Emotional Perception and Regulation and Their Relationship with Challenging Behaviour in People with a Learning Disability

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Acknowledgements

Abstract

Objectives: This study explores the relationships between challenging behaviour, emotional recognition, alexithymia and cognitive emotional regulation strategies in a population of people with learning disabilities. The Emotional Recognition Questionnaire was developed to measure an individual's ability to identify the emotions they would feel in a given situation. One objective of this study was to assess the validity and reliability of the tool.

Methodology: Cross-sectional data was collected from 96 participants with a learning disability and 95 of their carers. The service user participants completed the Emotional Recognition Questionnaire (ERQ), and adapted versions of the Alexithymia Questionnaire for Children (AQC) and the Cognitive Emotion Regulation Questionnaire for Children (CERQ-k). Carer participants completed the Checklist for Challenging Behaviour (CBC) and the Observer Alexithymia Scale (OAS). Correlational analyses were computed to identify relationships between the variables and linear regression was used to identify the predictive value of variables in relation to the main outcome variables of challenging behaviour frequency, management difficulty and severity. Finally, a between group analysis was conducted to compare the emotional recognition abilities of people with high frequency challenging behaviour with those with low or no challenging behaviour. Analyses were conducted to test the hypotheses.

Results: No relationship was found between the ERQ and the AQC so the construct validity of the ERQ was not supported. The results highlighted significant negative associations between emotional recognition abilities and challenging behaviour frequency and management difficulty. Significant differences in emotional recognition abilities were found between people with high frequency challenging behaviour and those with low or no challenging behaviours. Observer rated alexithymia was significantly related to challenging behaviour frequency, management difficulty and severity. Cognitive emotional regulation strategies and service user measured alexithymia were not, however, related to challenging behaviour. Other relationships were found between service user rated alexithymia and the

cognitive emotional regulation strategies of Catastrophizing and acceptance, and emotional recognition was negatively related to self-blame.

Conclusions: Overall, the study suggests that emotional recognition and observer related alexithymia are important in understanding challenging behaviour presented by people with a learning disability. This has implications for clinical practice and further research. Additional research needs to be conducted to evaluate the construct validity and test-retest reliability of the Emotional Recognition Questionnaire.

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Chapter 1
Introduction

1.2 Overview of Literature Review

It has been argued that before an individual can accurately report on their own emotional state they must be able to recognise different emotions and to understand what it means to be happy, sad, frightened or angry (Reed and Clements, 1989). If one is unable to interpret emotional stimuli, socio-emotional development may be impeded and anti-social or challenging behaviour, withdrawal or mood disorders may emerge (Zaja & Rojahn, 2008). This study aims to consider the relationship between emotional perception and challenging behaviour in people with mild to moderate learning disabilities.

The thesis will examine three elements of emotional perception. These are emotional recognition, alexithymia and cognitive emotional regulation. The introduction will provide definitions of relevant concepts before reviewing previous research on the emotional perception abilities of people with learning disabilities. The evidence relating to emotional perception and challenging behaviour in non-learning disabled populations will then be reviewed. Many of the studies reviewed involve forensic populations because behaviours that are related to forensic concerns, and especially acts of physical aggression, are arguably similar to the challenging behaviours exhibited by many people with a learning disability. However, it is recognised that assuming such a parallel is contentious, and the possible objections to comparing forensic and learning disabled populations will be discussed. Consideration will also be given to the difficulties involved in using self-report measures with people with learning disabilities. A systematic review of the literature relating to the relationship between challenging behaviour and emotional perception in people with a learning disability will then be conducted. Inclusion and exclusion criteria will be specified and the review process and quality framework will be explained. Finally, the rationale for the current study will be discussed and the aims and hypotheses of the study specified.

1.2. Definitions and Inclusions

1.2.1. Learning Disability

People with a learning disability constitute approximately 2% of the general population (approximately 985,000 people in England), this number is an estimate as no reliable figures are available of the prevalence within the United Kingdom (Emerson & Hatton, 2008). Of this number, 828,000 are adults and only 177,000 are known users of learning disability services (0.47% of adult population) (Emerson & Hatton, 2008). Across Wales, 13,500 people with a learning disability are registered with Social Services Departments. However, it is likely that this represents a substantial underestimate of the total population which is also believed to be around 2% of the general population (L.Wigley, Mencap Cymru, Personal Communication, 8th March 2013). Two per cent of the general population would be 60,129 people with a learning disability in Wales.

The World Health Organisation's (WHO) International Classification of Disease (ICD-10) defines learning disability as:

"A condition of arrested or incomplete development of the mind, which is especially characterised by impairment of skills manifested during the developmental period, which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities" (WHO, 1996).

The British Psychological Society (BPS) (2000) follows the diagnostic manuals in defining learning disability and provides guidance on assessment. It identifies three core criteria for diagnosis of a learning disability. These are:

- Significant impairment of intellectual functioning;
- Significant impairment of adaptive/social functioning;
- Age of onset before adulthood.

All three of these criteria must be present for someone to be considered to have a learning disability. These criteria are often set as eligibility criteria to

access specialist learning disability services.

The ICD-10 (WHO, 1996) also differentiates between degree of learning disabilities whereby people with a mild learning disability are identified as having an intelligence quotient (IQ) of between 50 and 69, those with a moderate learning disability usually have an IQ between 35 and 49, those with a severe learning disability having an IQ between 20 and 34, and finally, those with a profound learning disability possessing an IQ under 20.

Although the use of IQ has been criticised as an invalid and unreliable indicator of learning disability (Webb & Whittaker, 2012) it is still usually enshrined within eligibility criteria for services and, although not often measured unless eligibility is contested, may well be a criterion for exclusion from services for those with an IQ of over 70, regardless of their needs. Within clinical practice assessment of the degree of learning disability is usually a clinical judgment based on the functional, social and academic abilities of individuals. For the purpose of this thesis, the presence of mild or moderate learning disabilities will be determined by the services involved in an individuals care and support, and, participants will be identified to the researcher as being from that population.

The language used to describe learning disability has evolved over time and included terms such as mental retardation, learning difficulty and intellectual impairment. Most of the terms can be used interchangeably however subtle differences may exist in meaning (Emerson & Heslop, 2010). Some of the terms would be deemed inappropriate and offensive to use in the current social climate (e.g. mental retardation) (Emerson & Heslop, 2010), however, in relation to the literature search, it was important to ensure all relevant studies were sourced, whenever they were written.

1.2.2. Challenging Behaviour

Challenging behaviour can be defined as:

"Culturally abnormal behaviour of such an intensity, frequency or duration that the physical safety of the person or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities" (Emerson, 1995).

Research suggests that the prevalence of challenging behaviour within the learning disability population is between 10 and 15% (Emerson *et al,* 2001; Lowe *et al*, 2007). Within South Wales, prevalence of challenging behaviour was identified as 10% (range 5.5% - 16.8%) and more severe challenging behaviour as 8% (range 4.58%- 13.8%) within a learning disability population (Lowe *et al*, 2007). These findings are similar to those of Emerson *et al* (2001) who found the prevalence of challenging behaviour within an English learning disabled population as 10%- 15% and more serious challenging behaviour as 5%-10%. Both these studies used the same criteria which were based on work by Kiernan *et al* (1997) to identify serious challenging behaviour. The criteria identified were: Challenging behaviour happens at least once a day; the person is usually prevented from taking part in activities because of their behaviour; the person usually requires physical intervention by staff; the behaviour usually leads to major injury or damage (to staff, self or others). At least one of these criteria had to be met for someone to be described as having more severe or demanding challenging behaviour. Those with less demanding or severe behaviour did not meet any of these criteria but still showed behaviour which was regarded as representing a serious management problem, or would do if not for controlling measures within the person's environment (Emerson *et al,* 2001). Lowe *et al* (2007) broke these criteria down further into: "serious", "serious but controlled", "moderate", "lesser" and "none" which gives better insight into the broad spectrum of challenging behaviours that can be presented.

Of adults who were rated as having challenging behaviour at "serious" or "serious but controlled" levels, 51% showed serious or controlled aggression, 32% showed destructive behaviours, 35% showed self-injurious behaviours and 64% showed other difficult or disruptive behaviours. The majority showed multiple behaviours and topographies within each behavioural category (Lowe *et al,* 2007). Aggression included a range of behaviours harmful to others including hitting others, verbal abuse and using weapons. Self-injurious behaviour included a range of behaviours such as hitting head with hand, biting self, pica and air swallowing. Destructive behaviour included destroying personal property, furniture or items in the community. Finally the other difficult or disruptive behaviour included non-compliance, absconding, over-activity and sexualised behaviours. Of those who presented with severe or controlled challenging behaviour, 63% were male, 40% were aged between 12 and 35 years old, 30% were aged between 36 and 49 years old and 18% were over 50 years old (Lowe *et al,* 2007).

1.2.3. Emotional Recognition

"Emotions are important functions in our daily lives. They signal when personal concerns are at stake, motivate us to attain goals and teach us which situations should be avoided or approached" (Frijda, 1986). Emotional recognition involves the discrimination, identification, interpretation and labelling of emotional expressions (Bullock & Russell, 1984). Across different cultures people are able to identify the emotions of happiness, sadness, anger, fear, surprise and disgust from pictures (Ekman, 1972). Emotional recognition ability has been tested in a number of ways with people with learning disabilities including: Matching two faces expressing the same emotion, choosing an identified emotion from a set of pictures, matching words with pictures, matching emotional sounds with pictures or words, rating emotional intensity and selecting an appropriate emotional response to situations or stories (Moore, 2001). These different test procedures assess different elements of emotional recognition and have a variety of information processing demands (see Moore, 2001). Often these test procedures assess the ability to recognise an emotional expression in another person. The study

reported in this thesis, however, asked individuals how they would feel in specific emotionally arousing situations and thus focussed on the ability of people with a learning disability to recognise or perceive their own emotions.

1.2.4. Alexithymia

Alexithymia has been characterised as a deficit in emotional intelligence. It is the inability to differentiate, describe and label one's emotions and literally means "no words for feelings" (Bagby *et al*, 1994; Sifneos, 1973; Taylor *et al,* 1997). Features of alexithymia include difficulties in identifying and distinguishing between feelings and bodily sensations, difficulties in labelling and communicating emotional experience, and externally oriented thinking (Taylor *et al,* 1997). Research findings suggest that alexithymic individuals have limited awareness and capacity to communicate feelings which interferes with their capacity for intimacy and emotional connectedness with others (Paivio & McCulloch, 2004). The alexithymic person may be constricted, anxious, rigid and withdrawn, they may lack humour, imagination and insight, and they may take a highly pragmatic approach (Haviland *et al,* 2000). Some people tend to express tension through bodily or psychological symptoms. Alexithymia has been found to be associated with substance misuse issues, various mental health difficulties (Fukunishi *et al,* 1999), physical ill health (Taylor and Bagby, 2004) and personality disorder (Berenbaum, 1996).

1.2.5 Cognitive Emotional Regulation

"Emotion regulation influences the presence or intensity of emotions to facilitate responses that are likely to produce productive and contextually appropriate action" (McClure *et al,* 2009). It is the appraisal of the situation that culminates in the emotional and behavioural response (McClure *et al,* 2009). "Cognitive emotion regulation" is a term that describes the appraisal element. Cognitive coping strategies are employed after experiencing negative events (Garnefski *et al,* 2002). The focus is on the thoughts an individual may have after an event from which one can identify a general

cognitive style. This is based on the premise that cognitions are important in enabling individuals to regulate their emotions.

Garnefski *et al* (2002) identify a number of conscious cognitive processes which will have an impact on emotion regulation if employed, these are: Self-blame, acceptance, positive refocusing, refocusing on planning, catastrophizing and other blame. These will now be individually defined, based on the "Cognitive Emotional Regulation Questionnaire" manual (Garnefski *et al,* 2002)

1.2.5.1. Self- Blame

Self-blame involves holding yourself responsible for what you have experienced and having a preoccupation with your own mistakes. If someone uses this thinking style they may feel guilt. A high score on this may be linked to emotional difficulties.

1.2.5.2. Acceptance

Acceptance relates to the person resigning themselves to the situation and accepting it. They believe it cannot be changed and that life goes on. This can be both positive and negative. It is usually a good process for most events, but it may, however, result in feelings of resignation, or a low score may intimate that the person struggles to accept things and to move on.

1.2.5.3. Positive Refocusing

The positive refocusing style involves thinking about positive things instead of the event in question. This is a positive coping strategy and is related to well-being.

1.2.5.4. Refocus on Planning

The refocus on planning approach involves thinking about which steps to take to deal with an event or change a situation. Again this is considered to be a positive coping strategy.

1.2.5.5. Catastophizing

Catastophizing refers to thoughts about how terrible the situation is and the idea that what they have been through was the worst thing that can happen to a person, much worse than others experience. This is viewed as a negative coping strategy and may be linked to emotional problems.

1.2.5.6. Other-Blame

The other-blame approach is about putting the blame on other people and holding them responsible for events. This can be either positive or negative. A high score may indicate difficulties with socio-emotional abilities.

1.2.6. Model Illustrating the Proposed Relationship Between the Variables.

In order to explore the emotional factors impacting on challenging behaviour in people with a learning disability and provide clarity with regard to proposed relationships between the variables a model is presented in Figure 1.1.

Figure 1.1. Model Identifying the Proposed Relationship Between the Variables.
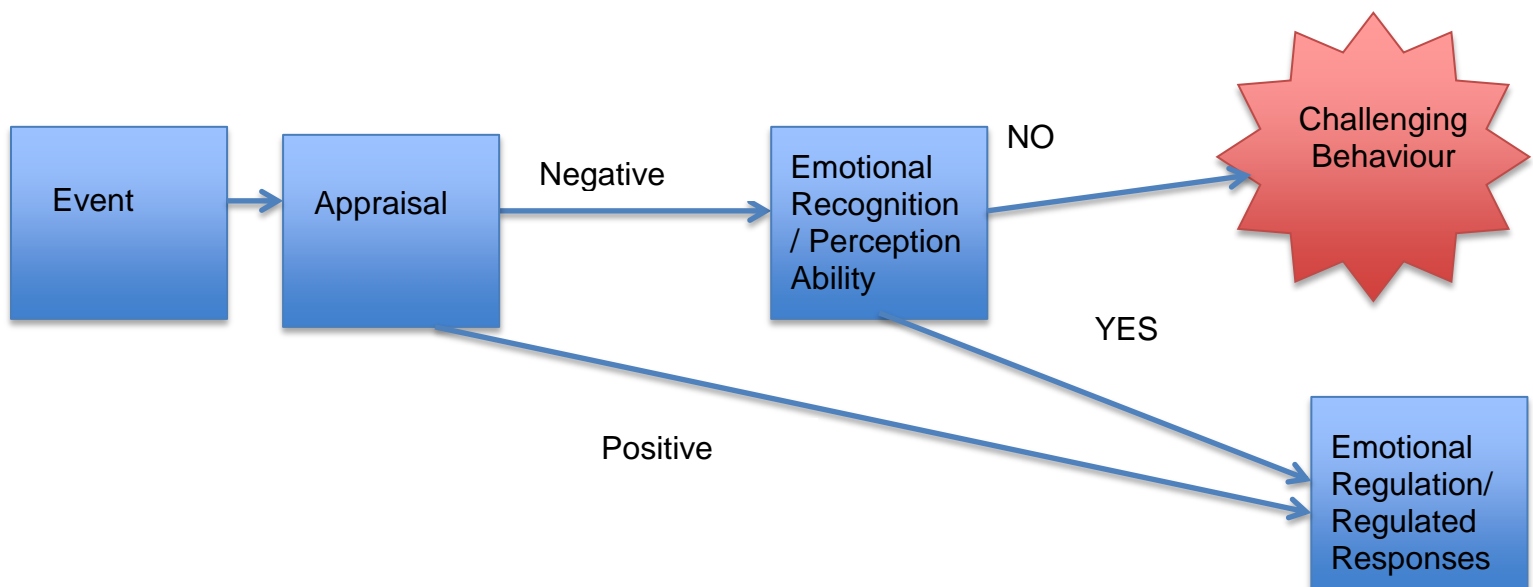
1.3. Emotional Perception and Regulation Abilities of People with a Learning Disability.

1.3.1. Emotional Development in People with a Learning Disability

People with learning disabilities may be more vulnerable to a disrupted emotional development. As children grow and develop, their emotional expression, recognition and regulation skills develop. Infants are able to express the basic emotions, but, they rely on their parents and caregivers completely to regulate these for them. When a child becomes distressed, a carer will typically soothe and cuddle them (McClure *et al*, 2009). The child develops an awareness of specific emotional states, accepts them and is able to identify them with the words given by their parents (Hughes, 2009). As language develops so does emotional regulation. Children are able to talk or think about their emotions. Also, peers are important in the child developing an understanding of how emotional regulation can maintain or disrupt social

relationships (McClure *et al,* 2009). The emotional development of people with learning disabilities may be compromised due to:

- People with learning disabilities have limited ability in interpreting internal states and, as a consequence, they have a limited awareness and understanding of their emotional experience (Sovner & Hurley, 1986; McClure *et al*, 2009).

- People with learning disabilities experience difficulties with expressive and receptive language. These may lead to problems relaying information about their emotions and seeking support and soothing from others (Sovner & Hurley, 1986; McClure *et al*, 2009).

- Children and adults with learning disabilities struggle to make meaningful friendships and often experience loneliness inhibiting their capacity to learn emotional recognition and regulation skills from peer interactions (Arthur, 2003).

- Compared to parents of normally achieving children, parents of children with learning disabilities have higher levels of anxiety (Margalit & Heiman, 1986); perceive their families as more chaotic (Amerikaner & Omizo, 1984), and report higher levels of conflict among family members (Margalit & Almougy, 1991). These factors may impact on the parent's ability to regulate the emotions of their child effectively.

- People with learning disabilities have been found to be at increased risk from maltreatment, abuse, neglect and deprivation, which is likely to interfere with emotional development and create emotional problems (Emerson *et al,* 1994; Janssen *et al*, 2002; Kendall-Tackett *et al,* 1993; Hughes, 2009).

The risk of emotional developmental disruption is evidenced by studies showing emotional problems as being three to four times more prevalent in the learning disability population than in the general population (Prosser, 1999; McClure *et al*, 2009). Mental health difficulties have been found in between 20% and 39% of a population of people with learning disabilities (Hatton & Taylor, 2005).

1.3.2. Emotional Recognition and People with Learning Disabilities

Studies which have focussed on the ability of people with learning disabilities to recognise emotions have found them to be significantly impaired, compared to non-learning disabled control groups, in identifying the emotions expressed in Ekman and Friesen's (1975) normed photographs (Owen *et al*, 2002; Harwood *et al*, 1999). These studies, however, have been criticised for not employing a control group who were matched in relation to the IQ of participants (Moore, 2001). McAlpine *et al* (1991) and McAlpine *et al* (1992) did employ a control group of children matched for IQ and gender and found that adults with mild and moderate learning disabilities were significantly less accurate at recognising emotions. The success rate of those with a learning disability was 51% compared to 81% of the child controls. In a study of people with Down's Syndrome, Hippolyte *et al* (2009) found that, in comparison with a control group of children matched for vocabulary, adults with Down's Syndrome scored significantly lower for all expressions except surprise in photographs of children's faces. Most authors reporting on this have found that happy was the emotion participants found easiest to identify, followed by sad (Rojahn *et al,* 1995; Joyce *et al,* 2006). This was also the case when Makaton symbols were used instead of photographs (Oathamshaw & Haddock, 2006). There is a lack of consistency across studies regarding which emotion people with learning disabilities find most difficult to recognise, but there is some consensus that they find identifying anger, fear, disgust and surprise more difficult (Hetzroni & Oren, 2002; Gray *et al,* 1983; Harwood *et al,* 1999; Owen *et al,* 2002).

Of special relevance to this thesis are the abilities of individuals to recognise how they would feel in different situations or identifying emotions in context. Hippolyte *et al* (2009) found that participants with Down's Syndrome were much better than children, matched for receptive vocabulary, at attributing emotion to individuals within context. In fact they found no significant differences between the Down's Syndrome group and the control group except for attribution of the emotion sadness. Harwood *et al* (1999) found that participants were significantly better at identifying emotions in moving displays

of sadness and anger than static pictures. The researchers suggested that this was due to the fact that the moving pictures were more like real life expressions of emotion. In Owen *et al's* (2002) study, participants were asked to recount an emotional experience of their own when they had been happy, sad, surprised, disgusted, fearful or angry. The results showed no difference between people with learning disabilities and the non-learning disabled control group. When asked how they would feel in response to different emotional stories, people with learning disabilities scored lower than controls but this failed to reach significance. These studies seem to indicate that people with learning disabilities do better when presented with real life expression of emotion or when context is provided. It should be noted, however, that both Owen *et al* (2002) and Harwood *et al* (1999) employed very small samples, so there is not enough power to draw firm conclusions from these studies. In addition, neither employed IQ or receptive language matched control groups.

Reed and Clements (1989) developed an assessment format that has subsequently been used in a number of studies. Initially, participants were asked to discriminate between happy and sad cartoon pictures, and they were then asked to label the emotion being expressed by the experimenter's face. Participants were then shown a sequence of three pictures with a descriptive sentence and asked how the principal character feels. They are shown six stories in total, three happy stories and three sad. Finally, participants are asked how they would feel in a difficult situation. To pass this assessment procedure participants need to give an errorless performance throughout. Joyce *et al* (2006) in a study with a broad sample of people with learning disabilities, with no exclusion criteria applied to participation, found that half of the participants passed the Reed and Clements assessment. McEvoy *et al* (2002), similarly, found that half of their participants passed the Reed and Clements assessment. However, when looking at a picture of a funeral, 76% of the participants were able to give appropriate emotional responses identifying the feelings of those at the funeral. The Reed and Clements assessment is, however, restricted to happy and sad emotions. Studies that have employed the Reed and Clements assessment, and others focussing on contextual understanding of emotion (e.g. Simon *et al,* 1996), have tended to

look at the relationship between emotional recognition and other factors, for example intelligence quotient (IQ).

Researchers have consistently found that the emotional recognition skills of people with a learning disability are related to their level of intelligence or IQ. Studies have found significant differences in emotional recognition skills between those with mild and moderate learning disabilities (Carvajal *et al,* 2012 ; Gray *et al,* 1983; Hetzroni & Oren, 2002; McAlpine *et al,* 1991; McAlpine *et al,* 1992). Authors have also found significant positive correlations between IQ and emotional recognition skills (Simon *et al,* 1995; Simon *et al,* 1996). In addition, receptive language ability has been found to be significantly correlated with emotional perception skills (Joyce *et al,* 2005; Hippolyte *et al,* 2009; McEvoy *et al,* 2002; Oathamshaw & Haddock, 2006; Reed & Clements, 1989). Simon *et al* (1996) found that increasing age in adults with a learning disability was associated with decreasing number of correct responses in emotion matching trials, but this is an area that should be further investigated. A number of studies, particularly older ones, raise the possibility that the restricted life experiences arising from long stay institutionalisation may have negatively impacted on emotional awareness difficulties experienced by people with a learning disability (Reed & Clements,1989; Iscoe & McCann, 1965; McAlpine *et al,* 1992). It should be noted, however, that social skills, quality of life and place of residence (community vs. institution) have not been found to be related to emotional recognition skills (Simon *et al*, 1995; Rojahn & Warren, 1997; Hetzroni & Oren, 2002).

