/1006**
IRAS project ID:	**111614**

The Proportionate Review Sub-committee of the West of Scotland 5 reviewed the above application on 04 June 2014.

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 make a request to postpone publication, please contact the REC Manager Mrs Sharon Macgregor, WoSREC5@ggc.scot.nhs.co.uk.

Ethical opinion

On behalf of the Committee, the sub-committee gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

Conditions of the favourable opinion

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

1. In the Information Booklet for participants with intellectual disabilities, page 2, section 3, the two sentences below the bullet points should be changed to “You can only take part in the interview *if* you took part in a study before. The study was run by the same researcher who is running this one.”

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which can be made available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

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.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett (catherineblewett@nhs.net), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

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).

Ethical review of research 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").

During the review of the study, the PR Sub-Committee noted the following ethical issue:

Suitability of supporting information

In the Participant Information Booklet for people with intellectual disabilities, some of the wording does not make sense and needs to be amended.

Approved documents

The documents reviewed and approved were:

Document	*Version*	*Date*
Covering letter on headed paper		14 May 2014
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only)		19 May 2014
Interview schedules or topic guides for participants	1	25 April 2014
Participant consent form [Participants with learning disabilities]	1	14 May 2014
Participant consent form [Clinical Practitioners]	1	25 April 2014
Participant information sheet (PIS) [Information sheet participants learning disabilities]	1	14 May 2014
Participant information sheet (PIS) [Clinical Practitioners]	1	21 March 2014
REC Application Form [REC_Form_28052014]		28 May 2014
Research protocol or project proposal	1	25 April 2014
Summary CV for Chief Investigator (CI)		21 March 2014
Summary CV for supervisor (student research)		01 March 2014

Membership of the Proportionate Review Sub-Committee

The members of the Sub-Committee who took part in the review are listed on the attached sheet.

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 HRA 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 HRA website http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/

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.

14/WS/1006	**Please quote this number on all correspondence**

Yours sincerely

SMacgregor

for
Dr Stewart Campbell
Vice-Chair

Enclosures:	List of names and professions of members who took part in the review "After ethical review – guidance for researchers"
Copy to:	Mrs Sue Steel, University of East Anglia Dr Paul Mills, NHS Norfolk & Waveney

West of Scotland 5

Attendance at PRS Sub-Committee of the REC meeting on 04 June 2014

Committee Members:

Name	*Profession*	*Present*	*Notes*
Dr Stewart Campbell (Vice-Chair)	Consultant Physician & Gastroenterologist	Yes	
Canon Matt McManus	Parish Priest	Yes	
Ms Janis Munro	Key Account Manager	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Mrs Sharon Macgregor	Co-ordinator

WoSRES
West of Scotland Research Ethics Service

NHS
Greater Glasgow
and Clyde

West of Scotland REC 5
Ground Floor - Tennent Building
Western Infirmary
38 Church Street
Glasgow
G11 6NT

Mrs Leen Vereenooghe
PhD student
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

Date 12 June 2014

Direct line 0141 211 2102
E-mail WoSREC5@ggc.scot.nhs.uk

Dear Mrs Vereenooghe

Study title: **Implementing computerised training programmes for CBT skills: An exploration of the attitudes of people with intellectual disabilities and clinical practitioners**
REC reference: **14/WS/1006**
IRAS project ID: **111614**

Thank you for your email of 11 June 2014. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 05 June 2014.

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Participant consent form [Participants with learning disabilities]	2	05 June 2014
Participant information sheet (PIS) [Learning Disabilities]	2	05 June 2014

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	*Version*	*Date*
Covering letter on headed paper		14 May 2014
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only)		19 May 2014
Interview schedules or topic guides for participants	1	25 April 2014
Participant consent form [Clinical Practitioners]	1	25 April 2014

Participant consent form [Participants with learning disabilities]	2	05 June 2014
Participant information sheet (PIS) [Learning Disabilities]	2	05 June 2014
Participant information sheet (PIS) [Clinical Practitioners]	1	21 March 2014
REC Application Form [REC_Form_28052014]		28 May 2014
Research protocol or project proposal	1	25 April 2014
Summary CV for Chief Investigator (CI)		21 March 2014
Summary CV for supervisor (student research)		01 March 2014

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

14/WS/1006 **Please quote this number on all correspondence**

Yours sincerely

SMacgregor

Mrs Sharon Macgregor
REC Manager

Copy to: Mrs Sue Steel, University of East Anglia
Dr Paul Mills, NHS Norfolk & Waveney

D. Study 1: Participant Information Sheet and Consent Form

Faculty of Health
Norwich Medical School

University of East Anglia

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

PARTICIPANT INFORMATION SHEET

Study: **Computerised training of cognitive behavioural therapy skills for people with an intellectual disability**

Do you want to take part in research?

