To See or Not to See: An Investigation of Social Information Processing Bias Among Sexual Offenders with a Mild Learning Disability

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DECLARATION

"I certify that this is a true and accurate account of the work carried out. This thesis has been composed by misled and the work herein is my own."

"The work herein has not been submitted for any other degree or professional qualification."

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August 2006

ABSTRACT

Introduction: Understanding of the cognitive processes, and in particular social information processing bias, that generate cognitive distortions among sexual offenders with a learning disability has been hampered by the lack of empirical research

Objectives: To employ the flicker paradigm to investigate social information processing bias among sexual offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability.

Design: An independent groups design was employed to compare the data obtained from a participant group of sexual offenders with a mild learning disability with two comparison groups of non-offenders with a learning disability and non-offenders without a learning disability.

Method: Participants were asked to view successively and repeatedly on a monitor two versions of a visual scene (an original and a slightly altered version of the original) until they detected the change. The changes to the original visual stimuli were either sex-related (midriff of a person being exposed) or neutral related (object being removed from a scene) changes. The experiment was counterbalanced with participants viewing equal number of sex-related and neutral related changes to the original stimuli.

Results: Non-offenders without a learning disability required less time to identify sex-related and neutral related changes than individual with a learning disability. However, no significant interaction was observed between type of participant group and type of stimulus change. This finding indicated that the nature of change in the stimulus did not influence the speed at which the participants responded. Results are discussed in relation to previous research.

Conclusion: Results obtained from the present study highlight that this as a complex area to investigate, as there is currently no clear framework to guide this area of research. Strengths and limitations of the present study are addressed and areas of future research are explored.

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Tables

Figures

Table of Contents

1.1 General Introduction

The following chapter explores the background research and rationale for examining attentional deficits among sexual offenders with a mild learning disability. First a literature review was undertaken to identify key areas of research that have examined prevalence of sexual offending by individuals with a learning disability, factors identified to account for high prevalence of sexual offending among individuals with a learning disability (e.g. recidivism and lack of knowledge about the legal system), information processing and selective attention among sexual offenders with a learning disability. To identify key research studies in these areas PsycInfo and Web of Science were accessed. These are both electronic citation and journal databases that are updated weekly. They provide citations with abstracts to the scholarly literature in the psychological, social, behavioural and health sciences. While searching these databases a strict search criteria was utilised. The search excluded studies that focused on sexual offenders without a learning disability, except when examining the area of attention. As there is currently no published research that has tested attentional deficits among sexual offenders with a learning disability, the current research had to widen its search to include research studies that had investigated attentional deficits among sexual offenders without a learning disability.

Based on the literature reviewed, the following chapter provides an overview of what constitutes a learning disability and gives justification for why the DSM-IV-TR (American Psychiatric Association, 1995) definition of learning disability was adopted for use in this study. This chapter goes on to focus on the link between offending and learning disability.

Individuals with a learning disability have been identified to engage in a variety of criminal activities (Hayes, 1996; Thompson and Brown, 1997), with a rate of offending that is slightly lower than that of the general population (Day, 1994). However, sexual offending has been found to be over-represented among this population, with Gross (1984) reporting that nearly 50% of prison inmates with a learning disability have committed a sexual offence. Although there appears to be an ongoing debate regarding the prevalence of sexual offending by individuals with a learning disability. Some studies report prevalence figures consistent with Gross (e.g. Lund, 1990; Hayes, 1997), with others reporting slightly lower figures. Indeed, Klimecki, Jenkinson and Wilson,

1994) reported a prevalence of 16.57%. Such variations in the data could be due to researchers not using clear criteria for what sexual crimes they include or exclude in their prevalence data. Failure to clearly identify a population that meet the diagnostic criteria for a learning disability (Winter, Holland and Collins, 1997) or lack of understanding about legal procedures (Gudjonsson, Clare and Cross, 1992) might affect prevalence figures. These issues are addressed further in sections 1.2.3b and 1.2.3d of this thesis.

Despite the inconsistencies in the prevalence data for sexual offending by individuals with a learning disability, the research to date still implies that it is a problem for this group of offenders. By examining factors including social circumstances, low self-esteem, history of sexual abuse, empathy (Marshall, Hudson, Jones, and Fernandez, 1995), cognitive distortions (Bumby, 1996; Lindsay and Macleod, 2001) and information processing, researchers (Ward, Hudson and Marshall, 1995) have attempted to identify factors that might be associated with why individuals with a learning disability engage in sexually deviant behaviour.

To date, much of the research has focused on the role cognitive distortions play in sexual offending behaviour with attention focused on the role cognitive distortions play in trying to explain the etiology and maintenance of sexually deviant behaviour (Bumby, 1997). Research has primarily focused on the cognitive content of post-offence cognitions, rather than examine the cognitive processes that underlie the initiation, maintenance and justification of sexual offending behaviour (Bumby, 1997). Although the content of these cognitions have been recognised to play an important role in the rationalisation of an offence, as well as subsequent re-offending, researchers suggest that information processing mechanisms are also important before and during the offence cycle (Pithers, 1994; Ward, Hudson and Marshall, 1995).

Langevin and Pope (1993) suggest that sexual offenders with a learning disability have deficits with information processing. They suggest that information that their sensory receptors receive (e.g. ears and eyes) may not process the information in the way that "normal" individuals do. Indeed, sensory deficits, problems decoding information, or difficulties interpreting and making decisions about the information may prevent material reaching the brain unaltered. According to Langevin and Pope (1993),

whatever the explanation, individuals with a learning disability differ from individuals without a learning disability in the way they process information. Clinicians need to be aware of this difference, as this will facilitate their theoretical and practical ideas when developing suitable treatment and relapse programmes (Ward, Hudson, Johnston and Marshall, 1997). Unfortunately, the research examining the information processing mechanism of sexual offenders with a learning disability is extremely limited. By reviewing this limited research this introductory chapter aims to show how current research (within this doctoral thesis) has contributed to existing literature that attempts to explain the role information processing play in sexually deviant behaviour among individuals with a learning disability.

1.2 General Overview of Sexual Offending by Individuals with a Mild Learning Disability

1.2.1 Defining Learning Disability

To date there is no single universally accepted definition for learning disability, although a number of key definitions have been put forward by the World Health Organisation, International Classification of Diseases-10 (ICD-10; 1992), Diagnostics and Statistical Manual IV-TR (DMS-IV-TR; 1995), the Mental Health Act (1983), the British Psychological Society (BPS; 2001) and the American Association on Mental Retardation (AAMR; 2002).

The World Health Organisation published the tenth revision of the International Classification of Diseases (ICD-10) in 1992, which defines learning disability (mental retardation) as:

'*a condition of arrested or incomplete development of the mind, which is especially characterised by impairment of skills manifested during the development period, skills which contribute to the overall level of intelligence, i.e. cognitive, language, motor and social inabilities*' (pg. 9).

To assess an individual's overall level of intelligence ICD-10 (World Health Organisation, 1992) advocates that a 'skilled diagnostician' should administer and score a standardised intelligence test, as well as a scale to assess the level of social adaptation. Once an IQ score is obtained the diagnostician can then refer to a framework that subdivides learning disability (mental retardation) into four precise categories based on IQ scores. The four categories are mild, moderate, severe and profound levels of intellectual functioning. Table 1.0 shows the classification for learning disability according to ICD-10 (World Health Organisation, 1992).

Table 1.0 Classification of 'Mental Retardation' under ICD-10 (World Health Organisation, 1992).

Classification	IQ
Mild mental retardation	50-69
Moderate mental retardation	35-49
Severe mental retardation	20-34
Profound mental retardation	< 20

DSM-IV-TR (American Psychiatric Association, 1995) defines learning disability as '*significantly subaverage general intellectual functioning, accompanied by significant deficits or impairments in adaptive functioning with onset before the age of 18*' (pg. 52).

According to DSM-IV-TR, (American Psychiatric Association, 1995) an individual who scores below 70 on an IQ scale would be classified as having significantly sub-average general intellectual functioning. To assess adaptive functioning, DSM-IV-TR (American Psychiatric Association, 1995) lists a number of ways to ascertain whether someone has deficits or impairments with their adaptive functioning. Clinicians are advised to assess adaptive functioning by examining a person's effectiveness in meeting the standards expected for his/her age by his/her cultural group in areas such as social skills and responsibility, communication, daily living skills, personal independence and self-efficiency.

DSM-IV-TR (American Psychiatric Association, 1995) is not as inflexible as ICD-10 (World Health Organisation, 1992) with its diagnostic criteria, as it states that even if an individual scores below 70 on an IQ score but shows good adaptive skills, they should not be diagnosed with a learning disability. Similarly, if an individual scores above 70 and below 84, but their adaptive skills are markedly impaired, DSM-IV-TR (American Psychiatric Association, 1995) states that such individuals could be diagnosed with a learning disability. DSM-IV-TR (American Psychiatric Association, 1995) also acknowledges the presence of 'borderline intellectual functioning', which ICD-10

(World Health Organisation, 1992) fails to do. Table 1.1 outlines DSM-IV-TR's (American Psychiatric Association, 1995) classifications of learning disability.

Table 1.1 Classification of Learning Disability under DSM-IV-TR (American Psychiatric Association, 1995)

Classification	IQ
Borderline intellectual functioning	approx. 70-84
Mild learning disability	50-55 to approx. 70
Moderate learning disability	35-40 to 50-55
Severe learning disability	20-25 to 35-40
Profound learning disability	below 20 or 25

The Mental Health Act (1983) defines learning disability using a two-tier classification system (i.e. mental impairment and severe mental impairment). Instead of using the term 'learning disability' the Mental Health Act (1983) opted to use the term 'mental impairment' and defined it as:

'...a state of arrested or incomplete development of mind which include significant impairment of intellectual and social functioning....' (pg.47)

When defining 'severe mental impairment' the Mental Health Act (1983) substitutes the word 'significant' with 'severe', enabling the definition to read 'severe impairment of intellectual and social functioning', rather than 'significant impairment'. Problems arise when trying to establish exactly what is meant by the terms 'severe' and 'mental impairment,' as the Mental Health Act (1983) has yet to provide a clear explanation of the difference in the level of social and intellectual functioning needed to warrant either the 'severe impairment' or 'mental impairment' classification.

To make the two-tier classification of the Mental Health Act (1983) more operational, the British Psychological Society (BPS; 2001) offered further clarification. Alves, Williams, Stevens and Prosser (1991) suggested that IQ scores and levels of social functioning should be used to classify someone as either having 'severe' or 'mental

impairment'. An individual with an IQ between 55 to 69 would be classified as having a significant 'mental impairment.' Someone with an IQ of 54 or below would be classified as having a 'severe mental impairment'. Individuals who require occasional help with eating, washing, clothing themselves and keeping warm would be considered to have a 'significant mental impairment' of social functioning. However, an individual who requires repeated support when completing these tasks would be classified as having a 'severe impairment' of social functioning.

Finally, the American Association on Mental Retardation (AAMR; 2002) provides a rather comprehensive definition and explanation for what constitutes a learning disability. The AAMR (2002) states that three criteria must be fulfilled in order for someone to be classified as having a learning disability. Firstly, an individual must have significant impairment of their intellectual functioning. Secondly, their adaptive living skills must be impaired. They must have limitations in two or more of the following adaptive living skills: communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure and work. Finally, the onset of the learning disability must occur before the age of eighteen years of age. However, an individual whose intellectual impairment is caused by a trauma, such as a head injury in adulthood, or dementia, would not be classified as having a learning disability by the classification set out by the AAMR (2002).

It would appear that there is no single definition for 'learning disability' that is universally accepted and used in either a clinical or academic context. What is clear is that a major problem lies with trying to fix a 'borderline' between those who can and those who cannot be described as having a 'learning disability'. In general, the classification systems used to define learning disability would class someone with an IQ of 69 as having a learning disability, but an individual with an IQ of 70 as not. Who could say that an individual with an IQ of 70 would not require similar help and assistance to that of an individual with an IQ of 69? To address this issue DSM-IV-TR (American Psychiatric Association, 1995) incorporated a broad 'Borderline Intelligence' category that includes individuals with an IQ that falls between 70 and 84. There are problems with this broad classification category, as it fails to offer further explanation or information when trying to distinguish between someone with an IQ of 69 and one with an IQ of 70. Lack of explanation has led some clinicians and

researchers to class individuals with an IQ that falls between 55 and 75 as having a mild learning disability, rather than follow the classification criteria set out by DSM-IV-TR (Swanson and Garwick, 1990; Charman and Clare, 1992).

After considering the above issues it was decided that the DSM-IV-TR (American Psychiatric Association, 1995) definition of learning disability (mental retardation) would be adopted for use in this study for a number of reasons. In the first instance, it provides a comprehensive definition and explanation for what constitutes a learning disability, as well as recognising the need for a classification system that includes a borderline intellectual functioning category. By including this borderline category it makes this classification system more flexible than the AAMR (2002), as it recognises the difficulty of setting and adhering to static classification criteria.

Now that a definition for a learning disability has been adopted for use in this study, it is necessary to examine the relationship between crime and learning disability. The next section of this thesis will provide a brief overview of general offending by people with a learning disability, before specifically focusing on the relationship between sexual offending and learning disability.

1.2.2. Offending and Learning Disability

Interest into the relationship between crime and learning disability has been around since the early 1900s (Lund, 1990). Indeed, Goring (1913) held the simplistic opinion that:

"*the greatest single cause of delinquency and crime is low grade mentality, much of it within the limits of feeblemindedness*" (cited in Lund, 1990. pg. 726).

Barron, Hassiotis and Banes (2002) also argued that low intelligence is a factor that is associated with crime and delinquency. Unfortunately, the link between crime and learning disability is not as simplistic as Goring (1913) or Barron et al. (2002) suggest. Understanding of the true nature of the relationship between learning disability and crime has been hampered by a lack of research into the identification, assessment and treatment of offenders (Taylor, 2000; Johnston and Halstead, 2000; Thompson, 1997; Caparulo, 1991). Factors such as the revision of mental health legislation (Lindsay and

Holland, 2000), changes in government policies to ensure provisions are in place to protect the human rights and dignity of individuals with a learning disability (Holland, Clare and Mukhopadhyay, 2002) and the resettlement of individuals with a learning disability from long-stay hospitals into the community (Day, 1993) have driven research within the past decade to focus on forensic issues among the population with a learning disability. By considering these factors, as well as the examination of current literature regarding the prevalence of offending by males with a learning disability and the characteristics associated with offending, the following sections of this chapter aims to show how the opinions have been developed with regard the relationship between learning disability and crime, particularly in relation to sexual offending. Firstly, a brief overview of general prevalence rates for offending people with a learning disability will be given.

Individuals with a learning disability engage in a variety of criminal activities (Hayes, 1996; Thompson and Brown, 1997), with a rate of offending that is slightly lower than in the general population (Day, 1994). Indeed, the offences committed by individuals with a learning disability are comparable to those perpetrated by individuals without a learning disability (Cooper, 1995). According to some researchers, (Lund, 1990; Hodgins, 1992; Day, 1993) property offences are the most common crimes committed by individuals with a learning disability. Hayes (1996) categorised the types of offences most likely to be committed by this population; they included offences against persons, nuisance offences, physical assault, sexual assault, murder and manslaughter. Motoring offences and 'white collar' crimes, such as fraud and deception, were either under represented or not committed by individuals with a learning disability. According to some researchers, (Holland, Clare and Mukhopadhyay, 2002; Hayes, 1996) people with a learning disability do not possess the necessary skills required or the opportunities needed to allow them to engage in these criminal activities. However, arson offences have been found to be over-represented among this client group. Indeed, Leong and Sliva (1999) reported a prevalence of 15% among an out-patient population of arsonists who had been diagnosed with a learning disability.

Sexual offending has also been found to be over-represented among the population with a learning disability. Indeed, Gross (1984) reported that nearly 50% of prison inmates with a learning disability had been convicted of a sexual offence. Caution should,

however, be exercised when referring to the prevalence rate quoted by Gross, as this study failed to use any form of formal assessment to determine learning disability or social functioning. A more detailed examination of sexual offending by people with a learning disability is given below.

1.2.3 Sexual Offending and Learning Disability

1.2.3a Defining Sexual Offences

When investigating prevalence of sexual offending among people with a learning disability, researchers often group sexual crimes under the generic term 'sexual offending' (Hayes, 1997; Ryan, 1997; Winter, Holland and Collins, 1997; Day, 1988; Gross, 1984). Such a term encompasses a wide range of sexually deviant behaviours. The term 'sexual offending' can incorporate the following types of sexual crimes: offences against children (i.e. lewd and libidinous), incest, homosexual assault, sexual assault (i.e. rape), indecent exposure (i.e. exhibitionism), frotteurism (i.e. intense, recurrent fantasies of, and/or actual touching and rubbing the genitalia against a non-consenting person), fetishism (i.e. sexual attraction to a specific inanimate object or part of a person's body), masochism (i.e. sexual stimulation created by being beaten, humiliated or bound and generally made to suffer for this purpose) and sexual harassment (i.e. stalking and voyeurism) (Freund and Seto, 1998; Lanyon, 1991). Researchers have chosen to group these sexually deviant behaviours under this generic term for two main reasons, with the first being for practical reasons. Limited numbers of sexual offenders with a learning disability (e.g. rapists, paedophiles, voyeurs and exhibitionists) creates problems when trying to carry out research with this population. Indeed, low sample size creates problems with the statistical power of experiments developed to investigate different types of sexual offenders. To address this problem and thus increase power, researchers chose to group the different types of sexual deviant behaviours under this generic heading (Lund, 1990; Walker and Biles, 1986).

Second, the absence of a clear or single definition for sexual offending means that there is no clear framework for researchers to follow when investigating in this area (Sahota and Chesterman, 1988). This results in researchers using their clinical experience and judgment when deciding which types of sexually deviant behaviours they will group

together under the term 'sexual offending' (Hayes, 1997; Ryan, 1997; Winter et al., 1997; Day, 1988; Gross, 1984). Grouping different types of sexually deviant behaviour under this generic term is not a unique process, as current and previous researchers have followed this procedure (Hayes, 1997; Winter, Holland, Collins, 1997; Day, 1988; Lund, 1990; Walker and Biles, 1986). It is for this reason, as well as practical issues (e.g. as outlined above) that this thesis chooses to follow this procedure and use the term 'sexual offending' to encompass different sexually deviant behaviour. However, unlike previously published research (Winter et al., 1997; Lund, 1990; Gross, 1984) this thesis will state the specific types of sexually deviant behaviours that the term sexual offending covers. When the term 'sexual offending' is used in connection with the empirical study of this thesis, it will encompass the following sexually deviant behaviours: rape, voyeurism, exhibitionism, dating abuse, homosexual assault, offences against children, stalking and sexual harassment.

1.2.3b Prevalence Rates of Sexual Offending by People with a Learning Disability

Grouping sexually deviant behaviours together creates problems when trying to ascertain prevalence of certain sexual crimes being committed by individuals with a learning disability. Studies (e.g. Hayes, 1997; Klimechi, Jenkinson and Wilson, 1994; Lund, 1990; Walker and Biles, 1986) providing prevalence figures on the rate of sexually deviant behaviours being committed by people with a learning disability, fail to give individual figures for the incidence of rape, voyeurism, exhibitionism, stalking, homosexual assault, fetishism, masochism and frotteurism being committed by individuals with a learning disability. These studies also fail to state which sexually deviant behaviours they are grouping under the term 'sexual offending.' For example, between 1980 and 1983, Lund (1990) examined census type data for 57 offenders with a learning disability receiving their first sentence for a crime they had committed. Although Lund found that 31.6% of this sample was convicted of a sexual offence, he failed to state what these sexual offences were. Lund (1990) also carried out an interview study to examine the types of offence individuals with a learning disability serving care orders on the 1 January 1984 had been convicted of. From a sample of ninety-one, nineteen (20.9%) had been convicted of a sexual offence. Again, Lund failed to state which sexually deviant behaviours he examined. Despite this failing,

Lund's figures are consistent with those of other researchers (Gross, 1984; Walker and McCabe, 1973; Day, 1988) who have found that sexual offences account for one-quarter to one-half of all index offences for men with a learning disability who have been admitted to hospital or other specialist treatment facilities.

Hayes (1997) investigated the types of offences committed by offenders with a learning disability who appeared at six local courts in New South Wales (Australia). The most commonly committed offences for the participants in this survey were assault or sexual assault. Like Gross, (1984) Hayes found, that for a group of individuals with either a learning disability or borderline intelligence, 46.2% had committed offences against another person.

High prevalence figures obtained by Lund (1990) and Hayes (1997) warrant further investigation. Inspection of these studies has found flaws with their methodology. Both studies based prevalence rates of sexual offending on figures obtained from offenders with borderline intelligence (IQ 70 – 79), as well as those with an IQ less than 70. As previously discussed in this chapter, a number of problems exist when trying to define learning disability. Both the DSMIV-TR (American Psychiatric Association, 1995) and the AAMR (2002) definitions for a learning disability, state that the cut-off point for a classification of learning disability is a full scale IQ score of less than 70. Failing to follow these guidelines, Hayes and Lund's studies both run the risk of calculating figures that are not a true representation of the number of offenders with a learning disability who have sexually offended.

Hayes also failed to distinguish between assault and sexual assault, when calculating prevalence for sexual offending among a population with a learning disability. This causes problems when trying to establish how much of the overall prevalence rate of 46.2% was made up of sexual offences or offences against another person that did not involve sexual assault. Failing to distinguish between sexual assault and assault may have caused Hayes to over estimate the prevalence rates for sexual offending among a forensic population with a learning disability.

Recent research has found the prevalence of sexual offending by imprisoned offenders with a learning disability to be much lower (Klimecki, Jenkinson and Wilson, 1994;

Winter et al., 1997; Walker and Biles, 1986). In 1994 Klimecki et al. investigated a sample of 60 offenders with a learning disability and found that 16.67% had committed a sex-related offence. However, Walker and Biles (1986) found the prevalence rate to be much lower. They found that, of an Australian prison population with a learning disability, 3.7% had been convicted of a sexual offence. In addition, Winter et al. (1997) found that, within a prison sample of 28 inmates suspected of having a learning disability, two had committed sexual crimes, which calculates to a prevalence rate of 7.14%. Murphy, Harnett and Holland, (1995) also found that among a sample of 21 remand prisoners suspected of having a learning disability, 9.5% had committed a sexual offence. Caution should, however, be exercised when interpreting prevalence rates reported by Winter et al. (1997) and Murphy et al. (1995) for sexual offending, as they were obtained from samples who were suspected of having a learning disability rather than having a full scale IQ less than 70.

Despite the inconsistencies in prevalence rates for sexual offending among the forensic population with a learning disability, the research to date (Hayes, 1997; Klimecki et al., 1994; Lund, 1990) still suggests that it is a problem for this group of offenders. In addition, the fact that there is a slightly higher prevalence of sexual offending among people with a learning disability than individuals without a learning disability also warrants further attention (Thompson, 1997). The next section of this thesis aims to address these differences by examining specific areas that could account for why there are variations in the prevalence rates of sexual offenders with a learning disability, as well as explain why there appears to be a higher incidence of sexual offending among individuals with a learning disability than by their counterparts of sexual offenders without a learning disability.