It has been hypothesised that people with learning disabilities who experience high levels of emotion have poorer emotional recognition skills, possibly leading to more challenging behaviour (Woodcock & Rose, 2007; Hayes *et al,* 2010). There have, however, been few studies and mixed results in relation to this. Rojahn and Warren (1997) found that people with learning disabilities presenting with depression had significantly poorer emotional recognition abilities than the non-depressed control group. However, Woodcock and Rose (2007) examined the relationship between emotional recognition and high

levels of anger in people with a learning disability. They found that self-reported anger was not related to poor emotional recognition as expected. The hypothesis that those with more self-reported anger were more likely to interpret facial expressions in a more negative and hostile way was not supported either. Further studies exploring the relationship between emotional recognition and challenging behaviour will be explored within the systematic review.

A number of methodological flaws have been identified within these studies. Authors have criticised studies for failing to use control tasks, making it difficult to ascertain whether it is a general visuo-perceptual, information processing or language difficulty, or a specific impairment of emotional recognition that is being observed (Rojahn *et al*, 1995; Moore, 2001). None of the studies within this review utilised a control task except Harwood *et al* (1999) and they did not report comparative data between control and experimental stimuli. A number of studies have not excluded individuals with autism, which may be important because people with autism have well documented deficits in emotional processing including emotional recognition. Inclusion of this client group would therefore be very likely to have an impact on study outcomes (Owen *et al,* 2002). Only Oathamshaw and Haddock (2006) and Owen *et al* (2002) have identified a diagnosis of autism as an exclusion criteria for participation. Rojahn *et al* (1995) identify the fact that a number of studies have used tests or measures that have not been validated or assessed for reliability, so that the psychometric properties and value of these tests are not known (for example Owen *et al*, 2002). Finally, within this review I have included a study by Hippolyte *et al* (2009) which focussed on individuals with Down's Syndrome compared to a control group. Zaja and Rojahn (2008) point out that one of the main shortcoming of syndrome specific studies is that their findings can only be generalised to people with that genetic condition and this leaves out a large proportion of people with learning disabilities. It should be noted, however, that studies have found no significant differences on performance on emotional recognition tasks between people with Down's Syndrome and those with moderate learning

disabilities on emotional discrimination and identification tasks (Carvajal *et al,* 2012).

1.3.3. Alexithymia and People with Learning Disabilities

Researchers have not yet explored the alexithymia concept with people with learning disabilities. Mellor and Dagnan (2005) argue that there is a strong case for research in this area due to parallels between the alexithymia construct and the emotional recognition difficulties (as outlined above) and external cognitive styles that have been identified in people with learning disabilities. They also point out that some of the factors associated with the development of alexithymia (for example, trauma and abuse, poor bonding and poor attachment in infancy) are often present in the lives of people with learning disabilities (Mellor & Dagnan, 2005). Researchers have found a negative correlation between alexithymia (as measured by the Toronto Alexithymia Scale) and verbal IQ scores in offender populations. If people with low verbal IQ's score higher on alexithymia measures, this again suggests its relevance to people with learning disabilities (Louth *et al,* 1998; Kroner & Forth, 1995).

1.3.4. Cognitive Emotional Regulation and People with Learning Disabilities

Although no studies have focused specifically on cognitive emotional regulation within the learning disabled population, a number of studies have successfully employed questionnaires to examine the cognitive processes of people with learning disabilities. Bramston and Baker (1997) used the Cook and Medley Hostility Scale to assess hostile attributions in people with a learning disability. Their findings were consistent with studies of non- learning disabled populations, that those who are chronically aggressive or angry have hostile attitudes predisposing them to view events as more provoking. Nezu *et al* (1995) used the Automatic Thoughts Questionnaire and the Hopelessness Scale for Children to access the cognitions of people with learning disabilities in relation to depression. They found that both of these scales were

significantly correlated with the depression scales. They also found that depressed individuals reported significantly higher frequencies of negative automatic thoughts and hopelessness than a non-depressed learning disabled control group. They argue that these results suggest that the cognitive processes underlying depression in a learning disability population are similar to those in a non learning disabled population. Similarly Glenn *et al* (2003) utilised the Automatic Thoughts Questionnaire and the Cognitions Checklist and identified significant correlations between these measures and anxiety and depression, consistent with those shown in the general population. All of these studies made adaptations to the questionnaires to make them more accessible to people with learning disabilities. The results indicate the validity and reliability of self-report measures with regard to cognitions in a learning disabled population.

1.3.5. Self-Report Data Collection within a Learning Disability Population

In the past, researchers have questioned whether people with learning disabilities are capable of self-report in relation to their emotions and cognitions (Bramston & Baker, 1997). Concerns have been raised concerning the difficulties in obtaining reliable and valid responses, a tendency for acquiescence and social desirability and observations that language and communication skills are directly related to IQ (Bramston & Baker, 1997). Heal and Sigelman (1995) suggest that, due to deficient cognitive, verbal and social skills, people with learning disabilities may be especially prone to response biases.

Despite these difficulties a number of studies have employed self-report measures that provide valid and reliable data from people with learning disabilities (Bramston & Baker, 1997). Stenfert-Kroese (1997) recognises that self-report formats have been useful in eliciting information about emotional distress from people with learning disabilities. Bramston and Baker's (1997) study employed a lie scale to assess any tendency towards socially desirable responses and found that the mean Lie Scale scores fell within the normative range for a non learning-disabled population. Lindsay *et al* (1994) found good

convergent validity across a number of self-report measures for emotional problems in people with a learning disability.

Various authors have suggested ways in which assessment and intervention can be improved with people with learning disabilities. Heal and Sigelman (1995) suggest that acquiescence can be circumvented by introducing either/ or or multiple choice formats. They suggest that introducing picture representations of the choices can be helpful. Stenfert- Kroese (1997) also recommends the use of pictures as well as oral presentation and open ended questions. Heal and Sigelman (1995) showed that responses can be systematically biased by question wording, unintentionally leading participants, and stressed the need for researchers to be vigilant to this. Lynch (2004) suggests making necessary adaptations including simplifying language, checking understanding, using concrete language, using real-life situations and examples, and using visual materials.

Bramston and Fogarty (2000) found that people with a learning disability were able to distinguish between emotional states, whilst carers were not able to distinguish between stress, anger and depression in service users. Carers were more likely to rate service users anger and stress levels as high and this was thought to represent an inclination for them to report pathology. Similarly, Lewis and Morrissey (2010) found little relationship between self and informant ratings of emotional disorders in a forensic sample of people with learning disabilities, with the exception of anxiety. They concluded that self and informant measures yielded different perspectives about a range of difficulties. These differences emphasize the need to use self-report measures with people with learning disabilities to gain an accurate account of their emotional understanding (Lewis & Morrissey, 2010). This also constitutes best and most inclusive practice.

1.4. The Relationship Between Challenging Behaviour and Emotional Perception and Regulation Abilities

In non-learning disabled adult populations, challenging behaviour is not generally used as a construct. For the benefit of this literature review, studies included have focused on populations who present with challenging behaviours (e.g. offenders, juvenile delinquents). Alternatively, studies may have measured problem behaviours including self-harm, violence, aggression, destructiveness and delinquency. Many of the behaviours described as challenging behaviour within a learning disability population would fall into these categories if they were presented within the general population. Wheeler *et al* (2009) point out that the distinction between what is termed 'anti-social' as opposed to 'challenging' or 'offending' behaviour in people with a learning disability is problematic because each term can be applied to a broad and similar range of behaviours. Typically, they argue, where an incident is handled by the criminal justice system it is classed as offending. In people with mild to moderate learning disabilities there can be considerable ambiguity regarding which behaviours should be treated as 'challenging' as opposed to 'offending' and reported to the police (Wheeler *et al,* 2009). The purpose of this section is to identify relevant literature regarding the relationship between challenging behaviours and emotional perception or cognitive emotional regulation.

1.4.1. Emotional Recognition and Challenging Behaviour

Difficulties in emotional recognition have been observed in a number of clinical and forensic populations who present with challenging behaviours. Some studies have focussed on youths who exhibit problem behaviour. McCown *et al* (1986) found that 40 incarcerated male delinquent youths were less accurate than controls at identifying emotional expressions, and particularly, in identifying the emotions of sadness, surprise and disgust. Downey *et al* (2010) studied the mediating effects of emotional intelligence on problem behaviours in 145 high school students (41% male). Emotional intelligence is a multi-faceted construct that encompasses assertiveness, self-

regard, empathy, social understanding and impulse control, amongst others. The scales of interest here measure "Emotional Self- Awareness", "Emotional Recognition and Expression" and "Understanding of Emotion". Downey *et al* (2010) found that poor emotional recognition was significantly related to rule-breaking behaviour and overall externalising behaviour. Also, poor understanding of emotions was significantly related to aggression and externalising behaviours overall. "Externalising behaviours" is a term that refers to disturbances in the regulation of behaviour and acting out behaviours including rule breaking, aggression and delinquency (Hughes & Gullone, 2008). One study looked at the relationship between emotional intelligence and self-harm in a large group of high school students (39% male), and found a significant negative correlation between self- harm and emotional intelligence. However, the authors did not report correlations between self-harm and individual components of emotional intelligence (Mikolajczak *et al,* 2009).

Comparisons have also been made between the emotional recognition skills of offenders versus controls. In a study of male offenders, Hoaken *et al* (2007) found that, compared to non-violent offenders and controls, violent offenders were significantly poorer at the interpretation of facial expressions of emotion than non-violent offenders and controls. Blair *et al* (2004) looked specifically at incarcerated men who either scored high or low on a measure of psychopathy. They found significant group differences in recognising facial expressions of fear, with psychopathic individuals being more likely than controls to make errors for the fearful expressions. In their meta-analysis of 20 studies, Marsh and Blair (2008) found a consistent and robust link between anti-social behaviour and impaired recognition of facial affect. They showed that relative to comparison groups, anti-social populations showed significant impairments in recognising fearful, sad and surprised facial expressions. Deficits in recognising fear were significantly greater than deficits for the other emotional expressions. The anti-social participants were not, however, impaired in their recognition of anger, happiness or disgust. This meta-analysis included mostly incarcerated populations of individuals described as psychopathic, conduct disordered, un-socialised, abusive or criminal (Marsh &

Blair, 2008). Interestingly, this meta-analysis did include two studies of learning disability populations that will be further discussed within the systematic review (Matheson *et al,* 2005; Walz *et al,*1996).

Research has also been conducted to assess the emotional recognition ability of men who perpetrate domestic violence. Marshall and Holtzworth-Munroe (2010) found that intimate partner violence was associated with mis-identifying wives' expressions of happiness as a negative emotion. In addition, mis-identification of fear as neutral in pictures of their wives or other females was also associated with intimate partner violence. Winter *et al,* (2004) measured emotional intelligence in a group of 44 men who perpetrated domestic abuse. The domestic abusers scored significantly lower than the general public on overall emotional intelligence. Low emotional intelligence was related to high scores on the "Propensity for Abusiveness Scale", indicating that a deficit in emotional intelligence may be related to intimate partner violence. Perpetrators of domestic violence scored low on the "Emotional Self- Awareness sub-scale" and scores on this scale were negatively correlated with scores on the "Propensity for Abusiveness Scale". Marshall *et al* (2011), in their study of undergraduate students (30% male), found that negatively biased ratings in terms of intensity of facial expressions of anger, sadness and disgust mediated the relationship between depressive symptoms and the perpetration of psychological aggression in intimate relationships.

Several studies have observed that people with a diagnosis of schizophrenia have significantly poorer emotional recognition skills than healthy controls, and some studies have gone on to compare forensic and non- forensic groups of people with schizophrenia (Silver *et al,* 2005; Wolfkuhler *et al,* 2012). In a group of 41 men with schizophrenia, a history of criminal behaviour was correlated with poor emotional recognition skills, and the recognition of fearful and angry expressions were particularly impaired in those with a high number of arrests (Weiss *et al,* 2006). This finding has not, however, been supported by other research in the area. Silver *et al* (2005) found that men with schizophrenia who had a history of violence actually identified facial

expressions more accurately than male non-violent patients. They did, however, find that the group with a history of violence struggled to differentiate between the intensities of the emotion being expressed, doing significantly worse than non-violent patients and controls.

Wolfkuhler *et al* (2012) found no difference between emotional recognition skills of patients with forensic (97% male) histories compared to those with no forensic histories (60% male) except that the forensic group was significantly better at recognising disgust. Indeed, the forensic group performed similar to controls (45% male) in recognising disgust. Fullam and Dolan (2006) looked at the relationship between psychopathy and emotional processing in violent male patients with schizophrenia and found that schizophrenic patients who scored higher on psychopathy scored significantly more poorly on recognition of sadness, particularly if it was low intensity sadness. There was a significant negative correlation between severity of cognitive symptomology and recognition accuracy for disgust.

The research comparing forensic and non- forensic groups of people with schizophrenia is therefore inconclusive and requires further research to clarify. Currently, within clinical psychology, the diagnostic framework as applied to mental health is under question, with arguments that mental illness presentations are the reaction to trauma (Division of Clinical Psychology, 2013). This inconsistency in findings related to schizophrenia may therefore reflect the lack of validity of diagnosis and the subsequent difficulty in finding an appropriate sample.

In summary, there do appear to be impairments in the emotional recognition skills of some groups of people who present with behaviours that challenge compared to controls. This is not, however, consistently shown when comparing forensic to non- forensic groups of people who have a diagnosis of schizophrenia. For groups who appear to be impaired in emotional recognition there are differences in which emotions they find most difficult to identify. This could be influenced by a number of factors including their age, diagnosis, type of offence, all of which require further investigation. One must, however, be

aware that there is a lack of consistency in the assessments of emotional recognition employed by different studies. The assessments used include: Ekman and Friesen (1975) photographs paired with intensity ratings, the Penn Emotion Acuity Test; assessments of emotional intelligence (e.g. EQ-i). and several others. Like the learning disability research, this limits comparability across studies and differences may exist due to measurement related artefacts. Most of these studies, with the exception of those that measured emotional intelligence, have focussed on recognising the facial expressions of others as opposed to one's own emotional perception. Finally, all of these studies have large sample sizes in comparison to the learning disability studies, ensuring more reliability and power of their findings.

1.4.2. Alexithymia and Challenging Behaviour

Researchers argue that difficulties in attending to, identifying and communicating emotions place individuals at increased risk of engaging in aggressive and self-harm behaviours to express their emotional pain and distress (Paivio & McCulloch, 2004). Studies have looked at the relationship between alexithymia and complex or challenging behaviours within a number of populations. The types of challenging behaviour examined include self-injury, violence, aggression and delinquency.

Alexithymia has been shown to have a relationship with deliberate self-harm or self-injury in a number of populations. Garisch and Wilson (2010) studied the role of alexithymia in adolescents (39% were female) who engaged in self-harm. They found that participants who self-harmed scored significantly higher than non self-harmers on alexithymia. Borrill *et al* (2009) found that alexithymia, and in particular the "difficulty identifying feelings (DIF)" factor, was a robust predictor of self-harm status in a student population (77% female). When looking at psychiatric populations, Zlotnick *et al* (1996) found that female in-patients who had recently engaged in self-harm had a high degree of alexithymia. Lambert and DeMan (2007) studied adolescent females who were self-harming and were awaiting psychological intervention. They found that adolescents who self-harmed had greater alexithymia, the

strongest association being between the DIF factor and self-harm which they suggest indicates that that individuals who self-harm face confusing emotional perceptions which they cannot transform into meaningful feelings. Oyefeso *et al* (2008) found a significant difference in alexithymia scores between those who self-harm and those who do not in a substance misuse population (male 73%). They also found that the DIF factor was a significant predictor of self-harm in this population. They suggest that self-harm fulfils the function of expressing tensions and managing intense negative feelings.

A number of studies have also looked at the relationship between alexithymia and violence. The majority of these studies have been completed with populations of offenders. Violent offender populations present with significantly higher alexithymia than non-violent control groups (Hornsveld & Kraaimaat, 2012; Louth *et al,* 1998). A number of studies have found a relationship between alexithymia and the "chronically unstable, antisocial and socially deviant lifestyle" factor measured within the "Psychopathy Checklist-Revised" (PCL-R) (Hornsveld & Kraaimaat, 2012; Kroner & Forth, 1995; Louth *et al,* 1998). Louth *et al* (1998), in their study of female imprisoned offenders, also found a relationship between the DIF factor of alexithymia and the antisocial factor on the PCL-R. The antisocial PCL-R factor relates to impulsivity, proneness to boredom, poor behavioural control and criminality (Louth *et al,* 1998). In their study of male forensic out-patients, Hornsveld and Kraaimaat (2012) found that alexithymia was also correlated with measures of anger, hostility and aggression, whilst Louth *et al* (1998) found that alexithymia was predictive of violence. Studies of adolescents have had similar findings. In particular, alexithymia has been shown to be significantly higher in delinquent adolescents than in controls (Manninen *et al*, 2011; Zimmerman, 2006). Manninen *et al* (2011) studied alexithymia in a population of reform school residents, 62% of whom where male. They were at a reform school due to disruptive behaviour. Alexithymia (and particularly DIF) was found to be correlated with self-reported aggression in this study. Zimmerman (2006) studied delinquency and offending behaviour in male adolescents and discovered that a high level of alexithymia (particularly in relation to the DIF factor) was associated with juvenile delinquency.

In non- offender populations, Teten *et al* (2008) studied a largely male (92%) veteran population and found alexithymia to be a significant predictor of impulsive aggression. Payer *et al* (2011) studied meth-amphetamine abusers and found that DIF was related to self-reported aggression. Finally, Konrath *et al* (2012) studied college students, 71% of whom were females. They found a positive relationship between alexithymia and trait aggressiveness particularly during interactions with individuals who were dissimilar to them in an experimental condition. They concluded that interpersonal difference, particularly at a group level, appears to function as a threat to alexithymic individuals.

Some researchers have focussed on alexithymia as a possible mediator between two other variables. Paivio and McCulloch (2004) studied the relationship between childhood trauma and self-harm in female undergraduates and found that higher levels of alexithymia predicted a greater extent of self-harm and mediated the relationship between childhood trauma and self-harm. There have, however, been mixed results from studies that have examined the possible mediation effect of alexithymia between attachment style and aggression. Bekker *et al* (2007) studied the relationship between antisocial behaviour and alexithymia in an undergraduate population (33% male). They found that alexithymia did not mediate the relationship between attachment styles and antisocial behaviour or passive aggressive behaviour. Fantasizing, a factor not measured on the Toronto Alexithymia Scale, was however found to have such a relationship and was identified as a possible risk factor to antisocial behaviour. In contrast, Fossati *et al* (2009), in a study of undergraduate students, 67% of whom were female, found that the DIF factor was a strong mediating factor between insecure attachment styles and impulsive aggression. They argue that the difference between the two studies may reflect a difference in how alexithymia was measured. Other studies have shown that depression mediates between alexithymia and self-harm (Garisch & Wilson, 2010; Lambert & DeMan, 2007). Garisch and Wilson (2010) also showed that alexithymia mediated the relationship between bullying (victimisation) and self- harm.

Two studies have not found significant relationships between alexithymia and challenging behaviour. Swannell *et al* (2012) accessed 11,423 adults who had participated in the "Australian Epidemiological Study of Self-Injury", 62% of whom were female. They found that alexithymia was only a weak predictor of self-harm, although they only measured factor 2, "difficulty describing feelings" in their assessment of alexithymia. This factor does not appear to have such a strong relationship with self-harm as the DIF factor (Borrill *et al,* 2009; Swannell *et al*, 2012). One study failed to find a significant difference in alexithymia scores between male adolescent sex offenders and non-offenders and the authors argued that this might be due to higher levels of alexithymia existing within an adolescent population generally (Moriarty *et al*, 2001). Due to the small sample size, Hornsveld and Kraaimaat (2012) argued that this study does not have enough power to draw conclusions.

In summary, there does appear to be a relationship between alexithymia and challenging behaviours in non-learning disability populations, particularly in relation to the DIF factor as measured by the Toronto Alexithymia Scale. Alexithymia may play a mediating role between insecure attachments and challenging behaviours although this needs further research. There is also some evidence to suggest that the relationship between self- harm and alexithymia may be mediated by depression.

1.4.3. Cognitive Emotional Regulation and Challenging Behaviour

The evidence base relating to cognitive emotional regulation strategies and challenging behaviours is still small. Garnefski *et al* (2005) studied the relationship between cognitive emotional regulation and externalising behaviour in a large group of adolescents (51% male). They found that externalising problems had significant correlations with positive refocusing, Catastrophizing and other-blame. However, after controlling for gender, age and internalising problems, the only strategy significantly predictive of externalising problems was positive refocusing (positive correlation- high externalising behaviour = high positive refocusing) with all of the cognitive emotional regulation strategies accounting for only 21% of the variance. The

authors concluded that cognitive emotional regulation strategies are more strongly predictive of internalising than externalising problems in this population. D'Acrement and Van Der Linden (2007) studied the relationship between cognitive emotional regulation strategies and impulsivity in a group of French adolescents (41% male). They argued that impulsivity had been related to poor anger control and aggressive behaviour in this population. They found that the total impulsivity score was related to the use of fewer appropriate strategies (acceptance, positive refocusing, refocus on planning, positive re-appraisal and putting into perspective) and the use of more inappropriate strategies (self- blame, blaming others, rumination and Catastrophizing). Cognitive emotional regulation strategies were also found to mediate the link between depression and impulsivity.

In relation to deliberate self-harm, Slee *et al* (2008) compared the influence of cognitive emotional regulation strategies between a clinical group of 100 students (11% male) referred for self-harm to a medical centre, and a control group of 123 female students. They only used three subscales of the cognitive emotional regulation questionnaire, measuring self-blame, positive reappraisal and Catastrophizing. This study found significant differences for all three subscales, even when depression was controlled for. Regression analysis indicated that self-blame was independently predictive of self-harm. However, another study of self-harm in young Italians (36% male) failed to replicate this finding. Although overall non-adaptive strategies were correlated with self-harm, (particularly rumination), none of the other sub-scales were correlated with self-harm (Cerutti *et al,* 2012). This is a relatively new area of research which has largely focussed on adolescents and young people.

1.4.4. Generalizability of the Findings to People with a Learning Disability

Although there may be overlap in terms of the behaviours presented by anti-social or vulnerable groups and people with a learning disability, one needs to be cautious in generalising these findings to a learning disability population for a number of reasons. Firstly, many of the groups described here are male and

incarcerated, having little in common with learning disability community samples. Forensic samples largely use male participants and self-harm samples largely use female samples, limiting generalizability across genders. The research discussed above has tended to use younger samples across a narrower age range than the learning disability research. Also, there is no evidence that the behaviours presented in these studies are similar in terms of frequency, management difficulty or severity, with most of them not including any measures of the relevant variable. The challenging behaviours of antisocial or vulnerable populations are likely to be functionally different from those of people with learning disabilities, with differing intentions and consequences. All these factors limit the generalizability of these findings to a learning disability population. These studies are, however, relevant in establishing a link between emotional perception and challenging behaviour and commonalities do exist. For example, low IQ's are often found in offender populations (The Prison Reform Trust, 2007). A systematic review of the literature will now explore the link between challenging behaviour and emotional perception within people with learning disabilities.

1.5 Systematic Review

1.5.1 Introduction

The purpose of this review is to identify and evaluate the evidence base relating to the relationship between emotional perception and challenging behaviour in people with a learning disability. Although it was hoped to complete a second part of the review which would identify and evaluate the evidence relating to the relationship between cognitive emotional regulation and challenging behaviour in people with a learning disability, no papers were identified within the search protocol (Appendix 1). This review will therefore focus only on the first aim.

Review Question

What is the relationship between emotional perception and challenging behaviour in people with a learning disability?

