Anxiety in High Functioning Children with Autism

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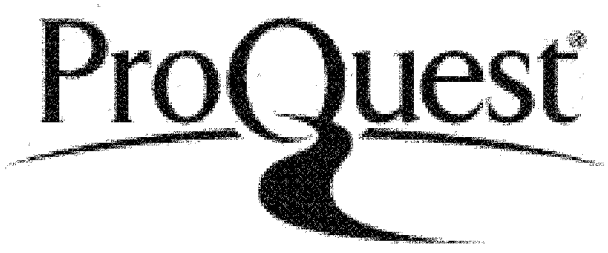

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Alinda Gillott

Abstract

High functioning children with autism were compared to two control groups on measures of anxiety and social worries. Comparison control groups consisted of children with expressive language disorder and typically developing children. Each group consisted of 15 children between the ages of 8 and 12 years and were matched for age and gender. Children with autism were found to be most anxious on both measures. High anxiety subscale scores for the autism group were separation anxiety and obsessive-compulsive disorder. Possible explanations for higher levels of anxiety in high functioning children with autism were explored. The groups were compared on measures of theory of mind, recognition and expression of emotion, communication and socialisation. The children with autism performed significantly worse than both control groups on the measure of socialisation. On the measures of theory of mind, recognition of emotion and communication skills, however, the children with autism did as well as children with expressive language disorder. Impairments in social abilities are, therefore, highlighted as possible factors contributing to anxiety in high functioning children with autism. Social anxiety was also found to correlate negatively with communication ability for the autism group. This is the first study to provide quantitative data on anxiety in children with autism. These findings are discussed within the context of theories of autism and anxiety in the general population of children. The clinical implications of these findings are also noted and suggestions for future research are made.

Contents

List of Tables

List of Figures

Appendices

1.0 Introduction

Autism is a disorder that effects all aspects of communication and social functioning. Autism is considered to incorporate a "triad" of impairments, involving deficits in socialisation, communication and imagination (Wing & Gould, 1979). The impairment of social interaction involves a marked inability to form reciprocal social relationships. This can range from complete social aloofness to inappropriate or odd interaction (Wing & Gould, 1979). Communication deficits in autism often involve little or no speech. Where there is speech, this includes idiosyncrasies such as echolalia and pronoun reversal. Facial gestures, body language and eye contact can also be affected (Frith, 1991). According to Howlin (1998) a lack of imagination is particularly noticeable in children with autism. Often play is very limited, restricted to behaviours such as lining up, spinning, or placing objects in patterns. Associated features of the disorder include difficulty coping with change, the need to adhere to fixed routines and patterns of behaviour, and prolonged engagement in obsessional interests. For the individual with autism, people and the environment can be very confusing and this can make the outside world both threatening and disturbing (Howlin, 1997).

Kanner (1943) first characterised the nature of autism in his now classic paper "Autistic Disturbances of Affective Contact". However, over the last two decades, there has been a shift in how autism is defined. Kanner (1943) defined a very discrete population, with specific characteristics. However, epidemiological

research, such as that carried out by Wing and Gould (1979) found a number of children who did not fit Kanner's 'classic' description of autism, but who displayed some features. This, along with the recognition of Asperger's (1944) work, led to the notion of a "continuum" or "spectrum" of autism (Wing & Gould, 1979; Wing, 1988, 1996). That is, autism exists in diverse forms, not just as Kanner defined.

The majority of individuals with autism have some degree of learning disability. However, a substantial minority (around twenty per cent) are of average intelligence (Howlin, 1997). In this group of individuals, labelled "high functioning", the triad of impairments and associated features are still present, but may be manifest in different ways. For example, whilst there may be more attempts at social interaction, behaviours such as inappropriate touching or monotonous speech can be observed (Tsai, 1992). According to Frith (1991) and Tsai (1992), whilst high functioning children with autism can be of average intelligence, their IQ profiles are often uneven, involving high verbal and performance discrepancies.

There has been more research addressing those individuals most profoundly affected by the disorder. This research has focused upon issues such as aetiology (Frith, 1989; Gillberg, 1998b); characteristics of autism (Wing, 1988, 1993); intervention (Howlin, 1998; Howlin & Rutter, 1987); and outcomes (Howlin, 1997; Nordin & Gillberg, 1998; Rumsey, Rapoport & Sceery, 1985). However, little research has addressed the needs of more able children with autism (Szatmari et al., 1989). Despite this, there is evidence to suggest that these individuals are susceptible to a wider range of difficulties due to their increased levels of activity and interaction with

the environment (Howlin, 1997). It is this group of children who will be the focus of this study.

Since Kanner first described autism, there has been a plethora of theories aiming to account for the deficits involved in the disorder. Two of the main theories hypothesised are the social-affective and social-cognitive theories. In his original paper, Kanner (1943) considered that an innate biological deficit in affect was involved. Later, Kanner (1949) viewed autism as a consequence of "refrigerator parenting". More recently, researchers have considered a cognitive deficit involved in autism. The central cognitive hypothesis to emerge is that autism involves a deficit in the acquisition of a "theory of mind" (Baron-Cohen, Leslie & Frith, 1985). From around the age of four years, most children are able to understand that other people have thoughts, beliefs and desires that influence their behaviour (Attwood, 1997). However, it has been suggested by many researchers (e.g. Baron-Cohen, Leslie & Frith, 1985; Frith, 1989; Tager-Flusberg, 1992) that children with autism are severely impaired in this area. The implications of this are that autistic children are impaired in their ability to attribute mental states to themselves and others. The theory of mind hypothesis has been criticised for not encompassing the full complexity of the disorder, such as the insistence on sameness, restricted interests and early disturbances in social interaction (e.g. joint gaze) involved in autism (Happé, 1994b; Rutter, 1999). This has led to increased interest in the inherent affective cause of autism: the concept of a social-affective impairment (Yirmiya & Sigman, 1991).

In his original paper, Kanner (1943) suggested that many of the core features of autism, particularly the insistence on sameness, repertoire of fixed behaviours, routines and obsessions, are anxiety driven. An inability to comprehend and cope with the environment results in an immersion into these behaviours as a way to cope with or block out the environment. However, since Kanner's early observations and several other similar observations (e.g. Attwood, 1997; Despert, 1965; Groden et al., 1994; Simons, 1974), there has been little further research into the nature and extent of anxiety in this population. The aim of this study is to explore the nature of anxiety in high functioning children with autism. In order to set the scene, the current literature in this area will be reviewed, including previous methodologies applied. Due to the dearth of previous research specific to this area, the general literature addressing anxiety in children will be drawn upon, as well as previous research focusing on high functioning adults with autism, including autobiographical accounts.

1.1 Defining Autism

In 1943, Leo Kanner gave one of the first descriptions of childhood autism. During his observations of eleven children, Kanner noted a profound lack of affective contact with people, resistance to change, repetitive routines and idiosyncratic speech. Whilst observing a general delay in learning, Kanner also noted isolated skills in visuo-spatial and rote memory tasks.

In 1944 Hans Asperger reported on a group of children he had observed. These children displayed naive and inappropriate social interaction, idiosyncratic use of speech, intense preoccupation in circumscribed interests, poor intonation and body language, and poor motor co-ordination. These children were found to have borderline, average or superior levels of ability, but often with specific learning difficulties (Asperger, 1944, in Frith, 1991). For many years, Asperger's syndrome was given little acknowledgement. However, more recently, the importance of his findings have been recognised (e.g. Attwood, 1997; Cox, 1991; Wing, 1981).

Both Kanner (1943) and Asperger (1944, in Frith, 1991) described their syndromes as unique clusters of features. However, subsequent research, most notably Wing and Gould (1979), found children with mixtures of both syndromes. These findings led Wing and Gould to develop the idea that autism existed on a "continuum" with variants of features and levels of ability. More recently, this has been referred to as the "spectrum" of autism (Wing, 1996).

1.2 Features of Autism

Autism is thought to incorporate a "triad" of impairments, involving deficits in socialisation, communication and imagination (Wing & Gould, 1979). The nature of these deficits and their consequences will now be discussed.

Social Impairment

The social impairment in autism affects ability to form social relationships. In their epidemiological study, Wing and Gould (1979) identified three types of social impairment, which they termed as aloof, passive and odd. The "aloof" group were completely indifferent to social interaction, except for obtaining things they wanted; they would then return to their aloofness. "Passive" children were described as accepting social approaches, whilst not spontaneously making contact themselves. The so called "odd" group of children were found to make social approaches, but these were often inappropriate, for example, only to indulge some idiosyncratic preoccupation. Thus, whilst all children with autism show social impairments, these impairments can be variable (Howlin, 1998).

Impairment of Communication

Children with autism invariably have some form of delay in language acquisition and language development (Lord & Paul, 1997; Loveland & Tunali-Kotoski, 1997; Rapin & Dunn, 1997). Children often have little or no speech. Where there is speech, idiosyncrasies such as immediate and delayed echolalia, pronoun reversal (substituting "I" for "you"), unusual intonation, and stereotyped speech can be observed (Lord & Paul, 1997). Difficulties in the semantics and pragmatics of language are frequently observed (Ramberg et al., 1996; Rapin & Dunn, 1997). In its most extreme form, communication is manifested by the absence of any desire to interact with others. In some children, communication is confined to the expression of their needs.

Other key features of the communication impairment include poor eye contact (fleeting or prolonged), lack of facial expression, lack of gesture and awkward body language (Frith, 1989).

Impairment of Imagination

According to Howlin (1998), the language deficit in autism is also manifested in children's inability to develop imaginative patterns of play. She states "just as language is stereotyped, repetitive and non-social, so too is their imaginative play" (p.8). Often children with autism tend to engage in play that is ritualistic, repetitive, non-functional, rather than spontaneous and imaginative. Play patterns are rigid and limited, with little variety or creativity. Rather than being imaginative or symbolic, play is often limited to arranging objects into complex patterns, or seemingly endless straight lines.

Few children with autism show normal enjoyment in dolls or trains or cars. If interest is shown in conventional toys, there is little appreciation of the symbolic functions of objects. Thus, the child with autism may be interested in just spinning the wheels of a car over and over, or dismantling a doll's body, but they are most unlikely to set off on an imaginary journey with them (Happé, 1994b).

Ritualistic and Stereotyped Behaviours

In addition to the triad of impairments, associated features of autism include a range of rituals, routines and obsessional interests.

Children with autism tend to exhibit highly stereotyped and ritualistic models of interaction. For example, they may insist on eating at the same time every day, in exactly the same position at the table and with exactly the same set of utensils. Dislike of change frequently extends to the wider physical environment. For example, intolerance of a piece of furniture being out of place, doors left open in a particular way, or curtains hanging in an unacceptable fashion (Howlin, 1998).

In place of normal play patterns, children with autism display order and routine in play. Play activities are often carried out over and over again in a specified order. If a play routine is interrupted, the child with autism is likely to become extremely distressed and they often need to start from the beginning, enacting the play routine again (Happé, 1994b; Howlin, 1998). Although children with autism rarely show normal interest in toys, they may show a fascination with unusual objects, or aspects of objects. For example, they may become obsessed with touching or noting down every street lamp, phone box, or door knob that they see whilst out walking. They may be fascinated by the feel of people's hair or clothing, although showing little interest in them as people (Frith, 1989). Children may also show an obsessional interest in collecting objects. These will vary, but can be anything from foreign coins to teddy bears, to more bizarre items, such as sink plungers, tin cans or bus tickets (Howlin, 1998).