1.2.3c Variation in Representation of Sex Offenders with a Learning Disability

The section above indicates that while prevalence rates for sex offending in people with a learning disability vary widely and have a number of methodological limitations, the figures still suggest that the number of sex offenders is over-represented within this group, when compared to people without a learning disability. The following section explores some of the reasons why this might be the case.

1.2.3d Limited Understanding of Legal Procedures

Lack of understanding about legal procedures could account for the over representation of sex offenders with a learning disability. According to Hayes (1996), they are more likely to be found guilty as they have limited or no understanding of the legal procedures. Gudjonsson, Clare and Cross (1992) investigated their vulnerability during police interviews, by comparing individuals with and without a learning disability in their understanding of the 'Notice to Detained Persons.' They found that individuals with a learning disability could only understand 11% of this caution compared to 68% for the individuals without a learning disability. Clare and Gudjonsson (1995) concluded that the information provided in this caution, which informs them of their right to silence, is too difficult for people with a learning disability to understand. Failure to understand may prevent individuals with a learning disability using the information from the caution to protect themselves while in police custody (Clare and Gudjonsson, 1995). Even with the amendments to the 'right to silence' caution (Criminal Justice and Public Order Act, 1994) people with a learning disability are still inclined to find the information too difficult and complex to use (Murphy and Clare, 1998).

More recently, Day (2000) suggested that individuals with a learning disability have impaired understanding of the consequences that accompany false confessions. They often make false confessions to please, gain attention (Day, 2000), or believe that it will result in them being able to return home (Clare and Gudjonsson, 1995). Individuals with a learning disability do not worry about giving false confessions, as they believe that it can be retracted without any consequences. According to Clare and Gudjonsson (1995), they are unaware that this information can be produced in court as evidence of their guilt.

Lack of knowledge about legal procedures and impaired understanding of a caution and their legal rights makes individuals with a learning disability vulnerable while in police custody. According to Gudjonsson (1993), they will often answer questions in an affirmative manner irrespective of whether the content of the statement is true or false. They are also more vulnerable to leading questions than individuals who do not have a learning disability (Clare and Gudjonsson, 1993). The desire to please influences individuals with a learning disability to agree with police questions and recall events in

a way they think they should be remembered, rather than provide an account of actual events.

1.2.3e Recidivism

Another explanation that has tried to account for the over-representation of sex offenders with a learning disability in prisons or secure units is the rate of recidivism. A number of studies have found that the rate of recidivism for this population ranges from 40 to 70% (Klimecki, Jenkinson and Wilson, 1994; Lindsay, Smith, Law, Quinn, Anderson, Smith, Overend and Allan, 2002). Swanson and Garwick (1990) investigated the rate of recidivism for 15 sex offenders with a learning disability. They received weekly treatment sessions for approximately 35 weeks. Within a two-year period following treatment, Swanson and Garwick found a 40% re-offending rate. Indeed, six of the original 15 sexual offenders with a learning disability were found to have re-offended. Swanson and Garwick classed any new sexual or non-sexual offences, whether it lead to a custodial sentence or not, as recidivism. However, of the six sexual offenders who had re-offended only two had been re-involved with the police for sexual offences (i.e. sexual propositions to children and touching a woman's breasts). The remaining four had been re-involved with the police for traffic offences and non-sexual related offences. Klimecki et al., (1994) reported similar recidivism rates as Swanson and Garwick (1990). In the 3.5 years after treatment Klimecki et al., reported a recidivism rate of 42%. In this study Klimecki et al., classed any new sexual offence, whether or not it lead to a custodial sentence or was the same type of offence as their earlier offence or offences, as recidivism. More recent research by Lindsay et al., (2002) has reported slightly lower recidivism rates for sexual offenders with a learning disability. In a study that reviewed the rate of re-offending of a sample of 62 sexual offenders with a learning disability, Lindsay et al., reported recidivism rates of 4% at 1 year post-treatment discharge, 12.5% at 2 years, 13% at 3 years and 21% at 4 years. Recidivism rates were based on clear evidence that a sexual offence had been committed (i.e. re-involvement with the police whether or not it resulted in a custodial sentence or re-admission to hospital for treatment) or suspicion of re-offending. Such recidivism rates led Hayes (1996) to conclude that this population may be more inclined to re-offend and this could account for the over-representation of sex offenders

with a learning disability. Re-offending will result in repeat sentences and this will increase the over-representation of sex offenders with a learning disability.

Hayes (1996) suggested that individuals with a learning disability are more likely to engage in behaviours that are regarded as illegal. Thompson and Brown (1997) suggest that both individuals with or without a learning disability engage in sexual behaviour that is regarded as criminal, but individuals with a learning disability do not possess the necessary skills to enable them to conceal their crime. They are also more likely to be detected, as many are restricted in the amount of time they are able to spend alone without supervision from staff or carers. Indeed, the care needs of many individuals with a learning disability often dictate that they require supervision during personal care activities (e.g. bathing and dressing). According to Mitchell (1987), assisting clients with these activities provides carers or staff with the opportunity to observe and judge certain behaviours as inappropriate (e.g. private masturbation or consenting same or opposite sex relationships). Other sexual behaviours such as pornography, fetish behaviour towards women's clothing or use of pictures of children to cause sexual arousal have also been detected under similar circumstances (Bowler and Collacot, 1993). However, the sexual behaviour of individuals without a learning disability cannot be assessed or monitored as easily as those with a learning disability. Any attempts to compare the sexual behaviour of these two groups is extremely difficult. It could, therefore, be that both groups engage in similar rates of sexual offending or deviance, but there are just more opportunities for individuals with a learning disability to be detected.

1.2.3f Lack of Knowledge about Sexually Inappropriate Behaviour

Lack of knowledge about sexually appropriate and inappropriate behaviour has also been suggested to account for the over-representation of sex offenders with a learning disability (Barmann and Murrey, 1981) Often this population are unaware of the laws pertaining to sexually appropriate behaviour. They are often confused about issues regarding consensual sex and where it is appropriate to have sex. Barmann and Murrey (1981) found that this population often have sex or masturbate in a public place as they are unaware that this is socially inappropriate. Being naïve about sexual expression and the legalities of sexually appropriate behaviour may increase the rate of sexual

offending among the population with a learning disability, as they try to establish sexual relationships and express their sexual needs.

From the research outlined above it seems that recidivism rates (Hayes, 1996), lack of understanding of legal procedures (Clare and Gudjonsson, 1995) and lack of knowledge regarding what is sexually inappropriate behaviour (Barmann and Murrey, 1981) play a role in accounting for the increased rate of sexual offending by individuals with a learning disability, than someone without a learning disability. However, there is one area where there is no difference between the two groups – namely gender. For both groups there is a higher incidence of sexual offending by males (Constantine, 2004). The next section of this thesis will address this and provide justification for why this thesis chose to focus primarily on sexual offending by males with a learning disability.

1.2.3g Gender and Sexual Offenders with a Learning Disability

Sexual offending has typically been seen as a crime committed by males (Constantine, 2004). Little research exists on female sexual offenders with a learning disability. Research that does exist indicates that the prevalence of sexual offending among females is extremely low. For example, Lindsay, Smith, Quinn, Anderson, Smith, Allan and Law, (2004) found that, of a sample of 179 females with a learning disability referred to a Scottish community-based service for severe and challenging behaviour and forensic problems between 1990 and 2001, only 18 had committed an offence. Of those 18, only 1 had committed a sexual offence (i.e. procurement for the purpose of sexual assault). This finding was consistent with Maden (1996) who found that, of a sample of incarcerated women at Her Majesty's Prisons Holloway, Styal, Drake Hall and Durham between 1988 and 1990, only 1 female identified with a learning disability was convicted of a sexual offence (i.e. indecent assault). Such low incidences of females committing sexual offences could account for the main body of sexual offending research that focuses predominantly on sexual offending committed by males with or without a learning disability (Marshall, 1999; Winter et al., 1997; Klimecki, Jenkinson and Wilson, 1994). Considering this, it was felt appropriate for this thesis to focus solely on sexual offences committed by males with a learning disability.

With a clear research group to focus on, this thesis can now turns its attention to examining possible factors that have been identified as potential causal factors for sexual offending by individuals with a learning disability. The research to date has been extensive, particularly in the area of cognitive distortions (Lindsay and Macleod, 2001; Winter et al., 1997; Bumby, 1996; Abel, Gore, Holland, Camp, Becker, and Rathner, 1989), when trying to offer explanations that can provide insight into sexual offending behaviour. The next section of this thesis will review current and past literature of possible causal factors of sexually deviant behaviour.

1.2.4 Characteristics of Sexual Offenders with a Learning Disability

A wide range of possible contributory factors has been associated with sexual offending of individuals with a learning disability. These factors include: social circumstances, low self-esteem, recent life events, psychiatric illness, family history of learning disability, history of sexual abuse, psychiatric illness, epilepsy, poor impulse control, distorted cognitions (Lindsay and Macleod, 2001; Winter, Holland and Collins, 1997; Glaser and Deane, 1999) and information processing deficits (Ward, Hudson and Marshall, 1994). The extent to which these factors account for sexual offending by this population remains unclear.

Day (1988) studied 20 offenders with a learning disability who had been discharged from a hospital based treatment programme. Using case note data, Day found that 85% had a history of serious childhood behavioural problems, 50% had a background of psychosocial deprivation, 50% had a family history of offending and 30% had a psychiatric disorder. More recent research by Winter et al., (1997) found similar results. However, the extent to which these factors can be used to account for the characteristics of sexual offending by individuals with a learning disability has been questioned. A review paper by Lindsay and Macleod (2001) stated that it is difficult to establish the role these characteristics play in sexual offending when most of these studies fail to examine an appropriate control group.

Glaser and Deane (1999) investigated the characteristics of sex offenders and offenders with a learning disability and found that there were no major differences between the two groups. They found that offenders with a learning disability committed non-sexual

and sexual crimes for similar reasons. Poor socialisation, lack of social skills, history of institutionalisation during childhood, poor anger management and impulse control were all identified as characteristics for both sexual and non-sexual offending. However, these characteristics may also be present among offenders who do not have a learning disability.

Several researchers have identified disturbance in family background as characteristic of sexual offending. Langevin and Pope (1993) found that many of their clients who had committed a sexual crime came from disturbed family backgrounds (e.g. lack of family support or alcohol abuse). Investigating approximately 100 sex offenders with a learning disability who had perpetrated either a sexual offence against a child, incest or were sexually aggressive towards adult women, they found the sexually aggressive group had the most family disturbance. Langevin and Pope (1993) found that the parenting background of this group was significantly more disturbed than that within the general population. There was a higher incidence of alcoholism, violence, history of forensic contact with one or more of the family members and attitude problems with the parents within the group of sexual aggressive offenders. Langevin and Pope concluded that the high incidence of these family disturbances lead to bad parenting and was often reflected in the child having educational or behavioural problems.

Winter, Holland and Collins, (1997) found similar results when they compared the family background of 21 offenders who self-reported as having a learning disability to a matched group of offenders who had been identified with a learning disability in childhood. They found that the self-reported individuals with a learning disability were significantly more likely to have experienced: lost contact with their father; criminality; illicit drug use; truancy; recent life events in the 6 months prior to their offence; and self-reported behavioural problems.

Both studies into the characteristics of family background have highlighted that behavioural and educational problems can be a result of disturbances in parental backgrounds. Indeed, Langevin and Pope (1993) found that almost 2 in 3 sex offenders had repeated at least one academic year of school. Of their sample, 85% of sexual aggressive offenders, 48% of paedophiles and 56% of incest perpetrators had repeated at least one year. A high prevalence rate for behavioural problems was also found in

these studies. Winter et al. found that 61.9% of their self-reported offenders with a learning disability had experienced behavioural problems at school.

Similarities in drug and alcohol misuse were also identified by Langevin and Pope's (1993) and Winter et al. (1997) studies. Langevin and Pope (1993) found that there was a significant amount of alcoholism among their sexual aggressive perpetrators. Similarly, Winter et al. (1997) found a high incidence of drug and alcohol misuse: of the self-reported offenders with a learning disability, 27.8% were found to have a drug and alcohol dependency. These results are not, however, consistent with other studies that have examined drug and alcohol misuse among sex offenders with a learning disability. Glaser and Deane (1999) found that this population was less likely to have a history of drug or alcohol dependency than non-sex offenders with a learning disability. Hayes (1996) and Lindsay and Smith (1998) also found that sex offenders with a learning disability were less likely to engage in illicit drug or alcohol misuse. The differences in results may be explained by the different methodologies employed. Both Langevin and Pope (1993) and Winter et al. (1997) obtained their samples from a forensic setting, whereas Hayes (1996) and Lindsay and Smith (1998) obtained participants from a clinical setting. This suggests that the setting may influence the results, as research studies have found alcohol and drug misuse to be prevalent among offenders from a forensic setting (Klimicki et al., 1994; Winter et al., 1997), but not a clinical setting (Hayes, 1996; Lindsay, Law, Quinn, Smart and Smith, 1998). Similarly Glaser and Deane (1999) found that there was a higher prevalence of substance abuse among offenders with a learning disability who were sent to prison than among offenders in an intensive residential treatment programme.

Winter et al's (1997) results may also have been affected by the methodology employed to obtain participants. They were asked to self-report whether or not they had a learning disability. Of the offenders who reported themselves as having a learning disability only two were found to have a full scale IQ less than 70. This creates problems when trying to make comparison with other studies, as Hayes (1996), Lindsay and Smith (1998) and Glaser and Deane (1999) all used offenders who had an IQ less than 70.

Other characteristics associated with sexual offending behaviour include epilepsy and a history of sexual abuse. Both of these characteristics are controversial, as there are

inconsistencies with current and previous research studies. Corbett and Pond (1979) suggested that, as there is a higher prevalence of epilepsy among individuals with a learning disability, this could contribute to their sexual offending behaviour. They suggest that an offence may be committed as a result of the epileptic seizure. Winter et al. (1997), however, found no direct correlation to indicate that offending was a result of an epileptic seizure. In their study only one offender was identified as having an epileptic seizure prior to their offence. However, the seizure had occurred eight days prior to the offence being committed. From this Winter et al. (1997) concluded that there was little evidence to support the association between epilepsy and offending.

Differing views also exist between the association of offending and history of sexual abuse. Thompson and Brown (1997) suggest that sexual abuse in childhood is a characteristic of sex offenders with a learning disability and several studies have found that many from this population have been sexually abused in childhood (Quinsey, 1986; Griffiths, Quinsey and Hingsburger, 1989). Indeed, recent research by Lindsay et al. (1998) has found that there is a higher prevalence of childhood sexual abuse among sex offenders with a learning disability than non-sexual offenders. From a sample of 48 sex offenders with a learning disability 38% had been sexually abused in childhood, compared to 12.7% of a sample of 50 non-sexual offenders. However, a number of authors have argued that the link between family history of abuse and sexual offending is tentative. Langevin and Pope (1993) found that, within a population of sex offenders with a learning disability, not all of them had been abused in childhood. Similarly, Day (1994) found little evidence to support the link between sexual offending and history of childhood abuse.

Some recent research has suggested that the prevalence rates of childhood sexual abuse of sexual and non-sexual offenders may be inaccurate due to under reporting. Briggs and Hawkins, (1996) claim that many males feel embarrassed and are, therefore, less likely to report being sexually abused than females. Issues such as homophobia, lack of societal acceptance of male sexual abuse and perceived threats to their masculinity have all been identified as reasons why males fail to report sexual abuse (Briggs and Hawkins, 1996).

Recent research has started to examine how the learning disability itself may contribute to the incidents of sexual offending. Lindsay and Smith (1998) proposed that deficits in conceptual understanding might lead offenders to develop stronger beliefs that allow them to deny or minimise their crime. Indeed, deficits with the conceptualisation of these concepts will make it difficult for offenders with a learning disability to understand that the denial and minimisation of an offence is self-justification rather than a truth.

Lindsay and colleagues (Lindsay and Smith, 1998; Lindsay, Neilson, Morrison, and Smith, 1998) have carried out a number of studies that have examined the cognitions associated with denial and minimisation. Investigating the responses to treatment for sex offenders with a learning disability, Lindsay and Smith (1998) found that the cognitions associated with denial were extremely powerful and difficult to address during treatment. Sex offenders consistently believed that the crime did not take place if people did not talk about it. Lindsay and Smith (1998) also found that having a learning disability made it more difficult for individuals to empathise. Several researchers have found that sex offenders experience problems when trying to understand the perspective of the victim (Burke, 2001; Fisher, Beech and Brown, 1999; Barbaree, Marshall and Lanthier, 1979). Deficits with identifying emotions in others create problems for individuals with a learning disability when they become sexually aroused. They may recognise their emotions, but fail to realise that their victim does not feel that same way. Lindsay and Smith (1998) concluded that sex offenders may have problems trying to decentre themselves from their emotions and this in turn affects their ability to understand the perspective of others.

The role cognitions play in accounting for sexual offending behaviour has received a great deal of research interest within the past decade. Researchers (Bumby, 1996; Stermac and Segal, 1989; Ward, Hudson, Johnston and Marshall, 1997) believe that cognitions, and in particular distorted cognitions, play a pivotal role in the etiology, maintenance and justification of sexual behaviour. Despite little research existing to explain or support the exact role cognitive distortions play in sexual offending, it is generally accepted that they play an important role as they enable sex offenders to diminish their responsibility and thus make their deviant sexual behaviour acceptable (Abel, Gore, Holland, Camp, Becker & Rathner, 1989). Considering this, clinicians

have developed treatment programmes that attempt to address these cognitions (Lindsay, Neilson, Morrison and Smith, 1998; Marshall and Serran, 2000).

Research to date has focused primarily on the cognitive content of post-offence cognitions (e.g. Bumby, 1996; Abel et al., 1989) rather than examine the cognitive processes that underlie the initiation, maintenance and justification of sexual offending behaviour. Although the content of these cognitions have been recognised as playing an important role in the rationalisation of an offence, as well as subsequent re-offending, researchers suggest that information-processing mechanisms are also important before and during the offence cycle (Pithers, 1994; Ward, Johnson and Marshall, 1994). It has been suggested that sexual offenders with a learning disability have deficits with information processing, as material that is received by their sensory receptors (e.g. ears and eyes) may not be processed as much as "normal" people, or not at all (Langevin and Pope, 1993). Sensory deficits, problems decoding information, or difficulties interpreting and making decisions about information may prevent material reaching the brain unaltered. According to Langevin and Pope (1993), whatever the explanation, individuals with or without a learning disability differ in their ability to process information. Clinicians need to be aware of this difference, as this will facilitate their theoretical and practical ideas when developing suitable treatment programmes (Langevin and Pope, 1993; Ward et al., 1997). Unfortunately, the research examining the cognitive processes or information mechanisms utilised by sexual offenders is limited. By reviewing this limited research, the next section of this chapter aims to show how current research has attempted to explain the role information processing plays in sexually deviant behaviour.

1.2.5 Information Processing Studies

Variables that may influence information processing have started to be examined: for example, sexual offenders' ability to process interpersonal cues in interactions between males and a female. Lipton, McDonel and McFall (1987) investigated rapists', violent non-rapists' and non-violent non-rapists' responses to a series of 72 thirty-second videotaped vignettes that depicted heterosexual couples either on a first date or more intimate interactions. Participants were instructed to indicate from a list of 5 affective cues (e.g. romantic, positive, neutral, negative or bad mood) which one was being

demonstrated in the vignettes by males and females. Lipton et al., (1987) found that rapists were significantly less accurate than the other two groups in interpreting the cues emitted by women in first date interactions. Rapists were also found to be less efficient reading women's cues, as opposed to men's cues, with rapists being more inclined to perceive negative cues as relatively positive reactions.

Malamuth and Brown (1994) obtained similar results when investigating the perception of women's communications by sexually aggressive men. They compared sexually aggressive males' responses to 4 thirty-second videotaped vignettes. These depicted an interaction between a man and a woman in a bar, where the man's advances were systematically varied (e.g. friendly, assertively rejecting, seductive and highly hostile) with the responses of sexually non-aggressive males. Participants rated each interaction on a 9-point Likert Scale (ranging from strongly disagree [-4] to strongly agree [+4], with 0 indicating neither agreeing or disagreeing). Malamuth and Brown (1994) found that sexually aggressive males interpreted clear and assertive communications as hostile, and friendly behaviour as seductive. These findings led Malamuth and Brown (1994) to conclude that sexually aggressive males were incompetent in decoding women's emotions, as they had particular difficulties interpreting negative cues.

Caution should be exercised when interpreting these research studies' findings (i.e. Lipton, McDonel and McFall, 1987; Malamuth and Brown, 1994), as similar methodological flaws have been identified in both studies. For example, both studies used videotaped vignettes to depict interactions between males and females. Craig (1990) raises concerns over the ecological validity of using videotaped vignettes, as she believes participants respond differently to stimulus presented in this way than they do to real-life situations. Videotaped vignettes also raise ethical concerns. Portraying women in a highly hostile, or seductive manner may reinforce sexual fantasies that sexual offenders hold, or confirm to them that this is what is regarded as 'normal' interactions between men and women. Exposing sexual offenders to this type of stimuli may confirm to them that this type of behaviour is acceptable and it may encourage them to offend. However, the practicalities of addressing these concerns are difficult. To elicit sexual offenders' responses to sexual stimuli and investigate their ability to interpret interactions between males and females, they need to be exposed to some type of sexual stimuli. Although videotaped vignettes might not achieve the same responses

as a real-life situation would, they might be the most suitable alternative, as ethical restrictions would not permit males and females to act out sexual interactions in front of sexual offenders.

Despite these weaknesses, the studies by Lipton et al. (1987) and Malamuth and Brown (1994) suggest that sexual offenders have deficits in their ability to interpret a woman's interpersonal cues. This finding offers support for the empathy literature that argues that sexual offenders have deficits in their ability to empathise (Hudson and Ward, 2000; Abel et al., 1989). Sexual offenders who are unable to empathise will continue with their sexually deviant behaviour, as they are unable to recognise the distress of their victims. Deficits decoding a woman or child's emotions suggest that sexual offenders have problems with the first stage of the Empathy Model (i.e. emotional recognition) proposed by Marshall, Hudson, Jones and Fernandez (1995). This is a four-staged model (i.e. emotion recognition, perspective taking, emotion replication and response decision) that requires individuals to go through all stages for them to be able to empathise. Problems at any one stage will result in failure to empathise.