1.5.2. Method

1.5.2.1. Search Strategy

Combinations of the same search terms have been used throughout the literature review, for example, the learning disability related search terms (group1) were combined with the emotional perception search terms (group 3) for that section of the literature review. Alexithymia, emotional recognition and cognitive emotional regulation were each, separately, combined with either learning disability or challenging behaviour. Additional searches were conducted around definitions of learning disability, challenging behaviour and it's prevalence, emotional development and self-report and people with learning disabilities.

In the process of conducting the systematic review, two searches were completed using the Psychlit and Psycharticles databases. The first search looked for studies that had examined emotional perception and challenging behaviour in people with a learning disability, this combined, from the lists below, search terms 1, 2 and 3. A second search was then conducted looking for papers that reported on the relationship between cognitive emotional regulation and challenging behaviour in people with a learning disability. This combined, from the lists below, search terms 1, 2 and 4 (Appendix 1). Finally, Web of Knowledge was used to search for authors A. Jahoda, E. Matheson and K. Mckenzie, as they appeared to be the main authors in the field. No further papers were identified as relevant from this search.

1.5.2.1.1. Search terms- 1, Learning Disability etc.

Learning disab*	Intellectual disabilit*	Intellectual* impair*
Mental* retard*	Learning difficult*	Mental* impair*
Mental* handicap*	Mental* subnormal*	

1.5.2.1.2. Search terms-2 , Challenging Behaviour etc.

Challenging behav*	Problem behav*	Violen*
Aggress*	Behav* problems	Self harm
Self injur*	Behaviours that challenge	Destruct*

1.5.2.1.3. Search terms- 3, Alexithymia and Emotional Perception etc.

Alexythymi*	Alexithymi*	Emotional literacy
Emotional recognition	Emotional awareness	Fac* perception
Emotion* perception	Emotion* cognition*	Emotional* intell*
Emotional understanding		

1.5.2.1.4. Search terms- 4, Emotional Cognition, Thinking Styles etc.

Cognitive emotion*	Emotion* regulation	Thinking errors
Thinking styles		

1.5.2.1.5. Search Limits

The searches were limited to English language and peer reviewed journal articles. Other exclusions were made using the "not" instruction. This was due to the number of school and child related concepts that were identified in the initial searches. Treatment and medication were also excluded at this stage, and a number of studies which focussed the emotional abilities of carers were also excluded at this stage. Finally autism was specified as an exclusion criterion for the search.

Not autis*	Not staff	Not prescri*	Not treat*
Not educat*	Not school	Not class	Not teacher
Not child*			

1.5.2.2. Inclusion and Exclusion Criteria

1.5.2.2.1. Inclusion of Papers

To be included within the review papers needed to meet a number of criteria. These were:

- Publication within a peer reviewed journal, this was an attempt to ensure high quality research was reviewed, having faced academic rigour during review by experts.
- Focussing on the relationship between emotional perception and challenging behaviour in an adult learning disability population. Or, focussing on the difference in emotional perception skills in challenging and non-challenging populations of people with a learning disability (for example offenders).
- Emotional reports given by participants with learning disabilities and reflecting their emotional understanding.
- Publication in English.

1.5.2.2.2. Exclusion of Papers

Specific areas of exclusion were identified:

- Studies focussing on the needs or experiences of carers.
- Studies focussing on service provision or policy.
- Single case studies or review papers.

1.5.2.2.3- Reviewing the Studies

Initially, 73 articles were identified and reviewed by title and abstract for relevance to emotional perception and challenging behavior in people with a

learning disability. Any article that clearly met any of the exclusion criteria was eliminated from the review at this stage. This process left nine articles, and for these full texts were retrieved. Again the inclusion and exclusion criteria were applied, from the nine retrieved. Seven studies then survived as eligible to be included in the systematic review. The diagram below illustrates the stages of reviewing the studies and applying the inclusion and exclusion criteria. At each stage some papers were excluded and the reasons for exclusion were identified.

Figure 1.2: Flow Chart Illustrating the Review Process and Application of the Inclusion and Exclusion Criteria

Titles and abstracts identified and screened

71 + 2 from previous searches=
73

Abstracts Excluded at this stage

Carer focussed studies- 4
Child participants- 1
Not quantitative methodology/ not research study- 4
No emotional self report measure- 5
Not challenging behaviour component/ challenging population- 1
Study not focused on people with a learning disability- 49
Studies focussed on service Provision- 1

= 65

Full texts assessed for eligibility

8 + 1 from a studies reference list =
9

Full articles excluded

Single case study- 1
Review Paper- 1

Studies included in review

7

1.5.2.3. Quality

The credibility of research depends on the critical assessment by others of the strengths and weaknesses in study design, conduct and analysis (Elm *et al*, 2008). Criteria for assessing the quality of the studies in this review were based on a number of papers including those critiquing research earlier in the literature review (for example Rojahn *et al,* 1995; Moore, 2001). The "Strengthening the Reporting of Observational Studies in Epidemiology Statement" (STROBE) (Appendix 2) was also used in the development of quality criteria for this review (Elm *et al,* 2008; Vandenbroucke *et al,* 2007). This is a checklist of 22 items that should be addressed in reports of observational studies. The STROBE checklist was designed to provide guidance for authors who were preparing research reports for publication, but it also facilitates critical appraisal and interpretation of articles (Elm *et al,* 2008; Vandenbroucke *et al,* 2007). Finally a "Step-by-Step Guide to Critiquing Quantitative Research" (Coughlan *et al,* 2007) was also used in considering quality criteria upon which to base this systematic review. Based on the ideas set out by these papers, the researcher amalgamated and condensed the available guidance and developed the quality appraisal scheme set out below. If papers included comment on all of the questions set out under each heading, they were awarded two points, if only some of the questions were answered in a report they were scored with a one, and if none of the areas were addressed they were given a zero. If some information was present but it was of poor quality it was also marked down. At the end of this process each paper was given a score out of 20 for quality (please see Appendix 3 for quality tables).

Aims/ purposes- Are specific aims, objectives or pre-specified hypotheses stated? Do they reflect the information in the literature review? Is the purpose of the study/ research problem clearly identified?

Title, Abstract and Introduction- Is the study's design indicated in the title or abstract? Is the title clear, accurate and unambiguous? Is the abstract an informative and balanced summary of what was done and what was found?

Does the introduction explain the scientific background and rationale for the study being reported? Does the introduction give an overview of what is known about the topic and where the gaps in knowledge exist? Does it note most recent pertinent studies or reviews? Does it offer a balanced critical analysis of the literature?

Study design- Are the key elements of the studies design presented? In comparison studies, is a control task included within the study? Are all variables defined?

Sampling- Has the target population been clearly identified? Are recruitment procedures and selection methods outlined? Are eligibility criteria for participation laid out? Are characteristics of the study participants outlined (e.g. age, gender, diagnosis, co-morbid conditions, IQ, language ability)? When a control group is used, are the gender, receptive vocabulary and/or IQ matched? Is there a rationale for the choice of matching variables?

Sample size and attrition- Does the study explain how the study size was arrived at? Are the numbers of individuals at each stage of the study reported and reasons for non -participation identified at each stage? In comparison studies a group size of 15 or less will be consider weak, a group size of 15-25 will be considered sufficient and over 25 will be considered strong.

Validity and reliability- Was information on the validity and reliability of assessment measures outlined? Were details provided on previous studies where measures were used? How was the measure developed if first employed in this study? Have the measures been adapted to make them more accessible for people with learning disabilities (for example, simplified language, pictorial representations)? If so, is there evidence of the reliability and validity of the adapted version? Similarly, was the questionnaire validated in a learning disability population? If not, is there reliability and validity data in this new population?

Data Collection- For each variable of interest, are sources of data and assessment methods explained? Has the data gathering instrument been described? Is it the appropriate? Have open- ended questions, multiple choice or either/ or questions been used in the questionnaire?

Analysis- Were descriptive statistics and missing data outlined for each variable? Was the distribution of the data examined? Were appropriate parametric or non- parametric tests employed? Were all statistical methods used clearly described? Is there a factual account of what was found in including significance?

Limitations- Were limitations of the study discussed, including any potential for bias or imprecision? Was consideration given to residual confounding by variables not measured?

Conclusions and recommendations- Was an overall interpretation of the results, considering objectives, analyses and results of other studies, provided? Were hypotheses supported? Were recommendations for future research made? Were clinical implications of findings outlined? Was the validity, generalizability and precision of results discussed in relation to other studies?

Table 1.1 Table Summarising the Studies Included in the Systematic Review

	Authors	Aims	Participants	Measures	Findings	Quality
1.	Jahoda, Pert & Trower (2006)	To identify if aggressive participants with a learning disability would prove less able to recognise facial affect than non-aggressive peers.	Aggressive group= 43 (22 male, 21 female) Non- aggressive group= 46 (20 male, 26 female) Groups matched for gender, age, adaptive behaviour, comprehension and IQ.	-Vineland Adaptive Behaviour Scale -BPVS-II -Ravens Coloured Progressive Matrices - 12 Ekman and Friesan (1975) pictures, 6 of each gender - asked to tell the researcher how the person is feeling -Staff completed Checklist of Challenging Behaviour to inform group allocation	1-No differences were found in the ability of aggressive and non-aggressive participants to identify facial affect. 2-No evidence of a negative bias by aggressive participants when mis-labelling emotions. 3- Most participants correctly labelled happiness, sadness, anger and surprise. They struggled more with fear and disgust. 4-Verbal ability related to ability to identify emotions.	**19/20**

| 2. | Matheson & Jahoda (2005) | The hypotheses were: 1- Those who are aggressive will not be impaired in their ability to label emotion compared to their non-aggressive peers. 2- Aggressive individuals would demonstrate a negative bias when mislabelling emotions. | Frequently aggressive group= 19 (11 male, 8 female) Non aggressive group= 15 (7 male, 8 female) There were no significant difference between the groups on age, IQ and verbal comprehension | -BPVS -Ravens Coloured Progressive Matrices There were three tests of emotion identification: 1-Decontextualised photographs Identify emotion in Ekman and Friesen's (1975) normed photographs. Control task: Identify activities people were engaging in on photographs. 2-Photographs with context- Identify emotions from photographs of individuals in context, for example happiness at a wedding, sadness at a funeral. Control task: Identify activities people were engaging in in | 1-Both aggressive and non-aggressive clients did significantly better on the control tasks than the emotion tasks. 2-There was no difference in the ability of aggressive and non-aggressive individuals to label Ekman and Friesen's normed photographs or the cartoons. 3-The aggressive group were impaired relative to non-aggressive peers when asked to identify emotions in contextualised pictures. 4-The aggressive group were significantly more likely than the non-aggressive group to incorrectly identify | **18/20** |

				pictures with context.	an emotion as angry on the
				3- Cartoons with context-	cartoon task.
				12 cartoons picturing 2 people in	5-Happiness was found to
				context, for example a happy	be the easiest emotion for
				person receiving a present.	participants to identify
				The participant was asked to	followed by sadness then
				pick the emotion of the central	anger.
				character (who had their face	6- BPVS scores were
				missing).	significantly correlated with
				Control task: Cartoons of people	performance on the emotion
				doing activities with an outline of	tasks. There was also a
				where their body should be,	negative correlation between
				participants asked to pick the	age and performance on
				correct body.	emotion tasks. There was no
				-Staff completed Checklist of	relationship between IQ and
				Challenging Behaviour to inform	performance on emotion
				group allocation.	tasks.

| 3. | McKenzie, Hamilton, Matheson, McKaskie & Murray (2000) | To examine whether differences existed in the ability to identify emotions between individuals described as having challenging behaviour and those who did not. | Challenging behaviour group = 16, 14 with aggressive behaviour

Non-challenging behaviour group= 16

Overall 22 were male and 10 female. Ages- 21-54. 8 had mild learning disability and 24 moderate.

Groups matched for | Participants were shown three sets of materials depicting emotions (happy, sad, afraid, angry, bored worried). These were:
1- Line drawings
2- Photographs of faces
3- Photographs of an emotion in context.
They were asked to:
1- Name an emotion depicted by a picture.
2- Choose which picture showed the target emotion from a group of six.
3- Choose emotions between two pictures. | 1-There were no significant differences between the challenging behaviour and non-challenging behaviour groups on the emotion recognition tasks. 2-Aggressive service users were found to be significantly better than the non-challenging behaviour group at labelling emotions depicted in photographs without context. | **9/20** |

			age, gender and level of disability.			
4.	Moffatt, Hanley-Maxwell & Donnellan (1995)	To evaluate the social competency skills involved in emotional recognition, affective perspective taking and expression of empathy of individuals with mild to moderate learning disability who also exhibit chronic behavioural	40 adults with IQ between 36 and 75. Divided into four groups (10 in each)- a-Moderate learning disability, non challenging behaviour, (6 male, 4 female) b-Moderate learning disability with	The "Test of Emotional Perception" was employed within this study. Participants are shown six videos depicting happy, sad and angry scenes. They are asked to identify how the key character in the video feels by pointing to the photograph displaying the corresponding emotion. They were also asked what would happen next and asked to pick from pictures depicting the next scene. Finally they were asked how they would feel if it	1-Emotional recognition scores of people with mild learning disability were higher than those of moderate learning disability. 2-People with mild learning disabilities and no behavioural problems did better than people with mild learning disabilities with behavioural problems. 3-There was no difference between those with moderate learning disability with and without behavioural	**8/20**

		problems of an interpersonal nature.	interpersonal behavioural problems (6 male, 4 female) c-Mild learning disability non challenging behaviour, (4 male, 6 female) d-Mild learning disability with behavioural problems (4 male, 6 female)	happened to them. -Those with behavioural difficulties identified via their notes or the presence of plan to manage behaviours.	problems. 4-All groups did better at identifying happy than sad or angry. 5-Staff persistently overestimated the abilities of service users to recognise emotions.	

| 5. | Proctor & Beail (2007) | To examine whether offenders with a learning disability would differ on empathy scores compared to people with a learning disability who have not offended. Empathy assessment included assessment of emotional recognition skills and emotional perception. | Service users who had offended =25

Non –offender learning disability control group= 25

Groups matched on IQ. | -Wechsler Abbreviated Scale of Intelligence" (WASI).
-Test of Emotional Perception (as above) however as focussed on empathy the final questions were altered to "How would you feel if one of you friends received similar news?"
The response was coded as either a "concerned response", an "incongruous response" or "no emotional response given" | 1-Offenders with a learning disability performed significantly better than non-offenders on emotional recognition
2-Offenders needed significantly fewer prompts than non- offenders to provide emotional descriptors. | **18/20** |

| 6. | Ralfs & Beail (2011) | To explore the four components of empathy in sex offenders with learning disabilities compared to adults with a learning disabilities in the general population. Empathy assessment included assessment of emotional recognition skills and emotional perception. | Sex offenders group= 21 All male

Non- offender group= 21 All male

The control group were matched with the offender group on the basis of age, gender and IQ. | -Demographic data was collected including age, gender, day activities, diagnosis of autistic spectrum disorder and history of mental health problems. -Wechsler Abbreviated Scale of Intelligence" (WASI). -The "Test of Emotional Perception" was employed within this study. Finally they were asked how they would feel if it happened to them. This was scored as "expressing empathy" | 1-No significant differences between sex offenders and non- sex offenders in emotional recognition. 2-Happy was recognised significantly more often than sad or angry. 3-The sex offender group needed significantly less prompts than non-offenders to provide angry descriptor. | **16/20** |

| 7. | Walz & Benson (1996) | 1-To determine whether aggression is related to difficulties with labelling facial expressions. 2-To determine discrimination techniques by varying facial fields. | Aggressive group= 18 All male

Non- aggressive = 21 All male

The groups were matched in relation to IQ and age range. | -Staff completed the conduct disorder sub-scale of the Revised Behaviour Problem Checklist to inform selection and group allocation.
- Peabody Picture Vocabulary Test
-The vocabulary scale of the WISC-III. - The expression labelling task -asking participants to identify how the person in the Ekman and Friesen (1975) photographs feel? How do they know he/she is feeling (e.g. sad)? What is it about their face that makes them look (e.g. sad)?
-The non-emotion control task (identifying activities).
-The facial cues measure- there | 1-Significantly higher scores on the control task than the expression labelling task. 2-No difference between the aggressive and non-aggressive groups on expression labelling or facial cues task. 3-No difference in aggressive and non-aggressive groups on the types of emotion correctly identified. 4-The aggressive group were more likely than the non-aggressive group to mis-label emotions as angry or sad. 5-Performance on the WISC-II (vocabulary scale) | **12/20** |

| | | | | was a standard picture and 5 options for one to select to match the standard. The choices were a face that-
A- Had eyes the same as the standard
B- A mouth identical to the standard,
C- Hair identical to the standard
D-None identical to standard
E-The identical expression to the standard OR a generalised version of the expression.
The researcher pointed to the standard face and said "This man/woman is (e.g. sad). Pick the other (e.g. sad) man/ woman. Is anyone else feeling (e.g. sad)? | and PPVT-R were significantly correlated with expression labelling and only performance on the WISC-II (vocabulary scale) was significantly correlated with performance on the facial cues measure.
5-On the facial cues measure people did better on the identical features trials than generalised expressive match trials.
6-On the facial cues trial people did significantly better on angry expressions compared to sad. | |

1.5.3. Results

1.5.3.1.Overview of the Narrative Literature Review

The seven articles that met the inclusion and exclusion criteria were reviewed with respect to their aims and objectives, the study design, the samples included in the studies, how emotional perception was measured, the findings, and the limitations of the research.

1.5.3.2. Aims and Objectives of the Studies

Of the seven studies, five had aims that focussed on the ability of people who present with challenging or aggressive behaviour to recognise facial expressions compared with a control group of non-challenging or non-aggressive people who also had learning disabilities (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; McKenzie *et al,* 2000; Moffatt *et al,* 1995; Walz & Benson, 1996). Most aimed to identify whether aggressive or challenging individuals were less able than controls at recognising facial affect, except Matheson and Jahoda (2005) who hypothesized that those who were aggressive would not be impaired in their ability to label emotion compared to their non-aggressive peers.

Other aims and hypotheses were identified in the studies. For example, based on the work of Walz and Benson (1996), Matheson and Jahoda (2005) hypothesised that aggressive individuals would demonstrate a negative bias when mislabelling emotions. Walz and Benson (1996) aimed to determine discrimination techniques by varying certain facial fields.

Two of the studies compared offender populations of people with learning disabilities to community samples (Proctor & Beail, 2007; Ralfs & Beail, 2011). Their overall aims were to examine whether offenders with a learning disability would differ from adults with learning disabilities in the general population on components of empathy. Empathy assessment included assessment of emotional recognition skills and emotional perception. Similarly, assessment of empathy was an additional focus in the studies by

Jahoda *et al* (2006) and Moffatt *et al* (1995). Jahoda *et al* (2006) wanted to test whether aggressive participants would prove less able than non-aggressive participants at perspective taking in situations of potential conflict. Moffatt *et al* (1995) aimed to evaluate affective perspective taking and the expression of empathy of individuals with mild to moderate learning disability who also exhibited chronic behavioural problems of an interpersonal nature. The elements of these empathy studies beyond emotional recognition will not be further discussed within this systematic review as they are not of direct relevance. Similarly, Proctor and Beail (2007) compared theory of mind of people with a learning disability who had offended and controls, but this will not be further discussed within this review.

1.5.3.3. Study Designs

All of the seven articles included in this review were cross sectional and all of them used experimental/ control group comparison designs.

1.5.3.4. Samples and populations

The sample sizes in the experimental groups in these studies ranged from 10 (Moffatt *et al,* 1995) to 43 (Jahoda *et al,* 2006). The control group size ranged from 10 (Moffatt *et al,* 1995) to 46 (Jahoda *et al,* 2006). Only in one study was a power calculation reported and the sample size was based on this (Proctor & Beail, 2007). Experimental samples were recruited from day and vocational services in three studies (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Walz & Benson, 1996). Control groups were recruited from day and vocational services in five studies (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Proctor & Beail, 2007; Ralfs & Beail, 2011; Walz & Benson, 1996). Moffatt *et al (*1995) recruited both their experimental and control samples from residential services. Two studies recruited their experimental sample from secure services for people with a learning disability (Proctor & Beail, 2007; Ralfs & Beail, 2011). In addition, Proctor and Beail (2007) recruited service users who had offended from psychology and probation services. One study, reported by McKenzie *et al* (2000), gave no information about where the study

participants were drawn from or how they were recruited. Five of the studies were conducted in the United Kingdom (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; McKenzie *et al,* 2000; Proctor & Beail, 2007; Ralfs & Beail, 2011) and two in the United States of America (Moffatt *et al,* 1995; Walz & Benson, 1996).

Studies have employed stratified random sampling techniques, selecting participants from larger cohorts of people with a learning disability based on their ability and whether they present with aggressive, challenging or offending behaviour or not. Control groups have then been matched on a variety of factors which will be highlighted throughout this description of the samples. Allocation to aggressive/ challenging versus non-aggressive/ non-challenging groups was based on staff reports in four of the non-offender studies (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; McKenzie *et al,* 2000; Walz & Benson, 1996). Two studies used the Checklist of Challenging Behaviour (Harris *et al*, 1994) to differentiate the groups (Jahoda *et al,* 2006; Matheson & Jahoda, 2005). These studies included people who had four or more incidents of verbal or physical aggression in the previous three months in the aggressive group and those with no such reported behaviour in the control group. Walz and Benson (1996) used the conduct disorder subscale of the Revised Behaviour Problem Checklist (Quay & Peterson, 1983). To qualify for the non-aggressive group, people needed a score of 2 or less, whilst to participate in the aggressive group they needed to score 13 or over. McKenzie *et al* (2000) based inclusion in each group on staff reporting the individual to have challenging behaviour or not. Moffatt *et al* (1995) reviewed service users' notes. Behaviour problems were deemed to be present if their notes contained data which substantiated the presence of problem behaviour or a behaviour management plan. In relation to the offender groups, Ralfs and Beail (2011) give a breakdown of offences committed by participants. These were: Indecent exposure- 28.0%; indecent assault 46.4%, 62.5% of these were committed against a minor; attempted rape 7.2% and rape 21.4%, 33.3% against a minor. Proctor and Beail (2007) did not give a similar breakdown but included individuals who had at some point offended against another person.

All the studies recruited people with mild to moderate learning disabilities. A few studies included a small number of people with borderline IQ (Jahoda *et al,* 2006; Moffatt *et al,* 1995; Ralfs & Beail, 2011; Walz & Benson, 1996). Intelligence was measured using the "Wechsler Adult Intelligence Scale" (WAIS) (used by Moffatt *et al,* 1995) the "Wechsler Intelligence Scale for Children- third edition" (WISC-III) (Wechsler, 1991) (used by Moffatt *et al,* 1995), the "Wechsler Abbreviated Scale of Intelligence" (WASI) (Wechsler, 1999) (used by Proctor & Beail, 2007; Ralfs & Beail, 2011) or the "Ravens Coloured Progressive Matrices" (Raven, 1965) (used by Jahoda *et al,* 2006 and Matheson & Jahoda, 2005). The versions of the WISC and WAIS were not reported. McKenzie *et al* (2000) and Walz and Benson (1996) did not report how intelligence was measured. Intelligence levels were reported in a variety of ways. Three studies identified IQ ranges for participants, with the lowest IQ being 36 and the highest 80 across the studies (Matheson & Jahoda, 2005; Moffatt *et al,* 1995; Ralfs & Beail, 2011). Two studies reported the mean IQ for each group, Jahoda *et al* (2006) identified the mean IQ in the aggressive group as 57 and the non- aggressive group as 60, whilst Proctor and Beail (2007) identified the mean IQ in the offenders group as 64.2 and the non-offenders as 60.8. The last two studies reported the level of learning disability of participants. McKenzie *et al* (2000) identified eight participants as having a mild learning disability and 24 as having a moderate learning disability and Walz and Benson (1996) described their participants as having borderline to moderate learning disabilities. All of the seven studies matched their control group based on either IQ or level of learning disability. Two studies also considered adaptive functioning in relation to level of learning disability (Jahoda *et al,* 2006; Moffatt *et al,* 1995), with the former employing the "Vineland Adaptive Behaviour Scale" (Sparrow *et al,* 1984) to measure this.