1.3 High Functioning Children with Autism

Within the spectrum of autism, there is a group of children whose intellectual abilities are within the average range. These children are often referred to as "high functioning". High functioning children with autism are different from those with 'classic' autism in that they actively seek out contact with others (Yirmiya & Sigman, 1991). However, the form and quality of their interactions are often unusual or inappropriate. This can be in the form of wanting interactions to focus on their own interests, using inappropriate eye contact or touching, odd postures, gestures and facial expressions (Wing, 1997). High functioning children with autism experience difficulty relating to peers and others, despite the fact that they often have considerable language skills. At times these children are aware of their differences and this can be a source of distress (Loveland & Tunali-Kotoski, 1997). Like other children with autism, high functioning children have a tendency towards order and routine, so that unexpected events, new people and new surroundings can be a source of distress (Loveland & Tunali-Kotoski, 1997). The ritualistic behaviours observed in high functioning children are more complex than for less able children, for example, acting out scenes from favourite films. More able children often involve others in their routines, such as engaging them in set dialogue or repeatedly asking the same questions (Howlin, 1998).

Whilst high functioning children have considerably more language skills, they still have some, if subtle, language difficulties, such as oddities in conversational interaction (Loveland & Tunali-Kotoski, 1997; Tsai, 1992). Conversations are often

focused on limited topics. Speech may be pedantic and formal, full of inappropriate statements or questions. They fail to take into account the bored expressions on the faces of their listeners and cannot engage in reciprocal conversation despite adequate linguistic ability. The high functioning child is sometimes referred to as 'very verbal' but at the same time 'a poor communicator' (Loveland & Tunali-Kotoski, 1997). Such children still display semantic and pragmatic difficulties, although phonology and syntax are said to follow the same development as in typical children (Ramberg et al., 1996; Rapin & Dunn, 1997).

According to Loveland and Tunali-Kotoski (1997), when high functioning children are highly stressed, they may regress to behaviours displayed in earlier stages such as temper tantrums and self stimulatory behaviours. They add that due to their abilities, high functioning children are often placed in school classes or situations in which they are expected to display age-appropriate social judgement and social behaviour. However, they often struggle to meet these expectations.

High functioning children are usually of average intellectual ability. However, their profile often shows an uneven pattern, with higher performance than verbal scores on IQ tests (Happé, 1994c; Yirmiya & Sigman, 1991). High performance scores are attributed to good rote memory and visuo-spatial abilities associated with autism. In contrast, low verbal scores are related to poor conceptual thinking, verbal abstraction and social reasoning abilities (Yirmiya & Sigman, 1991).

In diagnostic terms, there has been much debate as to whether high functioning autism is just another term for Asperger's syndrome, or vice versa (Gillberg, 1998b; Happé, 1994b; Kurita, 1997). Some have argued for a distinct disorder (Attwood, 1997; Cox, 1991), whilst others believe there is no distinction (Miller & Ozonoff, 1997). According to Prior et al. (1998) objective attempts to differentiate between subgroups in autism has not yet led to any consensus. Reviewing previous research, they found the most salient discriminating features to be related to severity of impairment, rather than distinctive diagnostic patterns of behaviours. In their own study, they considered level of intelligence and a history of language delay as differentiating factors. However, they did not find this distinction discriminatory in their cluster analysis. In a earlier study, Wing (1981) also found no distinction between those with Asperger's syndrome and high functioning autism. However, she considered the term Asperger's syndrome useful for parents and professionals who cannot believe in a diagnosis of autism, where the child is relatively able. Conversely, Miller and Ozonoff (1997) strongly discouraged use of the term Asperger's syndrome and, in fact, argued that even Asperger's cases did not have Asperger's syndrome. Perhaps as a result of these conflicting views and findings, or an increase in understanding, a spectrum (Wing, 1996) approach to autism is currently favoured. This approach is advocated here and thus, the term high functioning children with autism will be used to describe children in this study. The term Asperger's syndrome will only be used when describing previous research.

Research addressing children and adults with autism has predominantly focused on those most impaired (Szatmari et al., 1989). Follow-up studies suggest that, as

adults, high functioning individuals cope well in terms of adaptive abilities (Howlin, 1997; Rumsey, Rapoprt & Sceery, 1985; Szatmari et al., 1989). Despite this, there is evidence to suggest that these individuals are susceptible to a wider range of difficulties due to their increased levels of activity and interaction with the environment (Howlin, 1997). Researching the needs and difficulties of high functioning children and adults is therefore of great value and interest.

1.4 Epidemiology

Epidemiological research on autism has yielded varying results. This is primarily due to the differences in how autism is defined and diagnosed (Happé, 1994b). Early data suggested a prevalence rate of 4.5 in 10,000 (Lotter, 1966). Wing (1993) reviewed sixteen epidemiological studies, looking at prevalence rates for autism in different world-wide cities. Prevalence rates varied between 3.3 to 16.0 per 10,000. Wing suggested that the variance in rates could have been due to differing criteria used for diagnosing autism. The most consistent findings, based on Kanner's definition, were in the range of 4.3 to 4.9 per 10,000. However, when the wider spectrum approach to autism was considered, Wing found the numbers increased substantially. For example, Wing and Gould (1979) found an incidence of 21 per 10,000 in their Camberwell study. In terms of children diagnosed as having

Asperger's syndrome, Gillberg and Gillberg (1989) suggested a much higher incidence than that of autism, being in the range of 10 - 26 per 10,000.

In a recent review, Gillberg (1998a) combined all epidemiological research from 1985 to present and found a mean rate of 11.6 per 10,000. This statistic is typically reported as a prevalence rate of 1 in 1,000 and is considered the most realistic by Gillberg. Although this is a substantial rise in numbers, it is not felt that there has been an increase in the amount of children with autism. Increased awareness of the disorder and changing diagnostic criteria have been regarded as contributory to this escalation (Gillberg, 1998a; Wing, 1996). Previously children would only receive a diagnosis of autism if they displayed the 'classic' symptoms as defined by Kanner (1943). However, since autism has been conceptualised as being on a spectrum, a wider range of children are being diagnosed (Gillberg, 1998b; Wing, 1996).

Howlin (1997) has reported that the majority of individuals with autism have some degree of learning disability. She suggests that only around twenty per cent are of average intelligence. However, Gillberg (1998b) has considered that if the prevalence rates of autism and Asperger syndrome are combined to form a spectrum, than due to the reportedly higher incidence of Asperger syndrome, there are more able individuals than previously considered.

Gender Differences

In his original paper, Kanner (1943) noted an excess of boys in his clinical reporting, describing only two girls in his original paper. Asperger (1944, in Frith 1991) did not consider any girls to have his syndrome. Lotter (1966) observed that where girls did receive a diagnosis of autism, it was more likely to be accompanied by a severe learning disability than for boys. This finding has also been observed in subsequent research. For example, Wing and Gould (1979) found a higher prevalence of boys with a ratio of 4:1, based on Kanner's definition of autism. With the broader definition of autism, they found a ratio of 2:1 in children with severe cognitive impairment and 3:1 or 4:1 in the cognitively most capable (Wing & Gould, 1979). Whether there are fewer girls with autism or whether they are just harder to diagnose is unknown. Wing (1996) suggested that girls are perhaps affected less due to their stronger social instincts. A different clinical presentation to that found in boys could also result in girls being less likely to receive a diagnosis of autism (Gillberg, 1998a).

Socio-economic Status

With regard to socio-economic status, Kanner (1943) and Asperger (1944) noted high intelligence and high social standing in families in children with autism. This led to the idea that autism is more prevalent in high socio-economic classes. However, in Wing's (1993) review of sixteen world-wide epidemiological studies, class was examined in nine of the studies. A bias towards higher occupational class was found in two of the studies, but not the other seven. This led Wing (1993) to conclude that there was no obvious link between class and prevalence of autism.

1.5 Theories of Autism

Since Kanner's first description, there has been a plethora of theories aiming to account for the deficits involved in autism. In his original paper, Kanner (1943) considered an innate biological deficit in affect was involved. Later, Kanner (1949) viewed autism as a consequence of "refrigerator parenting". More recently, researchers have considered a cognitive deficit involved in autism. The central cognitive hypothesis to emerge is that autism involves a deficit in the acquisition of a "theory of mind" (Baron-Cohen, Leslie & Frith, 1985).

Theory of Mind Hypothesis

From around the age of four years, most children are able to understand that other people have thoughts, beliefs and desires that influence their behaviour (Attwood, 1997). However, it has been suggested by several researchers (Baron-Cohen, Leslie & Frith, 1985; Frith, 1989; Tager-Flusberg, 1992) that children with autism are severely impaired in this area. The central hypothesis to emerge is that autism involves a deficit in the acquisition of a "theory of mind" (Baron-Cohen, Leslie & Frith, 1985). The implications of this are that autistic children are impaired in their ability to attribute mental states to themselves and others. Such an impairment has grave implications for understanding social interactions and communicating personal needs.

Theory of mind has been defined as "the ability to infer other people's mental states (their thoughts, beliefs, desires, intentions, etc.), and their ability to use this information to interpret what they say, make sense of their behaviour and predict what they will do next" (Howlin, Baron-Cohen & Hadwin, 1999, p.2). It is suggested that this inability to "mind read" could account for the triad of impairments in autism (Happé, 1994b).

Two areas of mind reading ability have been considered: "first-order" theory of mind (such as the understanding of false belief); and "second-order" theory of mind (such as an understanding of other people's thoughts and desires) (Perner & Wimmer, 1985; Perner, Leekam & Wimmer, 1987). Research has consistently demonstrated that children with autism have a deficit in this area (Baron-Cohen, 1989a; Baron-Cohen, Leslie & Frith, 1985; Frith, 1989). The performance of children with autism has also been compared to other clinical populations, such as those with mild learning disabilities, Down's syndrome and specific language impairment (Leslie & Frith, 1988; Yirmiya et al., 1996; Ziatas et al., 1998). In these studies, children with autism were found to perform less well on theory of mind tasks compared to comparison control groups. Leslie and Frith (1988) compared children with autism to children with a specific language impairment (SLI). This was in order to control for the effects of language impairment on mentalizing ability. The SLI group performed significantly better than the autism group, passing second-order tasks. This led Leslie and Frith to conclude that language problems associated with autism cannot account for the theory of mind deficit.

One critique of the theory of mind hypothesis is that some twenty per cent of children with autism have been found to pass both first and second-order tasks (Happé, 1994b; Rutter, 1999). One explanation of this is that rather than a complete life-long deficit, there is a specific developmental delay in children with autism (Baron-Cohen, 1989a). It has also been suggested that verbal and intellectual ability have a positive effect on the ability to mind read (Happé, 1994c, 1995; Yirmiya et al., 1996). Dissanayake, Sigman and Kasari (1996) found that high functioning children with autism performed better than less intelligent autistic children on false belief tasks, suggesting that high functioning children may be able to compensate for their difficulties in cognitive understanding by making use of their intellectual ability. However, Frith, Happé and Siddons (1994) have argued that this suggests problem-solving abilities, rather than true theory of mind.