Research into emotion recognition of sexual offenders provides further support for the opinion that they may have deficits with the emotion recognition stage of the Empathy Model. Hudson, Marshall, Wales, McDonald, Bakker and McLean (1993) tested 75 male prisoners and hypothesised that sexual offenders would experience more difficulties recognising emotions including fear, disgust and anger than non-sexual and non-violent offenders. Participants were shown 36 slides depicting male or female facial expressions representing surprise, fear, disgust, anger, happiness and sadness. After looking at each slide participants had to answer a checklist of questions (i.e. 'Did that face show anger, fear, disgust, surprise, happiness or sadness?'). Results indicated that sexual offenders, compared to other inmates, were the least accurate in emotion recognition. Sexual offenders consistently confused fear with surprise and disgust with anger. Hudson et al., (1993) extended this analysis to investigate whether emotion recognition was a problem experienced by child molesters trying to identify the emotions of children and adults. Examining 20 male nonfamilial child molesters and 20 male community controls, Hudson et al. (1993) found child molesters were significantly less accurate at recognising emotions in both adults and children, than the community controls. However, no significant difference was found between the

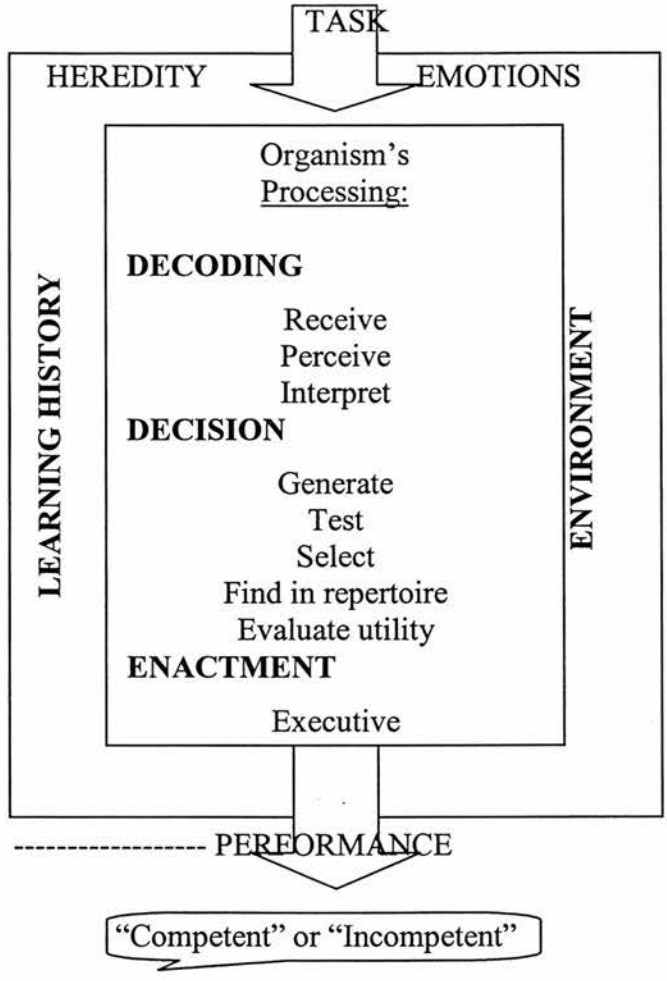
accuracy of the child molesters' recognition of emotional states in either sets of children and adult pictures. This finding may suggest that child molesters' ability to recognise emotions is a general problem, rather than a difficulty restricted to their specific interest group (e.g. children).

1.2.6 Social Information Processing Models

All three studies, outlined above, (Lipton et al. 1983; Hudson et al. 1993; Malamuth and Brown, 1994) are concerned with the first stage of Dodge's (1986) Social Information Processing Model and McFall's (1990) Social Information Processing Model of Social Skills and Social Competence. According to Dodge (1986), a series of information processes influence behavioural responses to social situations. The Social Information Processing Model (Dodge, 1986) proposes that there are five sequential steps required for behaviour responses to occur. These steps include 'encoding the social cues from the environment', 'forming a mental representation and interpretation of these cues', 'searching for the possible behavioural response', ' deciding on a response from those generated' and 'enacting the selected responses'. Deficits in any of these processes will result in inappropriate behaviour. When the research findings from Lipton et al., (1987) and Malamuth and Brown (1994) research studies are applied to the Social Information Processing Model, it appears that sexual offenders have deficits with the first stage of the model (e.g. encoding social cues from the environment). An inability to accurately interpret the interpersonal cues emitted by women during interactions with males, may lead sexual offenders to demonstrate sexually inappropriate behaviour. Such an explanation is consistent with McFall's account of sexually deviant behaviour.

McFall (1990) proposed a Social Information-Processing Model of Social Skills and Social Competences to explain competent and incompetent behaviour. It is a three-staged model that incorporates decoding skills, decision skills and enactment skills. All stages must be completed for an individual to perform either appropriate or inappropriate behaviour. Figure 1 shows a diagrammatical form of McFall's Model.

Figure 1. Schematic Outline of Social Information-Processing Model of Social Skills and Social Competence[1]



The model illustrated in figure 1, proposes that information is presented to the sensory receptors, where it is received, perceived and interpreted (decoding). This information is then processed to generate a behavioural response (decision), which is influenced by heredity, emotional, learning history and environmental factors. Once the behavioural response has been generated it can then be carried out (enactment). However, while executing the behavioural response, individuals must monitor the impact that the behaviour is having on the environment, as it will be judged as either a competent or incompetent response.

[1] Schematic outline in McFall, (1990) pg. 314.

Both Dodge's (1986) and McFall's (1990) models are very similar and can both be applied to explain sexually inappropriate behaviour resulting from sexual offenders misinterpreting interpersonal cues from females. However, these models are largely theoretical. They may provide useful descriptive information about the processes involved that may account for sexually inappropriate behaviour, but they fail to explain why sexual offenders have deficits decoding information or recognising emotions. Although it is vital for clinicians to be aware of the particular deficits sexual offenders have when developing suitable treatment programmes, it would also be beneficial for therapists to have a better understanding of the processes which could account for these deficits. Indeed, Craig (1990) suggests that sexual offenders are selective with the cues that they attend to. When information is received by their sensory receptors they attribute a level of importance to each piece of information. Individuals then select the information that they regard as most important and relevant. Unfortunately, there is no published research, to date, that has examined the way sexual offenders select, attend to and process cues or information. Despite this, research suggests sexual offenders have deficits in decoding interpersonal cues and emotions (Lipton et al. 1987; Malamuth and Brown, 1994) and that deficits in cognitive abilities (e.g. attention, memory and language) lead to deficiencies in social information processing (Gomez and Hazeldine, 1996). It was, therefore, felt that the area of attention and in particular selective attention and attentional bias needed to be examined. If sexual offenders have deficits in their ability to read emotions and identify negative cues, is this the result of selective attention deficits, excessive selective attention ability or attentional bias?

1.2.7 Selective Attention

According to Solso (1995), selective attention is:

'*the mechanism by which certain information is registered and other information is rejected (whether or not the latter enters conscious awareness)*' (pg 279).

A number of researchers (Cherry, 1953; Broadbent, 1958; Treisman, 1960) believe that, because of the large amount of information that exists in the world, a person needs to be able to select which information to attend to and which to tune out. Treisman (1964) proposed a theory to account for the many phenomena associated with selective attention. This theory proposes that incoming stimuli might undergo three different

kinds of analysis. The first test analyses the physical properties of the stimuli, with the second task determining the different components of the stimuli. The third test assigns meaning to the stimulus. These three tests are not necessarily carried out on all incoming information, as some stimuli can be disentangled from one another using only one test of Treisman's Attenuator Model. However, if this test fails to separate the two competing stimuli, processing will continue until they become disentangled from one another. For example, if you were at a railway station watching people get off a train waiting for your female friend to arrive there would be a number of factors to consider. According to Treisman's Model, you would sort the stimulus out using the first test: analysis by physical properties (i.e. separate stimulus by male or female status). However, it is unlikely that you would be aware of any details about the males such as hair colour or what they were wearing, as you did not process this information because your main focus was on the females. If this first test fails to disentangle the stimulus, the second stage of Treisman's Model would be carried out. For example, still trying to locate your female friend from the others getting of the train might require more than just trying to separate the males from the females. You would need to examine the females further. As the difference between this stimulus is not as clear, you would need to examine the components of the stimuli (e.g. size, hair colour, skin colour and height). However, this does not mean that you completely disregard or ignore the components that are not relevant to your friend, as Treisman's Model states that this information is attenuated (i.e. turned down or suppressed).

Treisman's Model attempts to provide an account of how individuals focus their cognitive processes on a narrow band of sensory stimulation in order to deal with the vast amount of information that they encounter in the environment. Such an account of selective attention is consistent with Craig (1990) who suggests that sexual offenders are selective with the cues they attend to. Rather than attend to all of the information they encounter, Craig suggests that sexual offenders filter out irrelevant information, leaving the relevant stimulus for their attention. However, Craig's view is purely theoretical with no empirical data to support it. Indeed, it is an area of research that has received little attention.

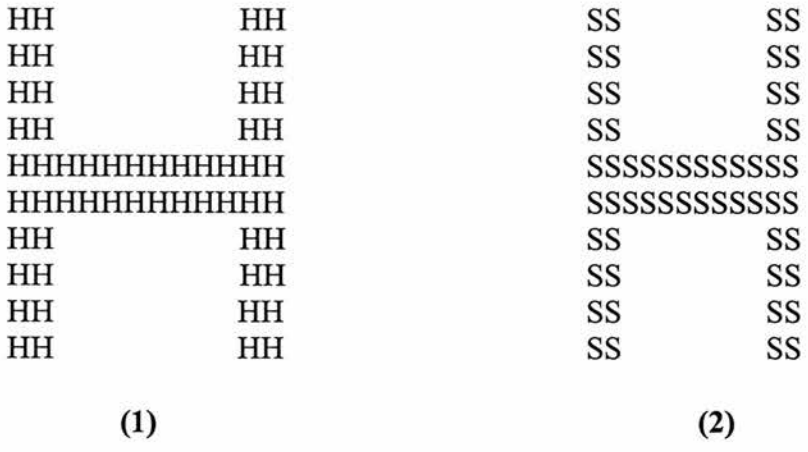
To address this, Whitefield (unpublished) carried out a series of empirical studies to investigate the attentional abilities of sexual offenders with a learning disability and

examine their selective attention. Previous research findings (Ward, Hudson, Johnston and Marshall, 1997; Malamuth and Brown, 1994; Craig, 1990) have found that sexual offenders have deficits with their ability to choose which information to attend to and process. According to Craig (1990), sexual offenders misinterpret cues that women give out, as they tend to focus on cues that support their aggressive behaviour. Ward et al. (1997), proposes that sexual offenders have social information deficits at the first stage of Marshall, Hudson, Jones and Fernandez's (1995) Empathy Model, that predisposes them to misconstrue cues and in particular negative ones. Problems at this stage of the model will have a detrimental impact on the remaining three stages. Research has examined empathy (i.e. facial expressions), but no single study has been designed to investigate the different stages of Marshall et al's (1995) Empathy Model. When Greer, Estupinan and Manguno (2000) reviewed studies that investigated empathy among sexual offenders they found certain studies tested the first stage of the Empathy Model (e.g. Hudson, Marshall, Wales, McDonald, Bakker and McLean, 1993), despite this not being their initial aim. Results from these studies found that sexual offenders had deficits in their ability to interpret facial expressions (e.g. fear, anger and surprise). Unfortunately, no published research has examined the fourth stage of the Empathy Model (i.e. response decision). Based on previous research findings, that sexual offenders have deficits with their ability to interpret facial expression and Craig's (1990) view that sexual offenders are poor at choosing the appropriate information to focus on, it was felt that sexual offenders might have deficits with the fourth stage of the Empathy Model (Marshall et al. 1995). Indeed, sexual offenders might have deficits in their ability to attend to all the necessary information that will allow them to make decision and thus have deficiencies with their selective attention.

Considering the research outlined above, Whitefield (unpublished) proposed that sexual offenders might have deficits with their selective attention. To test this Whitefield used interference tasks that are commonly used to test selective attention. First she tested selective and divided attention using the "Navon task" (Navon, 1977), as it is a straightforward task that been used on individuals as young as 5 years (Plaisted, Swettenham and Rees, 1999) which suggests that it would be suitable for use with individuals with a mild learning disability. In the "Navon task" participants are presented with large letters made up of smaller letters (see figure 1.1) and asked to identify letters at either the local (individual features that comprise the overall shape) or

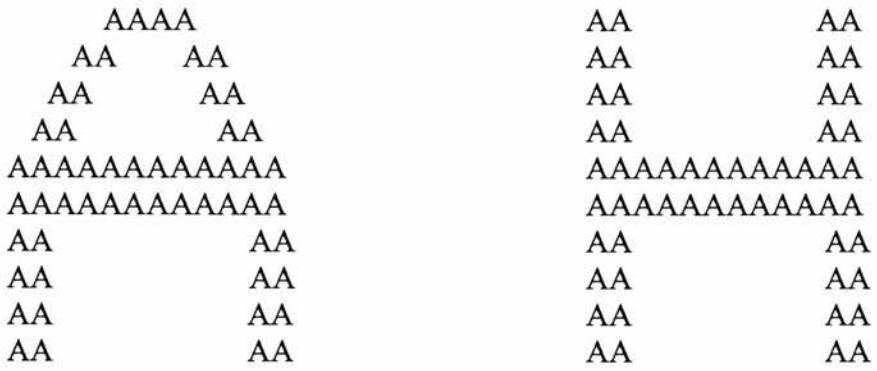
global level (overall shape). Panel 1 of figure 1.1 shows a global H made up of local Hs and panel 2 shows global Hs made up of local Ss.

Figure 1.1 Navon Task Stimuli



To test selective attention participants are asked to identify either the small (local) or large (global) letters in the presented stimuli. Participants without a learning disability are quicker to identify the letters at the global than local level (Navon, 1977), which indicates a Gestalt precedence for processing visual stimulus. The Gestalt approach is based on a global and more holistic approach to dealing with visual stimulus in the environment. According to this approach the whole of a form differs from the sum of its individual parts. This finding is also reflected in participants' responses in the divided attention task. Participants are not instructed to attend to either the global or local level, but to identify whether the letter A is present or absent in the stimulus (see figure 1.2). Participants without a learning disability are quicker to identify the letter A being present at the global than local level (Navon, 1977), indicating that they might have a natural advantage to process visual stimulus quicker at the global than local level. This finding suggests that they do not have conscious control over the speed at which they process information at either the global or local level.

Figure 1.2 Divided Attention Stimuli



(1) **(2)**

In both the divided and selective attention tasks, participants are quicker to identify the target letter when both stimuli letters are compatible (e.g. panel 1 of figure 1.1 and 1.2). This results from an absence of any stimulus material interfering with the processing task, as participants do not experience conflicting stimulus when selectively attending to stimulus at either the global or local level in trials where the stimulus is compatible.

After considering how people without a learning disability respond on the "Navon task", research has claimed that sexual offenders have problems selecting the appropriate cues or information to focus on (e.g. Craig, 1990; McFall, 1999) and the view that they may have deficits with the fourth stage of Marshall et al's. (1995) Empathy Model, in that they are unable to attend to all the necessary information that allows them to make a decision, this could suggest that they have problems with global processing. Unable to view the whole picture, sexual offenders may have a precedence of local rather than global processing. Considering this, Whitefield hypothesised that sexual offenders have deficits with their global processing, which results in them demonstrating local, rather than global, advantage and interference effects.

When comparing sexual offenders with a learning disability and non-offenders with a learning disability on the "Navon task", Whitefield found that sexual offenders did not demonstrate a local advantage effect. Although this study did not find evidence that sexual offenders differ from non-offenders in their ability to process information at either the local or global level, this does not mean sexual offenders do not have

attentional deficits. Indeed, the methods employed in this study may have been unable to detect any attentional differences due to the study failing to focus on the attentional processes that might differ in sexual offenders.

As there are a number of mechanisms involved in attention (Merrill and Taube, 1996), this suggests that examination of attention in sexual offenders should not be restricted solely to selective or divided attention. Considering this, Whitefield (unpublished) decided to consider the effects other components have on attention (e.g. attentional dwell time). This is an attentional effect that measures the location of spatial ability by investigating the speed at which participants detect a probe on either an attended or unattended visual field. Although this attentional effect has not been investigated among sexual offenders with a learning disability, it has been tested on anxious individuals to measure their attentional dwell time to threatening stimuli. Indeed, Fox, Russo and Dutton, (2002) found that anxious individuals were more sensitive to the presence of emotional stimuli (e.g. pictures of angry or happy faces) than neutral faces. This finding is consistent with a number of research studies that have found threat related stimuli to affect attentional dwell-time or the ability to disengage attentional resource from threatening stimuli (Taghavi, Neshat-Doost, Moradi, Yule and Dalgleish, 1999; Van Honk, Tuiten, DeHaan, Van den Hout and Stam, 2001). These studies have found participants with high trait anxiety to be slower than low trait anxious controls when responding to targets requiring attentional disengagement from threat. This finding suggests that anxious individuals are more attentive to threatening cues in the environment. Considering this finding and research (e.g. Harris, Rice, Quinsey and Chaplin, 1996; Quinsey 2003) that has found child molesters to spend longer viewing pictures of children than adults, when compared to "normal" males, it seems logical to presume that sexual offenders will be more attentive to their sexual interest group. This presumed increased level of interest in their sexual interest group led Whitefield to suggest that this might result in sexual offenders experiencing problems with attentional disengagement.

To test this Whitefield aimed to investigate attentional dwell time to establish whether sexual offenders experienced a longer delay in disengagement from pictures of people than pictures of objects. Participants were presented with pictures of people and objects individually for a short time in one of two locations. A target appeared in either the

same location that the picture appeared (valid trial) or not (invalid trial) and participants were required to respond to it. The target required some element of cognitive processing (i.e. pressing a specific key on a keyboard if a red square or circle appeared on the screen) rather than simply responding to whether a target appeared or not. This was done to prevent participants from attending to only one side of the screen.

The attentional dwell time task solely investigated differential disengagement of attention by investigating differences in time sexual offenders and non-offenders took to disengage their attention from pictures of people than objects. The invalid trials (i.e. the picture and target appear in different locations) provided a direct measure of disengagement of attention from the two pictures, by enabling comparisons to be made between the time it took participants to respond to a target after viewing either a picture of a person or object. Whitefield therefore hypothesised that if attentional dwell time increases in sexual offenders for pictures of people, then they will be slower to detect a target on an invalid trial following pictures of people.

Whitefield found that attentional dwell time was not found to increase in sexual offenders when viewing pictures of people and did not result in them being slower to detect targets on invalid trials following those pictures. Participants were significantly faster to respond to targets that appeared in valid compared to invalid locations. Although this difference did not differ between the two participant groups (e.g. sex offenders and non-offenders with a learning disability), this finding is consistent with how typical participants respond to this task (Fox, Russo and Dutton, 2003).

Like the selective and divided attention study, this study failed to provide information that suggests that sexual offenders with a learning disability have attention deficits. Failure to obtain significant results does not enable conclusions to be made that sexual offenders with a learning disability do not have attentional deficits. It could be that the methods used to investigate attention were unable to detect any differences. Methodological issues could also have influenced the results. For example, the stimulus material utilised in the attentional dwell time study may not have been explicit enough to catch the sexual offenders' attention, as the stimulus pictures of people depicted women and children in everyday situations. This was done to reflect how sexual offenders would normally see their victims. Previous studies that have used picture or

vignettes to investigate viewing time (Harris, Rice, Quinsey and Chaplin, 1996; Quinsey, Ketsetskis, Earls and Karamanokian, 1996; Quinsey, 2003) have portrayed women and children sexually (i.e. naked, being sexually provocative, or sexually assaulted). Using these types of images of women and children may have elicited a greater sexual response and caught their attention, resulting in sexual offenders viewing these pictures for longer (Harris et al., 1996). Although it would be interesting to examine whether these types of images would cause sexual offenders to have problems disengaging from stimulus material, ethical restrictions in Britain would not permit this type of stimulus material to be used.

Despite Whitefield failing to find significant results that support the hypothesis that sexual offenders with a learning disability have deficits with their selective attention or attentional dwell time, recent research by Smith and Waterman (2004) has provided renewed indications that sexual offenders may have deficits with their selective attention. Using an interference task to test selective attention, sexual offenders demonstrated greater interference bias on the Stroop task (Stroop, 1935) than non-offenders. In the Stroop task participants are presented with a list of names of colours that are printed in corresponding coloured ink (e.g. red written in red ink, or blue written in blue ink) and asked to read them aloud. They are then presented with another list of names of colours that are printed in different coloured ink that do not correspond (e.g. red written in blue ink, or yellow written in green ink) and instructed to say the colour of the ink. Participants find it easier to say the colour of the ink when the word and colour of the ink correspond than when they do not.

Smith and Waterman (2004) presented sexual offenders, violent offenders, non-violent offenders and undergraduates with colour-name words related to sexual offending. Results demonstrated that sexual offenders demonstrated the greatest interference bias on colour-name words relating to sexual offending than the other 3 groups. Sexual offenders were, therefore, found to have slower colour identification responses on words related to sexual offending than the other participant groups. They also found that there was a processing bias for aggressive words among violent offenders, but not for non-violent offenders. Using a selective attention framework (i.e. the Stroop effect) Smith and Waterman (2004) have found that sexual offenders have information processing bias towards sex-related stimulus.

Such a research finding highlights the need for continued research in this area, considering the implications that this finding has for relapse and successful treatment. For example, if sexual offenders do have an information processing bias for sexually related stimulus, when they are surrounded by stimulus that they consider to be sexual in nature (e.g. walking past children playing in a park) it seems logical to suggest that they will be more aware of the stimulus, which in turn could drive their sexually deviant cognitions.

The work of Smith and Waterman (2004) provides justification for continued work into the selective attention and, in particular, information processing bias among sexual offenders. However, it would be inappropriate to use the Stroop task with individuals with a learning disability. A number of individuals with a learning disability are unable to read or have difficulties reading, thus the Stroop would not be an appropriate interference task to use with this group. It also raises questions about ecological validity. If sexual offenders do have information bias towards material that is relevant to their sexually deviant behaviour, how appropriate is presenting them with sexually deviant words.

1.3 Aims and Hypothesis of Present Study

Considering the above and reviewing current literature on alternative methods used to test attentional bias, the present study aims to identify and use a test for information bias that is both suitable for use with individuals with a learning disability and considered to be more ecologically valid.

The flicker paradigm has been identified as a more ecologically valid method to test for information processing bias (Jones, Jones, Smith and Copley, 2003). The flicker paradigm is a pictorial approach that induces change blindness to detect information bias. The paradigm induces change blindness by presenting participants with two identical visual scenes (e.g. a woman on the telephone) that are continuously and cyclically being presented on a monitor. A visual change occurs in one of the visual scenes (e.g. the girl is no longer on the telephone or a piece of clothing is changed). Participants are required to indicate when they identify the change that has occurred in

the visual scene, with the computer recording how long it takes them to do so. This measurement is referred to as the change-detection latency (i.e. the time it takes participants to respond from the time the change occurred).

Using stimulus material that depicts men, woman and children in everyday situations (e.g. woman reading a book, man on the telephone and children playing in the sand) is ecologically more valid than presenting sexual offenders with sexual related words. Quinsey (2003) also stated that sexual offenders do not need to be exposed to sexually explicit material, such as pornographic material or pictures of children acting in an overtly sexual way, for their viewing time of this material to be increased more than non-offenders. Considering these issues, it was felt appropriate to portray adults and children in everyday situations that sexual offenders would be used to seeing.