For inclusion in four of the studies verbal communication and comprehension had to be within the criteria for participation (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Moffatt *et al,* 1995; Walz & Benson, 1996). This was measured using the WISC vocabulary scale (Walz & Benson, 1996), the "Peabody Picture Vocabulary Test- Revised" (Dunn & Dunn, 1981) (used by Walz &

Benson, 1996) or the "British Picture Vocabulary Scale- version two" (Dunn & Dunn, 1997) (used by Jahoda *et al,* 2006; Matheson & Jahoda, 2005). Moffatt *et al* (1995) excluded people with communication difficulties from their sample but did not formally measure language ability. The remaining three studies do not report on the language ability of participants, but it is likely, based on the tests of emotional perception used, that all of the participants had the required level of expressive and receptive language. Three of the studies matched control and experimental groups on language ability (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Walz & Benson, 1996).

All of the studies focussed on adults with learning disabilities with age ranges reported as between 18 and 68 (McKenzie *et al,* 2000; Moffatt *et al,* 1995; Ralfs & Beail, 2011; Walz & Benson, 1996) and mean ages for groups ranging between 31 and 45 (Jahoda *et al,* 2006; Proctor & Beail, 2007; Ralfs & Beail, 2011). Matheson and Jahoda (2005) did not report on the age of their participants. Five of the studies matched experimental and control groups on the age of the participants (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; McKenzie *et al,* 2000; Ralfs & Beail, 2011; Walz & Benson, 1996). Three of the studies used all male participants (Proctor & Beail, 2007; Ralfs & Beail, 2011; Walz & Benson, 1996). Three of the remaining studies matched their groups for gender, with experimental groups being 42%- 50% female and control groups being 50%-56% female (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Moffatt *et al,* 1995). McKenzie *et al* (2000) had the smallest proportion of female participants making up only 31% of the sample. Control and experimental groups were matched for gender in all of the seven studies.

A number of exclusion criteria were specified by the researchers. People with a diagnosis of Autistic Spectrum Disorder or serious mental illness (e.g. psychosis or dementia) were excluded from participation in four studies (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Proctor & Beail, 2007; Ralfs & Beail, 2011). Those with visual impairments were excluded from two studies (Jahoda *et al,* 2006; Moffatt *et al,* 1995) and those with hearing impairments were excluded from participation in Moffatt *et al's* (1995) study. McKenzie *et al* (2000) did not identify any inclusion or exclusion criteria.

1.5.3.5. Measuring Emotional Perception

In three of the studies, participants were asked to label the emotions depicted on sets of Ekman and Friesan's (1975) normed photographs (Jahoda *et al,* 2006 ; Matheson & Jahoda, 2005 ; Walz & Benson, 1996). Walz and Benson (1996) asked participants to identify how the person in the photograph was feeling?, how they knew that he/she was feeling that way (e.g. sad)? and what it was about their face that made them look (e.g. sad)? Both Matheson and Jahoda (2005) and Walz and Benson (1996) used control tasks. They asked participants to identify activities people were engaging in on photographs. Matheson and Jahoda (2005) also used two other assessments of emotional recognition. Firstly, participants were asked to identify emotions from photographs of individuals in context, for example happiness at a wedding, sadness at a funeral. The control task for this was asking participants to label the nature of activities people were engaging in in pictures with more contextual cues available than in the previous control task. In their third assessment of emotional recognition, Matheson and Jahoda (2005) presented cartoons with context. There were 12 cartoons picturing two people in context, for example a happy person receiving a present. The central character had an outline where their head should have been and the participant was asked to pick the appropriate head, displaying the appropriate emotion and to place it in the space. In the control task for this, participants were asked to pick the correct body to fit cartoons of people doing activities with an outline of where their body should have been. Walz and Benson (1996) used a matching task to determine discrimination techniques used by individuals to identify emotion. There was a standard picture and five options from which the participant could select a picture to match the standard. The choice was between faces that had: a) Eyes the same as the standard; b) a mouth identical to the standard; c) hair identical to the standard; d) nothing identical to standard and e) the identical expression to the standard or a generalised version of the expression. The researcher pointed to the standard face and said "This man/woman is (e.g. sad). Pick the other (e.g. sad) man/ woman. Is anyone else feeling (e.g. sad)? McKenzie *et al* (2000) used three sets of materials depicting emotions (happy, sad, afraid, angry, bored and worried). These

were: Line drawings; photographs of faces and photographs of an emotion in context. Participants were asked to: a) Name an emotion depicted by a picture; b) choose which picture showed the target emotion from a group of six, and c) choose which picture of two that are presented that showed the target emotion.

Three studies used the Test of Emotional Perception (Negri-Shoultz & Donnellan, 1989) to assess emotional recognition (Moffatt *et al,* 1995; Proctor & Beail, 2007; Ralfs & Beail, 2011). This is an unpublished test that was designed for use with people with a learning disability (Proctor & Beail, 2007). Within this test, participants were shown six videos depicting happy, sad and angry scenes. They were then asked to identify how the key character in the video was feeling? They were also asked what would happen next. For this question, Proctor and Beail, (2007) and Ralfs and Beail (2011) used multiple choices, asking the participant to select from three photographs. A final question either asked how they would feel if it happened to them (perception) (Moffatt *et al,* 1995) or how they would feel if it happened to their friend (empathy) (Proctor & Beail, 2007; Ralfs & Beail, 2011). The response to this last question was coded by Proctor and Beail (2007) and Ralfs and Beail (2011) as either a "concerned response", an "incongruous response" or "no emotional response given". They also recorded the number of prompts needed on the first question and the selection time taken on the second question.

1.5.3.6. Findings

Moffatt *et al* (1995) found that people with mild learning disabilities and no behavioural problems did better than people with mild learning disabilities with behavioural problems. There was no difference between those with moderate learning disability with and without behavioural problems. Other studies have found no significant differences in the ability of aggressive and non-aggressive participants to identify facial affect in the Ekman and Friesan (1975) photographs (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Walz & Benson,1996). Similarly, Matheson and Jahoda (2005) found no difference in

the ability of aggressive or non-aggressive individuals to label the emotions in their cartoons. With the tests McKenzie *et al* (2000) used, they also found no significant differences between the challenging behaviour and non-challenging behaviour groups on the emotion recognition tasks. However, when they compared those who presented with aggressive behaviours to the non-challenging behaviour group, they found that aggressive service users were significantly better than the non-challenging individuals at identifying and labelling emotions (t=-2.442, df=12, p<.05). Walz and Benson (1996) found no difference between the aggressive and non-aggressive groups on the facial cues task. In relation to the offender studies, Ralfs and Beail (2011) found no significant differences between sex offenders and non-sex offenders in emotional recognition. Interestingly, however, Proctor and Beail (2007) found that offenders with a learning disability performed significantly better than non-offenders on emotional recognition (F (1,49) = 6.17, p=.015) and needed significantly fewer prompts than non-offenders to provide emotional descriptors (F(1,49) =5.01, p=.03). Overall, these studies indicate that aggressive or challenging populations are not significantly worse at identifying emotions in the facial expressions of others than non- challenging individuals, and in fact, have been shown to do better in two studies (McKenzie *et al,* 2000; Proctor & Beail, 2007). There was only one significant finding in the other direction. Matheson and Jahoda (2005) found that the aggressive group were impaired relative to non-aggressive peers when asked to identify emotions in contextualised pictures (*U*= 71.00, p<0.05).

Although Walz and Benson's (1996) study found no significant differences in emotion labelling, they found that the aggressive group were more likely than the non-aggressive group to mis-label emotions as angry or sad. Similarly, in the cartoon task, Matheson and Jahoda (2005) found that the aggressive group were significantly more likely than the non-aggressive group to incorrectly identify an emotion as angry. Jahoda *et al* (2006), however, found no evidence of a negative bias by aggressive participants when mis-labelling emotions.

In line with previous research, four of the studies looked at the types of emotions most frequently recognised. All four found that happy was the easiest (Matheson & Jahoda, 2005; Jahoda *et al,* 2006; Moffatt *et al,* 1995; Ralfs & Beail, 2011). Ralfs and Beail (2011) found that happy was recognised significantly more often then sad or angry (F=18.79, p=0.001; F=34.62, p=0.001 respectively) and the sex offender group needed significantly less prompts than non-offenders to select the angry descriptor (F=8.423, p= 0.008). Jahoda *et al* (2006) found that most participants managed to correctly label happiness, sadness, anger and surprise. They found it more difficult to label fear and disgust.

The two studies that employed control tasks found that participants obtained significantly higher scores on the control task than the expression labelling task (p=<0.01 in both studies) indicating a specific emotional recognition deficit, not a general visuo-perceptual, information processing or language difficulty (Matheson & Jahoda, 2005; Walz & Benson, 1996). Walz and Benson (1996) also found on the facial cues measure that people did better on the identical features trials than on the generalised emotional expressive match trials (F (1,37) = 5.79, p<0.02). In line with earlier research, three studies found significant correlations between receptive language ability and performance on emotion recognition tasks (r= 0.36 to r=0.44, p=<.001 to p=<0.05) (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Walz & Benson, 1996). Matheson and Jahoda (2005) also found a significant negative correlation between age and performance on emotion tasks (decontextualized photographs- r= -0.41, p=<0.05; photographs with context- r= -0.73, p=<0.01; cartoons- r= -0.73, p=<0.01). Unlike previous research, however, they found no relationship between IQ and performance on emotion tasks (Matheson & Jahoda, 2005). Also of interest, Moffatt *et al* (1995) found that staff consistently overestimated the emotion recognition abilities of service users.

1.5.4. Critical Appraisal

Based on the narrative review of the seven studies, a critical review will be undertaken regarding issues of sampling, methods, measures, conclusions, and limitations of the findings.

1.5.4.2. Samples

Only one study used power calculations to identify the necessary sample size (Proctor & Beail, 2007) and a number of the studies used fairly small samples. Of particular concern are the studies by Moffatt *et al* (1995) which only had ten participants in each group, and the study by McKenzie *et al* (2000) which only had 16 participants in the challenging behaviour group (14 of whom were "aggressive"). Samples of this size are not likely to have sufficient power to be able to draw reliable conclusions from their findings. Only two studies had a large enough sample to ensure that they had significant power. These were the studies by Jahoda *et al* (2006) and Proctor and Beail (2007).

A number of the studies use all male samples (Proctor & Beail, 2007; Ralfs & Beail, 2011; Walz & Benson, 1996). Also, in McKenzie *et al's* (2000) sample, men were over represented. This will impact on the ability to generalise these findings to women with a learning disability. The selection of male only samples is more understandable in the offender studies, due to the prevalence of male secure settings and offending (involving the criminal justice system) (Halstead, 1996; Wheeler *et al,* 2009). Caution is still needed in generalising from offender populations to community populations due to the nature of the behaviours presented. There is no evidence to suggest that the behaviours presented are similar in terms of topography, frequency, management difficulty or severity. Unfortunately, the two offender studies in this review (Proctor & Beail, 2007; Ralfs & Beail, 2011) did not adequately describe the control groups in relation to challenging behaviours. It is possible that no differences existed because the control group also presented with challenging or aggressive behaviours.

People with autism have well documented deficits in emotional processing including emotional recognition (Owen *et al,* 2002). Three of the studies reviewed did not exclude people with a diagnosis of Autistic Spectrum Disorder, which may have impacted on their results (McKenzie *et al,* 2000; Moffatt *et al,* 1995; Walz & Benson, 1996**).** Also, four of these studies included a small number of people with borderline learning disabilities (IQ 70-80) which may have influenced the outcome of assessments, exaggerating participants' abilities, and limiting the generalizability of the findings to learning disability populations (Matheson & Jahoda, 2005; Moffatt *et al,* 1995; Ralfs & Beail, 2011; Walz & Benson, 1996).

1.5.4.3. Methods

As these are all comparison studies, a number of authors have criticised studies for failing to use control tasks to ensure that difficulties are specific to emotional recognition (Rojahn *et al*, 1995; Moore, 2001). Only two of the studies included in this review used control tasks (Matheson & Jahoda, 2005; Walz & Benson, 1996). This makes it difficult to determine whether any deficits observed reflect a general visuo-perceptual, information processing or language difficulty, or a specific impairment of emotional recognition. Jahoda *et al* (2006) provided a rationale for not using a control task, claiming that because both groups were matched for language and IQ, the differences shown are unlikely to be due to general impairment. However, they did identify this as a limitation of the study. Only two studies clearly outlined their designs within the methodology section of the report (Jahoda *et al,* 2006; Ralfs & Beail, 2011). None of the studies used correlational approaches to see whether relationships exist between challenging behaviours and emotional recognition, to assess the strength of any relationship or to assess whether poor emotional recognition can predict challenging behaviour.

1.5.4.4. Measures

A real weakness of most of these studies is that the measures used lack validity and reliability data. In McKenzie *et al*'s (2000) study, there is no

evidence that the data collection methods used have been scrutinised with regard to either reliability or validity, and this is also the case with Walz and Benson's (1996) facial cues measure. The Test of Emotional Perception was used in three of the studies (Moffatt *et al,* 1995; Proctor & Beail, 2007; Ralfs & Beail, 2011) and is unpublished. Very little data exists on the reliability and validity of this scale. However, Ralfs and Beail (2011) comment that this test has good face validity and was designed for use with people with a learning disability. Moffatt *et al* (1995) claimed that they compared scores at two points in time in order to assess test re-test reliability, but they then fail to report the outcome of this comparison. Moffatt *et al* (1995) made some effort to evaluate validity. A control group of 13 individuals without a learning disability were shown the videos and 10 of them correctly identified the emotion. This is a very small sample and suggests that even non-disabled individuals will only select the correct answer 76% of the time. Thus, nearly a quarter of non-learning disabled people would select a different emotion. As assessments of similar constructs are available, for example the Ekman and Friesen's (1975) photographs, more effort could have been employed to ensure construct validity. This adds further support for Rojahn *et al*'s (1995) observation that the psychometric properties and value of these tests are not known, creating concerns that the resulting data may not be sufficiently related to the construct being measured.

All of the remaining studies (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Walz & Benson, 1996) in this review used Ekman and Friesen's (1975) normed photographs of emotion to test emotional recognition in at least one part of their study. These have been validated across cultures and have been used in a number of learning disability studies previously. Matheson and Jahoda (2005) argue that decontextualized measures may, however, underestimate the abilities of people with learning disabilities to accurately identify emotions. This is based on Moore *et al*'s (1995) argument that assessment methods relying on simplified stimuli without dynamic or temporal cues may be a hindrance because they require the employment of more inferential, cognitively based capacities. Matheson and Jahoda (2005) developed two other tests using photographs of emotions in context and

cartoons with context. They describe significant piloting to agree the contexts and emotions to be shown in the pictures, after which the test materials were judged by 18 people without a learning disability. For each test and control test, Matheson and Jahoda (2005) report on the percentage agreement between the judges (minimum 83.3%). They also report on inter-rater reliability.

All of the studies in this review have employed appropriate approaches to collect data from people with a learning disability. They have all used open ended questions or multiple choice response formats and picture presentations of test stimuli as well as simplified language. This is in line with recommendations made by previous authors about how to involve people with learning disabilities in research (Heal & Sigelman, 1995; Stenfert- Kroese, 1997; Lynch, 2004).

Although all of the studies measured emotional recognition, they were doing so from different perspectives. For example, three of the studies had a wider aim of assessing empathy (Moffatt *et al,* 1995; Proctor & Beail, 2007; Ralfs & Beail, 2011). A number of studies also refer to social skills including communication and social understanding (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; McKenzie *et al,* 2000; Moffatt *et al,* 1995; Walz & Benson, 1996). The lack of consistency across the studies in terms of the theoretical constructs being measured reflects the perceived relevance of emotional recognition skills across constructs. With reference to this thesis, all of the studies in this review have focussed on recognising the facial expressions of others as opposed to one's own emotional perception; this remains a gap in the research to date.

1.5.4.5. Findings

Largely, where studies have found differences between challenging and non-challenging populations in emotional recognition abilities, the quality of the study has been questionable, with methodological weaknesses leaving the conclusions drawn in doubt. Moffat *et al* (1995) reported significant

differences between people with a mild learning disability who did or did not exhibit behavioural problems. However, beyond reporting means, they did not present any statistical analyses of the difference so it is not clear whether the differences reported were significant or not. None of the older studies assessed the distribution of the data and where statistical analysis was done parametric assumptions were made, possibly inappropriately (McKenzie *et al,* 2000; Walz & Benson, 1996). McKenzie *et al* (2000) found that aggressive service users were significantly better than non-challenging individuals at identifying and labelling emotions but they used a very small sample so their findings are unlikely to have the necessary power to draw reliable conclusions. These three studies had smaller samples and did not exclude people with autism. All these limitations limit the conclusions that can be drawn from these studies.

Walz and Benson's (1996) finding that the aggressive group were more likely than the non-aggressive group to mis-label emotions as angry or sad was supported by Matheson and Jahoda (2005) in relation to the cartoons with context task but there was no such difference when contextual or non contextual emotion pictures were used. This finding was not replicated by Jahoda *et al* (2006), who studied a larger sample and employed a sounder methodology. This issue needs to be examined further in future research.

Of the four better quality studies, two found no significant differences in the ability of aggressive and non-aggressive participants to identify facial affect using the Ekman and Friesen (1975) pictures (Jahoda *et al,* 2006; Matheson & Jahoda, 2005). Matheson and Jahoda (2005), however, did find that the aggressive group were significantly more impaired in identifying emotions within contextualised pictures. This may give some support for previous findings that people with learning disabilities do better with more contextual information, similar to non learning disabled controls (Hippolyte *et al,* 2009; Moore *et al,* 1995). The non-aggressive group did much better in this condition than in the other conditions, whereas the aggressive group may be presenting with the deficits in facial emotional recognition identified in the non–learning disabled anti-social populations. Matheson and Jahoda (2005)

suggest that aggressive individuals may attend to fewer cues in the environment and therefore benefit less from additional contextual information.

In the offender studies, Ralfs and Beail (2011) found no significant differences between offenders and non-offenders whilst Proctor and Beail (2007) found that offenders performed significantly better than non-offenders at emotional recognition and needed fewer prompts. The mean IQ, though not significantly different, was higher in the offender group in Proctor and Beail's (2007) study, participants in this group were also younger than controls, which may offer some explanation for this finding. The main concern with these latter two studies is the lack of description of the control group in relation to challenging behaviours, which means that these two studies might have compared two groups that were not very different with respect to challenging behaviour.

1.5.5. Summary of Systematic Review

This systematic review has included seven studies that have examined the emotion recognition skills of adults with a learning disability who present with challenging behaviour or belong to an offending population. Each of the studies was assessed for quality and methodological flaws were identified. The three older studies were of particularly poor quality, thus limiting the conclusions that can be drawn from them (Moffatt *et al.* 1995; McKenzie *et al,* 2000; Walz & Benson,1996).

The more recent studies were of better quality and these generally found no difference between challenging or offending populations and controls on the ability to recognise emotions in non- contextual photographs (Jahoda *et al,* 2006; Matheson & Jahoda, 2005; Ralfs & Beail, 2011). There were, however, two alternative findings. Proctor and Beail (2007) found offenders better than non-offenders at emotional recognition and Matheson and Jahoda (2005) found the aggressive group to be impaired in comparison with the control in recognising the emotions expressed in pictures with context. Suggestions attempting to explain these findings have been offered.

There is a lack of research regarding the ability of people with a learning disability to perceive their own emotions, and assessing the relationship between emotional perception and challenging behaviour. Previous studies have shown that people with learning disabilities do better at describing their own emotions (Owen *et al,* 2002, Lindsay *et al,* 1994) and other studies have shown that contextual information may be important in understanding emotions for people with learning disabilities (Matheson & Jahoda, 2005; Hippolyte *et al,* 2009). This thesis therefore hopes to reduce gaps in the evidence base by asking individuals how they would feel in different contexts.

1.6. Implications for Research and Rationale for this Study

1- In the treatment of challenging behaviours the use of psychotropic medication and behavioural approaches predominate. Stenfert-Kroese (1997) points out that carers and professionals working with learning disabled people typically focus on the service user's behaviour rather than on the emotions and motives driving the behaviour. Behavioural approaches are limited in what they can offer people with learning disabilities in relation to their emotional problems. Challenging behaviours may be readily controllable, but reducing the visibility of the underlying distress does nothing to decrease its severity (Wilner, 2005). Arthur (2003) criticizes the almost complete lack of direct psychological attention paid to the emotions of people with a learning disability. It is hoped that this research will provide information relating to the ability of people with a learning disability to engage in dialogue about emotional issues, as is required, for example, in the process of psychological therapy. Examples of interventions in which emotional recognition and regulation are important include "Cognitive Behaviour Therapy", "Dialectical Behaviour Therapy" and attachment focussed approaches. These emotionally focussed approaches will complement the "Positive Behavioural Support" model that currently predominates.

2- No current valid and reliable questionnaire exists that assesses individuals with learning disabilities' ability to perceive their own

emotions in a variety of contexts. This study aims to develop such a tool.

3- Clinically there is an assumption that challenging behaviour in people with a learning disability is related to poor emotional recognition and emotional dysregulation. This is supported by research relating to the impaired emotional perception abilities of individuals from other anti-social or challenging populations. Research in learning disability populations to date offers very little support for this theory. It has also focussed on participants' recognition of other people's emotions as opposed to their own. No research has been published on the cognitive emotional regulation abilities of people with learning disabilities. This study aims to identify whether there is a relationship between emotional perception, cognitive emotional regulation and challenging behaviour in adults with a learning disability, similar to that found in other populations.

4- The construct of alexithymia has not been explored in people with a learning disability. This construct relates to emotional perception and has been found to be connected to physical health, psychopathology and anti-social behaviour. Mellor and Dagnan (2005) argue that due to the difficulties that people with learning disabilities have in emotional recognition and their often complex emotional development, alexithymia should be further explored within this population. Alexithymia will therefore be assessed in terms of its usefulness as a construct to be measured and considered within interventions for people with a learning disability, in particular in relation to challenging behaviour. It will also be useful to correlate alexithymia scores with a measure of emotional recognition to inform construct validity.

5- A greater understanding of the cognitive emotional regulatory skills used by people with a learning disability and how these relate to challenging behaviour is essential in understanding the needs of, and developing interventions for, this client group.

1.7. Aims and Hypotheses

The population to be studied consists of service users who have mild or moderate learning disabilities. The project has three main aims:

Aims:

1- To examine the relationship between emotional recognition, cognitive emotional regulation strategies and alexithymia with challenging behaviour in adults with a learning disability.

2- To gain knowledge of the emotional understanding of people with learning disabilities who exhibit challenging behaviours.

3- To work towards the development of a clinical tool for measuring emotional recognition that can be used with people with a learning disability.

Objectives:

1- To determine whether emotional recognition is related to the cognitive emotional regulation strategies employed by people with a learning disability.