It has also been suggested that the ability to pass theory of mind tasks does not necessarily demonstrate mentalizing ability in everyday life (Fombonne et al., 1994; Frith, Happé & Siddons, 1994). Frith et al. (1994) compared theory of mind performance to real life adaptive behaviour using the Vineland Adaptive Behavior Scales (Sparrow, Balla & Cicchetti, 1984). They compared performance on theory of mind tasks to scores on the Socialization, Communication and Daily Living Domains. They also supplemented the Vineland Scales with items which they considered would distinguish social behaviour that necessitates theory of mind (termed "Interactive") and behaviour which could be learned ("Active"). Children with autism scored lower on all three Domains than normally developing and learning disabled controls. The

control groups were found to have greater mind reading abilities in real life compared to the autistic children, regardless of theory of mind task performance. That is, they scored higher on the Interactive measure than children from the autism group, irrespective of their passing or failing the theory of mind tasks. In contrast, for the autism group, only those who passed theory of mind tasks showed insightful Interactive behaviours. These children were also found to have higher within-group Communication Domain scores. Results from the Socialization Domain were inconclusive.

Further evidence of a true theory of mind deficit was demonstrated by Happé (1994a) using the "Strange Stories". These were a set of stories concerning the different motivations that can lie behind everyday social utterances (such as sarcasm, pretence, joke and lie). Happé considered the Stories to be more ecologically valid than the experiment based first and second-order tasks, as they more closely reflected real life difficulties in understanding minds. Happé found that autistic children gave as many mental state answers as controls (typically developing and learning disabled children). However, she found that these terms were used inappropriately to the Story context, such as repeatedly saying "she's having a joke". The autistic children were unable to use the context as an aid to understanding the speakers' motivation (now termed as having weak Central Coherence; see Happé & Frith, 1994 and Happé, 1997).

Social-Affective Hypothesis

Rather than a cognitive deficit, the social-affective theory, asserts an impairment in affect as the primary deficit in autism. This deficit was first described by Kanner (1943) when he described autism as "an innate inability to form the usual, biologically provided affective contact with people" (p. 250). Although a salient clinical feature of autism, this has received less attention than the cognitive accounts. Whilst not denying that children with autism lack a theory of mind, affective theorists see it as secondary to the affective impairment. This theory argues that children with autism have an innate impairment in the ability to perceive and respond to the affective expressions of others (Happé, 1994b). After Kanner, the main proponent of this theory is Hobson (1986a,b) who suggests an "emotion perception deficit" in autism, which is manifested in an impairment in the deciphering and labelling of emotions.

It is suggested that emotional behaviour provides a basis for communication, as well as understanding the self and others (Loveland & Tunali-Kotoski, 1997). According to Loveland and Tunali-Kotoski (1997), typically developing children engage in affective interactions from early infancy and these skills develop as they get older. However, children with autism are thought to have a deficit in relating emotionally to others (Capps, Yirmiya & Sigman, 1992; Sigman & Capps, 1997; Snow, Hertzig & Shapiro, 1987). Often children with autism display emotional responses which seem unusual, inappropriate or inadequate to the situation. Research also suggests that children with autism have difficulty recognising affect in others and in sharing affect in communicative situations (Loveland & Tunali-Kotoski, 1997). Furthermore, it has

been found that children and adults with autism produce fewer spontaneous affective expressions, in particular, fewer positive expressions, than comparison groups (Kasari et al., 1990; Snow et al., 1987; Yirmiya et al., 1992).

Research focusing on high functioning children with autism, has suggested an impairment in understanding and expressing emotion, rather than a complete deficit (Sigman, Arbelle & Dissanayake, 1995). Several studies have demonstrated appropriate labelling, understanding and expression of emotion in able children with autism (Bormann-Kischkel, Vilsmeier & Baude, 1995; Capps, Yirmiya & Sigman, 1992; Yirmiya et al., 1992). However, this does not suggest that all children with autism are able to express their emotions (Sigman, Arbelle & Dissanayake, 1995). Yirmiya et al. (1992) found that non-retarded children with autism were less able to identify and explain feelings presented to them in videotaped vignettes. As well as identifying the feelings of the Story's protagonist, children were also asked their own response to the vignette. They found that children with autism had greater difficulty empathising with the protagonists than normally developing controls.

High functioning children with autism have also been found to have difficulty explaining their own emotions. Capps, Yirmiya and Sigman (1992) compared high functioning children with autism to normally developing peers in their ability to understand simple and complex emotions. Happiness and sadness were selected as simple emotions and pride and embarrassment as more complex. These emotions were selected as they were considered to differ from each other in several important dimensions including locus of control and the role of an audience. They found that

the children with autism were able to identify times when they were happy or sad, but found the more complex emotions of pride and embarrassment problematic. In particular, they lacked reference to an audience in their description of embarrassment, which had been identified as necessary by the authors. Whilst children with autism were found to be able to identify some emotions, they found that they took longer to come up with answers. Thus, Capps, Yirmiya and Sigman (1992) argued that relaying past emotional experiences presented as a "problem-solving exercise" to the autistic children, compared to the spontaneity of their normally developing peers. This problem solving technique has also been found in other studies (e.g. Bormann-Kischkel, Vilsmeier & Baude, 1995) and has led Sigman, Arbelle and Dissanayake (1995) to conclude that "social understanding therefore seems to be arrived at logically, without much recourse to gut feelings and impressions" (p.292).

In summary, two main hypotheses addressing the core deficits in autism have been presented here: the theory of mind hypothesis and the social-affective hypothesis. Affective accounts (Capps, Yirmiya & Sigman, 1992; Hobson, 1986a,b) suggest a deficit in the ability to recognise and understand emotion; whereas cognitive accounts (Baron-Cohen, Leslie & Frith, 1985; Frith, 1989) suggest an inability to mind read as the primary deficit in autism. Researchers still disagree as to whether the primary deficit in autism is cognitive or affective (Yirmiya & Sigman, 1991). It is probable that deficits in both areas contribute to the impairments involved in autism (Happé, 1994b; Prior, Dahlstrom & Squires, 1990).

1.6 Anxiety in Children

Anxiety has been defined as "an aversive or unpleasant emotional state involving subjective apprehension and physiological arousal of a diffuse nature" (King, Hamilton & Ollendick, 1988, p.3). Whilst there are many definitions of anxiety, this definition will taken as an operational definition for the purpose of this study.

It has been suggested that anxiety is extremely prevalent in children and that it is developmental in nature (Craske, 1997; Klein, 1994). From separation anxiety in infancy, fear of animals and the dark in early childhood, to performance and social anxiety in late childhood, a substantial number of children suffer from some degree of anxiety at any one time (Bauer, 1980). According to Bauer (1980), the Piagetian model of cognitive development can be used as an explanation for the age related changes in anxiety provoking situations. Thus, there is a development from immediate, tangible fears, to more anticipatory and less tangible fears. It has also been suggested that as cognition develops, children have an increased ability to recognise and understand dangers in different situations (Craske, 1997; Ollendick, Yule & Ollier, 1991). This suggests that fears and anxieties can be adaptive, as they constitute protective responses to aversive stimuli (Ollendick, Yule & Ollier, 1991).

Whilst anxiety in children can be an adaptive part of normal development, it can also be of a level of intensity to be clinically significant. Several assessment measures have been designed to assess anxiety disorders in children. For example, self-rating scales such as the Revised Children's Manifest Anxiety Scale (Reynolds &

Richmond, 1985), the State Trait Anxiety Inventory for Children (Spielberger, 1973) and the Spence Children's Anxiety Scale (Spence, 1997a) are frequently administered and have good reliability and validity. Parent-rating scales, such as the Child Behaviour Checklist (Achenbach, 1978) are also commonly used to assess all childhood clinical problems, including anxiety disorder, as are clinical interviews and behavioural observations (Klein, 1994).

In terms of prevalence, around 5% of children in the general population display some form of anxiety disorder (King & Ollendick, 1997). Furthermore, anxiety disorder is the most common childhood psychiatric diagnosis (Craske, 1997). Generalised anxiety disorder, overanxious disorder, separation anxiety and simple phobia are the most frequently diagnosed. Panic disorder has also been found in children, although with much less frequency (Ollendick, Mattis & King, 1994), as has obsessive compulsive disorder in childhood (Anderson, 1994). King and Ollendick (1997) report that the aetiology of anxiety disorders in children is often complex, with aspects such as genetics, temperament, parental psychopathology and conditioning, converging with cognitive development, all implicated. Stability in the intensity and duration of childhood anxiety disorders has been found, with durations ranging from two to five years (King & Ollendick, 1997). Furthermore, it has been suggested that whilst the specific anxiety disorder may change, children with anxiety disorders retain some form of anxiety disorder over time (Craske, 1997; Spence & McCathie, 1993; Strauss, 1991). Moreover, it has been suggested that childhood onset of anxiety disorder is an indicator of disorder in adulthood, with approximately half of adults reporting childhood onset retrospectively (Klein, 1994). In particular,

Anderson (1994) has found that whilst obsessive-compulsive disorder is rare in childhood, it shows considerable continuity and stability into adult life.

According to Ollendick and King (1991), childhood anxiety can often be debilitating and can create functional problems for both children and their parents. For example, fears of the dark, medical or dental procedures, thunderstorms and school, can all have an effect on daily functioning (Ollendick & King, 1991). Education can also be affected by the presence of an anxiety disorder. Benjamin et al. (1990) conducted a community study of children aged seven to eleven years. Teachers viewed the children with anxiety disorders as significantly worse than non-anxious children on measures of academic, social and learning ability.

Several research studies have looked at the nature and content of worries in children. For example, a recent study by Perrin and Last (1997) looked at the role of worrisome thoughts in children with anxiety disorder. Comparing three groups (anxiety disorder, Attention Deficit Hyperactivity Disorder, non-clinical sample), Perrin and Last found that that those children referred with anxiety disorder reported more intense worries about separation and social evaluation than the controls. Stevenson-Hinde and Shouldice (1995) conducted a longitudinal study addressing consistency in the fearful behaviour, fears and worries of children aged four and a half to seven years. They found consistency in the level of fears and worries, but the nature of these worries changed over time in relation to gender roles. Thus, girls had worries about harm to their family members, whereas boys had performance worries.

Additional studies have also found evidence of gender differences in types of worries reported and the types of anxiety disorders developed and it has been found that girls are more at risk of developing anxiety disorders than boys (Craske, 1997; Livingstone, 1991; Spence & McCathie, 1993). In terms of specific worries and fears, Spence and McCathie (1993) found that girls have fears about getting sick, parental criticism and the dark, whereas boys have fears about physical injury, punishment and unfamiliar people. In an earlier study, McCathie and Spence (1991) found that children of both sexes also worry about things that are less likely to happen, such as bombings, earthquakes and fires. Craske (1997) carried out a review of gender differences in childhood anxiety disorders. She found that girls were more likely than boys to develop generalised anxiety disorder, phobias and separation anxiety. Few gender differences were found on measures of obsessive-compulsive disorder, and social phobia. These findings were also in parallel to those in the adult anxiety disorder literature. Craske suggested that gender differences in anxiety disorders may be due to girls being more likely than boys to report their fears and anxieties and more likely to engage in rumination and worry. She also suggested that girls may have different coping styles, or receive different parental responses to expressed anxiety.