The flicker paradigm is also an indirect task that reduces the likelihood of participants being able to mask their responses. As an indirect task involves performance being affected by prior experiences with no conscious recollection of past events, it was felt that this method might detect information processing bias among sexual offenders, as they will be unable to consciously try to mask their response. It is a paradigm that is suitable for use with individuals with a learning disability, as Carlin, Soraci, Strawbridge, Dennis, Loiselle and Chechile, (2003) successfully used it to test detection of change in naturalistic scenes by individuals with and with a learning disability. Carlin et al., (2003) also found that individuals without a learning disability completed the task significantly quicker than participants with a learning disability. Despite this difference in completion time between the participants with and without a learning disability, the flicker paradigm was still found to be a paradigm suitable for use on individuals with a learning disability.

It is also a paradigm that has been successfully used to investigate social information processing bias in social users of cannabis and alcohol (Jones, Jones, Blundell and Bruce, 2002) and in good, moderate and poor sleepers (Jones, MacPhee, Broomfield, Jones and Espie, 2005). Jones et al.'s, (2002) research found that individuals who had higher levels of social substance use were quicker to detect a visual substance related change. Indeed, social substance users were quicker to detect when the location of a bottle of alcohol was changed in the picture compared to when the location of a

videotape was altered. Similarly, social cannabis users were quicker to detect a substance related change (e.g. the location of a bottle of smoking apparatus was changed, as well as a highlighter pen) than non-social users of cannabis. These findings raise particular possibility concerning the effects stimulus of people in everyday situations could have on sexual offenders, compared to non-offenders. For example, if social users of alcohol or cannabis have information processing bias towards substance related changes, could it be that sexual offenders would follow a similar trend (in relation to sexual stimuli).

Taking this possibility into consideration, along with the ecological validity of the pictorial approach of the flicker paradigm, its suitability of use with individuals with a learning disability, previous research that has found individuals with a learning disability to be slower to detect changes to the visual stimuli than individuals without a learning disability (Carlin, Soraci, Strawbridge, Dennis, Loiselle and Checile, 2003) and research that has found sexual offenders have attentional bias when presented with sexual related words (Smith and Waterman, 2004), it seems logical to propose that sexual offenders with a learning disability are likely to have information processing bias to sexual related visual stimulus. Considering the above, it is therefore hypothesised

1. that sexual offenders with a learning disability will be significantly faster to detect visual sexual related changes, such as a change in a man's clothing, than non-offenders with a learning disability and non-offenders without a learning disability
2. that non-offenders without a learning disability will be significantly faster at completing that task, irrespective of the nature of the change (i.e. sex-related or neutral related change), than sexual offenders and non-offenders with a learning disability.

2.1 Design

An independent groups design was employed to compare the data obtained from a participant group of sexual offenders with a mild learning disability with two comparison groups of non-offenders with a mild learning disability and non-offenders without a learning disability. Sexual offenders with a learning disability currently attending a treatment programme run by the Learning Disability Clinical Psychology Department in the North East of Scotland formed one participant group. Participants attending local Adult Resource Centres formed the comparison group who had not offended but had a learning disability. The comparison group comprising of non-offenders without a learning disability was made up of male staff working at local hospitals and adult resources centres for people with learning disabilities.

2.2. Recruitment of Participants

The participants for this study were recruited from local hospitals and the learning disabilities services in the North East of Scotland.

2.2.1 Sexual Offenders with a Learning Disability

Virtually all sexual offenders suspected of suffering from a learning disability in the North East of Scotland are referred to the Learning Disability Clinical Psychology Department for assessment. Many are then referred to attend a weekly treatment programme for a minimum of three years. Participants were recruited via the weekly treatment programme.

Permission to invite individuals from the sex offender treatment programme to participate in this study was obtained from the lead clinician responsible for the treatment programme, who was also the current researcher's clinical supervisor. The researcher for the current study attended a weekly treatment session and provided information about the nature of the study to members of the group (i.e. sexual offenders with a learning disability). The researcher provided members of the group with consent forms[2] and participant information sheets[3] that outlined the purpose of the study, information on why they had been chosen, their right to withdraw from the study and

[2] See Appendix 6 for sample of consent form.
[3] See Appendix 2 for participant information sheet for the sexual offenders with a learning disability.

details on how their data would be stored. Both forms were read aloud to the sexual offenders with a learning disability and they were also given the opportunity to ask questions. Sexual offenders with a learning disability were then informed that they would have a week to decide if they wished to participate in the research study. It was highlighted that participation was voluntary and that it would not affect their treatment if they chose to participate or not. Twenty-six sexual offenders with a learning disability were invited to participant in this research study. All participants agreed to participate in the research study.

2.2.2 Non-offenders with a Learning Disability

Twenty-six non-offenders with a learning disability were accessed through an Adult Resource Centre run in the North East of Scotland. A brief information sheet[4] was sent to parents or carers of the non-offenders with a learning disability informing them of the nature of the current study. A copy of a consent form also accompanied the information sheet. No parent or carer objected to his or her child or person they cared for being invited to participate in this research study. A meeting was arranged for all twenty-six non-offenders with a learning disability to attend where the researcher of the current study followed the same recruitment process as outlined in section 2.2.1. All twenty-six non-offenders with a learning disability agreed to take part in the research study.

2.2.3 Non-offenders without a Learning Disability

Twenty-six non-offenders without a learning disability were recruited from local hospitals and learning disability services in the North East of Scotland. The researcher attended team allocation meetings at two local hospitals and one Adult Resource Centre and invited male staff to participate in the current research study. The same recruitment process as outlined in section 2.2.1 was followed, except for the way in which the information sheets and consent forms were delivered. Non-offenders without a learning disability were given the opportunity to read these forms by themselves. All twenty-six non-offenders without a learning disability agreed to participate in the research study.

[4] See Appendix 3 for copy of information sheet sent to parents and carers.

2.3 Description of Participants

Seventy-eight participants were invited to take part in this study. Based on the Diagnostic and Statistical Manual IV-TR (DSM-IV-TR; American Psychiatric Association, 1995) classification of learning disability, 52 of those participants had a mild learning disability (mean IQ = 60.5, SD = 3.85, range 54-71). The IQ for these participants was assessed using the Wechsler Adult Intelligence Scale Third Revision (WAIS-III; Wechsler, 1997) and documented in their Clinical Psychology files. Accessing non-offenders and offenders with a learning disability clinical psychology files provided Full Scale IQ scores for the 52 participants identified with a mild learning disability. Their mean age was 31.33 years (SD = 8.59, range 20-48). The remaining 26 participants did not have a learning disability. However, with epilepsy being identified as an exclusion criteria[5] this resulted in 5 sexual offenders with a learning disability and 6 non-offenders with a learning disability being excluded from taking part in the study. A further two sexual offenders with a learning disability were identified to have poor eyesight (e.g. one was registered partially sighted and the other only had sight in one eye) and therefore excluded from the study. Finally, one sexual offender with a learning disability had a medical condition, which meant that he had extremely poor hand eye co-ordination. He was therefore excluded from the study, as his responses to the task would have been hindered by his physical disability.

After excluding the above participants from the study, this now meant that 18 sexual offenders with a learning disability, 20 non-offenders with a learning disability and 26 non-offenders without a learning disability took part in the study.

2.3.1 Sexual Offenders with a Learning Disability

This group consisted of 18 male participants. The mean age of this group was 31.28 years (S.D. = 9.74, range 20-48) and the mean Full Scale IQ (WAIS-III; Wechsler, 1997) was 61.44 (S.D. = 4.33, range 54-71). Participants had no diagnosed psychiatric condition, apart from their learning disability. This group comprised of participants who had been convicted of perpetrating a sexual offence in the months prior to participating in this study, charged and were awaiting a court appearance and/or were

[5] See section 2.5 for explanation on exclusion criteria.

cautioned by police in connection with sexual offending behaviours but had been diverted from criminal proceedings.

2.3.2 Non-Offenders with a Learning Disability

Twenty male participants made up this group. The mean age was 31.39 years (S.D. = 7.58, range 22-45) and the mean Full Scale IQ (WAIS-III; Wechsler, 1997) was 59.56 (S.D. = 3.15, range 55-68). Participants had no diagnosed psychiatric condition, apart from their learning disability. Participants in this group had not committed a criminal offence.

2.3.3 Non-Offenders without a Learning Disability

For the remaining twenty-six male participants their mean age was 35.67 years (S.D. = 9.27, range 21-59) and they did not have a learning disability. Their mean time spent in further education was 2.67 years (S.D. = 1.97, range 0-7).

2.4 Ethical Considerations

A proposal for this research study was submitted to the Tayside Committee on Medical Research Ethics Committee. Ethical approval for the research to take place was granted in April 2006 (Ref: 05/S1401/179)[6]. Approval from the Research and Development Department of the local NHS area was also obtained.

In light of the nature of this research a number of potential ethical issues were considered prior to the undertaking of this research study. The next section of this thesis aims to address the ethical issues that were considered when designing the methodology of this research study.

[6] See Appendix 1 for letter confirming ethical approval was obtained for this research study to be carried out.

2.4.1 Nature of the Stimuli Material

Previous research studies have used stimulus of naked women and children (Quinsey, Ketsetzis, Earls and Karamanooukian, 1996; Harris, Rice, Quinsey, and Chaplin, 1996) when testing sexual offender's sexual interest. However, ethical restrictions would not have permitted nude photographs of people, pictures of children being overtly sexual or pornographic material from being used in this research study. Considering this and Quinsey (2003) who argues that sexual offenders do not need to be exposed to explicit sexual stimuli for them to offend or become sexually aroused, it was felt appropriate to use stimulus material that portrayed women, men and children in every day situations. The stimuli were therefore carefully selected to represent scenes from everyday situations such as a woman admiring a bouquet of flowers; a man on the telephone; a boy and girl holding hands. The stimuli were downloaded from the internet and is therefore readily available to anyone who has access to the internet. The stimulus material was not used to stimulate sexual offenders, but to test for information processing bias. The pictures of women, men and children that were used in the study portrayed them in everyday situations and thus reflected how sexual offenders and non-offenders see women, men and children while out walking, shopping or watching television.

To further reduce the likelihood of the stimuli producing "sexy thoughts" among sexual offenders with a learning disability, participants were de-briefed at the end of the experiment. Each participant was informed that if they experienced any "sexy thoughts" related to the study or in general, they could discuss it with the researcher or the therapist in the sexual offending therapy group that they attended. The study also took place on days that the sexual offenders received therapy. Therapists were made aware of the nature of the study and informed to be more aware and observant of the sexual offenders' behaviour and responses.

Non-offenders with and without a learning disability were also de-briefed at the end of their participation in the study. They were informed that they could ask questions or discuss any thoughts at the end of the study or contact the researcher at a later date. Each participant was provided with contact addresses[7].

[7] See Appendix 2 for Information sheets containing contact details for researcher and researcher's.

2.4.2 Confidentiality

Data was collected and stored under an anonymised numerical coding for each participant. Anonymised codes for each participant were allocated at the commencement of the data analysis and were correlated with the participant's name only on a protected Excel data sheet that was separate to the main data sheet on an SPSS 13 statistical package.

2.5 Exclusion Criteria

The flicker paradigm, as it name implies, involves visual stimuli being presented at a high speed, which results in the stimuli flickering or flashing. As flickering light has been found to cause seizures in some people who suffer from epilepsy (Ferlazzo, Aikfin, Andermann and Anderman, 2005) participants with a history of epilepsy were excluded from the study.

2.6 Stimuli and Apparatus

A laptop and the experiment-generating package E-prime were used to implement the flicker paradigm. Photographic stimuli were presented centrally on a 38cm (diagonal) laptop screen, with stimuli almost filling the screen. Viewing distance was approximately 65cm to the screen.

Stimuli of females, males and children were used, with three different flicker paradigms being used for each of the 12 stimuli (e.g. 4 original pictures of males, 4 original pictures of females and 4 original pictures of children). Stimuli were full colour photographs (12890 x 960 pixels). Figure 2.0 shows an example of one of the child stimulus used in the flicker paradigm[8]. For this stimulus a different flicker pair of stimuli were used for each of the two levels of the nature of change factor (e.g. sex-related and neutral). Each of the pairs contained the same original stimulus, OS (i.e. a boy and girl playing on a climbing frame). This original stimulus was then paired with a sex-related change, SRC (i.e. the colour of the girl's t-shirt changed from blue to pink).

[8] See Appendix 4 for colour versions of samples of the male and female stimuli used in this research study. The original stimulus and two levels of the nature of changes (e.g. the sex related change and neutral related changed) are shown for the male stimulus and female stimulus.

In the second pair, a neutral related change NRC was paired with the original stimulus (i.e. a part of the climbing frame was removed). Figure 2.0 shows the original stimulus along with the two changed stimuli.

Figure 2.0 Example of an original stimulus with its paired sex-related and neutral related changes

Original Stimulus (OS)

Sexual related changed stimulus (SRC)
(colour of girl's t-shirt changed)

Neutral changed stimulus (NRC)
(part of the climbing frame removed)

The same procedure was followed for the remaining stimuli. As stated above, there were a total of twelve original stimuli comprising of four individual pictures of children, four of men and four of women. Each of these original stimuli was then paired with a sex-related change and a neutral related change. Steps were taken to identify

what people regarded as a sex-related change and a neutral related to change to each stimulus. To do this ten naïve work colleagues were asked to view the twelve original stimuli and asked to list five changes in each of the pictures that they regarded as a sexual-related change and five changes that they regarded as neutral. They were instructed that they could not list sexual changes that could be regarded as overtly sexual or sexually inappropriate (e.g. exposure of breasts or genitalia), as ethical restrictions would not permit this type of stimulus to be used[9]. The lists that they produced were examined, with the frequency of what was regarded as a sex or neutral related change being recorded for each stimulus. The sex-related and neutral related changes with the highest frequency for each stimulus were identified and applied to produce the changes to each of the original stimulus. Examples of sex-related changes identified by work colleagues included: midriff being exposed, change in hair colour or style, change in colour of clothing, feet being exposed and hat being removed. Work colleagues identified a change in colour of a specific object in the picture (e.g. the frame of a bike changing from yellow to red) or the removal of an object (e.g. a football or wall socket) as a neutral related change.

For the practice trial experiment, the original stimulus comprised of pictures of everyday scenes, rather than people. This was done to prevent participants from being primed as to the nature of the experiment. There were two practice trails with the first original stimulus comprising of a road scene. This scene was then paired with a changed stimulus picture where the road markings had been removed from the road scene. Figure 2.1 shows the original and changed stimuli for one of the practice trials.

[9] See Section 2.4 for ethical explanations of why visual stimuli that portrayed women, men and children in everyday situations were selected.

Figure 2.1 Stimuli used in Practice Trial

Original stimulus

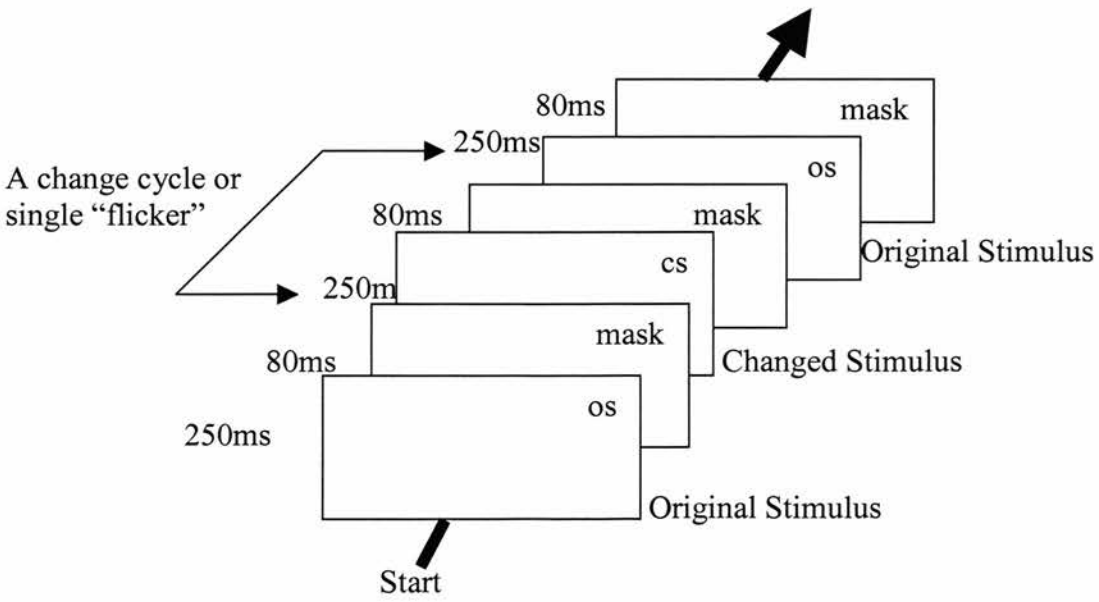
Changed stimulus

The second practice trial consisted of a scene of a zebra crossing. This was paired with a changed stimulus picture where a road bollard was removed from the scene[10].

[10] See Appendix 5 for colour version of the stimulus material used in the second practice trial.

A flicker paradigm is induced when the two stimuli of a pair (i.e. the original stimulus plus the sex-related change and the original stimulus plus the neutral related change) are presented in continuous succession on a computer screen until the participant identifies the change from the original to the changed stimulus (or from the changed stimulus to the original). A mask comprising of a blank white screen that fills the laptop screen was used to suppress visual transients that are produced by the change process. This is part of the usual practice used to suppress visual transient when implementing a flicker paradigm (Rensink, O'Regan and Clark, 1997). Figure 2.2 illustrates the presentation of the stimulus to induce change blindness. The original stimulus (e.g. a boy and girl playing on a climbing frame) was shown for 250ms and then replaced with the mask for 80ms. The mask was then replaced with the changed stimulus (e.g. the sex-related change) for 250ms, then the mask for 80ms, then with the original stimulus for 250ms and the mask finally replaced this for 80ms. This sequence illustrates a change cycle or a single "flicker". The same procedure was followed for the neutral change stimulus. This procedure was also applied to the remaining stimulus.

Figure 2.2 **A flicker Paradigm for Inducing Change Blindness Illustrating a Change Cycle or Single "Flicker".**



2.7 Procedure

After receiving permission from the appropriate managers of local hospitals, and adult resource centres for people with a learning disability, participants were approached and invited to participate in this research study. To ensure that participants with a learning disability, who suffered from epilepsy, were not included in the study, carers / staff were asked to identify participants who suffered from epilepsy and they were excluded from the study. Participants without a learning disability were verbally asked if they suffered from epilepsy, by the researcher, when initially being invited to participate in the study. No participant without a learning disability stated that they suffered from epilepsy.

Each participant was given participant information sheets that outlined the purpose of the study, information on why they had been chosen, their right to withdraw from the study and details on how their data would be stored[11]. Participants were also given consent forms[12]. For the groups with a learning disability, information sheets and consent forms were read to each prospective participant individually and they were given the opportunity to ask any questions. For the non-offenders without a learning disability, they were given the participant information sheets and consent forms to read and given the opportunity to ask questions or contact the researcher at a later date if they had any questions[13]. All participants were informed that they would have a week to decide whether they wished to participate in the study. During the recruitment period of this study care was taken to ensure that the sexual-related nature of this research study was not made apparent.

Participants who agreed to participate in the research study were taken to a quiet room where the laptop with the flicker paradigm was set up. Before starting the study, participants were again instructed of the nature of the study and asked if they still wished to participate in the experiment. They were given the opportunity to ask questions before being advised to complete the consent form before starting the experiment.

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[11] See Appendix 2 for participant information sheets for each of the 3 groups of participants (e.g. sexual offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability).

[12] See Appendix 6 for sample of participant consent form.

[13] Contact details for the researcher was contained in the participant information sheets.

The experiment started with participants being again asked if they suffered from epilepsy. This was to done to ensure that everyone had been asked, as well as informed, that the stimuli flickering was a normal part of the experiment. They were then instructed to look at the screen on the laptop where they were presented with an instruction sheet. The instruction sheet welcomed participants to the experiment and informed them of what they had to do in the experiment[14]. Participants with a learning disability were read this information, while the participants without a learning disability read the instruction sheet by themselves. Participants were informed that they would get the opportunity to complete two practice trials before the actual experiment started. Participants were then assigned to either version 1 or version 2 of the experiment. Two versions were set up in an attempt to counterbalance the experiment. All participants were presented with the same 12 original stimuli (e.g. four pictures of females, four of males and four children), but only ever saw either a sex-related or neutral related change to each stimulus. For example, a participant presented with version 1 of the experiment was presented with the original stimulus shown in figure 2.0 of this thesis. They were then presented with a neutral related change (e.g. a part of the frame disappeared). Participants in version 2 of the experiment saw the same original stimulus, but they received the sex-related change (e.g. the colour of the girl's t-shirt changed). The same procedure was followed for the remaining 11 original stimuli to ensure that no single participant was presented with an original stimulus twice. The experiment was also carefully designed to ensure that participants in each version saw 2 neutral related and 2 sex-related changes in the four pictures of males, females and children.

To start the experiment participants were instructed to press the spacebar on the computer keyboard. To receive the first practice trial participants pressed the letter 'n' on the laptop keyboard. They were then presented with a screen with a small cross in the centre of the screen before the first practice stimulus appeared. Participants were instructed to press the spacebar on the laptop as soon as they identified a change in the visual stimulus (e.g. an object changing colour or being removed from the picture). The original stimulus kept alternating with the changed stimulus until the participant pressed the spacebar. After pressing the spacebar they were asked what the change was

[14] See Appendix 7 for copy of the instruction sheet presented to participants.

and the experimenter recorded if their response was either correct or incorrect. Participants then followed the same procedure to obtain the second practice trial and all subsequent stimuli for the actual experiment (e.g. pressing the letter 'n' for the stimulus to appear, a small cross appearing before the stimulus, pressing the spacebar when participants identified a change and verbally informing the experimenter what the change was). The computer recorded the time it took participants to identify a change and the number of change cycles it took participants to identify the change in each trial of the experiment. Only data from participants who got all changes correct were included in the final data analysis. At the end of the experiment participants were thanked for taking part, de-briefed and given the opportunity to ask questions about the experiment.

3.1 Introduction to Results

The following chapter carries out exploratory data analysis to identify any outliers in the raw data before moving on to explain and justify the appropriate statistical analysis that was carried out on the data obtained in this study. Details of participant demographics based on IQ of participants with a learning disability, age of the three participant groups (i.e. sexual offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability) and convictions of the sexual offenders is calculated and presented. Finally, statistical analysis of the data (i.e. the average number of flickers to correct change detection for each participant on neutral related and sex-related changes) was executed and reported.