2- To determine whether emotional recognition is correlated with a specific difficulty in the 'identifying feelings' element of the alexithymia scale, further validating the scale for clinical use.

3- To determine whether emotional recognition and regulation strategies are related to challenging behaviour.

4- To determine whether alexithymia is correlated with challenging behaviour.

5- To determine whether alexithymia is related to the cognitive emotional regulation strategies employed by people with a learning disability.

6- To determine whether people who exhibit high frequency challenging behaviour are less able to recognise their emotions than those with no or low frequency challenging behaviour.

Hypotheses:

Hypothesis1- Emotional recognition skills will be negatively correlated with higher frequency, management difficulty and severity of challenging behaviour.

Hypothesis 2- Positive cognitive emotional regulation strategies will be negatively correlated with the frequency, management difficulty and severity of challenging behaviour.

Hypothesis 3- Negative cognitive emotional regulation strategies will be positively correlated with the frequency, management difficulty and severity of challenging behaviour.

Hypothesis 4- Alexithymia scores will be positively correlated with the frequency, management difficulty and severity of challenging behaviour.

Hypothesis 5- High Alexithymia scores will be positively correlated with the use of more negative cognitive emotional regulation strategies, and negatively correlated with the use of more positive strategies.

Hypothesis 6- Emotional recognition will be negatively correlated with the use of negative cognitive emotional regulation strategies and positively correlated with the use of positive strategies.

Due to the number of participants recruited to this study the researcher was able to complete a secondary analysis of the current data, using a one tailed t test. This, it was hoped, would provide further support for the relationship between emotional recognition and challenging behaviour. The hypothesis for this analysis is:

Hypothesis 7- Participants with high frequency challenging behaviour will be significantly poorer than participants with no or low frequency challenging behaviour at recognising their emotions.

Chapter 2
Methodology

2.1 Design

This study used correlational analysis to identify relationships between the variables. People with learning disabilities' emotional recognition skills, alexithymia and cognitive emotional regulation styles were correlated with carer rated levels of challenging behaviours and alexithymia. In addition, a between groups analysis was used to determine whether emotional recognition abilities were significantly worse in people who present with high frequency challenging behaviour compared with those with no or low frequency challenging behaviour. The questionnaire method of data collection was employed with both service users and carers. The outcome variables were the frequency, management difficulty and severity of behaviours that challenge, including "aggressive" and "other challenging behaviour". The predictor variables were emotional recognition, cognitive emotional regulation and alexithymia.

2.2 Sample

2.2.1. Power Calculation

Although no previous studies have examined the relationship between the key variables examined in this study within a population of people with learning disabilities, a number of studies can be seen as "near neighbours". Thus, Zlotnick *et al.* (1996) found a correlation of .33 between alexithymia and deliberate self-harm in a population of 153 female psychiatric inpatients, Lambert and de Man (2007) found a correlation of .39 between self-mutilation and alexithymia in a population of French adolescent girls who were accessing psychological services, and Teten *et al* (2008) found a correlation of .32 between alexithymia and impulsive aggression in a population of 82 male veterans.

With a medium effect size correlation of 0.33, and with 0.8 power and probability level 0.05 (and one-tail hypotheses), the sample size needed was identified as 55 participants (55 service users and 55 carers) to provide sufficient power to identify the relevant effects.

2.2.2. Recruitment

Participants were recruited from two south Wales learning disability services. They were recruited through community teams that supported people with learning disabilities. These teams were comprised of both health and social care professionals and provided services to individuals with a learning disability within community settings, for example family homes, day services and residential care. As the prevalence of challenging behaviour in the population of people with learning disabilities is approximately 10%, it was decided that an enhanced sample of people who presented with behaviours that challenge would be used. Some participants were therefore recruited through specialist services. Specialist services provide intensive assessments and interventions to people with learning disabilities who present with behaviours that challenge or with mental health difficulties. These services include "Assessment and Treatment Units", "Community Specialist Behavioural Intervention Teams" and "Specialist Residential Services". To be registered with these services, people must have a recognised diagnosis of learning disability. The degree of learning disability is determined within the clinical team involved with individual participants. Those approached to participate in this research were identified as having a mild to moderate learning disability by their clinical team. No formal assessment was completed with regard to this within this study.

During the process of recruitment, the researcher gave a presentation to each community team (Appendix 13) and provided information to specialist service managers. Posters (Appendix 15) were also provided that could be displayed as an aide memoire or shared with service users who may have been interested in participating. The information provided outlined the aims of the project, clarified what participation in the project would entail and identified the

inclusion and exclusion criteria for participation. Professionals were asked to gain consent from potential participants for the researcher to approach them with further information. Of the eleven community teams approached, 8 were supportive and identified potential participants for the study, these were the more rural teams, so this may have introduced bias into the sample. The assessment and treatment units and the specialist residential services also identified potential participants.

In total, 116 potential participants were identified by the teams. Of these, 16 eventually declined to participate, and four did not have capacity to consent to participation or lacked the ability required to complete the questionnaires and were therefore excluded from the project. In line with the Data Protection Act (1998), it was not possible to obtain information about those service users excluded from the study.

Carers were recruited by being identified by service users as being someone who knew them well and for at least six months. When the researcher met with service users, if they agreed to participate, they were asked to identify a carer during the process of giving consent. This included consent to contact the carer they chose in order to ask them to complete further questionnaires. Where possible, if the service user agreed, support staff who were present when I met the service user were asked to complete the questionnaires. If the service user identified someone else the researcher contacted them, provided information about the research and, if they agreed, arranged to meet with them or send them the information sheet, consent form and questionnaires. On one occasion, when the service user identified a carer, the carer informed the researcher that they had only known the service user for 3 months. The researcher therefore returned to the service user and they identified someone else.

2.2.2.1. Inclusion Criteria

The inclusion criteria for participation in the research were:

- Adults with a mild or moderate learning disability
- With an ability to communicate verbally
- And with the capacity to consent to participation.

Participants also needed to identify a carer who had known them well for at least 6 months.

2.2.2.2. Exclusion Criteria

The only exclusion criterion was a diagnosis of Autistic Spectrum Disorder, as it is known that people with this disorder have difficulty recognising and processing the emotional states of others and responding in emotionally appropriate ways to situations (Carr, 2007; Owen *et al,* 2001).

2.2.3. Participants

The final number of participants recruited to the study was 96 people with a learning disability. Carer participants submitted corresponding forms for all but one of these participants.

2.3 Measures

The researcher completed a literature review and selected questionnaires based on how frequently they had been used within previous research, their psychometric properties and discussion with supervisors. They were also selected as suitable for use with people with a learning disability. Significant time was spent considering which measures to use, their need to be piloted with service users and how they could be adapted. Two of the questionnaires were designed to be completed from an observer's perspective and needed to be compatible with the skills of a wide range of carers ranging from unqualified support staff and family members to community team professionals.

2.3.1. Self-Report Measures Completed with Participants with a Learning Disability

2.3.1.1. The Emotional Recognition Questionnaire

The study aimed to measure how well people with learning disabilities could recognise their own emotions and identify their appropriate response to specific emotionally arousing situations. The 20- item "Emotional Recognition Questionnaire" (ERQ) (Appendix 4) was developed in order to measure these aspects. Five pilot studies were undertaken within a professional population, specifically trainee clinical psychologists, learning disability service professionals and forensic hospital staff. Within these pilots, individuals were asked to answer questions about how they would feel in different situations by choosing between five emotions, happy, sad, angry, scared or worried. Questions were only included in the final ERQ if there was 80% agreement on the emotional response expected to a given scenario. If responses to a question were inconsistent and did not reach 80% agreement the items were either discarded completely or amended and placed on the next questionnaire to be re-piloted. The final questionnaire contained 20 items, four items for each of the emotional responses involved (happy, sad, angry, scared and worried). Each of the 20 items within the ERQ identified a scenario and asked participants how they would feel if they found themselves in such a situation. For example, one item was: "If you won first prize in a competition, how would you feel?" Advice was sought from two speech and language therapists and the questionnaire was tested with two adults with learning disabilities, resulting in further simplification of the language used in the items.

A clear protocol was developed for the delivery of the questionnaire (Appendix 4). Researchers placed six cards in front of the participant, five showing a comic yellow face expressing a particular emotion (emoticons) with the name of the emotion written below the emoticon. The sixth card showed a question mark with the words "I don't know" written beneath the question mark (Appendix 5). Before the assessment began, the participants were asked to name the emotions on the cards. If participants were unable to recognise or

label any of the emotions on the answer cards, the researcher told them which emotion the picture represented. Participants were then asked if they could think of anything that made them feel like that. The researcher then asked participants which card represented each emotion, for example "Which one is worried?" This was to ensure that the participant had the emotional recognition skills required to complete the assessment and the knowledge required to discriminate between the emotions represented on the cards. If the participant could not correctly identify three out of five emotions then their participation ended. This happened with respect to four participants who were then excluded from the study. Once this procedure had been completed, the researcher gave the participant information about the measure, asking them to identify how they would feel in each situation and to select the appropriate emotion from the cards. If participants selected two emotions for an item they were asked to choose which emotion they would feel most. Their response was then recorded by the researcher. If the participant did not know what emotion they would feel in response to one of the items this was also recorded.

If the participant did not know what emotion they would feel in response to one of the items, this was also recorded. If the participant gave an incorrect answer they were asked why they would feel, for example, happy? This was not included in the scoring of the ERQ but offered the option for clinical judgement to be used in assessment scenarios within clinical practice. For example, when assessing a service user's emotional recognition ability, if they do not give the correct answer but do give an emotion related response with appropriate justification for their answer in response to the "why?" question, a clinical psychologist may still give a point as they recognise the service user does have emotional recognition skills. The "why?" question was not incorporated into this study as it introduced too much variability into the process but is added to the questionnaire with clinical practice in mind. When the task had been completed, the participant was thanked and the questionnaire was later scored by the researcher. Scores were calculated for each emotion and for total emotional recognition ability. Inter-rater reliability

checks conducted on 10 questionnaires (200 items) identified 100% agreement between the researchers in scoring the responses.

2.3.1.2. The Alexithymia Questionnaire for Children

The Toronto Alexithymia Scale (TAS-20) (Bagby *et al,* 1994) is the most frequently used measure of alexithymia within the literature and has been validated with a number of populations including adolescents, psychiatric populations, forensic populations and those who abuse substances. The "Alexithymia Questionnaire for Children" (AQC) (Rieffe *et al*, 2006) is a simplified version of the TAS-20, enabling its use with primary school aged children. The scoring on the AQC was also simplified to a 3 point scale (0 = not true, 1 = sometimes true, 2 = often true) instead of the five point response scale used on the TAS-20. The AQC consists of three factors that represent three core features of alexithymia: "Difficulty Identifying Feelings"; "Difficulty Describing Feelings" and "Externally Oriented Thinking". The AQC was validated with a non-learning disabled child population (ages 9 to 15). Two of the factors, difficulty identifying feelings and difficulty describing feelings, showed good predictive validity and were significantly positively correlated with a somatic checklist and negative emotion mood scales. These two factors also showed good internal consistency (Cronbach's alpha around 0.75 for both). The externally oriented thinking factor failed to meet the criteria for internal consistency or predictive validity and thus needs to be interpreted with caution. This is consistent with research findings relating to the TAS-20 (Kooiman *et al,* 2002). The AQC has been used in a number of studies. For example, Gatta *et al* (2011) used the AQC in their study of juvenile headache sufferers and Mishra et al (2012) studied alexithymia in children with a diagnosis of cancer. The AQC has also been translated into and validated in Dutch (original) (Reiffe *et al,* 2010), French (Loas *et al,* 2010) and Farsi (Nasiri *et al,* 2009).

The alexithymia questionnaire for children was used in this study as it's items employ simplified language and shorter statements than the TAS-20 upon which it is based, thus making them more accessible to a learning disabled

population. Because the AQC does not use child related concepts, for example play, school, toys, it is therefore age appropriate for the population. Based on the test runs, however, it was observed that some of the questions prompted participants towards a particular answer. The answers "sometimes true" or "often true" may have been preferred when the words "sometimes" or "often" also appeared in the question. Also, some of the language needed to be simplified further and the questions broken down. To ensure consistency a protocol was developed for the delivery of this questionnaire (Appendix 6). If the participant did not appear sure about the answer, the researcher read the statement out again and asked them initially if they thought that it was true or false, if they said "true" they were asked to say whether it was "sometimes true" or "often true". If the questions needed to be simplified further, examples were given within the protocol. If participants were unable to answer, the researcher moved on to the next question. Participants selected their response using a visual block scoring system which consists of three boxes, a white one for "not true", a half black and half white box for " sometimes true" and a black box for "often true" (Appendix 7). On some items, this scoring card was turned over and participants were asked to make a choice between two responses. The responses were recorded by the researcher and later scored in relation to the three factors.

2.3.1.3. The cognitive emotional regulation questionnaire

Cognitive emotion regulation is the cognitive approach one employs to manage emotionally rousing information (Garnefski *et al*, 2007). The "Cognitive Emotional Regulation Questionnaire" (CERQ) was developed (Garnefski *et al*, 2001) to measure the conscious cognitive emotion strategies that adults and adolescents use. It consists of 36 items which measure nine cognitive strategies: "Self-blame", "Other Blame", "Rumination", "Catastrophizing", "Putting into Perspective", "Positive Re-focussing", "Positive Re-appraisal", "Acceptance" and "Refocusing on Planning". Those completing the questionnaire rate items on a six point scale that ranges from "0 - almost never" to "5 - almost always". The CERQ-k, developed for use with children aged nine and older, is an adaptation of the original CERQ, with some items

simplified and shortened (Garnefski *et al,* 2007). The children's version was selected for this study due to its simplicity, with the hope this would make it more accessible to a learning disabled population. Like the AQC, it does not use child related concepts, for example play, school, toys, and it is therefore deemed to be suitable for use with an adult learning disability population.

The CERQ manual provides reliability and validity data showing good psychometric properties. Test-retest correlations were between 0.48 (refocus on planning) and 0.65 (other blame). Construct validity was established by correlating the CERQ with a number of other questionnaires including the Coping Inventory for Stressful Situations and the "NEO 5 Factor Personality Test". Good internal consistency was observed, with alpha coefficients ranging from 0.68 to 0.85. When the CERQ-k's psychometric properties were tested on a group of 717 children aged 9-11, the subscales showed good internal consistencies, with most alphas ranging from 0.7 to 0.8. The child version (CERQ-k) has been used in previous studies. These include Muris *et al* (2011), who studied protective and vulnerability factors of psychopathology symptoms in adolescents. In addition, Legerstee *et al* (2010) studied cognitive coping styles in childhood anxiety disorders.

Piloting the CERQ-k with an adult with learning disabilities showed it to be too complex and abstract, so a shortened and further simplified questionnaire was then developed based on the CERQ-k. This asked participants to provide a concrete example of something bad that had happened to them in the last month, something that may have made them feel sad, angry, scared or worried. Based on this event, participants then answered 18 items using a simplified scoring scale, the same as that used in the AQC: "0 = not true", "1 = sometimes true", "2 = often true". This shortened questionnaire only measured six of the cognitive emotion regulation strategies: "Self-blame", "Acceptance", "Positive Refocusing", "Refocus on Planning", "Catastrophizing" and "Other Blame". Items measuring "Rumination", "Positive Re-appraisal" and "Putting into Perspective" were excluded due to their complexity. Items included in the shortened questionnaire were chosen because they appeared accessible for the learning disability population based on the complexity of the questions,

how concrete the concepts were and how individuals coped in the piloting of the original CERQ-k questionnaire. When the new version was piloted, the service user coped much better with this format (Appendix 8).

2.3.2. Observer Questionnaires Completed by Carers

2.3.2.1. The Observational Alexithymia Scale.

The Observational Alexithymia Scale (OAS) (Haviland *et al,* 2000) (Appendix 9) was designed as an instrument that can be completed by service users' relatives or acquaintances to measure alexithymia. It contains 33 items which are rated on a four point scale ranging from "0 – "Never: Not at all like this person" to "3 - All the time: Completely like this person". The scale includes 18 items that relate to the presence of alexithymia. There are also 15 items that, if present, are negative indicators of alexithymia and these are therefore reverse scored. It measures five factorial domains of alexithymia, these relate to an individual being: "Distant"; "Uninsightful"; "Somatising"; "Humourless" and "Rigid". The authors argue that an observer scale for alexithymia is important as the family and acquaintances of service users are able to see a wide range of behaviours in a variety of contexts beyond the reach of the professional.

The OAS was developed based on the "California Q-Set Alexithymia Prototype" (CAQ-AP) which can be completed by a lay or professional rater but can take 45-60 minutes to complete. The OAS authors re-wrote and simplified the language of the CAQ-AP scale, and removed double negatives and ambiguous items. A factor analysis was completed which identified the five factors and retained 33 items on the scale. They also performed confirmatory factor analyses which showed strong correlations between the first order factors ("Distant", "Uninsightful", "Somatising", "Humourless" and "Rigid") and the second order construct of alexithymia ($p < 0.05$). In terms of reliability, the test-retest coefficient was 0.87, showing OAS scores remaining relatively stable over a two-week period. The authors argue that the internal consistency, stability and factorial invariance provide support for the OAS's

construct validity. The OAS has been used in a number of studies. Foran *et al* (2012) studied emotional abilities in couples. A number of studies have compared self-rated alexithymia to observer rated alexithymia in populations that are alcohol-dependent (Thorberg *et al,* 2010), abuse cannabis (Dorard *et al,* 2008) or have eating disorders (Berthoz *et al,* 2007). The OAS has also been translated into French (Berthoz *et al,* 2005) and Chinese (Yao *et al,* 2005). These studies provide further evidence of the validity and reliability of the OAS.

2.3.2.2. The Checklist of Challenging Behaviour

Carers were asked to complete the Checklist of Challenging Behaviour (CBC) about the service user who had identified them (Harris *et al,* 1994) (Appendix 10). This is a survey instrument designed to monitor the nature and extent of challenging behaviours in a learning disabled population. The measure contains two checklists of behaviours, the first one listing 14 "Aggressive Behaviours", the second one listing 18 "Other Challenging Behaviours". The "Aggressive Behaviour" checklist includes behaviours that involve harmful physical contact to the person or to others (for example biting, scratching etc.). The second list included "Other Challenging Behaviours" that may be associated with aggression but are not necessarily directed at others (for example damaging/ breaking furniture/ and or objects, smashing windows etc.). One could, however, argue that a number of behaviours on the "Other Challenging Behaviour" list should also be classed as aggressive. Scales are used to rate the behaviours in terms of "Frequency", "Management Difficulty", and, for the aggressive behaviours only, "Severity". The "Frequency" scale ranges from "0- Never shown this behaviour to my knowledge" to "6 - Very frequently- Daily or more often in the past month". The "Management Difficulty" scale was based on the rater's perception of their own difficulty managing a challenging situation. This ranges from "0 - No problem- I can usually manage this situation with no difficulty" to "4- Extreme problem- I simply cannot manage this situation without help". The "Severity" scale focuses on the degree of tissue damage and it therefore only applied to the aggression checklist. This ranges from "0- No injury- Does not appear to

cause pain or tissue damage to other person" to "4- Very serious injury- Has caused very serious tissue damage (e.g. broken bones, deep lacerations/wounds) or resulted in hospitalisation and/or certified absences from work for whatever reasons". Carer participants were asked to rate the frequency of each behaviour. If they rated it "0" then they could move on to the next behaviour, but if they recorded any other number in the frequency box they were asked to rate the management difficulty and severity for that behaviour. Within this study an overall score was calculated for the "Frequency of Challenging Behaviour", the "Management Difficulty of Challenging Behaviour". These composite scores and the "Aggression Severity" score were all used in the data analyses.

Harris *et al* (1994) assessed the CBC for inter-rater reliability, between interviewer reliability and test- retest reliability. The results showed acceptable levels of reliability for all three types, with critical values of r_s being significant at the $p<0.05$ level for all three rating scales (frequency, management difficulty and severity). Harris *et al* (1994) did, however, note a tendency for the reliability of the scales to decrease as the numbers of the behaviours recorded increased. In terms of validity, the items that were included were based on information from service providers, a review of other checklists for challenging behaviours and by examining hospital records of violent incidents. Service providers were asked to identify any other aggressive or challenging behaviours and content analysis of 168 completed checklists was then completed by two researchers independently. The results of this suggested that content validity of the CBC is high. This measure has been used in a number of studies to measure challenging behaviour. Mills and Rose (2007) examined the relationship between challenging behaviour and burnout in staff working with people who have learning disabilities. Joyce *et al* (2001) conducted a study on challenging behaviour in community services. Jenkins *et al* (1998) looked at the relationship between the CBC and the "Psychopathology Inventory".

2.3.3. How the Questionnaires Relate to Proposed Model of Variable Relationships

The questionnaires measure different variables within the proposed model (see section 1.2.6). Figure 2.1. illustrates which variable within the model each questionnaire examines.

Figure 2.1. Illustration of how Each Questionnaire Relates to the Proposed Model of Interrelationships Between the Variables
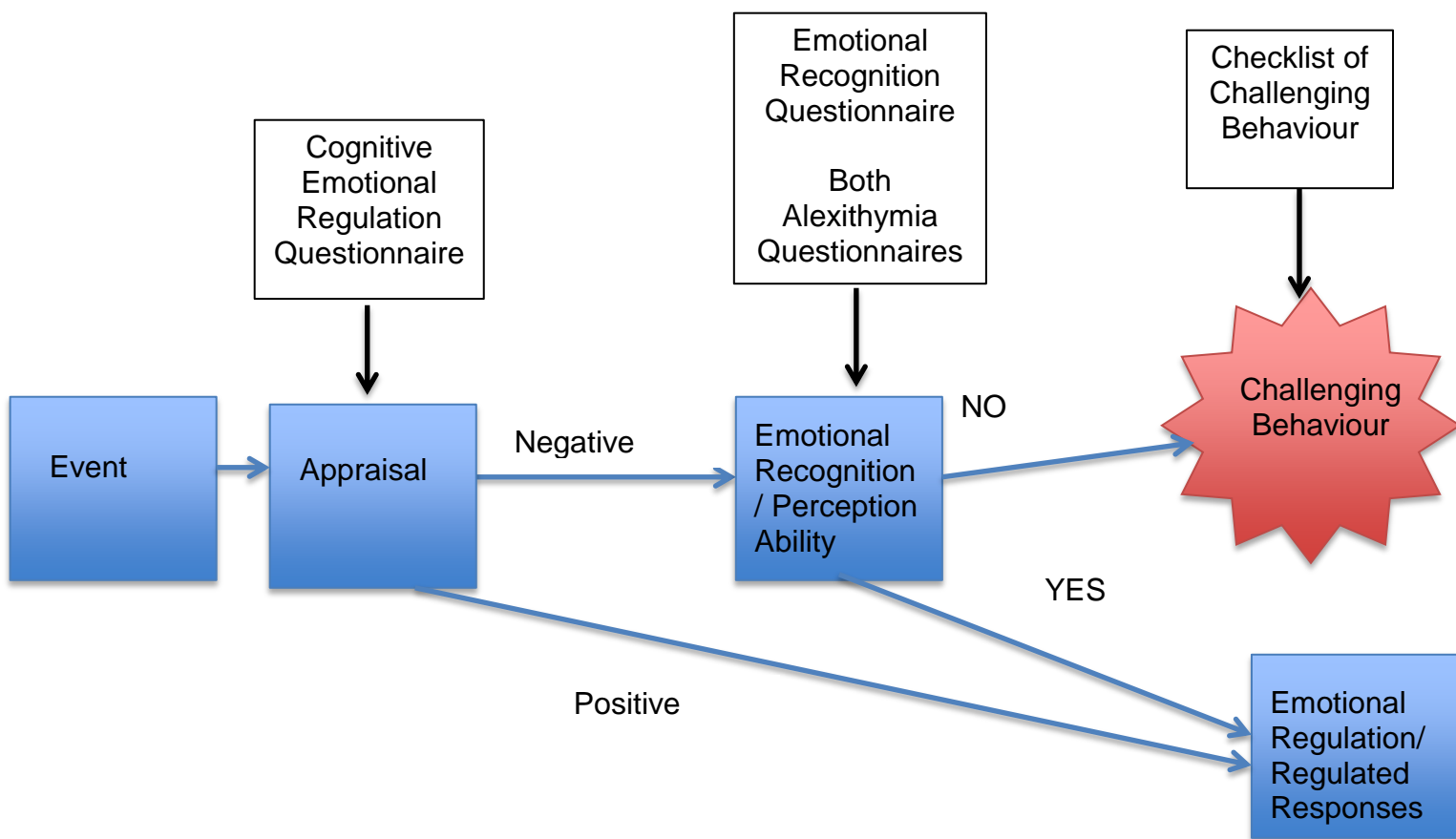
2.4 Procedure

2.4.1. Ethical Approval

Ethical permission to conduct this study was obtained from South West Wales Research Ethics Committee (Appendix 11) and permission was obtained from the relevant health boards Research and Development Departments (Appendix 12).