You are invited to take part in a research study. This information sheet explains what the study is about and what you would be asked to do. It will help you decide if you want to take part in the study or not.

I will explain this information sheet to you. If you would like someone else present while we talk about this, please tell me. This can be anyone you like. You can ask for this at any time. You can also show this information sheet to others and talk to them about the study. You do not have to talk about if you do not want to.

Please ask if you have any questions or if there is anything you do not understand.

Thank you.

The Researchers,

Leen Vereenooghe

Postgraduate Research Student,
University of East Anglia

Peter Langdon, PhD

Senior Clinical Lecturer,
University of East Anglia

Why are we doing this study?

- We want to understand how people think and feel in different situations.
- To do this, you will be asked to look at some pictures and listen to some stories on a computer. You will also be asked to answer some questions about each story. The stories are about the things we think, feel and do in different situations.

Why have I been invited?

- [name service manager] at [name service] told us we could talk to you to see if you would be interested. Other people here at [name service] are also invited for the study.
- We also invite people from other services and places in Norfolk.
- We hope that 66 people will agree to take part.

Do I have to take part in this study?

- NO, you do not have to take part in this study.
- If you say YES now, you can change your mind later and say NO.
- If you want some time to think about it, that’s ok.
- You can talk to others about this study before you say YES or NO.
- Your choice will not affect the services you receive.

IMPORTANT – If you say YES:

- I will ask you to sign a consent form to show you said YES.
- This form is the only form with your name on it. Only we know you take part in this study. We will not give your name to anyone else.
- Tasks of the study do not have your name on it. No one will know it was you who gave the answers.
- You can always change your mind and stop to take part. We do not need to know why.

What will I have to do? What will happen?

- You will be asked to see me two times. You will also see a second researcher.
- The first time we meet we need to check to make sure that you can take part in the study. This will take about 1 hour. I will ask you some questions about yourself, such as your age. I will also show you some pictures and ask you to do other things, like making a pattern with building blocks.
- If it is ok for you to take part in the study, we will meet again. This meeting will take about 2 hours. You will meet me and another researcher. There will be three tasks on a computer. You can get breaks in between.
- In the first task the computer will show you some pictures and will tell some stories. You will be asked to answer some questions about each story. I will be there to help you with the computer if you want to.
- The second researcher will help you with the second task. During this task we will show you some more pictures and get you to do some tasks on the computer.
- After the second task I will come back. Don't tell me about what you did with the second researcher. I will ask you to do some more tasks on the computer.

Are there bad things that could happen?

- You may find some tasks long and boring, but we will give you a break in between tasks.
- You might worry that you are not doing so well. Most people are not able to answer all questions, so just do the best you can.
- Sometimes when people talk about feelings, they get upset. If anything would upset you, please tell us. We can pause or stop the task. You can talk to us or someone else about it. This can be anyone you like.

Are there good things that could happen?

- You will get £ 5.00 for helping us with the study. £
- You may learn why some things can make you feel happy or sad.

- You can help us creating a successful training programme for people with intellectual disabilities which will help them to understand emotions better.

What happen with information about me?

- We only have one letter with your name to confirm you DO or DO NOT want to take part in the study. We will not tell anyone if you said YES or NO to the study. If you want to talk about it, you can talk to anyone you like.
- We will not write your name on tings for the purposes of research.
- Your name will not be on any task and no one will know it was you who gave the answers.

What happens in the end?

- We collect the results of all participants and write about them, but no names will be given.
- You will get a one page summary of what we found out.

Has the research been checked?

- Yes.
- People have looked at the study to check it is safe.
- People have also checked the information you get and what we do with you information.
- The research is checked by the University of East Anglia, and by the NHS.

What if you are unhappy about the research?