Research has also suggested that children with physical and developmental disabilities display more fears than typically developing children and that they tend to fear different events or situations (King, Hamilton & Ollendick, 1988). In their review, King, Hamilton and Ollendick (1988) found that visually impaired children had more fears about physical dangers, such as being burgled, than typically

developing peers. Ramirez and Kratochwill (1997) found that children with mental retardation reported more fears about unusual animals (such as snakes), strangers, dying and being kidnapped, than their typically developing peers.

In summary, the literature reviewed suggests that most children display some level of anxiety and that for a substantial minority, this is clinically significant. Gender differences have been found both in the types of anxiety displayed and in the development of anxiety disorders. Children with physical or developmental disabilities have been found to have a greater propensity to anxiety than their typically developing peers and differences have been found in the type of fears they report. Genetics, temperament, parental psychopathology, conditioning and cognitive development, have all been found to have a role to play in the development and maintenance of anxiety disorders in children.

1.7 Anxiety in Children with Autism

The existence of anxiety and anxiety disorders in the general population of children is well established. It has been suggested that people with disabilities are at least as susceptible to anxiety as other populations, if not more so (Allen, 1989; Lindsay et al., 1988; Ramirez & Kratochwill, 1997). Groden et al. (1994) have asserted that people with autism are more susceptible to anxiety, due to the characteristics of the

disorder. However, to date, the only literature available on anxiety in children with autism are clinical observations (Attwood, 1997; Groden et al., 1994; Schopler & Mesibov, 1994) or pharmacological studies (Steingard et al., 1997; Szabo & Bracken, 1994), there has been no research conducted on this subject.

It is not suggested here that children with autism are perpetually anxious. Rather, it is suggested that due to the nature of autism, there are many situations in which children with autism are susceptible to anxiety. Key features of autism and their relationship to anxiety will now be explored.

Resistance to Change

Anxiety in children with autism was first recognised by Kanner (1943). In his earliest observations, Kanner noted that "the child's behaviour is governed by an anxiously obsessive desire for the maintenance of sameness" (p.245). For example, Kanner noted the case of John F. When John's parents prepared to move house, John became very distressed upon seeing his bedroom rug moved. Kanner observed that this distress remained acute, until John saw his bedroom furniture in exactly the same place as before in his new room. Upon which, Kanner observed, all anxiety was gone. Thus, whilst not anxiety provoking for the typical child, inevitable changes in the environment result in confusion and distress for the child with autism (Groden et al., 1994). Even very minor changes, such as a change in the position of a piece of furniture, can induce extreme distress. The fear of possible change can also be a

source of anxiety. Kanner (1943) considered this to be a major factor in the explanation of monotonous repetitiveness.

According to Attwood (1997), ritualistic behaviours often become more dominant or elaborate when the individual has recently experienced some change in their life, such as a change in school, daily routine or accommodation. This was also acknowledged by Steingard et al. (1997) in their psychopharmacological paper on transition-associated anxiety in children with autism. They suggested that children with autism experience panic-like levels of discomfort in response to change. Furthermore, they stated that "Like children with anxiety disorders and behavioural inhibition, children with autistic disorder tend to respond adversely to novel stimuli and accommodate change very slowly." (p.13). However, as a result of cognitive or social limitations, Steingard et al. suggested that their discomfort and anxiety is often expressed behaviourally as agitation and irritability. In a clinical sample of nine children aged six to twelve years, Steingard et al. treated transition-associated anxiety with Sertraline. Some short-term behavioural reduction in symptoms was found, although the authors did not predict long-term maintenance.

Schopler and Mesibov (1994) have suggested that the resistance to change in autism is due to a difficulty in understanding what is happening in the environment and a feeling of constant uncertainty. This was also poignantly illustrated by Theresa Jolliffe, a woman with autism: "Reality to an autistic person is a confusing, interacting mass of events, people, places, sounds and sights. There seems to be no clear boundaries, order or meaning to anything. A large part of my life is spent

trying to work out the pattern behind everything. Set routines, times, particular routes and rituals all help to get order into an unbearably chaotic life. Trying to keep everything the same reduces some of the terrible fear." (Jolliffe et al., 1992, cited in Howlin, 1997, p.98). This suggests that the insistence on sameness is functional to the autistic individual, representing a way to create order and bring sense to an otherwise confusing world (Howlin, 1998).

Stereotypical Behaviours

It has been suggested that stereotypical behaviours in autism have a role to play in anxiety provoking situations. Howlin (1998) has observed that stereotypical behaviours such as echolalia, twirling, rocking, flicking and hand flapping often increase when children are distressed or anxious. Some children have also been observed engaging in repetitive questioning, particularly repeating questions about what is going to happen throughout the day (Thomas et al., 1998). This suggests that these stereotypical behaviours may act as calming strategies to children with autism.

Obsessive and Ritualistic Behaviour

One of the core symptoms of autism, first described by Kanner (1943) and still considered to be pertinent today, is that of obsessional behaviour. Despert (1965) interpreted common obsessive behaviours as defences against the overwhelming anxiety experienced by autistic children. Simons (1974) made similar clinical

observations and noted an increase in compulsive behaviours whenever autistic children attempted to interact with others. Thus, engagement in obsessions and rituals appears to play a key role in keeping fear and anxiety under control (Howlin, 1997).

Baron-Cohen (1989b) divided this behaviour into three areas: repetitive and stereotyped play; 'need for sameness' or 'resistance to change'; and repetitive and narrow interests. This led Baron-Cohen to examine whether these behaviours in children with autism were symptoms of obsessive-compulsive disorder. If so, he argued, this would have important implications for the management of this behaviour. However, Baron-Cohen found distinct differences in the obsessive behaviour in autism, to that of obsessive-compulsive disorder. He found that the types of obsessions in children with autism differed from obsessions displayed by individuals with obsessive-compulsive disorder. In obsessive-compulsive disorder, Baron-Cohen noted that checking and hand washing are common, but these behaviours are rarely seen in autism. Also, he observed that individuals with autism are unable to self-report on the egodystonic (unwanted) nature of their obsessions, or whether they serve to reduce anxiety. These were identified as key features of obsessive-compulsive disorder. Thus, Baron-Cohen suggested that considerable caution should be taken in using the terms obsessive and compulsive when describing repetitive features in children with autism. Research with adults with autism however, suggests that the repetitive behaviour can develop into clinically diagnosable obsessive-compulsive disorder (Szatmari et al., 1989; Tantam, 1991).

Whilst the repetitive behaviour in autism may differ from obsessive-compulsive disorder, research suggests that psychotropic medication used in obsessive-compulsive disorder can be beneficial to children with autism. Gorden et al. (1992) reported on the use of Clomipramine, a drug used in the treatment of obsessive-compulsive disorder, with children with autism. Results showed that the drug was helpful in the reduction of repetitive behaviours. Similarly, a study by Holtum, Lubetsky and Eastman (1994) reported the use of Clomipramine in the treatment of trichotillomania (hair pulling) with an autistic girl. The authors considered that trichotillomania was a manifestation of impulse control disorder, similar to obsessive-compulsive disorder, and so used Clomipramine. However, in this study, psychotropic medicine alone was not effective, although the combination of Clomipramine and Behaviour Therapy was found to have increased efficacy.

As well as a coping mechanism for anxiety, obsessive and ritualistic behaviours can also be the cause of anxiety in children with autism. Anxiety can be induced if the individual is not able to engage in their ritual or obsession, or fears being prevented from carrying out the behaviour (Howlin, 1998). Similarly, children can become very distressed if some minor change in their routine results in the inability to perform an activity in a certain way (Howlin, 1997).

Fears and Phobias

Children with autism are also susceptible to the same amount of fears and phobias as typically developing children, if not more so. According to Howlin (1998) children

with autism are susceptible to the fears of typical children such as dogs, and visits to the doctor or dentist. However, she has also observed that children with autism often display unusual fears such the sight of the vacuum cleaner, balloons and bathrooms (Howlin, 1998). She states "children with autism may experience extreme fear in many different situations. A particular radiator, a specific corner of the garden, a certain lamp-post in the street, a door or cupboard left open in a particular way, can all cause profound distress, which in turn results in an increase in tantrums and disruptive behaviours or elevated levels of self-injury or stereotypes" (p.223). Wing (1996) has also observed that phobias in children with autism can become intensified if they are accompanied by repetitive rituals. For example, a fear of germs can be intensified by hand washing routines. Often these fears can last for a long time and can be disruptive for all of the family, particularly if they involve everyday objects or events that cannot be avoided (Wing, 1996).

In summary, clinical observations and psychopharmacological studies have suggested that many of the behaviours typically labelled as autistic or stereotypic are functionally related to anxiety. Resistance to change, obsessive and ritualistic behaviours, and stereotypies are engaged in as a way of coping with, or making sense of, the environment. Thus, by the very nature of the disorder, children with autism are susceptible to a wide range of anxiety provoking situations.

1.8 Anxiety in Adults with Autism

In recent years, researchers have become interested in the outcomes for children with autism (Howlin, 1997; Rumsey et al., 1985; Szatmari et al., 1989). Good prognosis for high functioning adults with autism has been found in terms of social functioning, education and employment (Szatmari et al., 1989). However, some researchers have suggested a propensity for psychiatric disturbance in adults with autism (Lainhart & Folstein, 1994; Tantam, 1991; Tsai, 1996; Wing, 1981).

In her seminal paper, Wing (1981) described the clinical features, course, aetiology and management of Asperger's syndrome. In terms of prognosis, Wing stated that for people with Asperger's syndrome, this may be affected by the occurrence of psychiatric disturbance. She found clinically diagnosable anxiety and depression in many clients, particularly in late adolescence and early adulthood. She considered these difficulties to relate to an inability to cope with their environment and an increased awareness of their difference from other people. However, Wing acknowledged that her sample was biased in that they were referred to a psychiatric service. Whilst she noted that accurate incidence rates can only come from epidemiological studies, she indicated that the numbers appeared to be significant.

Tantam (1991) examined eighty-five adults with Asperger's syndrome, thirty of whom were found to meet the criteria for psychiatric disorder. Although depression was found to be the most common disorder, four of the sample presented with

anxiety, two with anxiety and depression, and two with obsessive-compulsive disorder.

Frith (1991) reported that 7% of adults with autism suffer from anxiety disorders. She also noted higher than average prevalence rates for psychosis (3.5%), mania (9%), and depression (15%).