2.4.2. Welfare of Participants

Due to the nature of some of the questions, and the need to ask participants to provide a concrete example of something bad that had happened to them in the last month, clear plans had to be identified should any clients become distressed or make any disclosures. A clear confidentiality statement was made during the process of gaining consent. This informed the participants that the researcher needed to pass on to relevant professionals any disclosures regarding risk to the participant or others. In addition, participants were asked only to talk about things they felt "okay" to talk about. It was made clear to participants that they could stop at any time before commencing with the questionnaires. If anyone had become distressed they would been given the opportunity to debrief with the researcher who would have offered some reassurance and support at that time. In addition, they would have been helped to access support from someone they were close to or appropriate professionals if the participant had wished. This was agreed through the process of gaining ethical approval.

2.4.3. Obtaining informed consent

Information about the research project, including the aims, hypotheses and inclusion and exclusion criteria for participation, was presented at multi-disciplinary team meetings by the researcher (Appendix 13). Both health and social care professionals within learning disability services regularly attend these meetings. Staff were asked to gain service users' consent for the

researcher to approach them (Appendix 14). Potential participants were therefore approached by professionals they knew or administrative staff within the teams to ensure that confidentiality was not compromised. They were asked if they would like to participate in the research project. At this stage they were given minimal information i.e. that it takes approximately half an hour and involves completing some questionnaires (Appendix 15) (see section 2.2.2.). If service users agreed, their details were passed on to the researcher who then arranged to meet the participant at a location of their choosing. Any risk concerns were identified at this stage and local lone worker policies considered in planning appointments.

When a researcher met with participants, an accessible information sheet (Appendix 16) was provided and read through with the participant, whilst referring to pictorial prompts. The participant was then given the opportunity to ask any questions. If at this point they were happy to proceed, the researcher read out the questions outlined on the consent form (Appendix 17). This provided an opportunity to check the participant's understanding and to clarify any points. In accordance with the ethical approval given for the study, it was only possible to include participants who had the capacity to give consent to take part. If it was deemed by the researcher that a service user did not have the capacity to provide informed consent they were excluded from the study. If the participant was happy to proceed, they were asked to sign the consent form.

During the process of gaining consent the service user was asked to identify a carer that the researcher could approach to complete the other questionnaires; this had to be someone who had known them well for at least six months. An additional information sheet and consent form were provided to the carer who, with their agreement, was asked to complete two further questionnaires (Appendices 18 and 19).

2.4.4. Data Collection

The participants with a learning disability were asked to complete three questionnaires that measured emotional recognition, regulation and alexithymia and also to provide demographic information (Appendix 20). The researcher supported them by reading out the questions and prompting them to select their answer from visual stimuli placed in front of them (Appendices 5 and 7). This took between 20 minutes and one hour to complete. When the participants had completed the questionnaires the researcher thanked them and gave them an opportunity to ask any questions. Where possible, carers were asked to complete questionnaires at the same time. If this was not possible then alternative arrangements were made to either visit them, to e-mail the questionnaires to them or to post them, together with a stamped addressed envelope and instructions about how to complete the questionnaires (Appendix 21). All participants were provided with the researcher's and her supervisor's contact details should they have any questions or wished to make a complaint. They were also offered the opportunity to obtain feedback on the outcomes of the research when the project was complete. The questionnaires were anonymous, with only an identification number linking the measures to one another and to the demographic sheet. A password protected tracking sheet was maintained by the researcher who was the only person who had access to personal and contact details. Data generated from each participant was not accessible to anyone other than the researcher and the academic and clinical supervisors.

An undergraduate psychology student was on placement within one of the health boards and was recruited to support data collection within the borough she was placed within. This person was trained by the researcher in all aspects of gaining consent and administering the questionnaires. She collected data from 11 service user participants and 11 carers. Her role included providing information, gaining consent and questionnaire completion with service user participants and providing information, gathering appropriate consent and further questionnaires from their carers.

2.5 Data Analyses

Data was analysed using the Statistical Package for Social Sciences (SPSS) version 20. The methods of analyses were as follows:

1. Data was screened for missing values, outliers and parametric qualities.
2. Descriptive analyses were then conducted of demographic details including the age of the participant, time known to carer and participant and carer gender.
3. Descriptive analyses were then conducted for all of the outcome and predictor variables measured by the questionnaires.
4. One-tailed Pearson's correlational analysis was used to assess the construct validity of the ERQ by comparing it with the AQC and the subscales of "Difficulty Identifying Feeling" and "Difficulty Describing Feelings".
5. One-tailed Pearson's correlational analysis was used to analyse parametric variables in line with the hypotheses. In addition, Spearman's rho was used to compute non-parametric correlations. One tailed tests were used for all correlations
6. Linear regression was used to assess the variance in challenging behaviour that could be explained by the predictor variables.
7. A one-tailed t test was used to compare emotional recognition ability of participants presenting with a high frequency of challenging behaviour and those with no or low frequency of challenging behaviour.

Chapter 3
Results

3.1 Introduction

This chapter will provide an analysis of the data collected in the study. The results chapter will consist of four main sections. First the data screening procedures will be described. Descriptive statistics will then be presented in relation to the participants themselves and then for the variables assessed in the study. The third section will present the correlational data in relation to each hypothesis and, where relevant, regression analysis relating to the outcome variables of "Challenging Behaviour Frequency", "Challenging Behaviour Management Difficulty" and "Aggression Severity". The final section will present a post hoc between groups analysis, testing hypotheses seven, comparing the emotional recognition ability of participants presenting with a high frequency of challenging behaviour and those with no or low frequency challenging behaviour.

3.2. Data Screening

3.2.1. Missing Values

Questionnaires were included and analysed if they had less than 10% missing data. All of the questionnaires completed with service users were administered by the researchers, and as a result there were no missing values in this data. The variables measured with service user participants were emotion recognition, alexithymia, as measured by the AQC, and data from the cognitive emotional regulation questionnaire. There were, however, missing data on the forms completed by carers (CBC and OAS). One set of carer's forms were not returned to the researcher, and in this case the service user's data was only used in statistical analysis relating to the service user completed measures. Another carer returned a challenging behaviour checklist with only the frequency data completed. All missing data was coded

as missing and missing data was excluded from correlational and regression analysis using the SPSS pairwise deletion option.

Missing Values Analysis (MVA) was conducted on the resulting dataset (N=96), which showed that the frequency of missing data ranged from 0-6.3%. The highest percentage of missing values was on the total OAS, where there were 6.3% of missing values. In addition, the challenging behaviour management difficulty variable had 5.2% missing data. For all the other variables, missing data was under 5%. Little MCAR's statistic was not significant with regard to the missing values indicating that missing data were randomly distributed.

3.2.3. Error analysis

Minimum and maximum values for each variable were screened to ensure that all data fell within the possible valid range for the variable. No items fell outside the possible range for any of the variables.

3.2.4. Outliers

Box plots were used to identify outliers and these were then checked to confirm that data had been entered correctly and measures correctly scored. In the case of one questionnaire input errors were identified and subsequently corrected after referring back to the raw data. In the case of all other variables, the outliers were all feasible, representing genuine extremes in behavior, self-blame and emotional recognition ability.

3.2.5. The Assumption of Normality

Parametric analyses assume that data are normally distributed. This was reviewed in this current study by calculating the z score for skewness and kurtosis by dividing each value by its standard error. A z score of 1.96 or above indicates an unsatisfactory level of skewness or kurtosis for parametric analyses as it implies that the data are not normally distributed. Most of the

alexithymia variables were normally distributed, including all of the "Alexithymia Questionnaire for Children" scales and the total. In addition, the "Observer Alexithymia Scale" total and three of it's sub scales were normally distributed ("Humourless", "Distant" and "Uninsightful"). The "Emotional Recognition Questionnaire" total was normally distributed as were the sub-measures of "Angry" and "Worried". Finally, overall scores for the "Cognitive Emotional Regulation Questionnaire" positive and negative strategies were normally distributed, as were the subscales "Acceptance", "Positive Refocusing" and "Refocus on Planning".

A number of the variables were not normally distributed. In particular, all of the variables relating to challenging behaviour were significantly skewed, and all showed kurtosis. The sub-scales of "Happy" and "Sad" on the "Emotional Recognition Questionnaire" were skewed and "Happy" and "Scared" showed significant kurtosis. The sub- scales of "Self-blame" and "Catastrophizing" on the "Cognitive Emotional Regulation Questionnaire" were both skewed and "Other Blame" had significant kurtosis. Finally, on the "Observer Alexithymia Scale", "Somatising" and "Rigid" were skewed (Appendix 22 for a table showing the distribution of all of the variables). Analyses using any of the variables that were not normally distributed were therefore performed using non-parametric methods.

3.2.6. Bonferroni Correction

When repeated tests are carried out on a study sample, the probability of finding significant outcomes is artificially inflated and the risk of making a Type I error increases (Morgan, 2007). A type I error is when the null hypotheses is rejected when it is, in fact, true (Field, 2009). As a result it has become customary to employ some way of adjusting the analysis to take account of this effect. There are a number of ways of doing this, one is to change the significance threshold from <0.05 to <0.01, another is to consider not isolated findings but consistent patterns of similar findings, and, another method is to apply a statistical correction method called the Bonferroni correction (Morgan, 2007). The Bonferroni correction is however highly conservative, dividing the

level of significance by the number of correlations made (Field, 2009). The cost of applying Bonferroni correction is a loss in power and the dramatic increase in the risk of a type II error occurring (that is not rejecting the null hypothesis when it is false, therefore missing significant relationships) (Garamszegi, 2006; Field, 2009). Morgan (2007) argues that Bonferroni corrections are not the sign of judicious statistical caution but simply a method of reducing type I errors and increasing type II errors. A Bonferroni correction was therefore not applied to the multiple tests made on the current data set. An alternative to using this correction is to observe patterns within the findings. For example, if challenging behaviour frequency is correlated at a significance level of 0.05 with all three variables on an alexithymia questionnaire, the probability of that happening by chance would be 0.05 x 0.05 x 0.05 which equals a probability of 0.000125 of that pattern appearing by chance. This thesis is however cautious in the interpretation of single correlations that occur within the analysis.

3.3. Descriptive Statistics

3.3.1. Demographics of Service User Participants

Of the 96 service user participants, 46 were women and 50 were men. The age range of the participants was 18-79 years old, with the mean age of the sample being 39.68 years, the median 39.0 years and the standard deviation 13.32 years.

When defining the extreme groups to be compared, quartile ranges were calculated based on the scores for the frequency of challenging behaviour. Participants allocated to the "no or low frequency challenging behaviour" group (n=26) scored four or less on the overall frequency scale on the Challenging Behaviour Checklist. Those within the "high frequency challenging behaviour" group (n=24) scored 34 or over and were within the upper quartile of the challenging behaviour frequency scores. The groups were comparable in terms of gender and when comparing the ages of participants no significant differences were found (t=.742, df=48, p N.S). Table

3.1 presents demographic details of the groups.

Table 3.1. Table showing the demographic information for the "no challenging behaviour" and "high frequency challenging behaviour" groups.

	N	Age Range	Mean Age	Male	Female
Challenging Behaviour Group	24	18-56	36.8	12	12
Non – Challenging Behaviour Group	26	23-79	39.4	13	13

3.3.2. Demographics of Carer Participants

Of the 95 carer participants, 72 were women and 19 were men. Gender was not recorded for four carers. The carers chosen by service users had known them between 6 months and 54 years and represented a number of caring roles. The carers who had known service users longest were family members, and one adult placement carer. The average time carers were known was 7.94 years (mean), the median being 5 years. The majority (80%) of carers had known the service users less than 10 years and 57% had known them for less than 5 years. The roles of carer participants and their time known to the service users are presented in Table 3.2.

Table 3.2: Table showing the relationship between carer participants and service users and the average time known to one another

Carer's Role	N	Time known to service user (years)		
		Mean	**Median**	**Range**
Support worker	30	5.15	5.00	1-18
LD service professional (nurse, social worker etc).	20	5.45	4.00	0.5- 20
Home manager/ team leader	22	4.98	4.00	0.5- 13
Family member (6 mothers, 1 partner)	7	30.13	32.5	8- 45
Key-worker	5	3.90	3.5	1-7
Day service staff (4 missing values)	9	7.40	6.0	4-14
Adult placement carer	2	30.00	30.00	6- 54
Total N=91 (4 missing values)	95	7.75	5.0	0.5- 54

3.3.3. Descriptive Statistics for the Variables

3.3.3.1. Challenging Behaviours

Challenging behaviour was rated by carers on three scales, "Frequency", "Management Difficulty" and aggression "Severity". On the "Frequency" scale participants can be rated between "0 - Never shown this behaviour to my knowledge" to "6 - Very Frequently- Daily or more of ten in the past month". The "Management Difficulty" scale can be rated between "0 - No problem" to

"4 – "I simply cannot manage this situation without help". Overall 32 behaviours are included within the "Frequency" and "Management Difficulty" scales. The maximum score for "Frequency" is therefore 192, and the maximum for "Management Difficulty" is 128. Aggression "Severity" is assessed on a scale of 14 behaviours that cause harm or injury. The "Severity" scale measures the degree of injury and can be rated between "0 - No injury" to "4 - Very serious injury". The latter includes hospitalisation, deep wounds or fractures. The maximum possible score for this would be 56. As is evident from the data below one cannot expect to see these extremes in this type of population and consequently the ranges of scores are much smaller. Table 3.3 below illustrates descriptive statistics for frequency, management difficulty and severity of challenging behaviours expressed by people with learning disabilities within this sample but rated by carers.

Table 3.3. Table showing the Frequency Management Difficulty and Severity of Challenging Behaviours Presented in this Sample as Measured by the Checklist of Challenging Behaviours.

	N	Range	Mean	Median	Standard Deviation
Challenging Behaviour Frequency	94	0-83	19.19	11.5	20.19
Challenging Behaviour Management Difficulty	91	0-59	8.46	2	12.35
Aggression Severity	94	0-19	2.31	0	4.52

3.3.3.2. Emotional Recognition

Emotional recognition ability was assessed with service users using the "Emotional Recognition Questionnaire". This was scored by giving one point for each correct answer. The maximum score for each emotion was therefore four and the overall maximum score for the questionnaire was 20. People did

much better at identifying happy and sad than the other emotions and they found identifying "worried" particularly difficult (see Table 3.4).

Table 3.4. Table showing the Scores Achieved by Participants with a Learning Disability on the Emotional Recognition Questionnaire and all the Component Emotions Measured

	N	Range	Mean	Median	Standard Deviation
Happy	96	2-4	3.90	4	0.37
Sad	96	0-4	3.22	3	0.93
Angry	96	0-4	2.47	3	1.29
Worried	96	0-4	1.78	2	1.17
Scared	96	0-4	2.46	3	1.26
Total ERQ correct	96	4-19	13.82	14	2.98

3.3.3.3. Alexithymia

Alexithymia was measured using responses from both service users and carer participants. On the "Alexithymia Questionnaire for Children" there were three scales, "Difficulty Identifying Feelings", "Difficulty Describing Feelings" and "Externally Oriented Thinking". An overall alexithymia score was also derived which could range between zero and 40. Difficulty identifying feelings scores could range from zero to 14, difficulty describing feelings scores could range from zero to 10 and, externally oriented thinking scores could range from zero to 16. Table 3.5 shows the scores for participants with a learning disability.

Table 3.5. Table showing Descriptive Statistics Relating to the Scores of Participants with a Learning Disability on the Alexithymia Questionnaire for Children (AQC).

	N	Range	Mean	Median	Standard Deviation
Difficulty Identifying Feelings	96	0-14	6.27	6	3.13
Difficulty Describing Feelings	96	1-10	5.56	6	2.22
Externally Oriented Thinking	96	3-13	8.56	9	1.94
Total AQC	96	8-31	20.40	20.5	4.96

Carers also rated alexithymia in participants with a learning disability using the "Observer Alexithymia Scale". This scale has five sub-scales as well as the overall score. The overall score could range between zero and ninety-nine. The sub-scales were: a) "Rigid", b) "Humourless", c) "Somatising", d) "Uninsightful" and e) "Distant". Scores on "Rigid", "Humourless" and "Somatising" could range from zero to 15, scores on "Uninsightful" could range from zero to 24 and "Distant" could range from zero to 30. Table 3.6 presents the range of scores obtained for this sample for each scale as well as averages and standard deviations.

Table 3.6. Table showing Descriptive Statistics Relating to the Scores on the Carer Rated Observer Alexithymia Scale (OAS) and it's Sub-Scales

	N	Range	Mean	Median	Standard Deviation
Rigid	92	0-12	4.95	4	2.78
Humourless	94	0-13	4.76	4	2.88
Somatising	94	0-14	4.77	5	3.19
Uninsightful	92	3-22	12.63	12	4.51
Distant	92	2-28	14.45	14	5.43
Total OAS	90	16-68	41.44	42	1.33

3.3.3.4. Cognitive Emotional Regulation

The "Cognitive Emotional Regulation Questionnaire", completed by people with a learning disability, measured three positive thinking styles ("Refocus on Planning", "Positive Re-focussing" and "Acceptance") and three negative thinking styles ("Other Blame", "Self-Blame" and "Catastrophizing"). On each of the six cognitive emotional regulation styles the participants could get a maximum score of six, and on the total positive and total negative scores the maximum score was 18. Table 3.7 presents the data for each scale. One can see that "Catastrophizing" was reported the most, closely followed by "Positive Refocusing", "Refocus on Planning" and "Other Blame". Self Blame" was the least used cognitive style.

Table 3.7. Table showing Descriptive Statistics Relating to the Cognitive Emotional Regulation Strategies Employed by Participants with a Learning Disability.

	N	Range	Mean	Median	Standard Deviation
Other Blame	96	0-6	3.22	3.5	2.10
Catastrophizing	96	0-6	4.27	4	1.36
Refocus on Planning	96	0-6	3.25	3	1.81
Positive Re-focussing	96	0-6	3.48	4	1.74
Acceptance	96	0-6	2.88	3	1.95
Self-Blame	96	0-6	1.24	0	1.76
Total Positive	96	2-18	9.60	10	3.33
Total Negative	96	2-16	8.73	9	3.15

3.4. Correlational analyses

One-tail correlational analysis was computed between AQC and ERQ data with the aim of further validating the ERQ questionnaire. One-tail correlational analyses were then computed between service user and carer rated alexithymia to identify if they were related in this population. One–tail correlational analyses were also conducted to test hypothesised associations between challenging behaviour and the identified factors: Emotional recognition, alexithymia (service user measured and carer measured) and cognitive emotional regulation. In addition, further correlational analyses were completed to test hypothesised relationships between alexithymia, cognitive emotional regulation and emotional recognition. Linear regression was used to assess the variance of the challenging behaviour outcome variables accounted for by emotional recognition and alexithymia.

3.4.1. Construct Validity of the Emotional Regulation Questionnaire

The ERQ was compared to the "difficulty identifying feelings" scale, "difficulty describing feelings" and "total AQC" with the aim of gaining further support for the construct validity of the Emotional Recognition Questionnaire. One-tailed Pearson's correlation coefficient was used as all of these variables were normally distributed, meeting the assumptions necessary for parametric analysis. No relationship was found between the Emotional Recognition Questionnaire and any of the AQC measures.

Table 3.8. Table Showing Correlations Between the Emotional Recognition Questionnaire and Relevant Dimensions of the Alexithymia Questionnaire for Children.

	Alexithymia DIF	Alexithymia DDF	Alexithymia Total
ERQ total	-.058	.006	.011

3.4.2. Correlations between carer and service user measured alexithymia

When correlations were computed, very little relationship was found between the OAS and the AQC. The only significant positive correlations found, using a one-tailed Spearman's rho test, were between "Somatising"(OAS) and "Externally Oriented Thinking" (AQC) (r_s= .265, p <0.01) and, "Somatising" (OAS) and "AQC total" (r_s= .250, p <0.05). As these results were the only significant found out of a large number of correlations, it is possible that they occurred by chance.

3.4.3. Hypothesis1- Emotional recognition skills will be negatively correlated with higher frequency, management difficulty and severity of challenging behaviour.

As none of the challenging behaviour related variables met the assumptions required to use parametric analyses, one-tailed Spearman's rho correlations were computed, as presented in Table 3.9. Significant negative correlations

were found between "Challenging Behaviour Frequency" and "Emotional Recognition Total" (r_s= -.290, p <0.01), "Worried" (r_s= -.204, p <0.05) and "Angry" (r_s= -.218, p <0.05). A significant negative correlation was also found between "Challenging Behaviour Management Difficulty" and "Angry" (r_s= -.229, p <0.05). A small positive correlation was found between "Challenging Behaviour Management Difficulty" and "Happy" (r_s= .187, p <0.05). "Emotional Recognition Total" had a significant negative correlation with "Aggression Severity" (r_s= -.178, p <0.05).

Table 3.9. Table Showing Correlations Between Emotional Recognition and Challenging Behaviour.

	CB Frequency	CB Management Difficulty	Aggression Severity
ERQ total	**-.290****	-.160	**-.178***
Happy	-.057	**.187***	-.034
Sad	-.088	.061	-.076
Worried	**-.204***	-.114	-.059
Scared	-.133	-.082	-.093
Angry	**-.218***	**-.229***	-.160

 **p<0.01, *p<0.05

A linear regression was conducted to determine whether scores on the Emotional Recognition Questionnaire were predictive of the challenging behaviour variables. Total emotional recognition accounted for 6.9% of the variance of challenging behaviour frequency, the overall model significantly predicting the frequency of challenging behaviour (R^2= 0.69, F(1, 93) = 6.833,

p < 0.01). The value of total emotional recognition significantly predicted the frequency of challenging behaviour, with emotional recognition ability reducing by -1.764 for each increase in the frequency of challenging behaviour (b = -1.764, t = -2.614, p <0.01). Angry total was not significantly predictive of challenging behaviour management difficulty (R^2= 0.27, $F_{(1, 90)}$ = 2.503, p = N.S.). "Angry" total was not significantly predictive of "Challenging Behaviour Management Difficulty" (R^2= 0.12, $F_{(1, 90)}$ = 2.503, p = N.S.). "Emotional Recognition Total" was not significantly predictive of "Aggression Severity" (R^2= 0.27, $F_{(1, 93)}$ = 1.146, p = N.S.).