- You can talk to the researchers at any time.
- You can make a complaint to the University of East Anglia or the NHS.
- We will give you information about how to complain.
- You can ask us or anyone you like to help you make a complaint.
- If you are harmed, you can contact the Patient Advice and Liaison Service. You can find their contact details on the leaflet attached to this information sheet. We can help you contact them. You may also be able to take legal action against the University of East Anglia or the NHS but you may have to pay for this.
- Making a complaint will not change the services you receive.

Researcher Contacts:

- You may always contact us to ask for more information about the study or if you wish to make a complaint.
- You can contact us directly, or you may ask someone else to contact us. This can be anyone you like: a family member, a friend, or a member of staff.

Please contact: Leen Vereenooghe,
Postgraduate Research Student
Psychological Sciences

Telephone: 01603 593665
Email: L.Vereenooghe@uea.ac.uk

Address: Elizabeth Fry 1.33
Norwich Medical School
University of East Anglia
Norwich
NR4 7TJ

When you need advice, have concerns, or are not sure where to turn for help, telephone NHS Norfolk PALS on 0800 587 4132

The NHS Norfolk Patient Advice and Liaison Service works to improve local health services

The service will:

- advise and support patients, their families and carers
- provide information on NHS services
- listen to your concerns and suggestions
- help sort out problems quickly on your behalf.

The service is confidential, and can be contacted on:

0800 587 4132

Mobile: 07500 990815
Fax: 01603 257299
Email: pals@norfolk-pct.nhs.uk
Website: www.norfolk-pct.nhs.uk
Office hours: 9am - 5pm Monday to Friday

Local health information for Norfolk:
www.heron.nhs.uk

NHS Direct CALL 24 HOURS ON 0845 4647

IN TRAN communication for all

NHS Norfolk

Patient Advice and Liaison Service

PALS - We're here to help


Need information but don't know who to ask?

Worried or have a problem but don't know what to do?

Concerned or want information on how to complain?

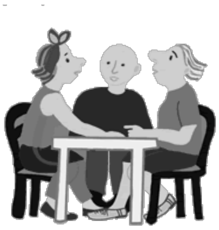
NHS Norfolk PALS can be contacted on:

0800 587 4132

Office hours: 9am - 5pm

Faculty of Health
Norwich Medical School

Participant's copy



University of East Anglia

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

Participant Consent Form

Study: **Computerised training of cognitive behavioural therapy skills for people with an intellectual disability**

Please initial the box if you agree with the sentence

I understand the information sheet. The information has been explained to me by Leen Vereenooghe. I have been able to ask questions. ☐

I understand that I will be asked some questions and may be asked to stop the study. I know that I can stop at any time. I do not need a reason for stopping. ☐

I know that the answers I give will not be told to anyone else. Results of the study may be published in a journal, but never with my name on it. ☐

I understand that people from the University of East Anglia and from the **NHS** may check to make sure the study is following the rules. ☐

I agree to take part in the study. ☐

I agree that the researcher may look at my clinical notes. ☐

I agree that you may contact me later for a new study. Yes / No
(This question does not affect your participation in the present study)

Name of Participant ________ Date ________ Signature ________

My address and telephone number are?

Name of Researcher ________ Date ________ Signature ________

Faculty of Health
Norwich Medical School

University of East Anglia

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

Researcher's Copy

PARTICIPANT CONSENT FORM

Study: **Computerised training of cognitive behavioural therapy skills for people with an intellectual disability**

Please initial the box if you agree with the sentence

I understand the information sheet. The information has been explained to me by Leen Vereenooghe. I have been able to ask questions. ☐

I understand that I will be asked some questions and may be asked to stop the study. I know that I can stop at any time. I do not need a reason for stopping. ☐

I know that the answers I give will not be told to anyone else. Results of the study may be published in a journal, but never with my name on it. ☐

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I agree to take part in the study. ☐

I agree that the researcher may look at my clinical notes. ☐

I agree that you may contact me later for a new study. Yes / No
(This question does not affect your participation in the present study)

Name of Participant ____________ Date ____________ Signature ____________

My address and telephone number are?