The presence of anxiety disorder has also been found in other follow-up studies of high functioning adults with autism. Rumsey et al. (1985) found chronic generalised anxiety in seven of the fourteen adult men sampled in their study. Additionally, Szatmari et al. (1989) found four out of sixteen adults received diagnoses of overanxious disorder and three obsessive-compulsive disorder, as rated by their parents in the Diagnostic Interview for Children and Adolescents. These rates compare to around 8% of all psychiatric out-patients in the general adult population presenting with anxiety disorder (Clark, 1989).

More recently, Hare (1997) and Hare and Paine (1997) illustrated the use of cognitive behaviour therapy with individuals with Asperger's syndrome, presenting with anxiety and depression. Both of these studies acknowledged the presence of psychological difficulties in adults with Asperger's syndrome and have attempted to promote the use of psychological therapies in treatment, rather than the use of pharmacotherapy.

Autobiographical Accounts

There have also been accounts of anxiety in adults with autism written by individuals with autism themselves. Temple Grandin, an American woman in her mid-forties, has provided some insightful and illuminating accounts of what it is like to live with autism. Temple talks of her slow language development, difficulties fitting-in at school and transitions between schools, and her constant fixations and obsessions (Grandin, 1984, 1992). One recurrent obsession concerned cattle and the chutes used to contain them during feeding. During her childhood, Temple remembered her conflict between wanting to be held, but not being able to tolerate touch. This led to the development of a "squeeze machine", similar to the cattle chutes she observed, which enabled Temple to gradually tolerate touch in a controlled way.

In terms of affective states, Temple recalled that she experienced feelings of intense anxiety and panic at the point of puberty. She reported that these feelings were constant and got worse with age. In terms of coping, Temple recalled: "I either fought the nerves by doing intense activity or simply retreated and avoided stimulation. During the worst attacks of 'stage fright' nerves my tendency to fixate on a topic increased. Over and over again I would talk on the same subject." (1984, p. 167). In individuals with autism, the onset of anxiety at puberty has been observed by several clinicians (e.g. Gillberg, 1984; Gillberg & Schauman, 1981; Komoto, Usui & Hirata, 1984), as has as a deterioration in other aspects of functioning, such as affect and social functioning.

Donna Williams (1992, 1994) has also written some insightful accounts of her experiences of being autistic. Donna's autism was not diagnosed until early adulthood. As a child, she was unable to comprehend 'the world' (as she termed it) and would often dissociate as a way of blocking out her environment. With increasing awareness of her emotional existence, Donna forced herself to experience 'the world'. However, during periods of intense distress, this became more difficult. After one particularly fraught social interaction she recalled: "At home I was in a state of overload. Some kind of emotion came over me and left me an uncomprehending mess. The meaning of everything before me had dropped out and I was surrounded by color and pattern and shape, with my sense of hearing heightened, my sensitivity to light increased, and my own nameless emotions washing over me." (1994, p. 128). Such incidents continued as Donna fought against her autism, needing to understand 'the world' and become a part of it.

Donna has also talked about the additional demands and expectations of being 'high functioning' placed on her by herself and others. Prior to her integration into 'the world' she recalled: "I could drive, paint, compose, and speak several foreign languages, all without thought or effort, but while I did I would be tuned out and everything that happened in the course of these actions came in without being filtered. It was like having a brain with no sieve but the consequences of my 'success' and 'high functioning' were shutdown, overload, dissociation and losing time." (p. 42).

1.9 Methodological Issues

This review has presented research with typically developing children, children with autism and adults with autism. Whilst some of the studies with typically developing children and adults with autism have explored anxiety, none of the studies on children with autism have specifically addressed this issue. Thus, there are no specific examples to act as guidelines to such a study. However, the studies reviewed are of methodological interest.

Measures

The studies of high functioning adults with autism employed various methodologies, including behavioural observation, carer report, self-report, clinical interview, or combinations of these. For example, Rumsey et al. (1985) used a combination of a structured interview schedule, parent interview and observation, in their behavioural outcomes study. Their interviews proved illuminating in terms of the difficulties this client group have in discussing emotions. They found that patients were often concrete in their thinking and that their speech was often monotonous, lacking normal intonational contours. Several patients repeated words or phrases within a sentence, appearing motorically 'stuck'. Poverty of speech and stereotyped speech were frequently seen; and some patients held idiosyncratic meanings for conventional words.

Szatmari et al. (1989) used structured interview schedules with both high functioning adults with autism and their parents. They also administered a social impairment rating scale, which assessed both speech and non-verbal communication. A battery of neuropsychological tests were also administered to measure various aspects of cognitive functioning. Results showed that parents reported more psychiatric symptoms than their autistic children. However, the authors did not elaborate on the ability of the autistic individuals to recognise or communicate psychiatric symptoms.

The clinical studies reported in this review (e.g. Hare, 1997; Tantam, 1991; Wing, 1981) used clinical interview to assess the extent of psychiatric disturbance in their clients. Hare (1997) also administered a self-report measure (the Beck Depression Inventory) throughout his intervention. The successful use of clinical interview, combined with the autobiographical accounts reported here, suggests that individuals with autism do have the ability to report feelings and emotions. However, these studies have focused on adults, whose cognitive abilities may be better developed than those of children.

Within the general child literature, self-report questionnaire (e.g. Revised Children's Manifest Anxiety Scale; State Trait Anxiety Inventory for Children), carer report, teacher report and clinical interview have been employed to assess anxiety. These studies have all yielded some informative results and have demonstrated not only children's abilities to self-report, but the value of their participation (Greig & Taylor, 1999).

In Perrin and Last's (1997) study of the role of worrisome thoughts in children, they administered several self-report anxiety inventories, including the Worry Scale. Their sample consisted of three comparison groups (anxiety disorder, ADHD, non-clinical sample) between the ages of five and thirteen. Whilst this study did yield some interesting results in relation to the role of worry in anxiety disorder, the Worry Scale they administered is yet to be tested for reliability and validity.

Stevenson-Hinde and Shouldice (1995) employed a range of questionnaires, interviews and behavioural observations in their study of children aged four and half to seven years. During the interviews with the children, they used a puppet to aid the interview process. This technique appeared to yield more specific information regarding the nature of the children's fears than the other methods employed.

Whilst many of the studies reported here have used multifaceted designs, they have all employed self-report questionnaires with children. According to Yule (1997), whilst parents and teachers are good at identifying observable behaviours, they are not so good at identifying anxiety and depression in children. He states "In order to access the subjective feelings of distress experienced by children, there can be no substitute for asking them directly." (p.1). Whilst Yule emphasises the value of self-report inventories, he notes that for children to be able to complete such inventories, they must be able to read. This effectively places a limit on the lowest age the scale can be administered. Yule suggests that this age be eight years, assuming a normal reading ability.

Comparison Groups

With regards to sampling, many of the studies reported here have compared children with autism to other groups of children. The majority of comparison group studies have included typically developing children as controls (e.g. Capps, Yirmiya & Sigman, 1992; Happé, 1995; Yirmiya et al., 1992). This has been in order to demonstrate effects specific to the experimental group, rather than all children (Bryman & Cramer, 1997). Therefore, it is of great importance to have a typically developing group of children in experimental studies. In addition to a typically developing control group, many researchers have added a third group to their studies, often with children from another clinical population. This has been in order to rule out the general effects of being a member of a clinical population, such as having a disability or a psychiatric disorder. Previous clinical comparison groups have included children with non-specific learning disabilities (Frith et al., 1994), Down's syndrome (Yirmiya et al., 1996), Attention Deficit Hyperactivity Disorder (Perrin & Last, 1997), and specific language impairment (Leslie & Frith, 1988; Perner et al., 1989; Ziatas et al., 1998). In studies with children, researchers have also interviewed their parents (Greig & Taylor, 1999). This has been in order to support data collected from children and to provide additional background data such as that from the Vineland Adaptive Behavior Scales (Fombonne et al., 1994; Frith et al., 1994).

In the present study, typically developing children will be selected as a control group. In addition, children with expressive language disorder will be selected as a second comparison group. According to Robinson (1991), disorders of speech and language

development are common. Approximately 1% of children display severe language delay, and between 3% and 15% have some form of language delay. It has been argued that disorders of language are important as they have great implications for both communication and learning (Howlin & Rutter, 1987).

Speech and language disorders have been found to be associated with high rates of psychiatric disturbance, particularly in childhood (Baker & Cantwell, 1987; Beitchman et al., 1996). An epidemiological study by Stevenson and Richman (1978) found that children with a delay in expressive language displayed significantly more behaviour problems than children with normal language development. Baker and Cantwell (1987) screened 600 children with speech and language problems for psychiatric disturbance. A positive correlation was found, with 50 per cent of the sample displaying diagnosable psychiatric disorders. In particular, articulation problems, abnormalities of language processing, language comprehension and language expression, were significantly more frequent in children found to have psychiatric disturbance. Baker and Cantwell suggested two possible reasons for a greater propensity to psychiatric disturbance in this population of children. They suggested that common antecedents such as intellectual impairment, brain damage, physical disorders, family factors and developmental disorders may be responsible; or that having a speech or language impairment in itself could cause psychiatric disturbance.

Beitchman et al. (1996) conducted a seven year follow-up study and also found high rates of psychiatric disturbance. They found that children who had psychiatric

disturbance at age five years were more likely to have the same problems at twelve years, compared to normal controls. Furthermore, they found that psychiatric disturbance is more likely to co-occur with language disorder than speech disorder.

Given the high rates of psychiatric disturbance reported in children with language disorder, any differences found in the present study between the expressive language disorder group and the autism group would specifically relate to autism, rather than language difficulties.

Ethical Considerations

When conducting research with children, Greig and Taylor (1999) have highlighted some important ethical considerations. These include the importance of considering any risks to children in terms of the nature of the research project, the research questions asked, sampling and the data collection instruments being utilised. Consideration of any potential physical, psychological or emotional risks to the participants should also be made. Greig and Taylor also stress the importance of informed consent, particularly from the children themselves, if this is possible, as well as their parents. This includes children from the control groups, as well as children from the experimental group. They advise that children and parents should be aware of what is involved in participating, their rights to withdraw from the study and what will happen to the results.

Summary of Methodological Issues

This review has highlighted the strengths and weaknesses of various methodologies used in experimental studies involving children and adults with autism, as well as typically developing children. The main issues that have been highlighted concern the applicability of self-report questionnaires in terms of developmental level and reading ability, as well as the questionnaires' reliability and validity. Thus, the selection of a questionnaire specifically designed and standardised for children is paramount. In addition, the value of comparison groups in experimental studies has been highlighted. Comparison of the experimental group to typically developing children is considered important and an additional clinical population can also be of value. Taking this into consideration, in addition to the experimental group, the present study has selected typically developing and expressive language disorder comparison control groups. Finally, important ethical considerations for conducting research with children have also been highlighted.

1.10 Conclusions and Research Questions

The aim of this review has been to explore the nature of autism, its core deficits and impairments. Drawing on theories of autism, it has been suggested that children with autism, by the very nature of the disorder, are susceptible to anxiety, particularly in a continually changing environment which they often struggle to make sense of

(Attwood, 1997; Schopler & Mesibov, 1994). Furthermore, it has been suggested that people with autism are more susceptible to additional psychological difficulties as they achieve adolescence and adulthood (Tantam, 1991; Wing, 1981). Moreover, those individuals considered to be high functioning have an increased likelihood of disturbance due to both their increased integration and their increased awareness of their differences from other people (Howlin, 1997).