3.2 Exploratory Data Analysis – Outliers

Outliers have been identified as being unusual data values that are inconsistent with the remainder of the data set (Iglewicz and Hoaglin, 1993). Inaccurate data recording or entry, incorrect distribution assumptions, unknown data structures, measurement errors and/or a legitimate value that happens to be extreme can cause outliers (Howell, 1997). Whatever the cause of an outlier, they require special attention as they could have a harmful effect on the data itself and any statistical analysis that is subsequently performed on the data (Howell, 1997; Iglewicz and Hoaglin, 1993). Failure to examine outliers could result in increased error, distorted p-values, reduced power of the statistical test and violation or the assumptions that underlie parametric statistical tests (Osborne and Overbay, 2004). Indeed, statistical comparison of data with outliers included or excluded found that the removal of outliers lead to a reduction in error variance and produced more accurate and reliable statistical analysis (Osborne and Overbay, 2004). Considering this, it seemed logical to examine the present research study for outliers in the data.

Using exploratory data analysis, participant's raw data was examined for outliers. A total of 11 participants were identified to have one outlier (e.g. a piece of data with a value that is two standard deviations from the mean [Howell, 1997]) in their data set, with a further 3 participants having two outliers in their data set. These outliers were identified and removed from the data sets, as they would have affected error variance. Means and standard deviations for each of the fourteen participants were recalculated and again checked for any deviations in the data. No additional outliers were identified

at this stage of the analysis. Table 3.0 provides the average number of flickers to correct change detection for each participant group on neutral and sex-related changes means and standard deviations for each participant group before and after outliers have been identified and removed.

Table 3.0 Mean Number of Flicker to Correct Change Detection Before and After Outliers have been Identified and Removed

	Mean			
Participant Group	Neutral related change **before** adjusted for outliers	Sex-related change **before** adjusted for outliers	Neutral related change **after** adjusted for outliers	Sex-related change **after** adjusted for outliers
Sex offenders with learning disability	33.48 s.d. 14.8	29.62 s.d. 13.93	28.5 16.18	27.55 s.d. 15.31
Non-offenders with learning disability	34.38 s.d. 11.92	32.26 s.d. 12.7	39.83 s.d. 12.52	31.54 s.d. 13.38
Non-offenders without learning disability	23.21 s.d. 12.65	20.52 s.d. 14.3	19.82 s.d. 13.89	15.85 s.d. 10.83

3.3 Statistical Analysis

The data was statistically analysed using SPSS Version 13 computer package. An independent sample t-test was employed to test the difference between two groups based on IQ, while a one-way analysis of variance (ANOVA) was performed to examine if age differed between the three groups of participants. A (2x3) mixed ANOVA was then performed to examine the effects of a variable under two or more conditions. If significant interactions had been observed that would have necessitated an analysis of simple effects. This analysis is an important technique for examining data that contain significant interactions, as it enables the interactions to be pulled apart to see exactly the effect of one factor at the level of the other factor (type of participant group and the type of change i.e. sex related change or neutral change). However, as no significant interactions were found when a (2x3) mixed ANOVA was performed, this meant that an analysis of simple effects was not required.

Parametric versions of the statistical tests were employed, as the data was found to meet the assumptions that underlie parametric tests (i.e. data is normally distributed [Howell, 1997]). Parametric tests were also used as they are considered to be more powerful and robust than non-parametric tests (Howell, 1997).

3.4 Statistical Power

Previous research has found a large effect size of change detection between individuals with and without a learning disability (Carlin, Soraci, Strawbridge, Dennis, Louiselle and Checile, 2003). In line with convention set out by Cohen (1988) when estimating a large effect, one can maintain an experiment with 3 groups of participants with 80% power using an alpha of 0.05 with access to 21 subjects in each condition (Cohen, 1988). However, since my main interest is in the difference between the two groups with intellectual disabilities N needs to be 26 to detect that difference with power 80% and alpha 0.05. Therefore a sample size of 26 in each condition is unlikely to lead to a particularly high probability of committing a Type 2 error (i.e. failing to reject the null hypothesis when it is false and the alternative hypothesis is true [Howell, 1997]). However, the size of the sample was limited by the accessibility to participants. This will be addressed further in section 4.4.1 of the discussion.

3.5 Participant Details

Eighteen sexual offenders with a learning disability were invited to participate in this research study[12]. All agreed to participate, with one making a number of errors on the flicker paradigm experiment. Methodological protocol for running the flicker paradigm states that data can only be included when participants answer correctly to all visual stimulus shown (Rensink, O'Regan and Clark, 1997). As this participant made more errors than correct responses (7 errors and 5 correct responses), this suggested that the participant did not fully understand the nature of the experiment and therefore the data was excluded from the final analysis. Similarly, two of the non-offenders with a learning disability also made a number of incorrect responses in their trials. One participant responded to 9 of the 12 visual stimuli incorrectly, with the other responding incorrectly on 5 occasions. This suggested that the participants did not fully understand the premise of the experiment, which resulted in their data being excluded from the final analysis. Finally, a participant's data from the group of non-offenders without a learning disability was also excluded from the final analysis as he failed to respond to 3 of the visual stimuli. On three occasions this participants accidentally responded too quickly to the visual stimuli and failed to observe the change before making his response (i.e. pressing the spacebar of the laptop). Analysis of the errors made by these four participants highlighted that the identification error rates was very low at only 3.33%.

Exclusion of the four participant's data described above meant that useable data was obtained from 17 sexual offenders with a learning disability, 18 non-offenders with a learning disability and 25 non-offenders without a learning disability. However, following the criteria for carrying out a mixed analysis of variance, convention states that analysis should only be carried out on equal sample size in each participant group (Howell, 1997). With the participant group of sexual offenders with a learning disability being both the experimental group and the group with the lowest number of useable data, this dictated that only data from 17 participants should be used from each of the other two groups (i.e. non-offenders with a learning disability and non-offenders without a learning disability). Data was therefore discarded from the last non-offender

[12] As outlined in section 2.3 of the methodology, 26 sexual offenders with a learning disability were originally invited to participate in this research study. However, after following the exclusion criteria 8 participants were excluded leaving only 18 being available to participate in the study.

with a learning disability and last 7 non-offenders without a learning disability that were tested. All subsequent analysis was now run on data obtained from 17 participants in each participant group.

3.6 Participant Demographics

3.6.1. Age

The difference in age of the three participant groups can be seen in figure 3.0.

Figure 3.0 Mean Age of Participants in Each Group

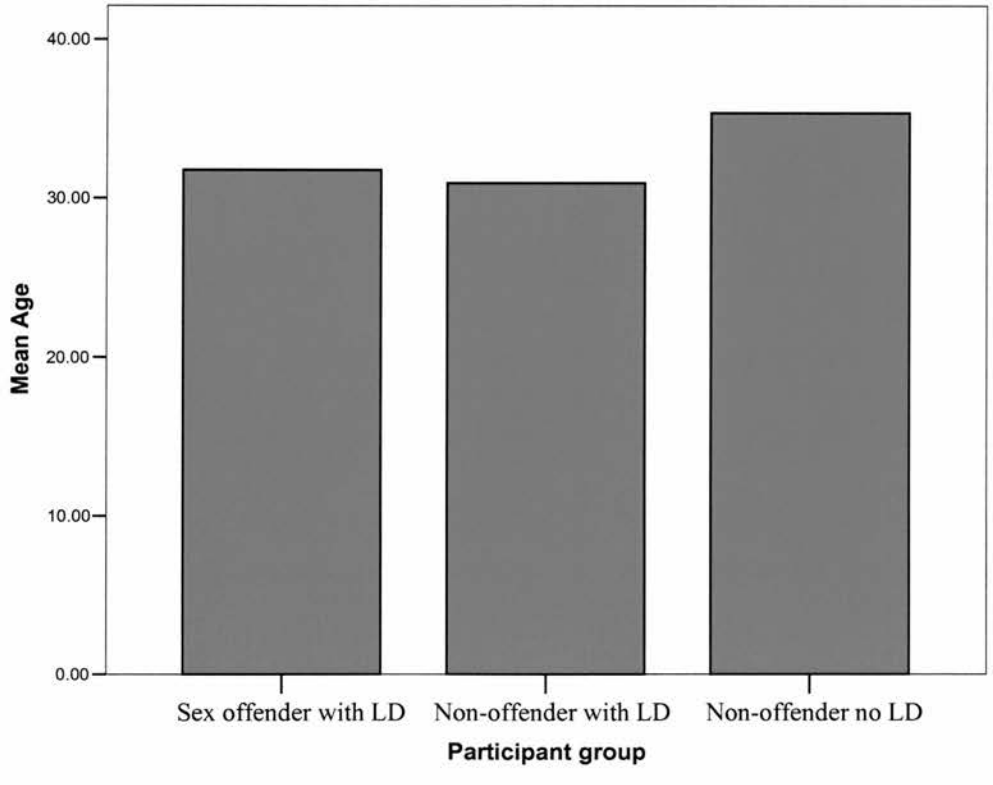


Figure 3.0 seems to indicate that non-offenders without a learning disability were as a group slightly older than the other two groups. They had a mean age of 35.35 years (s.d. 9.46), compared to non-offenders with a learning disability whose mean age was 30.94 years (s.d. 7.56) and sexual offenders with a learning disability whose mean age was 31.76 years (s.d. 9.8). However, when a one-way analysis of variance was performed

there was no significance difference found between each of the three groups (F (2,48) = 1.156 p = 0.323).

3.6.2 IQ

The difference in IQ for the two groups of participants with a learning disability can be seen in figure 3.1

Figure 3.1 Mean IQ for Participants in Each Group with a Learning Disability (LD)

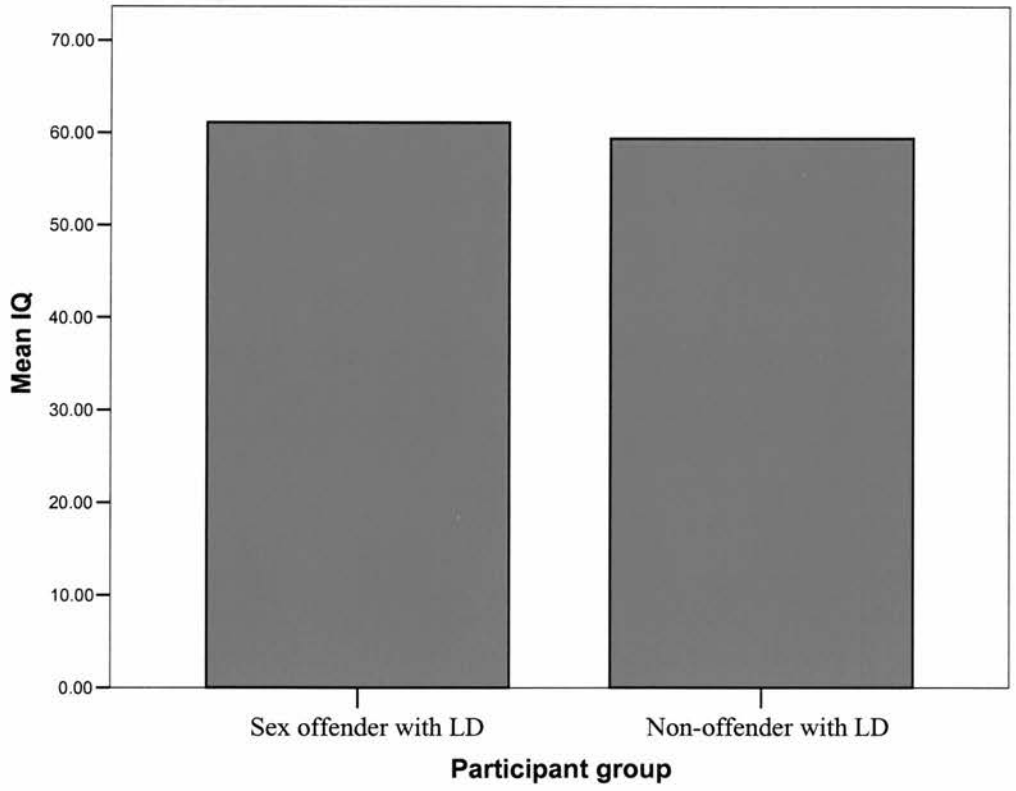


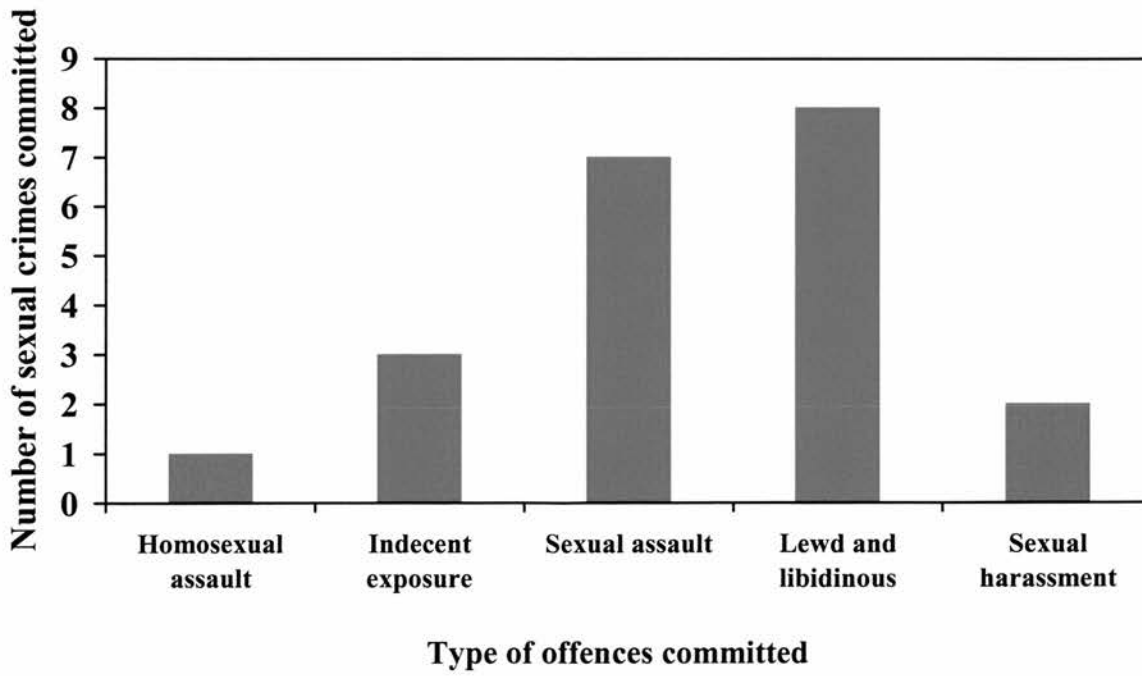
Figure 3.1 shows that the mean IQ of non-offenders with a learning disability is slightly lower than sexual offenders with a learning disability. Non-offenders with a learning disability were found to have a mean IQ of 59.41 (s.d. 3.18) compared to sexual offenders with a learning disability who had a mean IQ 61.12 (s.d. 3.18). However,

when an independent sample t-test was performed, this slight difference was found not to be significant (t (32) = 0.19 p = 0.313).

3.7 Convictions

Figure 3.2 shows the breakdown of sexual offences committed by the sexual offenders with a learning disability. The most common type of offences committed were sexual assault (i.e. rape and attempted rape) and lewd and libidinous behaviour (i.e. indecent behaviour including indecent exposure, taking indecent photographs and showing indecent photographs or videos with girls under the age of puberty and boys under the age of 14 years). Lewd and libidinous behaviour accounted for 38.1% of all sexual offences committed, compared to sexual assault which accounted for 33.3% of the crimes committed. However, due to the limited number of participants in the study the analysis did not differentiate between the different types of offences committed by the sexual offenders with a learning disability.

Figure 3.2 Sexual Convictions of Sexual Offenders with a Learning Disability

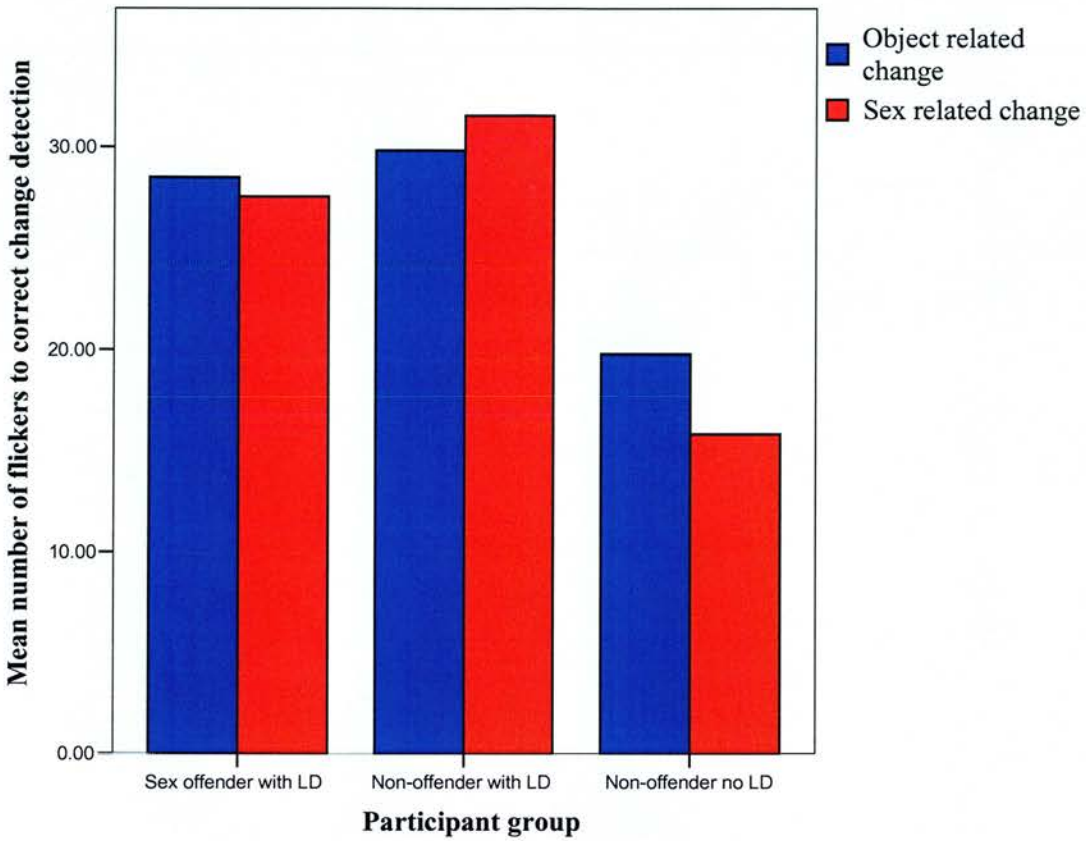


3.8 Analysis Procedure and Results

The average number of flickers to correct change detection for each participant on neutral related and sex-related changes were computed. A (2x3) mixed analysis of variance was performed on these data, with one within-subjects factor of type of change (sex-related change and neutral related change) and one between-subject factor of participant group (sex offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability). The interaction found between type of participant group and the type of change was found not to be significant ($F(2,48) = 0.56$ $p = 0.57$). No significant difference in the average number of flickers to correct change detection in neutral related (sex offenders with a learning disability $\bar{x} = 28.5$, s.d. 16.18; non-offenders with a learning disability $\bar{x} = 29.83$ s.d. 12.52; non-offenders without a learning disability $\bar{x} = 19.82$ s.d. 13.89) versus sex-related changes (sex offenders with a learning disability $\bar{x} = 22.56$ s.d. 15.31; non-offenders with a learning disability $\bar{x} = 31.54$ s.d. 13.38; non-offenders without a learning disability $\bar{x} = 15.85$ s.d. 10.82) was observed ($F(1,48) = 0.24$ $p = 0.63$).

Figure 3.3 shows that the average number of flickers to correct change for both sex-related and neutral related changes was similar for both groups of participants with learning disabilities. However, non-offenders without a learning disability appeared to have a lower average number of flickers to correct change for both types of changes when compared with participants with a learning disability. When this data was examined this difference was found to be significant ($F(2,48) = 6.05$ $p = 0.005$). A post hoc analysis (Tukey's LSD) was performed which found that non-offenders without a learning disability were significantly faster at completing the task than the other two participant groups. Indeed, when the mean difference was compared between the non-offenders without a learning disability and sexual offenders with a learning disability this was found to be significant at $p=0.012$. Comparison of the mean difference between the non-offenders without a learning disability and non-offenders with a learning disability was found to be significant at $p=0.02$.

Figure 3.3 Mean Number of Flickers to Correct Change Detection for each Participant Group on Neutral Related and Sex- Related Changes



3.9 Effect size

Based on research by Jones, MacPhee, Broomfield, Jones, and Espie (2005) and Carlin, Soraci, Strawbridge, Dennis, Loiselle and Chechile (2003) it had been anticipated that a large effect size would be obtained. However, after implementing the exclusion criteria of preventing participants who suffered from epilepsy from participating in the study, excluding participants who answered incorrectly to any of the trials on the flicker paradigm and the limited availability of sexual offenders with a learning disability this significantly reduced the sample size. Indeed, only 51 (i.e. 17 participants in each participant group) participants took part in the study, compared to the original 78 (i.e. 26 participants in each participant group) who had been invited to participate. Considering this decrease in the original sample size, it seemed that the experiment was underpowered. However, on the sex-related changes for the participants with a learning disability the power did go up to 64% which is only 16% away from the optimal 0.8

level (Cohen, 1988). This therefore indicated the magnitude of the effect size for the participants with a learning disability on the sex-related changes was medium. Such a finding suggested that the methodology employed was appropriate, but the small sample size did not allow for a large effect size to be obtained.

3.10 Summary

The results from the (2x3) mixed analysis of variance revealed that there was no interaction found between type of participant group and type of change, indicating that sexual offenders with a learning disability did not differ in the way that they responded to the sex-related and neutral related changes. Similarly, the three groups did not differ from each other in the way that they responded to the task, although the non-offenders without a learning disability did complete the task faster than the other two groups. However, based on these results they were unable to provide support for the hypothesis stated in section 1.3 of chapter 1 (i.e. that sexual offenders with a learning disability will be significantly faster to detect visual sexual related changes, such as a change in a man's clothing, than non-offenders with a learning disability and non-offenders without a learning disability).

4.1 Introduction to Discussion

The following chapter addresses the theoretical and ethical rationale for the present study. It also focuses on the results obtained in the study and addresses how they contribute to previous research, as well as their clinical implications. Strengths and limitations of the present study are addressed and areas of future research are also explored in this chapter.

4.2 Summary of Research

Despite research claims that sexual offenders have information processing bias, it is an area of research that has received little attention (Ward, Hudson and Marshall, 1994; Langevin and Pope, 1993). However, the limited published research that has been carried out has utilised a sample of sexual offenders without a learning disability (Smith and Waterman, 2004; Quinsey, 2003; Harris, Quinsey and Chaplin, 1996) and failed to investigate information processing bias among sexual offenders with a learning disability. The present study therefore addressed this by investigating social information processing bias among sexual offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability. Using the flicker paradigm, which has been identified as an ecologically valid method for testing information processing bias, (Jones, Jones, Smith and Copley, 2003), as well as a paradigm suitable for use with participants with a learning disability (Carlin, Soraci, Strawbridge, Dennis, Loiselle and Chechile, 2003), this paradigm was used to induce change blindness to detect information processing bias. When the flicker paradigm was used with sexual offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability it failed to produce results which could support the claim that sexual offenders have an information processing bias.