Name of Researcher ____________ Date ____________ Signature ____________

E. Study 2: Participant Information Sheet and Consent Form

Faculty of Health
Norwich Medical School

University of East Anglia

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

PARTICIPANT INFORMATION SHEET

Study: **Computerised training of cognitive behavioural therapy skills for people with an intellectual disability**

Do you want to take part in research?

You are invited to take part in a research study. This information sheet explains what the study is about and what you would be asked to do. It will help you decide if you want to take part in the study or not.

I will explain this information sheet to you. If you would like someone else present while we talk about this, please tell me. This can be anyone you like. You can ask for this at any time. You can also show this information sheet to others and talk to them about the study. You do not have to talk about if you do not want to.

Please ask if you have any questions or if there is anything you do not understand.

Thank you.

The Researchers,

Leen Vereenooghe

Postgraduate Research Student,
University of East Anglia

Peter Langdon, PhD

Senior Clinical Lecturer,
University of East Anglia

Why are we doing this study?

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IMPORTANT – If you say YES:

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What happens in the end?

- We collect the results of all participants and write about them, but no names will be given.
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Has the research been checked?

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Researcher Contacts:

- You may always contact us to ask for more information about the study or if you wish to make a complaint.
- You can contact us directly, or you may ask someone else to contact us. This can be anyone you like: a family member, a friend, or a member of staff.

Please contact: Leen Vereenooghe,
Postgraduate Research Student
Psychological Sciences

Telephone: 01603 593665
Email: L.Vereenooghe@uea.ac.uk

Address: Elizabeth Fry 1.33
Norwich Medical School
University of East Anglia
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NR4 7TJ

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The service is confidential, and can be contacted on:

0800 587 4132

Mobile: **07500 990815**
Fax: **01603 257299**
Email: **pals@norfolk-pct.nhs.uk**
Website: **www.norfolk-pct.nhs.uk**
Office hours: **9am - 5pm Monday to Friday**

Local health information for Norfolk:
www.heron.nhs.uk

NHS Direct CALL 24 HOURS ON 0845 4647

IN TRAN
communication for all

NHS Norfolk
Patient Advice and Liaison Service

PALS - We're here to help

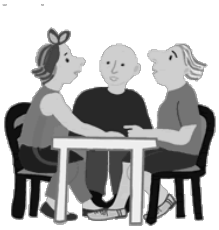
NHS Norfolk PALS can be contacted on:

0800 587 4132

Office hours: 9am - 5pm

Faculty of Health
Norwich Medical School

Participant's copy



University of East Anglia

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

PARTICIPANT CONSENT FORM

Study: **Computerised training of cognitive behavioural therapy skills for people with an intellectual disability**

Please initial the box if you agree with the sentence

I understand the information sheet. The information has been explained to me by Leen Vereenooghe. I have been able to ask questions. ☐

I understand that I will be asked some questions and may be asked to stop the study. I know that I can stop at any time. I do not need a reason for stopping. ☐

I know that the answers I give will not be told to anyone else. Results of the study may be published in a journal, but never with my name on it. ☐

I understand that people from the University of East Anglia and from the **NHS** may check to make sure the study is following the rules. ☐

I agree to take part in the study. ☐

I agree that the researcher may look at my clinical notes. ☐

I agree that you may contact me later for a new study. Yes / No
(This question does not affect your participation in the present study)

Name of Participant ____________ Date ____________ Signature ____________

My address and telephone number are?

Name of Researcher ____________ Date ____________ Signature ____________

Faculty of Health
Norwich Medical School

Researcher's Copy

University of East Anglia

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

PARTICIPANT CONSENT FORM

Study: **Computerised training of cognitive behavioural therapy skills for people with an intellectual disability**

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I know that the answers I give will not be told to anyone else. Results of the study may be published in a journal, but never with my name on it. ☐

I understand that people from the University of East Anglia and from the NHS may check to make sure the study is following the rules. ☐

I agree to take part in the study. ☐

I agree that the researcher may look at my clinical notes. ☐

I agree that you may contact me later for a new study. Yes / No
(This question does not affect your participation in the present study)

Name of Participant Date Signature

My address and telephone number are?

Name of Researcher Date Signature

F. Study 3: Participant Information Sheets and Consent Forms

You are invited to take part in a research study.

University of East Anglia

University of Kent | Tizard Centre

Participant Information Booklet IDs Version 2 – 05.06.2014

In this booklet: 10 questions about the study.