The literature on general populations of children suggests that most children display some degree of anxiety and, that for a substantial minority of children, this is pathological in nature (Klein, 1994). It has also been suggested that children with learning disabilities and autism, are equally susceptible to anxiety, if not more so (Allen, 1989; Groden et al., 1994). However, to date, no research has been conducted addressing the nature and extent of anxiety in children with autism. Case study material and psychopharmacological papers provide the only published data. Clinical observations (e.g. Attwood, 1997; Groden et al., 1994; Howlin, 1998) have suggested that factors specific to autism such as resistance to change, ritualistic behaviours and difficulty coping with interaction, can result in anxiety. Other factors such poor adaptive skills, lack of theory of mind and difficulty recognising and expressing emotion, have also been implicated in the difficulties experienced by individuals with autism (Baron-Cohen et al., 1985; Capps, Yirmiya & Sigman, 1992; Fombonne et al., 1994).

The hypothesis that children with autism have a great propensity to anxiety, has important implications for clinical psychology. Often children with autism are

referred to clinical psychology services as a result of their challenging or disruptive behaviour, self injury, or increased stereotypies. It has been suggested that these behaviours are often the result of internalised anxiety (Thomas et al., 1998). The idea that such behaviours may be anxiety based, would have great implications for the formulation and management of such difficulties. Howlin (1998) has suggested that recognising the cause of these behaviours, rather than focusing on the symptoms, can lead to more appropriate interventions. Therefore, this study aims to explore the nature and extent of anxiety in high functioning children with autism. Some of the possible explanations for anxiety, as outlined in this review, will also be explored.

The questions to be asked in this study are:

1. Do high functioning children with autism display higher levels of anxiety than two comparison control groups (consisting of children with expressive language disorder and typically developing children)?

2. Do high functioning children with autism display higher levels of social anxiety than two comparison control groups (consisting of children with expressive language disorder and typically developing children)?

3. What are some of the possible factors associated with higher levels of anxiety in children with autism?

   3a. Are there differences between the groups in measures of theory of mind, recognising and expressing emotions, communication and socialisation?

   3b. Are there correlations within the autism group between anxiety and measures of theory of mind, recognising and expressing emotions, communication and socialisation?

2.0 Method

2.1 Sample

The sample consisted of 45 children; 15 high functioning children with autism, 15 children with expressive language disorder, and 15 typically developing children. Children were between the ages of 8 to 12 years old. Children were matched for chronological age and gender. Thus, as each child was recruited to the autism group, a child of the same age and gender was recruited to the other two groups.

Autism Group

The participants from the high functioning autism group were selected from a Child Clinical Psychology Department, Child Development Centre and a Parent Support Group. In order to be selected for the study, each child had to meet the entry criteria. These were that the child had received a diagnosis of autism according to criteria set by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 1994); and that they were considered to have average or near-average intellectual and reading abilities, as defined by their Clinical Psychologist, Paediatrician or Teacher. All children attended mainstream school.

Expressive Language Disorder Group

The participants from the expressive language disorder group were selected by Community Speech and Language Therapists. In order to be selected for the study, each child had to meet the entry criteria. These were that they had received a diagnosis of expressive language disorder, as diagnosed by a Speech and Language Therapist within the Specific Language Impairment Team. No other language problems were to be included in their diagnosis (such as receptive language problems or semantic-pragmatic difficulties). Also as part of the entry criteria, each participant was considered to have average or near-average intellectual and reading abilities. Eight children attended mainstream school and seven attended a specialist school for children with language disorders of average intelligence.

The expressive language disorder group were selected to enable evaluation of the specific effects of language disorder on anxiety. Language impairment is an inherent part of autism to varying degrees, even in those who are high functioning (Tager-Flusberg, 1997). Thus, this group of children were selected to separate out language difficulties from other components of autism. It has been suggested that there is some overlap between autism and some types of language difficulties (Bishop, 1989). Those aspects of language identified as problematic in autism include semantics and pragmatics (the social use of language) and prosody (Tager-Flusberg, 1997). However, certain aspects of speech and language are not thought to be affected in autism, such as phonology, syntax and protoimperatives (Rapin & Dunn, 1997). It was therefore felt that children with expressive language disorder (affecting phonology and syntax) represented language difficulties not associated with autism.

Typically Developing Group

The children from the typically developing group were selected from several mainstream primary and secondary schools within the community. The locality of these schools were varied in terms of socio-economic background. Children were selected by the schools Head or Deputy Head as 'typical' children with average intellectual and reading abilities.

Ethnic Background

All children in the two clinical groups (autism and language disorder) were of white British origin. Two of the children in the typical group were of different ethnic backgrounds: one African-Caribbean, one European.

Socio-economic Background

In order to control as much as possible for socio-economic variables, the participants from the typically developing group were chosen from several separate schools, within different socio-economic areas.

It was not possible to be as selective for the participants in the high functioning autism and the expressive language disorder groups. This was due to the availability of children with these diagnoses. However, in Wing's (1993) review of sixteen world-wide epidemiological studies of children with autism, class was examined in nine of the studies. A bias towards higher occupational class was found in two of the

studies, but not the other seven. This led Wing (1993) to conclude that there was no obvious link between class and prevalence of autism.

2.2 Design

The study involved a comparison control group design with three groups: a high functioning autism group and two comparison groups. The two comparison groups consisted of a group of children with expressive language disorder and a typically developing group. The language disorder group was selected in order to explore the implications of language difficulties for anxiety. The total sample consisted of 45 children. There were 15 participants within each group. This sample size was based upon the number and accessibility of children with diagnoses of autism or expressive language disorder. Participants were allocated to groups on the basis of diagnosis for the high-functioning autism and expressive language disorder groups; and being free of any diagnosis for the typically developing group. The independent variable in this study was the allocated group and the primary dependent variable was the level of anxiety. All groups were matched for age and gender. During the investigation, all groups were administered the same measures and these were administered in the same order by one experimenter.

The Spence Children's Anxiety Scale (Spence, 1997a) was selected as the primary measure to answer the main research question of whether the high functioning autism group have the highest levels of anxiety. A second measure, the Spence Social Worries Questionnaire (Spence, 1995), was also selected in order to compare anxieties specific to social worries. Three other measures were also selected to address the third research question relating to the possible reasons for higher anxiety levels in children with autism. The Vineland Adaptive Behavior Scales (Sparrow, Balla, Cicchetti, 1984) were selected to assess possible socialisation and communication deficits; the Experience of Emotions Task (Capps, Yirmiya & Sigman, 1992) was administered in order to assess whether children had difficulty recognising and expressing their own emotional experiences; and the Strange Stories (Happé, 1994a) were selected to assess whether children lacked a theory of mind, thought pertinent to social understanding.

Normative, reliability and validity data have been established for three of the measures (Spence Children's Anxiety Scale, Spence Social Worries Scale, Vineland Adaptive Behavior Scales). For those measures where data had not been established (Strange Stories, Experience of Emotions Task), inter rater agreement checks were carried out using Kappa coefficients.

Pilot Study

In order to finalise the design and to establish the suitability of the measures selected, a pilot study was carried out prior to the investigation. Participants for the pilot

study consisted of two 'high functioning' boys with autism (both aged 12 years) and two boys with expressive language disorder (one aged 8; one aged 12).

During the pilot study, the Spence Children's Anxiety Scale, the Spence Social Worries Questionnaire (Pupil) and the Experience of Emotions Task were administered. This was in order to assess the language complexity of these measures and the suitability of the terminology used. The participants in the pilot study were able to answer the questions in these measures with little or no difficulty and thus, they were utilised in the final design.

Six of the 12 Strange Stories were administered in the pilot study plus two simpler Theory of Mind tasks. A first-order belief task, the 'Smarties Task' (Perner, Leekam & Wimmer, 1987) and a second-order belief task, the 'Ice Cream Van Task' (Perner & Wimmer, 1985) were administered. This was done for two reasons. Firstly, the Strange Stories are very language based and require a high level of reading comprehension. Thus, this measure needed to be piloted, particularly with the expressive language disorder group, to ensure that they were able to comprehend the Stories. Secondly, by their very nature, the Strange Stories are a high level test. Research (e.g. Baron-Cohen et al., 1997; Happé, 1994b) has found that high functioning children (and adults) with autism are able to pass first and second order belief tasks due to their higher level of cognitive functioning. Therefore, it was important to assess the degree of difficulty experienced during the first and second order tasks as well as the Strange Stories, particularly for the autism group. It was found that all participants passed the first and second order tasks. The Strange

Stories were experienced as being much harder (as anticipated) but neither of the groups struggled with the complexity of the language involved in the task. Therefore, the Strange Stories were used in the final design.

2.3 Measures

Spence Children's Anxiety Scale (Spence, 1997a)

The Spence Children's Anxiety Scale (SCAS) is a 45-item self-report questionnaire used to measure overall levels of anxiety as well as specific subscales of anxiety (presented in Appendix 1). Of the 45 items, 38 are anxiety items, six general items and one is an open ended question (non-scored). The subscales measured are Panic Attack and Agoraphobia, Separation Anxiety, Physical Injury Fears, Social Phobia, Obsessive Compulsive Disorder, and Generalized Anxiety Disorder/Overanxious Disorder. Subscale items are presented in Appendix 2.

Items are rated on a 4-point scale of severity: 'never', 'sometimes', 'often' and 'always' relating to how often each item happens to them. Respondents are asked to tick the box which corresponds to them.

Scoring

The responses are scored as:

Never	0
Sometimes	1
Often	2
Always	3

This yields a possible score of 114.

Subscale scores are computed by adding the individual item scores within that subscale. The total score is the sum of all six sub-scale scores.

Interpretation

The SCAS was standardised in clinical trials for boys and girls between the ages of 8-12 years; and was found to discriminate at group level between clinically anxious children and non-clinical controls. The mean score found for clinically anxious children was 42.48; whilst that for non-clinical controls was 25.04. SCAS scores were found to decline with age. Table 1 shows mean subscale data from the non-clinical controls from the standardisation trials.

Table 1. SCAS Subscale Means for Non-clinical Controls from Spence's (1997a) Standardisation Trials

	Panic/ Agoraphobia	**Separation Anxiety**	**Physical Injury**	**Social Phobia**	**Obsessive Compulsive Disorder**	**Generalized Anxiety Disorder**
Mean	4.42	4.90	3.66	6.65	6.09	6.35
(s.d.)	(4.85)	(3.75)	(2.97)	(4.07)	(3.95)	(3.76)

Psychometric Details

The SCAS has been found to have good reliability and validity as tested in two studies (Spence, 1994, cited by Spence, 1997a; Spence, 1997b). An internal reliability coefficient of 0.93 and a Guttman split-half reliability of 0.92 was found (Spence, 1994, cited by Spence 1997b). Total scores were normally distributed, with a mean score of 30.56 (s.d. = 16.75). A factor analysis study (Spence, 1997b) confirmed the subtypes of anxiety measured in the Scale, to be consistent with the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 1994).