4.2.1 Experimental Hypothesis

Sexual offenders with a learning disability will be significantly faster to detect visual sexual related changes, such as a change in a man's clothing, than non-offenders with a learning disability and non-offenders without a learning disability

Non-offenders without a learning disability did demonstrate significantly quicker detection latencies in both sex-related and neutral related changes than the other two groups – namely sexual offenders with a learning disability and non-offenders with a learning disability. Such a finding indicated that irrespective of the nature of the change non-offenders without a learning disability were significantly quicker on completion of the task than the other two participant groups. This finding is consistent with the trend observed in previous research that examined the detection of change in naturalistic scenes by participants with or without a learning disability (Carlin, Soraci, Strawbridge, Dennis, Loiselle and Chechile, 2003). In this study, participants with a learning disability responded slower to all types of changes in the visual stimulus than their counterparts of participants without a learning disability.

No significant interaction was found between the type of participant group and type of change. Such a finding indicated that sexual offenders did not demonstrate significantly quicker detection latencies in sex-related changes compared to neutral related changes and thus the experimental hypothesis failed to be supported. This finding is not consistent with Smith and Waterman (2004) who found that using a selective attention framework of the Stroop effect (Stroop, 1935) sexual offenders without a learning disability demonstrated an information processing bias towards sex-related stimulus. However, caution should be exercised when comparing the research findings from Smith and Waterman's study with the results from the current study undertaken in this thesis, as comparison with like with like are not being made. For example, both studies utilised different participant groups. Although both studies tested sexual offenders the present study used sexual offenders with a learning disability, however Smith and Waterman did not. Secondly, different methods to investigate information processing bias were used. Such differences could have had an affect on the outcomes of these studies. Despite these differences the method employed in the current study to investigate information processing bias among sexual offenders with a learning disability has

been found to be a reliable method (Jones, MacPhee, Broomfield, Jones and Espie, 2005; Jones, Jones, Smith and Copley, 2003; Rensink, O'Regan, and Clark, 1997) and considering this if sexual offenders with a learning disability did have an information processing bias you would have expected this method to detect it. Indeed, from looking at the mean number of flickers to correct change for sex related and neutral related changes for both groups of participants with a learning disability, as outlined in table 3.0 in Chapter 3, it can be seen that they reflected the trend that was predicted in the experimental hypothesis (i.e. neutral related changes [sex offenders with a learning disability $\bar{x}$ = 28.5, s.d. 16.18; non-offenders with a learning disability $\bar{x}$ = 29.83 s.d. 12.52] and sex-related changes [sex offenders with a learning disability $\bar{x}$ = 22.56 s.d. 15.31; non-offenders with a learning disability $\bar{x}$ = 31.54 s.d. 13.38]). Although this trend was not significant enough to achieve an interaction, this failure might result from specific methodological issues that could have influenced the results, such as small sample size. Such an issue along with other methodological issues, which could have affected the results of this study, will be addressed in the section 4.4 of this chapter.

4.3 Ethical and Clinical Implications of the Study

Research has indicated that investigating information processing among sexual offenders is an important area, considering the implications that it has for relapse and successful treatment. However, it would be unethical to base interventions on a theory or model which is unsupported by empirical data, especially in an area with such a high human cost as sexual offending. This therefore provides a theoretical and ethical rationale for this study.

By examining information processing among sexual offenders with a learning disability the present study obtained results that questioned that value of Information Processing Models (i.e. McFall, 1990 and Dodge, 1990) that have been developed without any empirical research to explain inappropriate behaviour. As outlined in Chapter 1, both models proposed that deficits at any of the stages of the model would result in inappropriate behaviour. Closer inspection of these models revealed that the first stage of both models requires participants to decode information that is presented to the sensory receptors. Failure to do this will result in inappropriate

behaviour. However, the present study failed to demonstrate that sexual offenders with a learning disability have deficits with their social information processing bias, as they were able to successfully complete an attention task (i.e. the flicker paradigm) in a similar way to a control group of non-offenders. Such a finding does not offer support for these two models and questions the value of theoretical models that fail to provide any empirical data to support their claims. For a model to have any value it needs to be supported with empirical data that clearly demonstrates how it can be applied to account for any problems decoding information presented to the sensory receptors. Future researchers may wish to consider what contributions theoretical models, without empirical support, can make to further understanding of sexual offenders' with a learning disability information processing abilities.

Despite the present study failing to provide empirical support for the Information Processing Models outlined above, it did obtain results consistent with similar studies by Whitefield (unpublished) outlined in section 1.2.7 of Chapter 1. The present studies and the series of indirect tasks that examined attentional dwell time and selective and divided attention of sexual offenders with and without a learning disability (Whitefield) all failed to obtain significant results that would support the claim by previous researchers that sexual offenders have an information processing bias (Ward, Hudson and Marshall, 1994; Langevin and Pope, 1993). Despite these findings, it was still important that the current study was carried out. For example, as Smith and Waterman (2004) found that sexual offenders without a learning disability had an information processing bias towards sex-related stimulus, it provided continued support for the rationale to examine if this was also true for sexual offenders with a learning disability. However, exact replication of this study was not possible, as the paradigm used to assess social information processing bias was not suitable for use on individuals with a learning disability. Indeed, an alternative to the Stroop effect (Stroop, 1935) was needed, as this requires literacy skills of which many individuals with a learning disability have problems with. Considering this, an alternative paradigm was selected. The flicker paradigm was therefore chosen based on the fact that it had been found to be a reliable method to detect information processing bias (Jones, MacPhee, Broomfield, Jones and Espie, 2005; Jones, Jones, Smith and Copley, 2003; Rensink, O'Regan, and Clark, 1997), as well as suitable for use on individuals with a learning disability (Carlin, Soraci,

Strawbridge, Dennis, Loiselle and Checile, 2003). It was also necessary that other areas of attention were examined, as there are a number of mechanisms involved in information processing (Merrill and Taube, 1996).

Considering the above, it seemed logical that the present study was carried out to obtain empirical data that could support existing research. Despite failing to obtain significant results it has provided additional information in this area. It offers support for the previous studies carried out by Whitefield (unpublished), but also excludes another area of attention that may or may not be involved in accounting for whether or not sexual offenders with a learning disability have a social information processing bias. Such findings have clinical implications. Without significant empirical data it suggests that information processing bias can no longer just be assumed to play a role in generating cognitions. However, before concluding that information processing does not have a role to play all areas of social information processing require to be tested.

Regarding the results of the present study, failure to obtain significant results might lie with specific limitations of the methodology and design. Indeed, one area that stands out is the actual participant groups (i.e. individuals with a learning disability). Previous research has found sexual offenders without a learning disability to have an information processing bias (Smith and Waterman, 2004), but this has been unable to be replicated with sexual offenders with a learning disability. Such a finding raises two issues, with the first questioning whether or not the results obtained in Smith and Waterman's study were down to chance. The second issue relates to whether specific methodological limitations (i.e. effect size; selection process employed to identify neutral and sex-related changes; ecological validity of the stimulus material; participants being involved in treatment; issues of denial) could have affected the results and thus prevented the present study from obtaining results consistent with Smith and Waterman (2004). The next section of this thesis will address these methodological limitations in detail.

4.4 Methodological Issues

Limitations of the Research

A number of limitations in the methodological design of this research were identified:

4.4.1 Effect Size

Being aware of the issue of power and need for a large sample the researcher did invite all the sexual offenders with a learning disability who were available in the North East of Scotland at the time the research was undertaken to participate. However, as the number of sexual offenders with a learning disability was limited it resulted in the sample not being differentiated by the types of sexual offences that they had committed. Failure to differentiate meant that the group of sexual offenders with a learning disability were not a homogenous group and thus were being compared to a group that was – namely the non-offenders with a learning disability. In doing so, this increased the variance among the sexual offenders with a learning disability, which in turn increased the difficulty when trying to obtain a significant effect (Howell, 1997). However, the logistics of controlling for this is difficult, due to the limited number of sexual offenders with a learning disability.

Apart from taking the issue of power into consideration it is also important to focus on the issue of clinical significance. Howell (1997) states that if an effect size is to be clinically significant this should be observed in a small group. Although this was the case with Smith and Waterman (2004) who had a sample size of 10 in each participant group when testing information processing bias among sexual offenders, the current study undertaken for this thesis failed to replicate such a finding. Attention therefore needs to be directed towards other methodological issues that could have influenced the results in this study.

4.4.2 Stimuli – Selection of Neutral Related and Sex-Related Changes

A further potential limitation of the present study was the way in which the sex-related and neutral related changes were identified in the original stimulus material. Although this research study followed the same practice used in previous research

when identifying changes in the stimuli (Jones, MacPhee, Broomfield, Jones and Espie, 2005; Jones, Jones, Smith and Copley, 2003; Rensink, O'Regan and Clark, 1997), the results of this study could have been affected by using an inappropriate group of participants to complete this task. For example, this study asked ten naïve work colleagues to view the twelve original stimuli (i.e. 3 pictures of women, 3 pictures of men and 3 pictures of children) that were used in this research study. They were instructed to list five changes in each of the pictures that they regarded as a sex-related change and five changes that they considered to be a neutral related change. The sex-related and neutral related changes with the highest frequency for each stimulus were identified and applied to produce the changes to each of the original stimulus. These participants were then excluded from participation in the research study, as their familiarity with the stimulus material would have affected their responses to the task (Rensink, O'Regan and Clark, 1997). However, the changes identified by the ten naïve work colleagues may have differed from the changes that sexual offenders with a learning disability would have identified. Considering this, it might have been more appropriate to use sexual offenders with a learning disability to identify neutral and sex-related changes in the visual stimulus. However, the feasibility of being able to do this was prevented by the limited availability of sexual offenders with a learning disability.

As outlined above, this research study followed the same procedures employed by previous research when identifying changes to the stimuli (Jones, MacPhee, Broomfield, Jones and Espie, 2005; Jones, Jones, Smith and Copley, 2003; Reinsink, O'Regan and Clark, 1979). However, it is important to acknowledge that the sex related changes identified by the naïve participants might have been personal changes, rather than changes that would always be classed as sexual in nature by other naïve participants. This is a difficult methodological issue to address, as overtly sexual changes that would tend always to be interpreted as sexual (i.e. exposure of genitalia) would not be permitted due to ethical restrictions. Such a restriction limits the sex-related changes that can be identified and increases the risk of these changes becoming personal rather than sexual related changes.

A further potential limitation of the sex-related and neutral related changes relates to salience of the stimuli. The stimuli were carefully selected to represent scenes that

portray women, men and children in everyday situations, as ethical restrictions would not have permitted explicit stimuli (i.e. pictures of naked men, women or children). However, it is important to note that the stimuli selected could have been personally salient to the participants. For example, a specific stimulus could have triggered pleasant or unpleasant memories with participants and thus affect they way in which they attended to the stimulus. Again this is a methodological issue that is extremely difficult to control for. However, future researchers may wish to address this by selecting a paradigm to investigate attentional bias that does not rely on stimuli that could potentially evoke emotional memories for participants.

4.4.3 Ecological Validity of the Stimulus Material

A number of researchers have argued that videotaped vignettes should be used rather than still photographs, as they are ecologically more valid (Craig, 1990; Loftus and Zanni, 1975; Loftus and Palmer, 1974; Hunter, 1964). Indeed, Craig (1990) argued that videotaped vignettes portray a more realistic representation of how men, women and children interact in everyday situations than still photographs do. Craig (1990) found that participants responded to videotaped vignettes in a slightly different way than how they did to still photographs. Although the current study acknowledged the validity of Craig's view, the practicality of addressing this was difficult, as the flicker paradigm relies on the use of still photographs rather than videotaped stimulus. The current study therefore selected still photographs that portrayed women, men and children in everyday situations. However, future studies may wish to address the issue of videotaped vignettes and select a paradigm which tests information processing bias that can be adapted for use with videotaped vignettes.

4.4.4 Sample - Sexual Offenders Without a Learning Disability

The experimental group in this present study was the sexual offenders with a learning disability. Their performance on the information processing task was then compared with the performance of non-offenders with a learning disability and non-offenders without a learning disability. However, it may also have been appropriate to have included a comparison group of sexual offenders without a learning disability, as this would have provided additional information. For example, their

performance on the information processing task could have provided insight into whether Smith and Waterman's (2004) results were due to chance, as well as whether the actual issue of a diagnosis of a learning disability was a confounding variable in this research. However, time limitations prevented a comparison group of sexual offenders without a learning disability from being included in this study, as the process to obtain ethical approval through the prison service is lengthy. Considering this, the present study was designed as a pilot study. However, if significant results had been obtained it would have provided justification for extending this research, out with the doctoral thesis, to include a comparison group of sexual offenders without a learning disability.

4.4.5 Participants Involved in Treatment

All the sexual offenders who participated in this study were currently involved in a cognitive behavioural treatment programme specifically designed for the treatment of sexual offenders. The length of time participants had been receiving treatment varied with some just starting a three-year treatment programme, some in the middle of their three-year programme and others nearing the end of their three-year programme. One participant had been involved in treatment for 12 years, with others returning for treatment after re-offending. Another participant had completed his treatment programme but had returned to visit the group. Despite the variations in the length of time participants had received treatment, they were all underwent the same treatment programme regime. During their treatment sessions participants cognitive distortions are challenged, they are educated about socially appropriate and inappropriate behaviours and receive sex education. Receiving this type of treatment might have influenced how they responded to the information processing task and thus affected the results. However, this confounding variable of treatment could not be controlled for, for a number of reasons. For example, ethical restrictions prevent participants from being denied treatment. It would have been unethical to prevent newly convicted sexual offenders from commencing a treatment programme, or suspending treatment for those sexual offenders who are already receiving therapy until they had completed the information processing task. Also, as there is not an indefinite number of sexual offenders with a learning disability, the

logistics of carrying out research with this group dictates that researchers study those who are readily available.

Ideally, sexual offenders should be tested on the information processing task before they have commenced treatment. However, based on the low number of yearly referrals of sexual offenders to the Clinical Psychology department in the East of Scotland it would take up to 7 years to attain a sample of 26 participants. Such an option was not a possibility for this research study due to the time restriction that was placed on completion of this research.

4.4.6 Issue of Denial

The issue of denial could also have affected the results of this study. According to Lakey (1994) there are different levels of denial including: denial of offence; denial of intent; denial of responsibility; denial of harm and denial of typical state. Sexual offenders may demonstrate all, or some of these levels of denial. Indeed, many sexual offenders with learning disabilities often deny that the offence occurred, even when they have been tried and convicted (Lindsay, Olley, Jack, Morrisson and Smith, 1998; Lindsay and Smith, 1998). Some sexual offenders accept that the offence occurred, but argue that their intent was misconstrued. Indeed, they often proclaim that they were trying to control their victims and this behaviour was misinterpreted as a sexual act. Others often deny responsibility for their sexual offences by placing the blame on their victims. Rather than take responsibility for their actions they often argue that the victim encouraged them by acting sexually provocative, enjoying the sexual contact, or by the clothes that they were wearing (Lindsay et al., 1998; Lindsay and Smith, 1998). However, some sexual offenders accept that the offence happened, take responsibility for it, but deny that they intended to harm their victim. Finally, some accept that the offence occurred but shift the blame to their victims and attribute their behaviour to a temporary aberration of mental state (Kennedy and Grubin, 1992).

Unfortunately, this study failed to establish at what stage of denial sexual offenders were at. As outlined above, sexual offenders varied in the length of time they had been receiving treatment, which suggests that individuals just commencing

treatment might be at a different level of denial compared to someone nearing the end of their treatment programme. Also, individuals who admit to their crime might be more open to the assessment and therapeutic process and prepared to take responsibility for their deviant behaviour. This acceptance might result in sexual offenders responding to the flicker paradigm in a different way from how they would have if they had not received treatment or be in denial about their sexually deviant behaviour. Indeed, Scully and Marolla (1983) investigated a group of rapists who admitted to their crime and a group who did not. Both groups were asked to describe the sexual assaults that they had committed. When their descriptions were compared, Scully and Marolla (1983) found that the group who did not admit to their crime described their offence with stereotypes that vindicated themselves and placed the blame on their victims. These results were interpreted to suggest that rapists are aware of culturally and socially acceptable beliefs about sexual behaviour, however the beliefs that they possess are based on flawed conceptions. Considering these issues suggests that denial was another confounding variable for this research study. However, the logistics of controlling for this is difficult, due again to limited number of sexual offenders with a learning disability and the ethical issues previously discussed in section 4.4.5 concerning denial of treatment.

4.4.7 Strengths of the Research

Whilst it is acknowledged that there are a number of limitations in the methodology and design of the present research study which could have had an effect on the results, there are also a number of significant strengths of the study. The present research extends on previous research in a number of ways:

4.4.8 Central and Marginal Interest Changes

As outlined above in section 4.4.2 sex-related and neutral related changes were identified by examination of the responses made by naïve participants. Based on the work of Rensink, O'Regan and Clark (1997) these changes can then be further divided into central interest changes and marginal interest changes. According to Rensink et al., (1997) central interest changes are identified when three or more of the raters identified the same specific change in a stimulus picture, whereas a

marginal interest change is one that the raters failed to mention. Based on these criteria all the changes applied to the original stimulus in the present study were central interest changes. Choosing to use only central interest changes was a conscious decision based on the fact that individuals with or without a learning disability have a propensity to detect central interest changes quicker than marginal interest changes, as that is where their attention was initially directed (Carlin, Soraci, Strawbridge, Dennis, Loiselle and Chechile, 2003; Hollingworth, Schrock and Henderson, 2001). However, individuals with a learning disability differ from individuals without a learning disability in the way that they shift their attention to marginal interest areas. Carlin et al., (2003) found that individuals with a learning disability were slower to move their attention away from an area of central interest to the marginal interest area. Indeed, Carlin et al., (2003) found that individuals with a learning disability were still focused on an area of central interest in a scene, while individuals without a learning disability had shifted their attention to a marginal interest area and identified the change. Considering this finding, it was felt appropriate that this research study should try to control for this difference between participants with and without a learning disability and thus have a positive effect on trying to reduce the variance between the two groups. To do this, the study used only central interest neutral and sex-related changes.

4.4.9 Stimuli

As previously discussed, the flicker paradigm has been used to assess social information processing bias among social users of cannabis and alcohol (Jones, Jones, Smith and Copley, 2003; Jones, Jones, Blundell and Bruce, 2002) and good, moderate and poor sleepers (Jones, MacPhee, Broomfield, Jones and Espie, 2005). All these studies have utilised the same methodology for presenting visual stimuli in the flicker paradigm. For example, in each of these studies only two original stimuli were used. Indeed, in the studies which examined information processing bias among social users of alcohol and cannabis the 2 original stimuli comprised of an alcohol original stimulus and a cannabis original stimulus. The alcohol original stimulus was then paired with an alcohol neutral change and an alcohol related change. Similarly, the cannabis original stimulus was paired with a cannabis neutral change and a cannabis related change. Participants were then presented will all 6

pictures. Following such a procedure raised a number of issues of concerns. For example, presenting participants with all pictures resulted in them becoming familiar with the visual stimuli and thus affected the way in which they responded to the task. Indeed, familiarity with the stimuli could have resulted in their attention being initially focused on an area where they had initially observed the first change. For example, if they had viewed the cannabis original stimulus with the cannabis neutral change first and then were presented with the same original stimulus with the cannabis related change, their response to the cannabis related changed could be delayed due to their attention being directed to the area where they noted the first change (i.e. the cannabis neutral change).

Another problem with this design lies with the fact that there were only two original stimuli. This increases the likelihood of variance in the data, which results in increasing the difficulty when trying to obtain a significant effect (Howell, 1997). The issue of variance was a problem for these studies (Jones, MacPhee, Broomfield, Jones and Espie, 2005; Jones, Jones, Smith and Copley, 2003; Jones, Jones, Blundell and Bruce, 2002), however they addressed it by increasing the sample size. Indeed, the average sample size for these three studies was 170 participants. However, the option of increasing sample size was not feasible for the current study due to the limited available number of sexual offenders with a learning disability. Therefore to deal with these issues of concern regarding familiarity with stimuli and variance, improvements had to be made to the way in which the stimulus material was presented to the participants.

To address these issues of concern the present study was counterbalanced to ensure that participants were only exposed to the original stimulus once. For example, if participants were presented with a sex-related change to original stimulus 1 (e.g. a child playing on a climbing frame), they would not see the neutral related change to that original stimulus. However, if participants were presented with the neutral related change to original stimulus 1, they would not see the sex-related change[13]. Following this procedure ensured that participants were not exposed to the original stimulus twice and thus prevented participants from becoming familiar with stimuli.

[13] See section 2.7 of Chapter 2 for a more detailed account of the procedure employed to present the stimuli.

This in turn prevented this issue from becoming a confounding variable and thus affect the speed at which participants detected a change in the stimuli.

As outlined above, a number of limitations and strengths have been identified in the methodological design of this study. However, the feasibility of being able to control for the limitations was restricted by the limited availability of sexual offenders without a learning disability. Having a small sample size meant that specific steps had to be in place to try to control for variance. These included using only central related changes, as individuals with or without a learning disability differ on the speed at which they disengage from central to peripheral areas of interest and preventing participants from becoming familiar with stimuli, as familiarity could affect the speed at which they detect a change in the stimulus.

4.5 Contributions of the Present Study to Existing Literature

Results obtained from the current study provided support for the appropriateness of using the flicker paradigm on participants with a learning disability. As outlined in section 4.2.1, this study obtained results consistent with Carlin, Soraci, Strawbridge, Dennis, Loiselle and Chechile (2003) who found that individuals with a learning disability were significantly slower to respond to all types of changes in the visual stimulus than individuals without a learning disability. This trend was replicated in the present study as participants with a learning disability were significantly slower in detecting sex-related and neutral related changes than participants without a learning disability. Further support for the appropriateness of this research lies with the trend observed in the mean number of flickers to correct change for sex-related and neutral related changes for both groups of participants with a learning disability. Although not significant, it did follow the trend that was proposed in the experimental hypothesis. However, as previously discussed, failure to have obtained a significant effect may have resulted from the experiment being underpowered. Despite this, it still provides support for the appropriateness of using the flicker paradigm to test information processing bias among sexual offenders with a learning disability.