3.4.4. Hypothesis 2- Positive cognitive emotional regulation strategies will be negatively correlated with the frequency, management difficulty and severity of challenging behaviour.

Hypothesis 3- Negative cognitive emotional regulation strategies will be positively correlated with the frequency, management difficulty and severity of challenging behaviour.

One-tailed Spearman's rho correlations were computed to explore relationships between challenging behaviour and cognitive emotional regulation, as presented in Table 3.10. Two positive correlations were found between "Challenging Behaviour Frequency" and "Total CERQ Negative" (r_s= .184, p <0.05) and " Other Blame" (r_s= .183, p <0.05).

Table 3.10. Table Showing Correlations Between Cognitive Emotional Regulation Styles and Challenging Behaviour.

	CB Frequency	CB Management Difficulty	Aggression Severity
CERQ Positive	-.058	.054	-.150
CERQ Negative	**.184***	.166	.015
Self- Blame	.043	.055	.054
Acceptance	-.055	.010	-.133
Refocusing on Planning	.113	.130	.013
Positive Refocusing	-.098	.031	-.085
Catastrophizing	.113	.156	-.063
Other Blame	**.183***	.141	.045

**p<0.01, *p<0.05

3.4.5. Hypothesis 4- Alexithymia scores will be positively correlated with the frequency, management difficulty and severity of challenging behaviour.

One-tailed Spearman's rho correlations were computed to identify relationships between challenging behaviour and alexithymia, as presented in Table 3.11. Only one significant correlations was found between service user

measured alexithymia (AQC) and challenging behaviour, a significant positive correlation was found between "Aggression Severity" and "Difficulty Describing Feelings" (r_s= .186, p <0.05). Significant positive correlations were, however, found between carer rated alexithymia (OAS) and some of the challenging behaviour scores. Challenging behaviour "Frequency" was significantly related to the sub-scales "Distant' (r_s= .218, p <0.05), "Uninsightful" (r_s= .491, p <0.01), "Rigid" (r_s= .320, p<0.01) and "Observer Alexithymia Total" (r_s= .497, p <0.01). Challenging behaviour "Management Difficulty" is significantly correlated with "Uninsightful" (r_s= .325, p <0.01) and "Observer Alexithymia Total" (r_s= .317, p <0.01). Finally, Aggression "Severity" was significantly correlated with "Uninsightful" (r_s= .296, p <0.01) and "Observer Alexithymia Total" (r_s= .298, p <0.01).

Table 3.11. Table Showing Correlations Between Alexithymia and Challenging Behaviour.

	CB Frequency	CB Management Difficulty	Aggression Severity
Alexithymia DIF	.079	.059	-.059
Alexithymia DDF	.160	.126	**.186***
Alexithymia EOT	-.008	-.006	-.013
Alexithymia Total	.150	.133	.133
Observer Alexithymia Distant	**.218***	.170	.147
Observer Alexithymia Uninsightful	**.491****	**.325****	**.296****
Observer Alexithymia Somatising	.154	.067	.133
Observer Alexithymia Humourless	**.194***	.124	.096
Observer Alexithymia Rigid	**.320****	.084	.150
Observer Alexithymia Total	**.497****	**.317****	**.298****

**p<0.01, *p<0.05

Linear regression was conducted to determine the degree to which observer rated alexithymia was predictive of challenging behaviour. Total observer

alexithymia accounted for 21.4% of the variance of challenging behaviour frequency, the overall model significantly predicting the frequency of challenging behaviour (R^2= 0.214, F(1, 88) = 23.713, p <0.001). The value of total observer rated alexithymia significantly predicted the frequency of challenging behaviour, with observer alexithymia increasing by 0.831 for each increase in the frequency of challenging behaviour (b = .831, t = -4.870, p <0.001). Total observer alexithymia also accounted for 8.9% of the variance of challenging behaviour management difficulty, the overall model significantly predicting the management difficulty of challenging behaviour (R^2= 0.89, F(1, 85) = 8.174, p <0.01). The value of total observer rated alexithymia significantly predicted the management difficulty of challenging behaviour, with observer alexithymia increasing by 0.333 for each increase in the management difficulty of challenging behaviour (b = .333, t = -2.859, p <0.01). Finally, total observer alexithymia was also significantly predictive of aggression severity, accounting for 5.9% of the variance (R^2= 0.059, F(1, 88) = 5.457, p <0.05). The value of total observer rated alexithymia significantly predicted aggression severity, with observer alexithymia increasing by 0.099 for each increase in the severity of aggression (b = .099, t = -2.336, p <0.05). The predictive ability of observer rated alexithymia was weaker in relation to the severity of aggression.

3.4.6. Hypothesis 5- High Alexithymia scores will be positively correlated with the use of more negative cognitive emotional regulation strategies, and negatively correlated with the use of more positive strategies.

Exploratory analysis was conducted to discover whether alexithymia was related to particular cognitive emotional regulation styles, as presented in Table 3.12. It was anticipated that alexithymia would be related to the use of more negative thinking styles than positive ones. As some of the variables met the assumptions for parametric analyses whilst others did not, firstly one-tailed Pearson's correlation coefficients were calculated for the parametric variables. Significant positive correlations were found between the cognitive emotional regulation style of "Acceptance" and

"Alexithymia- Difficulty Identifying Feelings" (r = .253, p <0.01), "Alexithymia- Difficulty Describing Feelings" (r = .223, p <0.05), "Alexithymia Total", as measured by the AQC, (r = .224, p <0.05) and "Distant" as measured by the OAS (r = -.199, p <0.05). "Total CERQ Negative" was positively correlated with "Difficulty Identifying Feelings" (r= -.171, p <0.05) and "Difficulty Describing Feelings" (r= -.176, p <0.05) and "Total AQC" (r = .180, p <0.05). A significant negative correlation was found between "Total Positive CERQ" and "Alexithymia- Externally Oriented Thinking" (r = -.187, p <0.05).

Table 3.12. Table Showing Pearson's Correlations Between Alexithymia and Cognitive Emotional Regulation

	CERQ Positive	CERQ Negative	Acceptance	Positive Refocusing	Refocus on Planning
Alexithymia DIF	.085	**.171***	**.253****	-.043	-.094
Alexithymia DDF	.149	**.176***	**.223***	.003	.030
Alexithymia EOT	**-.187***	.018	-.092	-.109	-.140
Alexithymia Total	.041	**.180***	**.224***	-.069	.-.101
Observer Alexithymia Distant	.091	-.044	**.199***	-.020	-.005
Observer Alexithymia Uninsightful	-.115	.094	-.037	-.130	-.046
Observer Alexithymia Humourless	.040	-.155	.158	-.057	-.043
Observer Alexithymia Total	-.030	.014	.132	-.115	-.087

**p<0.01, *p<0.05

For the variables that did not meet the criteria for parametric analyses, one-tailed Spearman's Rho correlations were computed, as presented in Table

3.13. Significant positive correlations were found between variables measured on the AQC and cognitive emotional regulation strategies. The "Alexithymia- Difficulty Identifying Feelings" variable was significantly correlated with "Self-Blame" (r_s = .203, p <0.05). "Catastrophizing" was significantly correlated with "Alexithymia- Difficulty Identifying Feelings" (r_s = .233, p <0.05), "Alexithymia- Difficulty Describing Feelings" (r_s = .359, p<0.01) and, "Alexithymia Total" (r_s = .295, p <0.01). No relationship was found between any of the carer rated observer alexithymia scales and cognitive emotional regulation.

Table 3.13. Table Showing Spearman's Rho Correlations Between Alexithymia and Cognitive Emotional Regulation

	CERQ Positive	CERQ Negative	Self- Blame	Acceptance	Refocus on Planning	Positive Refocusing	Catastrophizing	Other Blame
Alexithymia DIF	X	X	**.203***	X	X	X	**.233***	-.080
Alexithymia DDF	X	X	.120	X	X	X	**.359****	-.088
Alexithymia EOT	X	X	-.082	X	X	X	.031	.013
Alexithymia Total	X	X	.121	X	X	X	**295****	-.085
Observer Alexithymia Distant	X	X	-.049	X	X	X	.013	.012
Observer Alexithymia Uninsightful	X	X	.087	X	X	X	-.025	.117
Observer Alexithymia Somatising	-.040	.089	.087	.018	-.094	-.008	.014	-.023
Observer Alexithymia Humourless	X	X	-.106	X	X	X	-.041	-.151
Observer Alexithymia Rigid	-.155	-.036	-.001	-.034	-.120	-.153	-.099	.023
Observer Alexithymia Total	X	X	.005	X	X	X	-.043	.041

X parametric tests completed, see above, **p<0.01, *p<0.05

3.4.7. Hypothesis 6- Emotional recognition will be negatively correlated with the use of negative cognitive emotional regulation strategies and positively correlated with the use of positive strategies.

Exploratory analysis was also completed to identify whether emotional recognition was related to particular cognitive emotional regulation styles. As highlighted above, some of these variables met parametric assumptions where others failed to do so. Two tables will therefore be presented. Table 3.14 presents parametric correlations (one-tailed Pearson's correlation coefficients) and Table 3.15 presents the non-parametric correlations (one-tailed Spearman's rho). When Pearson's correlation coefficients were calculated, significant positive correlations were found between "Emotional Recognition Total" and "Positive Refocusing" (r = .209, p <0.05) and "Acceptance" (r = -.170, p <0.05). A negative correlation exists between the number of "Angry" questions scored correctly and "Acceptance" (r = -.215, p<0.05) and "Total CERQ Negative" (r = -.186, p <0.05).

Table 3.14. Table Showing Pearson's Correlations Between Emotional Recognition and Cognitive Emotional Regulation

	CERQ Positive	CERQ Negative	Acceptance	Refocus on Planning	Positive Refocusing
ERQ Total	0.13	-.165	**-.170***	.006	**.209***
Worried	.069	-.011	-.090	.086	.145
Angry	-.128	**-.186***	**-.215***	-.046	.044

**p<0.01, *p<0.05

For the variables that did not meet the criteria for parametric analyses, one-tailed Spearman's rho correlations were computed, as presented in Table 3.15. Significant negative correlations were found between "Self Blame" and both the number of "Angry" questions scored correctly ($r_s = -.229$, p <0.05), and "Emotional Recognition Total" ($r_s = -.229$, p<0.05).

Table 3.15. Table Showing Spearman's Rho Correlations Between Emotional Recognition and Cognitive Emotional Regulation

	CERQ Positive	CERQ Negative	Self- Blame	Acceptance	Refocus on Planning	Positive Refocusing	Catastrophizing	Other Blame
ERQ Total	X	X	**-.229***	X	X	X	.032	-.120
Happy	.067	-.150	-.114	.071	-.038	.143	-.102	-.038
Sad	.070	-.038	-.021	-.049	.155	.089	.045	-.096
Worried	X	X	-.128	X	X	X	.123	-.005
Scared	-.007	-.101	-.165	-.097	-.080	.169	.086	-.108
Angry	X	X	**-.229***	X	X	X	-.087	-.074

X parametric tests completed, see above, **p<0.01, *p<0.05

3.4.8. Hypothesis 7- Participants with high frequency challenging behaviour will be significantly poorer than participants with low frequency challenging behaviour at recognising their emotions.

An one- tailed independent t-test was employed to determine whether the emotional recognition abilities of people who present in the highest quartile with regard to frequency of challenging behaviours were significantly poorer than those who presented with no or low frequency challenging behaviour (in the lowest quartile). This was a secondary analysis due the large sample recruited, with the aim of gaining further support for the relationship between emotional recognition and challenging behaviour. A one tailed t-test was used because the variable "Total ERQ" was normally distributed and the variances were not significantly different between the high frequency challenging behaviour group and the no or low frequency challenging behaviour group $(F (1,48) =.389, N.S)$. There were significant differences between the groups, with those who present with high frequency challenging behaviour being significantly poorer at emotional recognition than those with no or low frequency challenging behaviour $(t= 2.403, df= 1,48, p=0.013)$.

3.5. Summary of Results

Significant correlations have been found between the challenging behaviour variables, emotional recognition and observer rated alexithymia. Linear regression has determined how much of the variance in challenging behaviour, emotional recognition and observer rated alexithymia account for. In a secondary analysis, a one-tailed independent t test indicated that there was a significant difference in the emotional recognition abilities of people who present with high frequency challenging behaviour compared to participants who presented with no, or low frequency challenging behaviour, the latter being significantly better at recognising their emotions.

The cognitive emotional regulation strategies of "Catastrophizing" and "Acceptance" were related to service user measured alexithymia (AQC).

"Self-blame" was related to emotional recognition ability. The next chapter will interpret these results and consider them in view of previous research.

Chapter 4
Discussion

4.1. Overview of Discussion

This chapter will provide an interpretation of the results, relating them to previous research where possible. Initially, the validation of the "Emotional Recognition Questionnaire" (ERQ) will be discussed and consideration given to why correlations with the AQC failed to support construct validity. The relationship between service user and carer alexithymia will then be discussed. The findings in relation to each of the hypotheses will be outlined and previous research referred to when possible. The strengths and limitations of the study will be identified and discussed. Clinical implications of this study and areas for future research will then be considered before drawing conclusions.

4.2. Validation of Emotional Recognition Questionnaire (ERQ)

Correlations were computed between the ERQ total, the AQC total, and the dimensions of "difficulty identifying feelings (DIF)" and "difficulty describing feelings" (DDF). Because some studies have suggested that these two dimensions may in fact represent a single factor it seemed important to include both in the correlation (Kooiman *et al,* 2002; Lumley *et al,* 2005). Correlational analysis between the ERQ and the AQC did not provide evidence of construct validity. It appears likely that the AQC assessed a different variable. Lumley *et al* (2005) studied a number of emotional concepts including alexithymia, emotional awareness, emotional approach coping and emotional intelligence. The most similar to the emotional recognition concept in this study is emotional awareness. This includes identifying and correctly labelling emotions both in oneself and others. Lane *et al* (1990) developed the "Levels of Emotional Awareness Scale" (LEAS) which contains 20 emotionally rousing vignettes to which the respondent is asked to identify how they would feel and how the other person in the story would feel. This scale was

considered for this study but it was deemed too complex for the client group and difficult to adapt. It may have been helpful, however, within the pilots to have assessed construct validity of the ERQ by comparing it with the LEAS in a non-learning disability population. Interestingly, Lumley et al (2005) found that the LEAS had very low correlations with all of the other measures. It did not correlate at all with the TAS-20 (which the AQC is based on) or the OAS. Factor analyses also showed that the LEAS loaded separately to the other measures. Therefore, maybe it should have been expected that the construct validity of the ERQ would not be supported by correlations with the AQC. Alexithymia and emotional recognition, as described in this study, appear to be completely different concepts (Lumley *et al,* 2005).

4.3. Correlations between carer and service user measured alexithymia

Correlations were computed between the OAS and the AQC and they were not significantly related. The only significant relationships that were found were between "Externally Oriented Thinking" (EOT) and "Somatising", and, "Total AQC" and "Somatising". Due to the large number of correlations computed it is possible that these occurred by chance. In previous studies the OAS and the TAS-20 (which the AQC is based on) and their various sub scales did not correlate very highly and the authors have suggested that they may relate to different variables (Lumley *et al,* 2005; Meganck *et al,* 2010). Meganck *et al* (2010) point out that the relationships between self-reports and expert reports are usually correlated at approximately .30. Similar to the findings in this study, Meganck *et al* (2010) found the highest correlations between the OAS and the EOT sub-scale. The EOT is a particularly problematic dimension as studies have found it to be unreliable (Kooiman *et al,* 2002). In the OAS, Meganck *et al* (2010) found that only the "Distant" dimension showed good inter-rater reliability and conclude that inter-rater reliability for the OAS is problematic. In addition, they found no support for the factorial validity of the OAS.

Lumley *et al* (2005) point out that there is disagreement over the definition of alexithymia, with the AQC and TAS 20 only measuring the awareness and

verbalisation of one's feelings. These are only some of the aspects of alexithymia (Kooiman *et al*, 2002). Sometimes alexithymia is defined as a global impairment in the processing of emotion and includes features such as somatisation and lack of humour, as in the OAS (Lumley *et al*, 2005). Meganck *et al* (2010), however, argue that the broader definition of alexithymia goes beyond the core components, including concepts that are related to it, but not unique to it. They therefore argue that components such as somatization, rigidity and distance may be a consequence of alexithymia but they are not core features, so that a high score on the OAS may not reflect only alexithymia. Meganck *et al* (2010) feel that a questionnaire assessing alexithymia should focus on the core components of the concept rather than the broader context. The difficulties with the definition of alexithymia may also contribute to the problems finding a clear factor structure in both the TAS-20 (and AQC) and the OAS (Meganck *et al,* 2010). Lumley *et al* (2005) argue that until the field has greater theoretical clarity, researchers need to use multiple measures.

4.4. Discussion of Hypotheses

4.4.1. Hypothesis1- Emotional recognition skills will be negatively correlated with higher frequency, management difficulty and severity of challenging behaviour.

Significant negative correlations were found between "challenging behaviour frequency" and "ERQ total" (r_s= -.290, p <0.01), the number of correct "Worried" items on the ERQ (r_s= -.204, p <0.05) and the number of correct "Angry" items on the ERQ (r_s= -.218, p <0.05). A significant negative correlation was also found between "Challenging Behaviour Management Difficulty" and the number of correct "Angry" items on the ERQ (r_s= -.229, p <0.05). There was a significant positive correlation between "Happy" and "Challenging Behaviour Management Difficulty" (r_s= .187, p <0.05), however, considering the number of correlations that were computed and the isolated nature of this finding, this may be due to chance. There was a significant negative correlation between "Emotional Recognition Total" and "Aggression

Severity" (r_s= -.290, p <0.01), (r_s= -.178, p <0.05). Hypothesis one was therefore supported in relation to "Challenging Behaviour Frequency" and, less so, with "Management Difficulty" and "Aggression Severity".

It is difficult to make direct comparisons with previous research as previous studies focussed on the recognition of emotions in others, for example in photographs. Unlike previous studies, however, these findings do indicate that emotional recognition abilities are related to the frequency and severity of challenging behaviour, and perception of anger is related to "Challenging Behaviour Management Difficulty". It may also provide support for Matheson and Jahoda's (2005) finding, illustrating the importance of contextual information in the understanding of emotions for people with learning disabilities, and people with more challenging behaviour may have more difficulties in using this contextual information.

Linear regression showed that emotional recognition accounted for only a modest amount of the variance in challenging behaviour, total emotional recognition accounted for 6.9% of the variance of challenging behaviour frequency. The number of correct "angry" items on the ERQ was not significantly predictive of "Challenging Behaviour Management Difficulty". "Total Emotional Recognition" was not significantly predictive of "Aggression Severity". This is consistent with the view that, although important, emotional recognition is only one of many variables implicated in the frequency of challenging behaviour.

4.4.2. Hypothesis 2- Positive cognitive emotional regulation strategies will be negatively correlated with the frequency, management difficulty and severity of challenging behaviour.

Hypothesis 3- Negative cognitive emotional regulation strategies will be positively correlated with the frequency, management difficulty and severity of challenging behaviour.

Two significant positive correlations were found between "Challenging Behaviour Frequency" and "Total Negative Cognitive Emotional Regulation

Strategies" (r_s= .184, p <0.05) and "Other Blame" (r_s= .183, p <0.05) in this population of people with learning disabilities. Hypotheses two was therefore rejected and the null hypotheses accepted. Hypothesis three had some support however the correlations were small. This may provide further evidence of the limited predictive value of cognitive emotional regulation strategies in predicting externalising behaviours, as found by Garnefski *et al* (2005).

4.4.3. Hypothesis 4 - Alexithymia scores will be positively correlated with the frequency, management difficulty and severity of challenging behaviour.

One significant positive correlation was found between service user measured alexithymia (AQC) on the "Difficulty Describing Feelings" scale, and "Aggression Severity" (r_s= .186, p <0.05), however, considering the number of correlations that were computed and the isolated nature of this finding, this may be due to chance. Significant positive correlations were found between carer rated alexithymia (OAS) and some of the challenging behaviour scores. Challenging behaviour "Frequency" was significantly related to the OAS sub-scales of "Distant' (r_s= .218, p <0.05), "Uninsightful" (r_s= .491, p <0.01), "Rigid" (r_s= .320, p<0.01), "Humourless" (r_s= .194, p <0.05) and "Observer Alexithymia Total" (OAS) (r_s= .497, p <0.01). Challenging behaviour "Management Difficulty" was significantly correlated with "Uninsightful" as measured by the OAS (r_s= .325, p <0.01) and "Observer Alexithymia Total" (OAS) (r_s= .317, p <0.01). Finally, "Aggression Severity" was significantly correlated with "Uninsightful" as measured by the OAS (r_s= .296, p <0.01) and "Observer Alexithymia Total" (OAS) (r_s= .298, p <0.01). These results show that hypothesis four can be accepted in relation to observer rated alexithymia (OAS) but less so in relation to service user rated alexithymia (AQC).

Linear regression showed that total observer alexithymia accounted for 21.4% of the variance of "challenging behaviour frequency", 8.9% of the variance of "challenging behaviour management difficulty" and 5.9% of the variance of "challenging behaviour severity". Alexithymia accounts for a modest amount

of the variance in all aspects of challenging behaviour. This is consistent with the view that observer rated alexithymia is just one of many variables related to the frequency, management difficulty and severity of challenging behaviour.

The findings of this study do support previous literature that shows a relationship between alexithymia and challenging behaviour (for example, Konrath *et al,* 2012; Teten *et al,* 2008) but one must be cautious in the comparison with previous studies. These all used self-report measures of alexithymia, which in this study was found to have no relationship with challenging behaviour. No previous studies have examined the relationship between observer rated alexithymia and challenging behaviour.

4.4.4. Hypothesis 5- High Alexithymia scores will be positively correlated with the use of more negative cognitive emotional regulation strategies, and negatively correlated with the use of more positive strategies.

Some interesting correlations were found between alexithymia and cognitive emotional regulation strategies. In particular, significant correlations were found between service user rated alexithymia, "Acceptance", "Catastrophizing", "Total Negative CERQ" and "Total Posiitve CERQ". Significant positive correlations were found between "Acceptance" and "Alexithymia- Difficulty Identifying Feelings" ($r = .253$, $p < 0.05$), "Alexithymia- Difficulty Describing Feelings" ($r = .223$, $p < 0.05$) and "Alexithymia Total", as measured by the AQC, ($r = .224$, $p < 0.05$). Catastrophizing was significantly positively correlated with "Alexithymia- Difficulty Identifying Feelings" ($r_s = .233$, $p < 0.05$), "Alexithymia- Difficulty Describing Feelings" ($r_s = .359$, $p < 0.01$) and, "Alexithymia Total" ($r_s = .295$, $p < 0.01$). "Total Negative CERQ" was significantly positively correlated "Alexithymia- Difficulty Identifying Feelings" ($r = .171$, $p < 0.05$), "Alexithymia- Difficulty Describing Feelings" ($r = .176$, $p < 0.05$) and, "Alexithymia Total" ($r = .180$, $p < 0.05$) The "Alexithymia- Difficulty Identifying Feelings" variable was significantly positively correlated with "Self-Blame" ($r_s = .203$, $p < 0.05$), and, the "Alexithymia- Externally Oriented Thinking" variable was significantly negatively correlated with "Total

Positive CERQ" (r = -.187, p <0.05), however, considering the isolated nature of these findings and the number of correlations that were computed, these two correlations may be due to chance. Only one relationship was found between the carer rated observer alexithymia scales and cognitive emotional regulation, this was a significant positive correlation between "Distant " as measured by the OAS and "Acceptance" as measured by the CERQ (r=.199, p<.05), but again, the isolated nature of this finding results in caution in it's interpretation as it may be due to chance. This hypothesis is therefore only supported in relation to high alexithymia scores being related to Catastrophizing and "Total Negative CERQ" (acceptance is generally considered a positive approach). In relation to all other cognitive emotional regulation strategies, the null hypothesis cannot be rejected.