Spence Social Worries Questionnaire (Spence, 1995)

The Social Worries Questionnaires are used to assess symptoms of social anxiety in children. Items relate to whether the young person experiences worry about a particular social situation or tries to avoid that situation. All situations involve some form of scrutiny or evaluation by others. According to Spence (1995) these items were selected on the basis of these situations being commonly feared by socially anxious or socially phobic individuals as reported in the research and clinical literature she reviewed.

There are three versions of the Social Worries Questionnaire: Pupil, Parent and Teacher. The situations covered in each questionnaire vary slightly from each other. In this instance the Pupil and Parent questionnaires were administered.

Pupil Questionnaire (SWQ-Pupil)

The Pupil version of the Social Worries Questionnaire (Appendix 3) consists of 13 items relating to worries about and avoidance of social-evaluative situations in various settings. This version of the Questionnaire relates to personal experiences in both home and school situations.

Parent Questionnaire (SWQ-Parent)

The Parent version of the Social Worries Questionnaire (Appendix 4) consists of 10 items relating to fear and avoidance of social situations. In the Parent version of the Questionnaire, parents are asked to assess situations in which they have had direct contact, such as their child using the telephone or going into a shop alone to buy something. These items are directly comparable to those of the Pupil version of the Questionnaire.

Scoring

For both the Pupil and Parent versions of the questionnaire items are scored as:

Not True	0
Sometimes True	1
Mostly True	2

Thus, for the Parent version of the Questionnaire, the maximum score obtainable is 20, and for the Pupil version, the maximum score obtainable is 26.

Interpretation

Normative data for the SWQ-Parent and the SWQ-Pupil were established by Spence (1995) in her standardised trials with children and adolescents aged 8 to 17 years. The data showed no significant difference in scores between the age groups and

between the sexes. The mean total score found for the Parent version was 6.42 (with a standard deviation of 6.17), with a mean of 8.44 (s.d. = 5.3) for the Pupil version.

Psychometric Details

Internal reliability was found to be high, with a Guttman split-half reliability coefficient of 0.93 and a coefficient alpha of 0.94. Factor analysis revealed a single factor accounted for 66 per cent of the variance in test scores, confirming that the Questionnaire measures a single dimension (Spence, 1995). Correlations between the Pupil and Parent versions of the Questionnaire were significant but weak (r = 0.28).

Strange Stories (Happé, 1994a)

The Strange Stories were designed to test theory of mind in more able children with autism. The Stories concern the different motivations that can lie behind everyday social utterances which are not literally true (such as sarcasm, pretence, joking and lying). Happé considered the Stories to be more ecologically valid than the experiment based first and second-order tasks, as they more closely reflect real life difficulties in understanding minds.

The Strange Stories consist of 12 short vignettes, each accompanied by a picture and two test questions: a comprehension question ("was it true what x said?") and a justification question ("why did x say that?"). The Stories concern the different motivations that can lie behind everyday social utterances which are not literally true. The 12 story types comprised Lie, White Lie, Joke, Pretend, Misunderstanding, Persuade, Appearance/Reality, Figure of Speech, Sarcasm, Forget, Double Bluff and Contrary Emotion (presented in Appendix 5). In each Story a character says something which is not literally true and the participant is asked to explain why the character said what he or she said.

The set of Stories was introduced as follows: "I am going to read you some stories and I'd like you to listen carefully. I will then ask you two questions at the end of each story". Each Story was read out aloud by the experimenter, unless the participant preferred to read the Stories themselves, in which case they read them aloud (this often aided their concentration). At the end of each Story, participants were asked the two test questions. The first question "was it true what x said?" was treated as a test of comprehension. Therefore, although the first response was recorded, if they were wrong, the Story was read out again until the participant answered correctly or appeared to understand. The second question "why did x say that?" was then asked and the participant's answer was recorded in full verbatim (the record form is presented in Appendix 6). Whilst positive comments were made throughout the administration of the task, no feedback was given regarding the correctness of the answers.

Scoring

Answers given in response to the "why?" question were rated as either correct or incorrect. The justifications were also scored as either involving mental states or physical (literal) states.

In each case, only one score was given per story, giving credit for their best answer. Thus, if a participant gave one correct answer and one incorrect answer, the correct answer was taken.

Answers were scored on a 3-point scale:

2 = fully correct; mental state answer

1 = partially correct; or physical state answer

0 = incorrect

Inter-rater Agreement

The data was coded by two raters, the experimenter and a Consultant Clinical Psychologist, who was blind to group status. Inter-rater agreement was calculated using Kappa. Kappa measures agreement rate between two raters. A value of 1 indicates perfect agreement, a value of 0 indicates that agreement is no better than chance. According to Fleiss (1981), Kappa values greater than 0.75 represent excellent agreement beyond chance. Values below 0.40 represent poor agreement and values between 0.40 and 0.75 represent fair to good agreement beyond chance.

Kappa for all stories across all three groups was found to be 0.77. Kappa was also calculated for each individual story. Story 1 (Lie) no cases to rate, Story 2 (White Lie) 0.64, Story 3 (Pretend) 0.69, Story 4 (Joke) 0.66, Story 5 (Idiom) 0.72, Story 6 (Misunderstanding) 0.56, Story 7 (Double Bluff) 0.86, Story 8 (Sarcasm) 0.78, Story 9 (Persuasion) 0.72, Story 10 (Contrary Emotion) 0.72, Story 11 (Appearance/reality) 0.87 and Story 12 (Forgetting) 0.80. Disagreements were discussed until a consensus was reached.

Experience of Emotions Task (Capps, Yirmiya & Sigman, 1992)

This is an adapted version of the task Capps, Yirmiya and Sigman (1992) used in their study investigating emotion recognition and communication in children with high functioning autism (originally developed by Seidner, Stipek & Feshbach, 1988). In their study, Capps, Yirmiya and Sigman (1992) gave participants a list of four emotions: happiness, sadness, pride and embarrassment. In this study, the emotions 'worry' and 'fear' were added as they were thought pertinent to the study. The record form utilised in the present study is presented in Appendix 7.

Participants were given a list of the six emotions (sadness, happiness, embarrassment, pride, worry and fear). Each child was asked to read the list aloud and to tell about a time in which he or she felt each emotion. If a child was unable to provide an

example, the experimenter prompted the child by relating a time in which she felt the emotion, and then proceeded to ask the child about the other emotions before returning to the source of difficulty. The prompting stories given were the same for each participant (and are presented in Appendix 8).

Prompting in the form of additional questions (e.g. "what have you done that made you proud?") were used when a child was unable to respond, stated that he or she had never felt the target emotion, or could not recall the corresponding situation.

Coding

The coding categories defined by Capps, Yirmiya and Sigman (1992) were used in this study. A description of these categories is presented in Appendix 9.

Scoring

Responses were scored within the following dimensions:

1. affect - whether the emotion was positive or negative
2. locus - whether the event was internal to and controllable by the person
3. audience - the presence or absence of an audience who observed the event

Table 2 displays the affect, locus and presence of an audience for each of the six emotions, which were deemed appropriate in evaluating children's responses.

Table 2. Scoring Categories for Experience of Emotions Task

Emotion	Affect	Locus and Controllability		Audience
happiness	positive	external	uncontrollable	no audience
sadness	negative	external	uncontrollable	no audience
embarrassment	negative	internal	controllable	audience
pride	positive	internal	controllable	audience
worry	negative	internal	controllable	no audience
fear	negative	external	uncontrollable	no audience

One point was given for a correct answer within each of the three dimensions:

1 point = appropriate affect

1 point = appropriate locus and controllability

1 point = appropriate audience

Thus yielding a maximum score of 18.

Inter-rater Agreement

In order to ensure consistency in scoring, the data was coded by two raters, the experimenter and a Consultant Clinical Psychologist, who was blind to group status. Inter-rater agreement was calculated using Kappa.

Kappa coefficients of inter-rater agreement were calculated for each dimension by emotion: Locus 0.65 (sadness), 1.00 (embarrassment), 1.00 (pride), 0.87 (worry), 0.76 (fear). Affect: 0.78 (sadness), 1.00 (embarrassment), 0.65 (pride), 0.63 (worry), 0.72 (fear). Kappa was also calculated for agreement between the emotion embarrassment and the audience dimension: 0.95. With respect to both locus and affect for the emotion happiness, there were no cases to rate. Disagreements were discussed until a consensus was reached.

Vineland Adaptive Behavior Scales (Sparrow, Balla & Cicchetti, 1984)

The Vineland Adaptive Behavior Scales (a revision of the Vineland Social Maturity Scale) are a measure of adaptive functioning in children from birth through 18 years (and low-functioning adults). The Scales are administered to a respondent (such as parent or caregiver) who is familiar with the daily activities of the individual being assessed. There are three versions of the revised Vineland: the Interview Edition Survey Form, The Expanded Interview Edition and the Classroom Edition. Four Domains of Adaptive Behavior are measured: Communication, Daily Living Skills, Socialization and Motor Skills. For the purposes of this study, the Interview Edition was utilised. Only the Communication and Socialization Domains were administered as these were thought to be most pertinent to the study. The starting place for each Domain can be determined either by chronological, mental or social age. Due to

their social and communication difficulties, participants from the autism and language disorder groups were started at age 5 years for each Domain. Participants from the typical group were started at their chronological age.

The Communication Domain comprises three subdomains: Receptive (what the individual understands); expressive (what the individual says); and Written (what the individual reads and writes).

The Socialization Domain comprises three subdomains: Interpersonal Relationships (how the individual interacts with others); Play and Leisure Time (how the individual plays and uses leisure time); and Coping Skills (how the individual demonstrates responsibility and sensitivity to others).

Scoring

Scores relate to the frequency with which item is carried out:

yes or usually	2
sometimes or partially	1
no or never	0

If the respondent has not observed the individual performing an activity, 'N' is scored. If the respondent does not know whether the individual performs the activity, 'DK' is scored.

Each Domain of the Vineland Adaptive Behavior Scales produces standard scores, percentiles and age equivalents. In this instance, standard scores for the two Domains were utilised. Standard scores relate the individual's score to the mean score for individuals of the same age. Standard scores have a mean of 100 and a standard deviation of 15, and range from 20 to 160. Standard scores are preferred because, unlike percentile scores, they have equal units across the full range. Thus, the difference in performance between scores of 100 and 115 is the same as that between 130 and 145 (Sparrow, Balla & Cicchetti, 1984).

Standard scores are normally distributed. Therefore, 68 per cent of normal individuals will obtain standard scores between 85 and 115, and 95 per cent will obtain standard scores between 70 and 130.

Psychometric Details

The reliability and validity of the Vineland Adaptive Behavior Scales are well established (Cicchetti & Sparrow, 1981; Sparrow, Balla & Cicchetti, 1984).

2.4 Procedure

Ethical approval for this study was first obtained from two local National Health Service Trusts. No amendments to the original design of the study needed to be made. Slight amendments to the participant letters needed to be made for one of the Trusts. Once these amendments had been made, full ethical approval was granted.