The results from this study did not reflect clinical observations. Personal observations of sexual offenders with a learning disability have found them to be extremely focused when dealing with stimulus material of women, men and children. Indeed, some sexual offenders have been found to collect pictures of women, men or children. Examination of these collections found them to be extremely organised and contained only the image of the person (i.e. if the sexual offender was only interested in women, the pictures would only contain women, with everything else in the picture having been cut away e.g. pictures of men, children or inanimate objects). Clinical observation of sexual offenders with female members of staff have also revealed some sexual offenders to be so focused on specific parts of the female's anatomy that they are oblivious to what is going on around them, or to the fact that they are being observed. With this level of focused attention or bias towards sexual stimuli, it was hypothesised that they would be quicker to detect sex-related changes in visual stimuli than neutral related changes. However, this was not significantly reflected in the data

Failure to obtain data that supports clinical observations and researchers' claims that sexual offenders have deficits with their information processing (Smith and Waterman, 2004; Langevin and Pope, 1994; McFall, 1990) highlight that this is a complex area to investigate, as there is limited existing research in this area. Indeed, to date there is no published research that has examined information processing bias among sexual offenders with a learning and currently only one piece of research (i.e. Smith and Waterman, 2004) that has examined this area among sexual offenders without a learning disability. Hence there is no clear framework to guide research in this area. However, the previously unpublished research by Whitefield and the present study which investigated social information processing among sexual offenders with a learning disability have made a preliminary attempt to logically identify areas of information processing (i.e. attention) that might differ in sexual offenders with a learning disability. In addition, continued failure to obtain significant results on experimental tasks might suggest that tasks that rely on reaction time responses are not the most appropriate method to detect information processing deficits among individuals with a learning disability. Future researchers may wish to consider using physiological measures (e.g. penile plethysmorgraphy;

eye gaze; galvanic skin response). Some of these suggestions will be addressed in more detail in the following section of this chapter.

4.6 Future Research

Physiological assessments are routinely used with sexual offenders in America and Canada. Indeed, penile plethysmorgraphy is a physiological measure that measures a man's erectile response while viewing or listening to sexual stimuli. This assessment technique was originally developed by Freund (1963) and involves monitoring any changes in the length and circumference of a man's penis while he watches or listens to appropriate sexual interactions (e.g. consensual sex) or inappropriate sexual acts (e.g. under-age sex). Phallometric assessment has been found to discriminate between child molesters and non-sexual offenders (Freund, 1967), rapists and non-sexual offenders (Quinsey et al., 1981) and incestuous and nonincestuous child molesters (Quinsey, Chaplin and Carrigan, 1979). Phallometric assessment might offer insight into sexual interest of sexual offenders, however it does not appear to be a technique that would be able to be used to assess information processing. This might also be the case for galvanic skin response. This therefore leaves eye gaze as the most logical supplementary method to assess information processing bias.

4.6.1 Eye Gaze Recording to Investigate Information Processing Bias

Eye movement recording has been used to examine a number of different research areas. These include: eye movement assessment of emotional processing in anxiety (Calvo and Avero, 2002) eye gaze being used to assess selective visual attention for ugly and beautiful body parts among individuals with an eating disorder (Jansen, Nederkoom and Mulkens, 2005); investigating bias in eye movement to threatening facial expressions in generalised anxiety disorder and depressive disorders (Mogg, Miller and Bradley, 2000). However, recently eye movement has been used to assess cognitive bias for smoking cues in smokers after the consumption of alcohol (Field, Mogg and Bradley, 2005). This study found that smokers maintained their gaze on smoking pictures for longer than they did on control pictures, with the magnitude of this effect being increased after the consumption of alcohol. However, the same effect was not obtained after the consumption of a non-alcoholic drink. Considering

this, it was felt that eye gaze might be an important additional measure to take when using the flicker paradigm to test information processing bias among sexual offenders with a learning disability. This would enable researchers to monitor where sexual offenders with a learning disability are focusing their gaze and how long they are taking to disengage their gaze from certain aspects of the picture (i.e. the person in the picture or objects).

However, as good methodological practice advocates testing participants who are naïve to the task to prevent practice effects or participants working out what the experiment was measuring, it would be worthwhile considering an alternative paradigm that can incorporate eye movement as an additional assessment tool. Indeed, an alternative to the flicker paradigm and one that the participants would not be familiar with is negative priming. This is a paradigm where participants are presented with a series of trials in which they must select a target from an array of two or more stimuli. A prime display is presented that contains, for example, one target and one non-target followed by a probe display that also contain one target and non-target. Negative priming is observed when a non-target in the prime display becomes a target to the probe display. Indeed, when negative priming effects of individuals with or without a learning disability were compared, it was found that the individuals with a learning disability did not or could not use inhibitory mechanisms of attention to assist their selecting a target letter from the displays (Merrill and Taube, 1996; Cha and Merrill, 1994). This research indicates that negative priming can be observed in individuals with a learning disability, suggesting that it would be an appropriate method to test attentional abilities of sexual offenders with a learning disability. Considering this and the way in which the stimuli is presented in negative priming, suggests that this might be as effective a way as the flicker paradigm to incorporate eye movement as an additional assessment method of information processing bias.

4.7 Conclusions

The aim of the present study was to investigate social information processing among sexual offenders with a learning disability, non-offenders with a learning disability and non-offenders without a learning disability. The flicker paradigm was employed

to induce change blindness to assess information process of the 3 participants groups. The research found that non-offenders without a learning disability had significantly quicker detection latencies in both sex-related and neutral related changes that the other two groups of participants with a learning disability. This finding was consistent with previous research (Carlin, Soraci, Strawbridge, Dennis, Loiselle and Checile, 2003).

No significant interaction was observed between type of participant group and type of change. This finding indicated that sexual offenders did not demonstrate significantly quicker detection latencies in sex-related changes compared to neutral related changes and thus failed to support the experimental hypothesis. However, the detection latencies in sex-related and neutral related changes for both participant groups with a learning disability did follow the predicted trend. Failure to obtain a significant interaction might result from the study being underpowered.

The present study failed to offer support for claims that sexual offenders with a learning disability have deficits with their information processing. However, this does not mean that sexual offenders with a learning disability do not have information processing bias. Indeed, the methodological weaknesses identified with this study (e.g. small sample size and selection of stimulus), or the methods utilised might have been unable to detect any attentional deficits that sexual offenders with a learning disability have (i.e. failure to use eye movement). Before concluding that sexual offenders do not have social information processing bias further research is needed in this area. Future research should consider replication of the present study, ensuring that the methodological flaws are addressed (e.g. sample size, additional comparison group of sexual offenders without a learning disability), incorporating eye movement as an additional assessment, or testing the alternative paradigm (i.e. negative priming plus assessment of eye gaze) as this might offer further insight into whether social information processing bias can be detected among sexual offenders with a learning disability.

Abel, G.G., Gore, D.K., Holland, C.L., Camp, N., Becker, J.V., & Rathner, J. (1989) The measurement of the cognitive distortions of child molesters. *Annals of Sex Research* 3, 135-153.

American Association on Mental Retardation (2002) *Mental Retardation: Definition, Classification, and systems of support* (10th Edition).

American Psychiatric Association (1995) *Diagnostic and Statistical Manual of Mental Disorders (Fourth Revision)*. Washington D.C.: American Psychiatric Association.

Barbaree, H.E., Marshall, W.L., & Lanthier, R.D. (1979) Deviant sexual arousal in rapists. *Behaviour Research and Therapy* 17, 215-222.

Barmann, B.C., & Murrey, W.J. (1981) Suppression of inappropriate sexual behaviour by facial screening. *Behaviour Therapy* 12, 730-735.

Barron, P., Hassiotis, A., & Banes, J. (2002) Offenders with intellectual disability: the size of the problem and therapeutic outcomes. *Journal of Intellectual Disability Research* 46, 454-456.

Bowler, C., & Collacott, R.A. (1993) Crossdressing in men with learning disabilities. *British Journal of Psychiatry* 163, 566-568.

Briggs, F., & Hawkins, R.M.F. (1996) A comparison of the childhood experiences of convicted male child molesters and men who were sexually abused in childhood and claim to be non-offenders. *Child Abuse and Neglect* 20, 221-233.

British Psychological Society (BPS) (2001) *Learning Disability: Definitions and Contexts*. Professional Affairs Board of the British Psychological Society, Leicester.

Broadbent, D. (1958) *Perception and communication*. Oxford: Pergamon.

Bumby, K.M. (1996) Assessing the cognitive distortions of child molesters and rapists: Development and validation of the MOLEST and RAPE Scales. *Sexual Abuse: A Journal of Research and Treatment* 8, 37-54.

Burke, D.M. (2001) Empathy in sexually offending and nonoffending adolescent males. *Journal of Interpersonal Violence* 16, 222-233.

Calvo, M.G., & Avero, P. (2002) Eye movement assessment of emotional processing. *Emotion* 2, 105-117.

Caparulo, F. (1991) Identifying the developmentally disabled sex offender. *Sexuality and Disability* 9, 311-322.

Carlin, M.T., Soraci, S.A., Strawbridge, C.P., Dennis, N., Loiselle, R., & Chechile, N.A. (2003) Detection of changes in naturalistic scenes: comparisons of individuals with and without mental retardation. *American Journal on Mental Retardation* 108, 181-193.

Cherry, E.C. (1953) Some experiments on the recognition of speech with one and two ears. *Journal of the Acoustical Society of America*, 25, 975-979.

Clare, I.C.H., & Gudjonsson, G.H. (1993) Interrogative suggestibility, confabulation, and acquiescence in people with mild learning disabilities (mental handicap): Implications for reliability during police interrogation. *British Journal of Clinical Psychology* 32, 295-301.

Clare, I.C.H., & Gudjonsson, G.H. (1995) The vulnerability of suspects with intellectual disabilities during police interviews: a review and experimental study of decision-making. *Mental Handicap Research* 8, 110-128.

Cohen, J. (1988) *Statistical power analysis for the behavioural sciences*. (2nd edition). Erlbaum.

Constantine, N.J. (2004) Female adolescent perpetrators versus non-perpetrators: A comparative study of personality factors/traits and psychopathological variables. *Dissertation Abstracts International: Section B: The Science and Engineering* 64, 3570

Cooper, A.J. (1995) Review of the role anti-libidinal drugs in the treatment of sex offenders with mental retardation. *Mental Retardation* 33, 42-48.

Corbett, J.A., & Pond, D.A. (1979) *Epilepsy and behavioural disorders in the mental handicap* (Ed). P. Snaith & F.E. James, pp. 37-44. Headley Bros: Ashford.

Craig, M.E. (1990) Coercive sexuality in dating relationships: A situational model. *Clinical Psychology Review* 10, 395-423.

Day, K. (1988) A hospital-based treatment for male mentally handicapped offenders. *British Journal of Psychiatry* 165, 630-639.

Day, K. (1993) Crime and mental retardation. In K. Howells and C.R. Hollin (Eds) *Clinical Approaches to the Mentally Disordered Offenders*. Chichester: Wiley.

Day, K. (1994) Male mentally handicapped sex offenders. *British Journal of Psychiatry* 165, 630-639.

D.H.S.S. (1983) *Mental Health Act*, London: H.M.S.O.

Dodge, K.A. (1986) A social information processing model of social competence in children. In M. Perlmutter (Ed.). *The Minnesota Symposium on Child Psychology* (Vol. 18, pp. 71-125). Hillsdale, NJ: Erlbaum.

Ferlazzo, E., Zifkin, B.G., Andermann, E., & Andermann, F. (2005) Cortical triggers in generalized reflex seizures and epilepsies. *Brain: A Journal of Neurology* 128, 700-710.

Field, M., Mogg, K., & Bradley, B.P.(2005) Alcohol increases cognitive biases for smoking cues in smokers. *Psychopharmacology* 180, 63-72.

Fisher, D., Beech, A., and Browne, A. (1999) Comparison of sex offenders to nonoffenders on selected psychological measures. *International Journal of Offender Therapy and Comparative Criminology* 43, 473-491.

Fox, E., Russo, R., & Dutton, K. (2002) Attentional bias for threat: Evidence for delayed disengagement from emotional faces. *Cognition and Emotion* 16, 355-379.

Freund, K. (1963) A laboratory method for diagnosing predominance of homo- or hetero- erotic interest in the male. *Behavior Research and Therapy* 1, 85-93.

Freund, K., and Seto, M.C. (1998) Preferential rape in the theory of courtship disorder. *Archives of Sexual Behavior* 27, 433-443.

Glaser, W., & Deane, K. (1999) Normalisation in an abnormal world: a study of prisoners with intellectual disability. *Intellectual Journal of Offender Therapy and Comparative Criminology* 43, 338-356.

Goring, C. (1913) The English Convict. Cited in Lund, J. (1990) Mentally retarded offenders in Denmark. *British Journal of Psychiatry* 156, 726-731.

Gomez, R., & Hazeldine, P. (1996) Social information processing in mild mentally retarded children. *Research in Developmental Disabilities* 17, 217-227.

Greer, J.H., Estupinan, L.A., & Manguno-Mire, G.M. (2000) Empathy, social skills, and other relevant cognitive processes in rapists and child molesters. *Aggression and Violent Behavior* 5, 99-126.

Griffiths, S.D.M., Quinsey, V.L., & Hingsburger. D. (1989) *Changing inappropriate sexual behaviour: a community based approach for persons with developmental disabilities*. Baltimore: Paul Brookes Publishing.

Gross, G. (1984). *Activities of a Developmental Disabilities Adult Offender Project*. Olympia WA: Washington State Developmental Disabilities Planning Council.

Gudjonsson, G.H., Clare, I.C.H., & Cross, P. (1992) The revised PACE 'Notice to Detained Persons': How easy is it to understand? *Journal of Forensic Science Society* 32, 289-299.

Gudjonsson, G.H. (1993) Confession evidence, psychological vulnerability and expert testimony. *Journal of Community and Applied Social Psychology* 3, 117-129.

Harris, G.T., Rice, M.E., Quinsey, V.L. & Chaplin, T.C. (1996) Viewing time as a measure of sexual interest among child molesters and normal heterosexual men. *Behavior Research and Therapy* 34, 389-394.

Hayes, S. (1996) *People with an intellectual disability and the criminal justice system: two rural courts*. Research Report 5, NSW Law Reform Commission, Sydney.

Hayes, S. (1997) Prevalence of intellectual disability in local courts. *Journal of Intellectual Developmental and Disability* 22, 71-85.

Hodgins, S. (1992) Mental disorder, intellectual deficiency and crime: evidence from a birth cohort. *Archives of General Psychiatry* 49, 476-83.

Holland, T., Clare, I.C.H., & Mukhopadhyay, T. (2002) Prevalence of 'criminal offending' by men and women with intellectual disability and the characteristics of 'offenders': implications for research and service development. *Journal of Intellectual Disability Research* 46, 6-20.

Hollingworth, A., Schrock, G., & Henderson, J. (2001). Change detection in the flicker paradigm: The role of fixation position within the scene. *Memory and Cognition* 29, 296-304.

Howell, D.C. (1997). *Statistical methods for psychology*. 4th Edition. Duxbury.

Hudson, S.M., Marshall, W.L., Wales, D., McDonald, E., Bakker, L & McLean, A. (1993) Emotion recognition in sex offenders. *Annals of Sex Research* 6, 199-211

Hudson, S.M. & Ward, T. (2000) Interpersonal competency in sex offenders. *Behavior Modification* 24, 494-527.

Hunter, I (1964) *Memory* (revised ed.). Harmondworth., Middlesex: Penguin.

Iglewicz, B., & Hoaglin, D.C. (1993). *How to detect and handle outliers*. Milwaukee, WI.: ASQC Quality Press.

Jansen, A., Nederkoom, L., & Mulkens, S (2005). Selective visual attention for ugly and beautiful body parts in eating disorders. *Behaviour Research and Therapy* 43, 183-196.

Johnston, S.J., & Halstead, S. (2000) Forensic issues in intellectual disability. *Current Opinion in Psychiatry* 13, 475-480.

Jones, B.C., Jones, B.T., Blundell, L., & Bruce, G. (2002) Social users of alcohol and cannabis who detect substance-related changes in a change blindness paradigm report higher levels of use than those detecting substance-neutral changes. *Psychopharmacology* 165, 93-96.

Jones, B.T., Jones, B.C., Smith, H., & Copley, N. (2003) A flicker paradigm for inducing change blindness reveals alcohol and cannabis information processing biases in social users. *Addiction* 98, 235-244.

Jones, B.T., MacPhee, L.M., Broomfield, N.M., Jones, B.C., & Espie, C.A. (2005) Sleep-related attentional bias in good, moderate, and poor (primary insomnia) sleepers. *Journal of Abnormal Psychology* 114, 249-258.

Kennedy, H., & Grubin, D. (1992) Patterns of denial in sex offenders. *Psychological Medicine* 22, 191-196.

Klimecki, M.R., Jenkinson, J. & Wilson, L. (1994) A study of recidivism among offenders with an intellectual disability. *Australia and New Zealand Journal of Developmental Disabilities* 19, 209-219.

Lakey, J. (1994) The profile and treatment of male adolescent sex offenders. *Adolescence* 29, 755-761.

Lanyon, R.L. (1991) Theories of sex offending. C.R. Hollin & K. Howells (eds).(1997). *Clinical approaches to sex offenders and their victims*. Wiley. (35-54).

Langevin, R., & Pope, S. (1993) Working with learning disabled sex offenders. *Annals of Sex Research* 6, 149-160.

Leong, G.B., & Silva, J.A. (1999) Revisiting arson from an outpatient forensic perspective. *Journal of Forensic Science* 44, 558-563.

Lindsay, W.R., & Holland, A. (2000) Changing services for offenders with intellectual disabilities. *Journal of Intellectual Disability Research* 44, 367-368.

Lindsay, W.R., Law, J., Quinn, K., Smart, N., & Smith, AHW (2001) A comparison of physical and sexual abused: Histories of sexual and non sexual offenders with intellectual disability. *Child Abuse and Neglect* 25, 989-995.

Lindsay, W.R., & Macleod, F. (2001) A review of forensic learning disability research. *The British Journal of Forensic Practice* 3, 4-10.

Lindsay, W.R., Neilson, C., Morrison, F., & Smith, A. (1998) The treatment of six men with a learning disability convicted of sex offences with children. *Journal of Clinical Psychology* 37, 83-98.

Lindsay, W.R., Olley, S., Jack, C., Morrison, F., & Smith, A. (1998) The treatment of two stalkers with intellectual disabilities using a cognitive approach. *Journal of Applied Research in Intellectual Disabilities* 11, 333-344.

Lindsay, W.R., & Smith, A.H.W. (1998) Responses to treatment for sex offenders with intellectual disability: a comparison of men with 1- and 2-year probation sentences. *Journal of Intellectual Disability Research* 42, 346-353.

Lindsay, W.R., Smith, A.H.W., Quinn, K., Anderson, A., Smith, A., Allan, R., & Law, J. (2004) Women with intellectual disability who have offended: Characteristics and outcome. *Journal of Intellectual Disability Research*, 48, 580-590.

Lipton, D.N., McDonel, E.C., & McFall, R.M. (1987) Heterosocial perception in rapists. *Journal of Consulting and Clinical Psychology* 55, 17-21.

Loftus, E.F., & Palmer, J.C. (1974) Reconstruction of automobile deconstruction: An example of interaction between language and memory. *Journal of Verbal Learning and Verbal Behaviour* 13, 585-589.

Loftus, E.F., & Zanni, G. (1975) Eyewitness testimony: The influence of wording of a question. *Bulletin of the Psychonomic Society* 5, 86-88.

Lund, J. (1990) Mentally retarded offenders in Denmark. *British Journal of Psychiatry* 156, 726-731.

McFall, R.M. (1990) The enhancement of social skills. An Information-Processing Analysis. In W.L. Marshall, D.R. Laws, & H.E. Barbaree (Eds), *Handbook of sexual assault: Issues, theories and treatment of the offender* (pp. 311-330). New York: Plenum.

Madan, A. (1996) *Women, Prisons and Psychiatry. Mental Disorders Behind Bars.* Oxford: Butterworth-Heinemann.

Malamuth, N.M., & Brown, L.M. (1994) Sexually aggressive men's perceptions of women's communications: Testing three explanations. *Journal of Personality and Social Psychology* 64, 699-712.

Marshall, W.L. (1999) Current status of North American assessment and treatment programs of sexual offenders. *Journal of Interpersonal Violence* 14, 221-239.

Marshall, W.L., Hudson, S.M., Jones, R., and Fernandez, Y.M. (1995) Empathy in sex offenders. *Clinical Psychology Review* 15, 2, 99-113.

Marshall, W.L., and Serran, G.A. (2000) Current issues in the assessment and treatment of sexual offenders. *Clinical Psychology and Psychotherapy* 7, 85-96.

Merrill, E.C., & Taube, M. (1996) Negative priming and mental retardation: The processing of distractor information. *American Journal on Mental Retardation* 101, 63-71.

Mitchell, L. (1987). In A. Craft (Ed). *Sexuality and Mental Handicap: Issues and Perspective*. London: Costello.

Mogg, K., Millar, N., & Bradley, B.P. (2000) Bias in eyemovements to threatening facial expressions in generalised anxiety disorder and depressive disorders. *Journal of Abnormal Psychology* 109, 695-704.

Murphy, G.H., & Clare, I.C.H. (1998) People with learning disabilities amongst men on remand in prison. *Mental Handicap Research* 8, 81-91.

Murphy, G.H., Harnett, H., & Holland, A.J. (1995) A survey of intellectual disabilities amongst men on remand in prison. *Mental Handicap Research* 8, 81-98.

Navon, D. (1977) Forest before trees: The precedence of global features in visual perception. *Cognitive Psychology* 9, 353-342.

Osborne, J.W., & Overbay, A. (2004). *The National Statistics Socio-Economic Classification user manual*. London. Office of National Statistics.

Pithers, W.D. (1994) Process evaluation of a group therapy component designed to enhance sex offenders' empathy for sexual abuse survivors. *Behavior Research and Therapy* 32, 565-570.

Plaisted, K., Swettenham, J., & Rees, L. (1999) Children with autism show local precedence in a divided attention task and global precedence in a selective attention task. *Journal of Child Psychology and Psychiatry* 40, 733-742.

Quinsey, V.L. (1986) Men who have sex with children. In D.N. Weistub (Ed.) *Law and Mental Health: International Perspectives* (pp. 140-172). Elmsford, NY: Pergamon.

Quinsey, V.L. (2003) Estimating the likelihood of sexual and violent re-offending. Paper presented at *Multi-Agency Interventions for Sexual and Violent Offenders*, Dundee, Scotland.

Quinsey, V.L., Chaplin, T.C., & Carrigan, W.F. (1979) Sexual preference among incestuous and non-incestuous child molesters. *Behavior Therapy* 10, 562-656.

Quinsey, V.L., Chaplin, T.C., & Upfold, D. (1984) Sexual arousal to nonsexual violence and sadomasochistic themes using rapists and non-sex offenders. *Journal of Consulting and Clinical Psychology* 52, 651-657.

Quinsey, V.L., Chaplin, T.C., & Varney, G. (1981) A comparison of rapists' and non-sex offenders' sexual preferences for mutually consenting sex, rape and physical abuse of women. *Behavioral Assessment* 3, 127-135.

Quinsey, V.L., Ketsetzis, M., Earls, C., & Karamanoukian, A. (1996) Viewing time as a measure of sexual interest. *Ethology and Sociobiology* 17, 341-354.

Rensink, R.A., O'Regan, K., & Clark, J.J. (1997). To see or not to see: the need for attention to perceive changes in scenes. *Psychological Science*, 8, 368- 373.

Ryan, G. (1997) Sexually abusive youth: Defining the population. In G. Ryan & S. Lane (Eds). *Juvenile sexual offending: Causes, consequences, and correction* (p.p.3-9). San Francisco, CA: Jossey-Bass.