1. What is this about?
2. Who are we?
3. Who can take part in the study?
4. Do I have to take part?
5. What will I be asked to do?
6. Are there good things that could happen?
7. Are there bad things that could happen?
8. Is it safe?
9. What if I am unhappy?
10. What will happen with my information?

1. What is this about?

We want people to help us with a research study. We want to know how we can use computers in therapy. Your ideas are important to us.

- We are looking for people who took part in a previous study using computers.
- We want to interview you.
- There will be questions about computers.
- There will also be question about therapy.

2. Who are we?

We are researchers from the university.

I am Leen

I am Peter

3. Who may take part in the study?

- People who have a learning disability.
- People over 18 years old.
- People who took part in a previous study.

You can only take part in the interview if you took part in a study before. The study was run by the same researcher who is running this one. It involved doing tasks on a computer.

4. Do I have to take part?

You do **NOT** have to take part in this study.

Important: If you say **YES**

- I will ask you to sign a consent form to show you said YES.
- This form is the only form with your name on it. Only we know you take part in this study. We will not give your name to anyone else.
- Tasks of the study do not have your name on it. No one will know it was you who gave the answers.

You can STOP at any time.

We do not need to know why.

5. What will I be asked to do?

You will be asked to see the researchers a few times. You can meet with the researcher at a place where you feel alright. We can meet at the day centre, the local learning disabilities team, or even at the university.

If you need transport, we will pay for this.

The first time we meet

- You will meet a researcher.
- You will be asked to sign a consent form.

After you have signed the form, the researcher will ask you questions.

- This will be the interview.

The interview will take less than one hour. It will be recorded. The researcher will then write down all your answers.

The second time we meet

- The researcher will bring papers.
- These papers describe everything that you said in the interview.
- The researcher will talk you through it.
- You can make changes to the text. The researcher will help you with this.

6. Are there good things that could happen?

- Your ideas will be used for future studies.

- You will receive 20 pounds at the end of the study.

7. Are there bad things that could happen?

- You may find the interview long, but your opinion matters. There are no wrong answers.

⇨ We will give you breaks.

- You might worry you are not doing so well.

⇨ We will help you with the questions. There will be pictures, too.

- Sometimes when people talk about feelings, they get upset.

⇨ If you get upset, we can take a break.
We can also stop the study.
You can always talk to us. You can also talk to family, a friend, or a member of staff.

8. Is it safe?

- The study is safe.
- People have looked at the study to check if it is safe.
- People have also checked this booklet and the information you get.
- People have checked what we will do with information about you.

The research has been checked by the university and by people from the NHS.

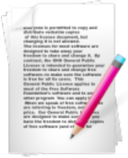
9. What if I am unhappy?

- You can talk to the researchers at any time.
- You can make a complaint to the University of East Anglia or the NHS.
- We will give you information about how to complain.
- You can ask us or anyone you like 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.
- Making a complaint will not change the services you receive.

10. What will happen with my information?

- We only have one letter with your name to confirm you DO or DO NOT want to take part in the study.
- We will not tell anyone about your choice. If you want to talk about it, you can talk to anyone you like.
- We will not write your name on things for the purposes of research.
- No one will know it was you who gave the answers.

- We put all the papers in a locked drawer.



- We collect the results of all participants and write about them, but no names will be given.
- You will get a one page summary of what we found out.

For more information contact:

Mrs Leen Vereenooghe
Department of Clinical Psychology
Norwich Medical School
University of East Anglia
Norwich, NR4 7TJ
Email: L.Vereenooghe@uea.ac.uk

Telephone: 07775907349

Thank you !

Participant Consent Form

Study

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

Computerised training programmes for CBT skills:

Exploring the attitudes of people with intellectual disabilities

Please, initial the box if you agree with the sentence.

I understand the Participant Information Booklet (version 1 – 14.05.2014). The information has been explained to me by Leen Vereenooghe. I have been able to ask questions. ☐

I understand that I will be asked some questions and may be asked to stop the study. I know that I can stop at any time. I do not need a reason for stopping. ☐

I understand that my the interview will be recorded and the answers written down. I know that I can make changes to it. ☐

I know that the answers I give will not be told to anyone else. Results of the study may be published in a journal, but never with my name on it. ☐

I understand that people from the University of East Anglia and from the NHS may check to make sure the study is following the rules. ☐

.