This may indicate that when an alexithymic individual experiences a difficulty, they are confused by the emotions they experience and they often think about how terrible things are but resign themselves to the outcomes. Emotions are generally seen as motivating experiences, but these results may indicate that in the absence of emotional perceptual abilities, the alexithymic individual may often just accept the situation and make no effort to change it, regardless of how terrible they think it is. This area warrants further research.

4.4.5. Hypothesis 6- Emotional recognition will be negatively correlated with the use of negative cognitive emotional regulation strategies and positively correlated with the use of positive strategies.

With regards to this hypothesis, no clear patterns emerged from the data analysis, other than in relation to self-blame and "Acceptance" as measured by the CERQ. Significant negative correlations were found between "Self Blame" and both the number of "Angry" questions scored correctly on the ERQ (r_s = -.229, p <0.05), and "Emotional Recognition Total" (ERQ) (r_s = -.229, p<0.05). There were significant negative correlations between "Acceptance" on the CERQ and "ERQ Total" (r = -.170, p <0.05), and, the number of "Angry" questions scored correctly on the ERQ (r = -.215, p<0.05). Other correlations found between "Emotional Recognition Total" (ERQ) and

"Positive Refocusing" (CERQ) (r = .209, p <0.05), and, "Angry" on the ERQ was significantly negatively correlated to "Total Negative CERQ" (r = -.186, p <0.05). These latter two correlations are quite small so may have occurred by chance due to the number of correlations computed. Hypothesis six is therefore supported in relation to self-blame but not any of the other cognitive emotional regulation strategies ("Acceptance" is generally considered a positive approach). These results indicate that individuals who blame themselves when things go wrong perform poorly on emotional recognition assessments, particularly in relation to anger recognition. No previous research has examined the relationship between cognitive emotional regulation strategies and emotional recognition. However, because previous research has found self-blame to be associated with self- harm and internalising problems (Garefski *et al,* 2005; Slee *et al,* 2008), this would warrant further research within a learning disability population. There is only one question on the challenging behaviour checklist pertaining to self injury, so it is unlikely that such a relationship would have been shown using this measure.

4.4.6. Hypothesis 7- Participants with high frequency challenging behaviour will be significantly poorer than participants with no or low frequency challenging behaviour at recognising their emotions.

This hypothesis was supported by the results of this study. Significant differences were found between the groups, with those who present with high frequency challenging behaviour being significantly poorer at emotional recognition than those with no or low frequency challenging behaviour (t= 2.403, df= 1,48, p<0.05). As stated previously, it is difficult to make direct comparisons with the previous research that focussed on the recognition of emotions on others. This finding provides some support for Matheson and Jahoda's (2005) research which showed that people with more challenging behaviours had significantly more difficulties in identifying emotions from pictures containing contextual information. In the current study, participants were only provided with contextual information and not shown pictures. In

addition, they were asked to reflect on their own emotions, identifying how they would feel in a specific context, as opposed to recognising the feelings of others. The provision of contextual information does appear to be important for people with a learning disability in helping them to recognise emotions. This finding provides further evidence indicating the relevance of emotional recognition abilities in the frequency of challenging behaviour.

4.4.7. The Degree to Which the Model of Relationships was supported by the Research

The model proposed in Chapter 1 is partially supported by the results. Emotional recognition (ERQ) ability does have a negative relationship with challenging behaviour. That is, participants with good emotional recognition skills were less likely to present with challenging behaviour, and vice versa. Similarly carer rated alexithymia (OAS) had a positive relationship with challenging behaviour, high levels of alexithymia being related to high levels of challenging behaviour. These findings indicate associations in line with that section of the model. Neither cognitive emotional regulation or service user measured alexithymia related to challenging behaviour, but they were related to one another. This indicates the model is too simple in explaining the interrelationships between the variables and suggests the possible existence of other options with regard to outcomes, for example, internalising problems.

4.5. Strengths and Limitations of the Current Study

4.5.1. Strengths

This is the first study to look at individuals' perception of their emotions and how this relates to challenging behaviour presented by people with a learning disability. Previous studies have focused on the recognition of others' emotions from facial expression and have not found a relationship between this type of emotional recognition and challenging behaviour. This study, however, examined participants' ability to recognise their own emotions and

found contrasting results. This is also the first study to research alexithymia and cognitive emotional regulation within a learning disability sample.

A key strength of the study is the sizable clinical sample (n = 96 service users and n = 95 carers) giving sufficient power to study the relationships between the variables. Also, participants were drawn from community and specialist services for people with learning disabilities, providing a broad sample in relation to the levels of challenging behaviour presented. The carer participants also held a wide number of caring roles. Previous research has tended to focus on staff carers, as opposed to families and professionals, to provide information about a participant's level of challenging behaviour.

Efforts were made to develop a questionnaire that can be used within clinical practice. This will enable clinicians to gauge the emotional perception abilities of the people with a learning disability they are working with. No similar tool currently exists.

4.5.2. Limitations

This study had a number of limitations which will be discussed further in this section.

1- This study is limited by a cross sectional design, which means that causality or temporal order cannot be inferred. To assume that poor emotional perception is the cause of challenging behaviour would be to go too far and would ignore possible confounding variables such as mental health and coping skills. Results may also reflect how a participant was feeling at the time of the assessment.

2- This study did not exclude participants with severe mental illness. As there is some evidence that service users with psychosis and other severe mental health problems have difficulty with emotional recognition (Rojahn *et al,* 1995) it may have been more appropriate to exclude these participants. In addition, the aetiology of the participants' learning disability was not controlled for.

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3- The participants in this project were not assessed in relation to their receptive language ability or intelligence. Evidence does suggest that emotional recognition is related to both language ability and IQ. In other studies researchers have matched their experimental group with the control on one of these. This was not the case in this study when comparing the high frequency challenging behaviour group with the low or no challenging behaviour group as this was a secondary analysis. Although all the participants in the study were identified as having either a mild or moderate learning disability, it is not clear how levels of learning disability were distributed between the groups. Level of learning disability and language ability may therefore be confounding variables.

4- Researchers have identified the need to employ control tasks to ensure that difficulties are specific to emotional recognition and not due to general cognitive or language impairments (Matheson & Jahoda, 2005; Moore, 2001; Rojahn *et al,* 1995; Zaja & Rojahn, 2008). This study did not employ control tasks or measures of language or intelligence, and it is therefore difficult to draw conclusions regarding the specificity of emotional recognition impairment.

5- As the between groups comparison was a secondary analysis based upon the large sample size recruited, no power calculation was completed to inform the number of participants required in each group. It is noteworthy, however, that the comparison group sizes in this study are equivalent, if not larger, than all except one of the studies discussed in the systematic review and much of the previous learning disability research into emotional recognition.

6- All of the participants in this group had mild or moderate learning disabilities, could communicate verbally and had no sensory impairments that would have prevented them from participating. This may therefore impact on the generalizability of these results to people with severe learning disabilities, sensory impairments or communication difficulties. This population has been excluded from the majority of research with people with learning disabilities because they are viewed as difficult to reach, or they lack the ability to actively

participate or make informed consent (McClimens & Allmark, 2011). With no evidence to the contrary, it is likely that similar, if not more profound, difficulties in emotional recognition and regulation will be present in this population. This is because people with severe learning disabilities have lower IQs which research suggests is related to emotional recognition ability. Also, those with sensory and communication difficulties receive limited sensory feedback in relation to their social and emotional behaviour. Language ability has also been found to relate to emotional recognition ability within research. The increased prevalence of challenging behaviour exhibited by individuals with more severe learning disabilities may be related, in part, to difficulties in emotional recognition, expression and regulation (Emerson & Bromley, 1995).

7- There has been significant debate over the validity of using self-report in measuring alexithymia. Alexithymic individuals, by their definition, are not very self-reflective and have deficient or impaired introspection. Using self -report measures therefore requires an alexithymic individual to report on capacity they lack (Kooiman *et al,* 2002; Meganck *et al,* 2010; Zimmerman, 2006).

8- Unlike previous research, service user measured alexithymia (AQC) was not related to challenging behaviour. Some of the language, though simplified, may still have been too abstract for people with a learning disability. The abstract nature of the questions may have caused confusion to the participants and be too complex for people with a learning disability who are likely to cope better with more concrete examples (Lynch, 2004). This is in addition to the limitations relating to the definition of alexithymia and concerns about the use of self-report measures to assess this concept as discussed previously.

9- Although some work was done to ensure that the ERQ was a valid and reliable assessment, this work is not complete. Test-retest reliability was not assessed within this project. Further work to establish construct validity also needs to be completed. Matheson and Jahoda (2005) described the difficulty they experienced in identifying particular situations that provoked a single discernible emotion in the

development of their contextual assessments. Similar difficulties were experienced in the development of the ERQ in this study, resulting in five pilot studies. These pilot studies were conducted with non-learning disabled individuals and when used with the participants with learning disabilities some questions appeared particularly problematic. There were three questions which participants answered incorrectly more than they answered correctly. This raises doubts about whether these questions were valid for use with a learning disabled population. One question asked "If you have a job interview on Monday morning, how would you feel before it?", and in the pilot studies 80% of participants chose "worried". However, only 30% of participants with a learning disability responded with "worried". Most said they would be happy because they wanted a job. When asked "If your carer becomes ill and needs to go into hospital, how would you feel?", the expected answer was "worried", based on the pilot studies. However, only 41% of participants with a learning disability answered "worried", with many of their answers being "sad" or "scared". The final question that caused difficulties was "You are blamed for taking somebody else's cake. If you did not do it, how would you feel?". In the pilot studies, the most frequent response was "angry" but only 47% of the learning disabled participants responded with "angry", their other responses included "sad", "scared" or "worried". Further work on the structure of the questionnaire, possibly through focus groups of people with learning disabilities, is needed to identify situations that cause people to worry or to become angry. Also, conducting further pilots with people with learning disabilities will improve validity within this population. The correct responses for each question ranged from 29% to 100%. It is difficult to know where to draw the line in determining whether a question is invalid in the population or whether it accesses a specific deficit in emotional recognition. However, when there are more incorrect than correct responses, the validity of the item certainly needs to be questioned.

10- Scores on self-report measures can be influenced by a tendency of respondents to give socially desirable answers and by the limited

understanding of their own functioning (Hornsveld & Kraaimaat, 2013; Bekker *et al,* 2007). This is also recognised as a concern in relation to self-report data collected from people with learning disabilities (Heal & Sigelman, 1995). When collecting the data from participants, they did at times appear to be reluctant to state that they would be angry in a given situation. Sometimes people were visibly uncomfortable and needed to be reassured that everyone gets angry sometimes, including the researcher and any carer present. This may therefore have impacted on individual responses. It should be noted, however, that participants did better on the "angry" questions than on the "worried" or "scared" items.

11- Large correlations were found between the OAS and challenging behaviour, both of these measures being completed by carers. This may be evidence of a "Halo Error". This is conceptualised as "a rater's failure to discriminate among conceptually distinct and potentially independent aspects of ratees behaviour" (Saal *et al,* 1980). The effect occurs due to the rater's overall impression or evaluation of a person strongly influencing their ratings of specific attributes (Lance *et al,* 1990; Murphy *et al,* 1993). The halo effect has been found to inflate or create illusory inter-correlations between the factors measured (Murphy *et al,* 1993; Solomonson & Lance, 1997). With regard to this study, it may be possible that carers rated people who present with challenging behaviour more negatively with regard to alexithymia, for example describing them as being more rigid and lacking insight, because of their overall view of that person, in light of their behaviour. There is some debate, however, about whether the halo effect has a negative effect on accuracy. A negative relationship has been found between halo error and accuracy (Fisicaro, 1988) although some studies have found the contrary (for example, Cooper, 1981) leading Murphy *et al* (1993), in their review, to conclude that the halo error does not necessarily imply low levels of accuracy and may in fact increase the accuracy and validity of ratings. They also argue that efforts to control the halo error have not proved successful. Certain factors are recognised as limiting the halo effect. For example, the more familiar

the rater is with the ratee, and the more dimensions they are asked to rate on the lesser the halo error. These factors may have reduced the halo effect in this study. Murphy *et al* (1993) point out that it is often difficult to determine whether halo errors have occurred or what to do about them.

12- Due to the high number of correlations computed, it is likely that some that appeared to be significant were in fact merely the result of chance. Whilst interpreting the results of this study, caution has been applied and patterns of correlations have been reported upon more confidently. In the case of single correlations, caution has been exercised in their interpretation and reporting.

4.6. Clinical Implications

The findings from this study have a number of clinical implications for psychologists and services supporting people with learning disabilities.

1- These results show the ability of many people with a learning disability to identify, reflect on and enter into dialogue about their emotions, all of which abilities are necessary for psychological therapy including psychodynamic psychotherapy, dialectical behaviour therapy and cognitive behavioural therapy.

2- The results suggest that a full assessment of emotion recognition abilities in people with learning disabilities who present with challenging behaviour would be useful information that could facilitate the successful adaptation of psychological approaches. In clinical practice, emotional recognition and understanding is usually assessed with people with a learning disability using photographs of others. Although this is important in relation to empathy and social understanding, it has not been shown to be important for understanding challenging behaviour (see the systematic review in chapter 1). A greater focus is therefore recommended on an individual's ability to reflect on their own emotions and how they would feel in emotionally arousing situations. Thorough assessment and formulation are needed so that treatment can meet individual needs.

3- The inclusion of emotional education and coping skills is indicated in psychological approaches aimed at supporting people who present with behaviours that challenge. Interventions need to focus on enhancing awareness and communication of the emotional experience (Paivio & McCulloch, 2004). Garisch and Wilson (2010) suggest that improving individuals' emotional skills will protect against stressors that lead to overwhelming emotions. For example, understanding what anger is, how it feels and what may make people feel like that, may be a good starting point for an anger management programme (Owen *et al*, 2001).

4- Previous research indicates that the recognition of emotional expression can be effectively improved through systematic training. McKenzie *et al* (2000) and Rydin-Orwin *et al* (1999) ran training programmes which led to participants' increased accuracy in identifying emotions. McKenzie *et al* (2000) asked participants to identify emotions from pictures which had varying amounts of context, whilst in Rydin-Orwin *et al* 's (1999) study, video clips from soap operas were shown. In their review, Wood and Stenfert- Kroese (2007) concluded that the four published studies to date have shown that emotion recognition skills can be enhanced and maintained over time through training. It is unclear, however, which specific features of the training are fundamental to improvement. It is also recognised that targeting alexithymic symptomology in emotion training programmes would assist individuals to cope (Garisch & Wilson, 2010).

5- Alexithymia has been considered one of the most important factors limiting the success of psychodynamic psychotherapy. Authors have argued that anxiety provoking psychotherapies are likely to increase the severity of presenting problems associated with alexithymia and recommended supportive as opposed to interpretive psychotherapies (Mellor & Dagnan, 2005). Evidence does, however, suggest useful alternatives to help individuals to become more emotionally aware and expressive in a safe supportive and empathic setting (Zimmerman, 2006). Group therapy and cognitive behaviour therapy have both been found to lead to positive outcomes for alexithymic people, and actually

led to a reduction in alexithymia which was maintained at follow up (Ogrodniczuk *et al,* 2012; Spek *et al,* 2008). Spek *et al* (2008) argue that alexithymia is not a stable trait and suggest that it may sometimes be secondary to depression. It should be noted that studies into therapeutic outcomes for people with alexithymia have always used self-reported as opposed to observer reported alexithymia so it is unclear how this will apply to the population within this study, nevertheless practitioners need to be aware of this.

6- Some studies suggest that therapeutic outcomes are compromised for people with alexithymia due to difficulties in the establishment and maintenance of a therapeutic relationship (Ogrodniczuk *et al,* 2005; Ogrodniczuk *et al,* 2012). Ogrodniczuk *et al* (2005) found that therapists reacted more negatively to people with high levels of alexithymia which in turn led to poorer outcomes. Therapists viewed people with alexithymia as possessing less positive qualities, being less compatible with them and having little significance as members of the group in therapy. This in turn may lead the alexithymic person to experience a lack of support, belonging and mutual understanding. Therapists need to be aware of this so that they can address such countertransference issues within supervision. These countertransference reactions may provide insight into the service user's inner life and promote empathy and understanding in the therapist (Ogrodniczuk *et al,* 2005).

7- Within the therapy context with individuals with learning disabilities and alexithymia or poor emotional recognition skills, it may be helpful for therapists to repeatedly label emotions. They could offer verbal labels for service users' current and past experiences and identify previously unrecognised triggers for emotion. This would enable service users to become aware of a greater range of emotional experiences and might well facilitate emotional communication (Ogrodniczuk *et al,* 2005).

8- The predominance of the behavioural model within learning disability services fails to recognise the emotional needs of people with learning disabilities. Behaviours are seen as the result of triggers and consequences or reinforcement, and the relevance of the mood or

emotional state of the individual is not recognised, labelled or understood. In order to support the development of emotional perception and regulation in people with learning disabilities there needs to be a greater emphasis on an emotional component to their care. It is important for services and staff teams to employ more emotionally focussed language and to show empathy. This will facilitate the development of emotional recognition skills in people with a learning disability and may reduce the presentation of challenging behaviour. For example, if a service user is asked to wash up and tells staff to "f*** off", this may not just be a function of task avoidance. Rather, they may be feeling sad that day because their parents did not ring as promised, or something bad may have happened at the day centre. If care staff could be helped to be emotionally focussed and emotionally literate the presentation of challenging behaviour might reduce. For example, rather than asking her to complete her domestic chores, they could have recognised the service user's sadness and offered additional support, empathised with her and validated her feelings, or attempted to problem solve the situation. An important clinical implication of this study is that challenging behaviour is not just the result of triggers and consequences, but that the emotional life of people with a learning disability is important too and needs to be given higher priority. This would complement and be a useful addition to the Positive Behavioural Support framework.

4.7. Future Research

Based on the discussion above, a number of areas for future research can be identified.

1. Further work needs to be completed to improve the psychometric properties of the ERQ. This may be achieved using focus groups of people with learning disabilities to better inform the emotionally arousing situations within the items, and particularly to support the development of questions relating to worry. Test–retest reliability needs to be assessed when the final items have been agreed. In addition,

construct validity may be addressed through comparing the ERQ with the LEAS with a non-learning disabled population. Within a learning disability population, one could consider comparing the ERQ to facial emotional recognition assessments in order to determine whether this supports construct validity. If this analysis did not support construct validity it would indicate these are indeed two independent concepts.

2. Further studies of observer rated alexithymia (OAS) and its relationship with challenging behaviour need to be completed in a variety of populations. This may facilitate a better understanding of this relationship. It may be helpful to use different raters for challenging behaviours and the OAS to minimise halo error.

3. Additional research in a variety of populations would be helpful to explore the relationship between self-rated alexithymia, using either the AQC or the TAS-20, and cognitive emotional regulation strategies. These strategies may also have a mediating role between alexithymia and challenging behaviour. The findings from this study suggest that this issue warrants further investigation.

4. Replication of the between groups analysis (high vs. low or no challenging behaviour) in this study would clarify whether the results found were due to a specific deficit in emotional perception or to other confounding variables. Future studies should include a control task, IQ or receptive language matched experimental and control groups, and a predetermined power analysis to ensure that the group sizes are sufficient to draw firm conclusions. People with serious mental health difficulties should be excluded from the sample.

5. Further research relating to mental health and emotional recognition and cognitive emotional regulation would take this research forward in a new direction. It is widely suggested that people with learning disabilities experience higher rates of emotional and psychiatric problems than the general population (Borthwick–Duffy, 1994). Previous research has shown that cognitive emotional regulation strategies are related to internalising problems (Garnefski *et al,* 2005). Alexithymia has also been found to be related to depression (Spek *et al,* 2008). Similarly, Rojahn and Warren (1997) found that people with

learning disabilities with a diagnosis of depression had poorer emotional recognition abilities than those without depression (again this was based on the recognition of emotions in pictures of others). Therefore, research within a learning disabled population that assessed mental health, alexithymia, cognitive emotional regulation and emotional perception would enhance our understanding in relation to the importance of emotional perception and regulation in clinical presentations. Rojahn *et al* (1995) argue that because emotional recognition deficits have been found in different psychiatric populations it would be interesting to explore whether deficits in emotion recognition represent a marker for concurrent mental illness in people with a learning disability.

6. Future longitudinal research would help to clarify the complex interrelationship between emotional perception and challenging behaviour.

7. Research has demonstrated that a teaching programme for staff working with people with learning disabilities who present with behaviours that challenge can improve their emotional intelligence (Zijlmans *et al,* 2011). It would be interesting to investigate whether an emotionally intelligent staff team would reduce the incidence of challenging behaviour presented by the service users they work with. In theory, increased emotional intelligence would increase staff team members' emotional recognition and language, empathy and social understanding. This may prevent them from becoming involved in conflictual situations, recognising people's emotional needs and offering the appropriate support before they present with challenging behaviour. Further research into the impact of emotional intelligence training for staff on the frequency, management difficulty and severity of challenging behaviours would promote emotional understanding in service contexts.

8. Finally, the implementation and evaluation of a training programme focussed on the development of emotional perception abilities for people with learning disabilities would provide clarity on the issue of whether these abilities can be improved using a group training format.

4.8. Conclusion

Previous research has found that people with learning disabilities have difficulties in recognising emotion in the facial expression of others. Relationships have been found between challenging behaviour and emotional recognition and alexithymia in non-learning disabled populations but there have been no consistent findings on the issue of whether people with learning disabilities with higher levels of aggression or challenging behaviour have more difficulty distinguishing between the emotions depicted in the facial expressions of others. Alexithymia and cognitive emotional regulation strategies have not been researched in a learning disability population.

This study focussed on the emotional perception abilities of people with a learning disability, asking participants how they would feel in a specific situation. The Emotion Recognition Questionnaire was developed to measure this. In addition, alexithymia and cognitive emotional regulation strategies were measured. Emotional recognition was found to be significantly negatively related to the frequency and management difficulty of challenging behaviour, accounting for 6.9% of the variance in frequency. Significant differences in emotional recognition abilities were found between people with high frequency challenging behaviour and those with low or no challenging behaviours. Observer rated alexithymia was significantly related to challenging behaviour frequency, management difficulty and severity, accounting for 21.4%, 8.9% and 5.9% of the variance respectively. Cognitive emotional regulation strategies and service user measured alexithymia were not related to challenging behaviour. Other relationships were found between service user rated alexithymia and the cognitive emotional regulation strategies of Catastrophizing and acceptance, and emotional recognition was negatively related to self-blame.

This study has a number of limitations including the cross-sectional design, the fact that the challenging behaviour and low or no challenging behaviour groups were not matched on either language ability or intelligence, and the

possibility of a halo error occurring, these are discussed in section 4.5.2 which considers the study limitations,

These findings have a number of implications for clinical psychologists working with people with learning disabilities. It would be helpful to assess people's emotional recognition abilities prior to psychological intervention, and to use an intervention to increase service users emotional recognition and labelling. The promotion of the emotional needs of people with learning disabilities within services should also be a priority, with the long-term goal of providing emotionally intelligent and responsive services.

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