Sahota, K., & Chesterman, P. (1998) Sexual offending in the context of mental illness. *Journal of Forensic Psychiatry* 9, 267-280.

Scorzelli, J.F., & Reinke-Scorzelli, M. (1979) Mentally retarded offenders: a follow-up study. *Rehabilitation Counselling Bulletin* September, 70-73.

Scully, D., & Marolla, J. (1983) Incarcerated rapists: Exploring a sociological model. *National Rape Centre, Institute of Mental Health.*

Smith, P., & Waterman, M. (2004) Processing bias for sexual material: The emotional stroop and sexual offenders. *Sexual Abuse: Journal of Research and Treatment*, 16, 163-171.

Solso, R.L. (1995). *Cognitive Psychology* (4th Edition). Boston: Allyn & Bacon.

Stermac, L.E., and Segal, Z.V. (1989) Adult sexual contact with children: An examination of cognitive factors. *Behavior Therapy* 20, 573-584.

Stroop, J.R. (1935) Studies of interference in serial verbal reactions. *Journal of Experimental Psychology* 18, 624-643.

Swanson, C.K., and Garwick, G.B. (1990) Treatment for low functioning sex offenders: Group therapy and interagency co-ordination. *Mental Retardation* 28, 155-161.

Taghavi, M.R., Neshat-Doost, H.T., Moradi, A.R., Yule, W., & Dalgleish, T. (1999) Biases in visual attention in children and adolescents with clinical anxiety and mixed anxiety – depression. *Journal of Abnormal Child Psychology* 27, 215-223.

Taylor, J. (2000) Northgate sex offender project. *Journal of Intellectual Disability Research* 44, 1140.

Thompson, D. (1997) Profiling the sexually abusive behaviour of men with intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities* 10, 125-139.

Thompson, D., & Brown, H. (1997) Men with intellectual disabilities who sexually abuse: A review of the literature. *Journal of Applied Research in Intellectual Disabilities* 10, 140-158.

Treisman, A.M. (1960) Contextual cues in selective listening. *Quarterly Journal of Experimental Psychology* 12, 242-248.

Treisman, A.M. (1964) Verbal cues, language, and meaning in selective attention. *American Journal of Psychology* 77, 206-219.

Van Honk, J., Tuiten, A., DeHaan, E., Van den Hout, M., & Stam, H. (2001) Attentional biases for angry faces: Relationships to trait anger and anxiety. *Cognition and Emotion* 15, 279-297.

Walker, N., & Biles, D. (1986) *Australian prisoners 1986.* Canberra: Australian Institute of Criminology.

Walker, N., & McCabe, S. (1973) *Crime and insanity in England.* University Press: Edinburgh.

Ward, T., Hudson, S.M., Johnston, L., & Marshall, W.L. (1997) Cognitive distortions in sex offenders: An integrative review. *Clinical Psychology Review* 17, 479-507.

Ward, T., Hudson, S.M., & Marshall, W.L. (1995) Cognitive distortions and affective deficits in sex offenders: A cognitive deconstructionist interpretation. *Sexual Abuse: A Journal of Research and Treatment* 7, 67-83.

Ward, T., Louden, K., Hudson, S.M., & Marshall, W.L. (1995) A descriptive model of the offense chain for child molesters. *Journal of Interpersonal Violence* 10, 452-472.

Wechsler, D. (1997) *Wechsler Adult Intelligence Scale – III.* New York: The Psychological Corporation.

Whitefield, E. (unpublished manuscript). The effects of cognitive distortions in sex offenders and non-sex offenders with mild learning disabilities.

Winter, N., Holland, A.J., & Collins, S. (1997) Factors predisposing to suspected offending by adults with self-reported learning disabilities. *Psychological Medicine* 27, 595-607.

World Health Organisation (1992) *The ICD-10 Classification of Mental and Behavioural Disorders: Diagnostic Criteria for Research*. Geneva: World Health Organisation.

Appendix 1

Letter confirming ethical approval from Tayside Research and Ethics Committee.

Tayside Committee on Medical Research Ethic
A
Level 9
Ninewells Hospital & Medical School
DUNDEE
DD1 9SY
Telephone Number: 01382 632701
Fax Number: 01382 496207
www.nhstayside.scot.nhs.uk

NHS Tayside

Dr Elaine Whitefield
Trainee Clinical Psychologist
Clinical Psychology Department
Wedderburn House
1 Edward Street
Dundee
DD1 5NS

Date	22 March 2006
Your Ref	
Our Ref	NFB/JM/**05/S1401/179**
Enquiries to	Mr Nigel F Brown
Extension	32701
Direct Line	01382 632701
Email	nigel.brown@tuht.scot.nhs.uk or fiona.bain@tuht.scot.nhs.uk

Dear Dr Whitefield

Full title of study: **Investigation of attentional deficits among sexual offenders with mild intellectual disabilities**

REC reference number: **05/S1401/179**

Thank you for your letter of 24 February 2006, 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 Vice-Chair and Medical Advisor.

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.

Conditions of approval

The favourable opinion is given provided that you comply with the conditions set out in the attached document. You are advised to study the conditions carefully.

Approved documents

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

Document	*Version*	*Date*
Application		09 November 2005
Investigator CV	Supervisor - Professor William R Lindsay	
Investigator CV		
Protocol		
Covering Letter		08 November 2005
Covering Letter	Supervisor Letter	
Participant Information Sheet	Sexual Offenders with Intellectual Disabilities - 2	
Participant Information Sheet	Non Offenders with Intellectual Disabilities - 2	

Document	*Version*	*Date*
Participant Information Sheet	Individuals without Intellectual Disabilities - 1	
Participant Consent Form		
Response to Request for Further Information	Covering Letter	
Other	Sample of visual stimuli	09 November 2005

Research governance approval

The study should not commence at any NHS Tayside site until the local Principal Investigator has obtained final research governance approval from NHS Tayside R&D Department.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

05/S1401/179	**Please quote this number on all correspondence**

Yours sincerely

Chair

Enclosures: Standard approval conditions

Copy to: NHS Tayside R & D

Headquarters
Kings Cross, Clepington Road, Dundee DD3 8EA

Chairperson, Mr Peter Bates
Chief Executive, Professor Tony Wells

Appendix 2

Participant Information Sheet for Sexual Offenders with a Learning Disability

Study Title: Investigation of attentional deficits among sexual offenders with mild intellectual disabilities

I would like to invite you to take part in a research study. This research has ethical approval from an NHS Research and Ethics Committee and also from Tayside Research and Development office. Permission to access participants to take part in this study has been given by Prof Bill Lindsay.

Before you make a decision about taking part, it is important that you understand what will be involved and why the research is being done.

Please read or listen to the following information carefully and feel free to ask if there is anything you are unsure about. Please take your time to decide whether you would like to take part in this project.

What is this study about? Why is it important?

The aim of this study is to find out more about how men who sexually offend pay attention to a particular visual task. Research in the past has shown that people who drink alcohol or take cannabis are quicker to detect changes in visual tasks, which contain their interest (e.g. alcohol or cannabis) than people who do not drink alcohol or take cannabis. This study hopes to learn if this is also true for sexual offenders. The study aims to investigate if sexual offenders will be quicker to detect changes in pictures that contain their sexual interest than individuals who do not sexually offend. I hope that by carrying out this research it will lead to a better understanding of how sexual offenders process information. This will in turn help when trying to develop suitable treatment programs for sexual offenders.

Why have I been chosen?

You have been invited to take part in this study because you have committed a sexual offence. To examine if sexual offenders are quicker to detect changes in a visual task, I need to test people like yourself who have committed sexual offences and compare your responses with men who have not committed a sexual offence.

Do I have to take part?

It is completely up to you to decide whether or not you wish to take part. After reading this information sheet you will be given a week to decide whether you wish to take part in the study. Your participation is voluntary. You are also free to change your mind at any time and do not have to give a reason for changing your mind.

If you decide not to take part this will not affect current or future medical or psychological treatment offered to you.

Who is carrying out the study?

The study is being carried out by Dr Elaine Whitefield, Trainee Clinical Psychologist, as part of her training to become a Clinical Psychologist. Professor Bill Lindsay and Dr Karen McKenzie, both Clinical Psychologists, will supervise her. All contact details are provided at the end of this information sheet.

What will be involved if I agree to take part?

If you decide to take part, you will be given this information sheet to keep and will be asked to sign a consent form.

Then you will be asked to complete a visual task. The visual task will involve you looking at pictures of people and objects that will be shown on a computer monitor. You will be asked to look for changes that occur in the pictures. For example, you will be shown 2 pictures that are exactly the same expect for one thing. You will be required to try to identify what is different in the picture. It will take between 15-20 minutes to complete the task.

What if something goes wrong or I change my mind?

You are free to stop the task at any point without having to give a reason.

If you are unhappy about how this research has been carried out you can make a complaint by following the normal NHS complaints procedure.

Will my information be kept anonymous and confidential?

Yes. All the information about you and your performance on the visual task will be anonymised and kept strictly confidential. The information will be kept on one computer in the Clinical Psychology Department and it will be password protected. The information will be destroyed after 5 years. This is in line with the requirements of the data protection act.

What will happen to the results of the research study?

After analysis of the results, the research will be written up as part of Elaine Whitefield's training to become a Clinical Psychologist. A summary of the study results will be sent to you if you wish them.

Who do I contact for further information?

If you have any questions or need any further information about this study, please contact any of the individuals below:

Dr Elaine Whitefield
Trainee Clinical Psychologist
Clinical Psychology Department
Wedderburn House
1 Edward Street
Dundee, DD1 5NS
Tel: 01382 346025

Professor Bill Lindsay
Consultant Clinical Psychologist
Clinical Psychology Department
Wedderburn House
1 Edward Street
Dundee, DD1 5NS
Tel: 01382 346025

Participant Information Sheet for Non-Offenders with a Learning Disability

Study Title: Investigation of attentional deficits among sexual offenders with mild intellectual disabilities

I would like to invite you to take part in a research study. This research has ethical approval from an NHS Research and Ethics Committee and also from Tayside Research and Development office. Permission to access participants to take part in this study has been given by Adult Resource Centre, Adult Resource Centre and Day Centre.

Before you make a decision about taking part, it is important that you understand what will be involved and why the research is being done.

Please read or listen to the following information carefully and feel free to ask if there is anything you are unsure about. Please take your time to decide whether you would like to take part in this project.

What is this study about? Why is it important?

The aim of this study is to find out more about how men who sexually offend pay attention to a particular visual task. Research in the past has shown that people who drink alcohol or take cannabis are quicker to detect changes in visual tasks, which contain their interest (e.g. alcohol or cannabis) than people who do not drink alcohol or take cannabis. This study hopes to learn if this is also true for sexual offenders. The study aims to investigate if sexual offenders will be quicker to detect changes in pictures that contain their sexual interest than individuals who do not sexually offend. I hope that by carrying out this research it will lead to a better understanding of how sexual offenders process information. This will in turn help when trying to develop suitable treatment programs for sexual offenders.

Why have I been chosen?

You have been invited to take part in this study because you have not committed a sexual offence. To examine if sexual offenders are quicker to detect changes in a visual task, I need to compare their responses with men who have not sexually offended.

Do I have to take part?

It is completely up to you to decide whether or not you wish to take part. After reading this information sheet you will be given a week to decide whether you wish to take part in the study. Your participation is voluntary. You are also free to change your mind at any time and do not have to give a reason for changing your mind.

If you decide not to take part this will not affect current or future medical or psychological treatment offered to you.

Who is carrying out the study?

The study is being carried out by Dr Elaine Whitefield, Trainee Clinical Psychologist, as part of her training to become a Clinical Psychologist. Professor Bill Lindsay and Dr Karen McKenzie, both Clinical Psychologists, will supervise her. All contact details are provided at the end of this information sheet.

What will be involved if I agree to take part?

If you decide to take part, you will be given this information sheet to keep and will be asked to sign a consent form.

Then you will be asked to complete a visual task. The visual task will involve you looking at pictures of people and objects that will be shown on a computer monitor. You will be asked to look for changes that occur in the pictures. For example, you will be shown 2 pictures that are exactly the same expect for one thing. You will be required to try to identify what is different in the picture. It will take between 15-20 minutes to complete the task.

What if something goes wrong or I change my mind?

You are free to stop the task at any point without having to give a reason.

If you are unhappy about how this research has been carried out you can make a complaint by following the normal NHS complaints procedure.

Will my information be kept anonymous and confidential?

Yes. All the information about you and your performance on the visual task will be anonymised and kept strictly confidential. The information will be kept on one computer in the Clinical Psychology Department and it will be password protected. The information will be destroyed after 5 years. This is in line with the requirements of the data protection act.

What will happen to the results of the research study?

After analysis of the results, the research will be written up as part of Elaine Whitefield's training to become a Clinical Psychologist. A summary of the study results will be sent to you if you wish them.

Who do I contact for further information?

If you have any questions or need any further information about this study, please contact any of the individuals below:

Dr Elaine Whitefield
Trainee Clinical Psychologist
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Participant Information Sheet for Non-Offenders without a Learning Disability

Study Title: Investigation of attentional deficits among sexual offenders with mild intellectual disabilities

I would like to invite you to take part in a research study. This research has ethical approval from an NHS Research and Ethics Committee and also from Tayside Research and Development office. Permission to access participants to take part in this study has been given by Hospital.

Before you make a decision about taking part, it is important that you understand what will be involved and why the research is being done.

Please read or listen to the following information carefully and feel free to ask if there is anything you are unsure about. Please take your time to decide whether you would like to take part in this project.

What is this study about? Why is it important?

The aim of this study is to find out more about how men who sexually offend pay attention to a particular visual task. Research in the past has shown that people who drink alcohol or take cannabis are quicker to detect changes in visual tasks, which contain their interest (e.g. alcohol or cannabis) than people who do not drink alcohol or take cannabis. This study hopes to learn if this is also true for sexual offenders. The study aims to investigate if sexual offenders will be quicker to detect changes in pictures that contain their sexual interest than individuals who do not sexually offend. I hope that by carrying out this research it will lead to a better understanding of how sexual offenders process information. This will in turn help when trying to develop suitable treatment programs for sexual offenders.

Why have I been chosen?

You have been invited to take part in this study because you have not committed a sexual offence and do not have an intellectual disability. To examine if sexual offenders are quicker to detect changes in a visual task, I need to compare their responses with men who have not sexually offended and do not have an intellectual disability.

Do I have to take part?

It is completely up to you to decide whether or not you wish to take part. After reading this information sheet you will be given a week to decide whether you wish to take part in the study. Your participation is voluntary. You are also free to change your mind at any time and do not have to give a reason for changing your mind.

If you decide not to take part this will not affect current or future medical or psychological treatment offered to you.

Who is carrying out the study?

The study is being carried out by Dr Elaine Whitefield, Trainee Clinical Psychologist, as part of her training to become a Clinical Psychologist. Professor Bill Lindsay and Dr Karen McKenzie, both Clinical Psychologists, will supervise her. All contact details are provided at the end of this information sheet.

What will be involved if I agree to take part?

If you decide to take part, you will be given this information sheet to keep and will be asked to sign a consent form.

Then you will be asked to complete a visual task. The visual task will involve you looking at pictures of people and objects that will be shown on a computer monitor. You will be asked to look for changes that occur in the pictures. For example, you will be shown 2 pictures that are exactly the same expect for one thing. You will be required to try to identify what is different in the picture. It will take between 15-20 minutes to complete the task.

What if something goes wrong or I change my mind?

You are free to stop the task at any point without having to give a reason.

If you are unhappy about how this research has been carried out you can make a complaint by following the normal NHS complaints procedure.

Will my information be kept anonymous and confidential?

Yes. All the information about you and your performance on the visual task will be anonymised and kept strictly confidential. The information will be kept on one computer in the Clinical Psychology Department and it will be password protected. The information will be destroyed after 5 years. This is in line with the requirements of the data protection act.

What will happen to the results of the research study?

After analysis of the results, the research will be written up as part of Elaine Whitefield's training to become a Clinical Psychologist. A summary of the study results will be sent to you if you wish them.

Who do I contact for further information?

If you have any questions or need any further information about this study, please contact any of the individuals below:

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Appendix 3

Information Sheet for Carers and Parents

Study Title: Investigation of attentional abilities of men

I would like to invite your child or the person you care for to take part in a research study. This research has ethical approval from an NHS Research and Ethics Committee and from the Tayside Research and Development office. The study is being carried out by Dr Elaine Whitefield, Trainee Clinical Psychologist, as part of her doctoral qualification in Clinical Psychology from Edinburgh University. Professor Bill Lindsay and Dr Karen McKenzie supervise her.

What is this study about? Why is it important?
The aim of this study is to find out more about how men pay attention to different visual tasks. Research in the past has shown that different groups of people (e.g. children and adolescents) focus on different parts of a visual task. For example, if children are shown 2 identical pictures of people playing football, but one of the pictures has the football missing, children who like football will be quicker to detect this change in the picture than people who do not like football. This study hopes to learn if this is also true for adult men and other types of interests that they might have. It is hoped that by carrying out this research it will lead to a better understanding of how different men process information. This will in turn help us when trying to think of appropriate and suitable ways to pass information on to different groups of individuals in a way that they will fully understand.

Taking part in the study
Participation in the study is voluntary and I have enclosed a copy of the consent form that I will go through with each participant who volunteers to participate in the study. They will be given the opportunity to ask questions and have a go at the task before deciding if they wish to take part in the study. They can stop at any point during the study without having to give a reason and their performance on the visual task will be anonymised and kept strictly confidential.

What will be involved if participants agree to take part?
They will be asked to complete a visual task. This task will involve participants having to spot the difference in a picture. For example, they will be shown 2 pictures exactly the same except for one thing. Participants will be required to identify what is missing from the picture (e.g. a table, chair or flower). It will take a maximum of 15 minutes to complete the task.

Participation in this study is greatly appreciated and if you have any questions or need further information about this study, please contact any of the individuals below:

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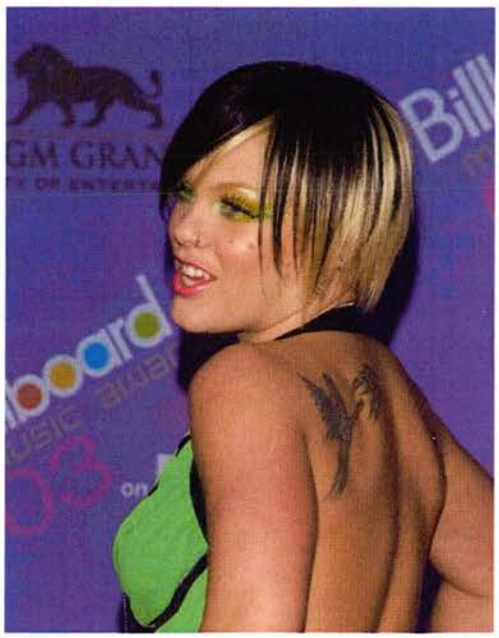
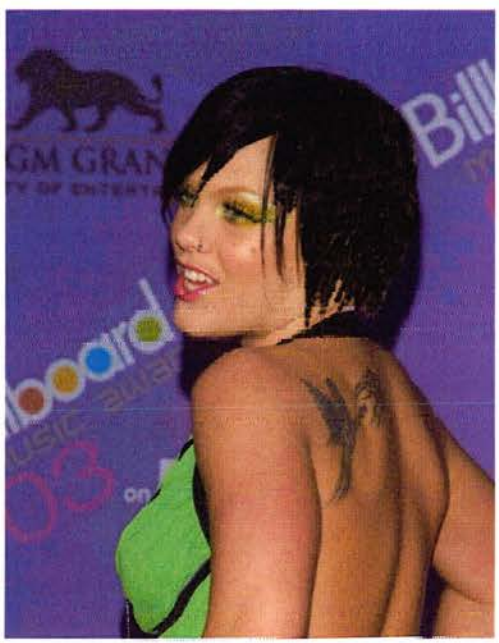
Appendix 4

Examples of Colour Versions of Male and Female Stimuli with Corresponding Sex-Related and Neutral Related Changes.

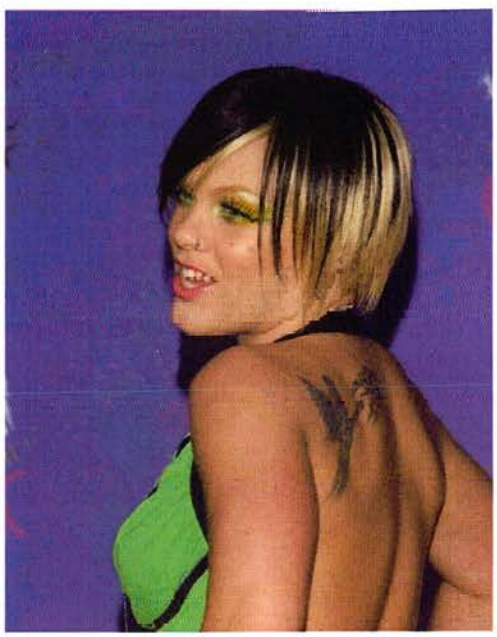
Example of Female Stimulus:



Original Stimulus



Sex-Related Change



Neutral Related Change

Example of Male Stimulus:

Original Stimulus

Sex-Related Change

Neutral Related Change

Appendix 5

Colour Version of Stimuli used in Second Practice Trial

Original Stimulus

Changed Stimulus

Appendix 6

Participant Consent Form

Have you had the project information sheet read out to you?	Yes/No
Have you been able to ask questions about the project?	Yes/No
Have you had satisfactory answers to all your questions?	Yes/No
Have you had enough information about the project?	Yes/No
Do you understand that taking part in the project is voluntary (you decided if you want to, you can say no?)	Yes/No
Do you understand that if you say yes, you can change your mind?	
-at any time	Yes/No
-and you do not have to have a reason for changing your mind	Yes/No
-and this won't affect your right to have medical and/or psychological help in the future	Yes/No

I agree to take part in the project

Signature..... Date .....

Appendix 7

Instructions presented on the computer screen at start of study:

Welcome to the experiment.

You will see a scene followed by a blank, then the scene again but with a change to the image.

Your task is to determine when you see the change in the picture.

Press the "Space Bar" and say as soon as you notice the change.

PRESS THE SPACE BAR TO BEGIN

Appendix 8

Source Table of the Analysis of Variance.

2x3 Analysis of Variance

Source:

	Group	N	Mean	SD
Neutral Related	Sex offenders (LD)	17	28.4990	16.18428
Change	Non-offenders (LD)	17	29.8260	12.52376
	Non-offenders	17	19.8212	13.88794
Sex-Related	Sex offenders (LD)	17	27.5554	15.31140
Change	Non-offenders (LD)	17	31.5438	13.38224
	Non-offenders	17	15.8472	10.82493

FACTOR:	group	change	subjects
LEVELS:	3	2	51
TYPE:	BETWEEN	WITHIN	subjects

Source	SS	df	MS	F	p
Change	29.009	1	29.009	0.237	0.629
Error	5875.589	48	122.408		
Group	3129.134	2	1564.567	6.055	0.005
Error	12402.050	48	258.376		
change*group	137.876	2	68.938	0.563	0.573
error	5875.589	48	122.408		