I agree to take part in the study. ☐

Name of participant ______________________ Date ______________________ Signature ______________________

Name of researcher ______________________ Date ______________________ Signature ______________________

Participant Information Sheet

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

Study

Implementing computerised training programmes for CBT skills: An exploration of the attitudes of clinical practitioners

1. What is the study about?

People with intellectual disabilities (IDs) are at risk for developing mental health problems, such as depression. Previous studies have shown that cognitive-behavioural therapy (CBT) has moderate to large effects in the treatment of anger problems and depression. However, some people with IDs find it difficult to engage in and understand therapy.

In two previous studies we evaluated a computerised training paradigm to train some of the skills that people need to undertake CBT. This study aims to explore the attitudes of clinical practitioners and people with IDs towards the implementation of such training programmes in practice.

2. Who are we?

We are a team of researchers.

Principal investigator:

Leen Vereenooghe
PhD Student, Clinical Psychology
University of East Anglia

Project and academic supervisor:

Dr Peter Langdon
Clinical Senior Lecturer
Tizard Centre, University of Kent

3. Why have I been invited?

The study wants to explore how people who routinely offer CBT to people with IDs see the implementation of computerised training programmes. We are looking for clinicians who have experience with delivering CBT to this population.

4. Informed consent.

You do not have to take part in this study. If you decide to participate, you will be asked to sign a consent form and you will receive a copy of this. The consent form details your rights as a participant.

5. Right to withdraw.

You may withdraw from the study anytime. You do not need to explain or clarify why you wish to withdraw. If at any point you wish to withdraw from the study, you can request to have the thus far collected data withdrawn.

6. What will my participation involve?

Participation in the study will consist of a single interview, lasting approximately forty-five minutes. The interview will be arranged at a time and place that is convenient for you.

The interview will be recorded and transcribed. The researcher will contact you to provide you with the transcribed and analysed interview data. You will have a chance to make corrections.

7. Possible advantages and disadvantages of taking part.

Participation in the study will not inflict harm. You may find the interview long, but your opinion matters to us.

8. Ethical approval.

The study has obtained a favourable ethical opinion of the NHS Research Ethics Committee. Officials of both the NHS and the supporting universities may at all times check whether the study is being conducted in line with the regulations.

9. What will happen with my information?

The consent form is the only stored data that will have your name on it. All data collected during the study will be anonymised.

We aim to disseminate the results of this study. This can be through the publication of a scientific article, a PhD thesis and conference proceedings. However, all data will be anonymised.

You may, at all times, request for any data we collected from you to be withdrawn from the study.

10. Compensation.

Upon completing the study you will be awarded £ 20.00 compensation for your time and efforts.

For more information contact:

Mrs Leen Vereenooghe
Department of Clinical Psychology
Norwich Medical School
University of East Anglia
Norwich, NR4 7TJ
Email: L.Vereenooghe@uea.ac.uk
Telephone: 07775907349

Thank you !

Participant Consent Form

Study

Implementing computerised training programmes for CBT skills:

An exploration of the attitudes of clinical practitioners

University of East Anglia
Norwich NR4 7TJ England

Telephone
01603 593665

Email
L.Vereenooghe@uea.ac.uk

Please, initial each box if you agree with the statement.

Information
I understand the Participant Information Sheet (version 1 – 25.04.2014). The information has been explained to me and I have been able to ask questions. ☐

Recording
I understand that the interview will be recorded and transcribed. I will be able to make corrections ☐

Confidentiality
I understand that the information I provide will be confidential. The information will be anonymised. ☐

The results of this study may be published; for example, in a PhD thesis or an international peer review journal. All published data will be anonymised. ☐

Withdrawing from the study
I understand that I may withdraw from the study at any time. I do not need to provide an explanation for withdrawing. I may choose for all my information to be withdrawn. ☐

Good research practice
I understand that officials from the National Health Service and the University of East Anglia may ask questions to ensure the study is conducted according to its research protocol. ☐

I agree to take part in the study. ☐

Name of participant ____________ Date ____________ Signature ____________

Name of researcher ____________ Date ____________ Signature ____________