Upon receipt of consent (see Appendices 11-13 for consent form and information sheets), children and their parent(s) were invited to a 90 minute interview at the Clinical Psychology Department. Appointments were arranged at home or school if for some reason (such as child care arrangements) they were not able to attend at the Department. Child and parent were interviewed separately by the experimenter in a quiet room.

The first interview was conducted with the parent. Parents were given information regarding the experimental procedure. This involved informing them of the nature of the questions both they and their child were going to be asked.

The Communication and Socialization Domains of the Vineland Adaptive Behavior Scales were then administered. These were administered in conversation format, as advised in the manual, rather than on a question by question basis.

Following this, the Spence Social Worries Questionnaire (Parent) was administered. Parents were instructed to answer according to the rating 'not true', 'sometimes true' or 'mostly true'. They were read out the questions item by item.

The second interview was then conducted with the child. The experimenter and child sat at a low table where the child was able to see and read the measures. The child was informed of where their parent was (which was in the waiting room, if the interview took place at the Clinical Psychology Department). The child was then given information regarding the experimental procedure. This involved telling them that they were going to be asked some questions about the kinds of things children might worry about; they were going to be asked about times when they felt some feelings like happy and sad; and that they were going to be read some stories and asked questions about what happened in each story.

The first item administered was the Spence Children's Anxiety Scale. Items were read to the child unless they wanted to read them themselves. The child was informed that they were going to be read some questions and that for each one they had to say whether they 'never', 'sometimes', 'often' or 'always' felt like that. After checking that they understood, the items were then administered in numerical order.

The Experience of Emotions Task was then administered. The child was informed that they were going to be read a list of 'feeling words' and they had to talk about a time when they felt that way. If the child had difficulty recalling a time, they were given a range of set prompts (including a story of a time the experimenter

experienced the emotion). The experimenter wrote down the participant's response verbatim. If a child responded that they had never felt the emotion, no further questions were asked about that emotion and the experimenter went onto the next one.

The Spence Social Worries Questionnaire (Pupil) was then administered. Again, items were read out to the child unless they wanted to read them out themselves. They were asked to state whether the item was 'not true', 'sometimes true' or 'mostly true' in their experience.

The Strange Stories task was then administered. The child was informed that they were going to be read a set of stories and that at the end of each one, they would be asked questions about the story. Each story was then read out to the child and at the end of each story they were asked the two questions and their answers were recorded verbatim.

3.0 Results

The present study identified three questions which attempted to explore whether high functioning children with autism have higher levels of anxiety than two comparison control groups and the possible factors which may contribute to this. In order to answer these questions, descriptive and statistical analyses were carried out on the data (raw data is presented in Appendices 14 and 15).

3.1 Methods of Analysis

Prior to the statistical analyses, tests were carried out to determine whether parametric or non-parametric statistics would be most appropriate. The criteria for parametric analysis are that the data must be interval (continual), normally distributed and that the variances are homogeneous (Bryman & Cramer, 1997).

In the present study, measures yielded a combination of ordinal and interval data. In order to measure distribution, one sample Kolmogorov-Smirnov tests were carried out on all of the measures for the three groups combined. This test compares the observed frequencies of values to a hypothetical normal distribution. A non-significant result (p value greater than 0.05) is necessary in order to meet the criteria

for parametric statistics (Bryman & Cramer, 1997). As can be seen in Table 3, all measures except the Experience of Emotions Task met these criteria.

The Levene's test of homogeneity of variance was used to test whether the variances between the groups differed. If the statistic of the Levene test is significant, then the variances are statistically different (or not homogeneous), and do not meet the criteria for parametric analysis (Bryman & Cramer, 1997). As can be seen in Table 3, data from the Strange Stories, Experience of Emotions Task, and Vineland Socialization Domain gave significant results. That is, the variances are significantly different and, therefore, not homogeneous.

Table 3. Tests of Distribution and Homogeneity of Variance

	Kolmogorov-Smirnov Z	**(2-tailed Sig.)**	**Levene's test**	**(2-tailed Sig.)**
SCAS	.523	(.948)	1.125	(.334)
SWQ-Pupil	.794	(.554)	1.351	(.270)
SWQ-Parent	1.047	(.223)	1.503	(.234)
Strange Stories	1.241	(.092)	13.657	(.000)
Exp.of Emotion	1.662	(.008)	3.347	(.045)
V. Communication	.922	(.363)	1.053	(.358)
V. Socialization	1.058	(.213)	4.296	(.020)

These tests show that the data do not meet the criteria for parametric analysis. Therefore, non-parametric statistics were selected for this study. Kruskal-Wallis analysis of variance tests were carried out on all measures to compare differences between the groups. Pairwise comparisons were made using Mann-Whitney U tests. Spearman's RHO correlations were carried out to explore possible correlations between the anxiety measures and the other measures for the high functioning autism group.

3.2 Demographic Information

The sample consisted of 15 children in each group. Participants in all three groups were matched for age and gender. Tables 4 and 5 show the mean age and gender dispersions within each group.

Table 4. Mean Ages for each Group (in years)

Group	Range	Mean	(s.d.)
Autism	8 - 12	10.27	(1.52)
Language	8 - 12	10.25	(1.52)
Typical	8 - 12	10.26	(1.52)

Table 5. Gender Dispersion across all three Groups

Group	Male	Female
Autism	13	2
Language	13	2
Typical	13	2

Participants were aged between 8 to 12 years. Table 6 displays the number of children in each group throughout the age band.

Table 6. Age Dispersion across all three Groups

Age	No. in Each Group
8	3
9	2
10	3
11	3
12	4

Participants were invited to attend an interview at the Clinical Psychology Department. Where this was not possible, they were seen at alternative locations. For the autism group, 7 were seen at the department, 7 at home and 1 at school. For the language disorder group, 2 were seen at the department, 6 at home and 7 at school. For the typical group, 1 was seen at the department, 11 at home and 3 at school.

3.3 Research Findings

Question 1: Do high functioning children with autism display higher levels of anxiety than two comparison control groups?

Differences in anxiety levels were compared using the Spence Children's Anxiety Scale (SCAS). Table 7 shows the means and standard deviations for each group. The means show that the high functioning autism group displayed higher levels of anxiety than the two matched control groups. Kruskal-Wallis analysis of variance found these differences to be significant ($\chi_2 = 6.59$, d.f. = 2, $p = < 0.05$).

Table 7. SCAS Means and Standard Deviations for each Group

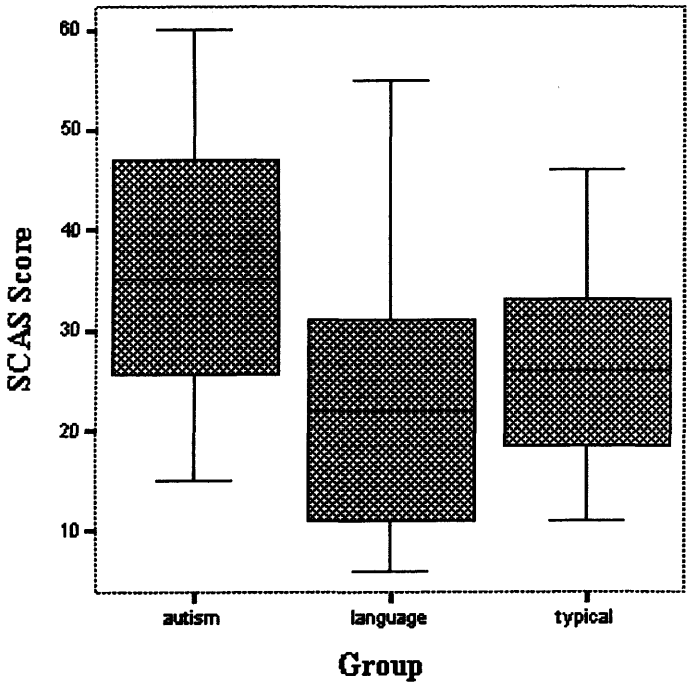
	Autism n = 15	**Language** n = 15	**Typical** n = 15
	Mean (s.d.)	**Mean (s.d.)**	**Mean (s.d.)**
SCAS	36.53 (13.69)	23.80 (14.55)	25.33 (10.18)

Comparisons between pairs of groups were made using Mann-Whitney U Tests. Pairwise comparisons between the autism and typical groups showed a significant difference in levels of anxiety (U = 61.0, $p = < 0.05$, 1-tailed). Comparisons between

the autism and language disorder groups also showed a significant difference (U = 58.5, p = < 0.05, 1-tailed). Comparisons between the language disorder and typical groups showed no significant differences (U = 100.5, NS).

Figure 1 displays a boxplot of the median and range of scores for each group. The boxes comprise the middle 50 per cent of observations and the lines in the boxes represent the median. The downward lines (the whiskers) display the lowest value in the distribution and the upward lines the largest value (Bryman & Cramer, 1997).

Figure 1. Boxplot for the Spence Children's Anxiety Scale



Whilst the autism group displayed the highest levels of anxiety, the language disorder group displayed the widest range of anxiety scores.

The standardisation trials by Spence (1997a) found a mean score of 42.48 for clinically anxious children and 25.04 for non-clinical controls. In terms of individual scores in the present study, seven children from the autism group obtained scores equal to or higher than that clinical mean. Three children from the language disorder group and one from the typical group also obtained scores higher than the clinically anxious mean. Individual scores for the girls in the present study were well below the clinical range: autism group (24 and 27), language disorder group (14 and 35), typical group (37 and 27).

As well as providing an overall measure of anxiety, the Spence Children's Anxiety Scale also provides subscale data. The six subscales included are Panic Attack and Agoraphobia, Separation Anxiety, Physical Injury Fears, Social Phobia, Obsessive Compulsive Disorder, and Generalized Anxiety Disorder/Overanxious Disorder. Means and standard deviations for each group are presented in Table 8 and Figures 2, 3 and 4 display these means as a graph for each group.

Table 8. Means and Standard Deviations for SCAS Subscales for the three Groups

	Autism n = 15		**Language** n = 15		**Typical** n = 15	
	Mean	**(s.d.)**	**Mean**	**(s.d.)**	**Mean**	**(s.d.)**
Panic / Agoraphobia	5.33	(4.25)	3.40	(3.16)	2.80	(2.65)
Separation Anxiety	7.07	(4.17)	4.40	(2.59)	3.00	(1.73)
Physical Injury Fears	4.93	(3.31)	2.93	(2.15)	2.07	(1.87)
Social Phobia	5.13	(3.66)	5.00	(4.24)	5.53	(3.02)
Obsessive Compulsive	8.47	(3.68)	3.40	(3.04)	5.47	(3.46)
Generalized Anxiety Disorder	5.67	(2.87)	4.67	(3.31)	6.47	(2.23)

Subscale means show that the autism group scored highest on Separation Anxiety and Obsessive Compulsive Disorder. For the language disorder group, Social Phobia, Separation Anxiety, Obsessive Compulsive Disorder, and Generalized Anxiety Disorder were the highest subscale scores. Finally, for the typically developing group, Generalized Anxiety, Obsessive Compulsive Disorder and Social Phobia were the highest subscale scores.

Figure 2. SCAS Subscale Means for the Autism Group

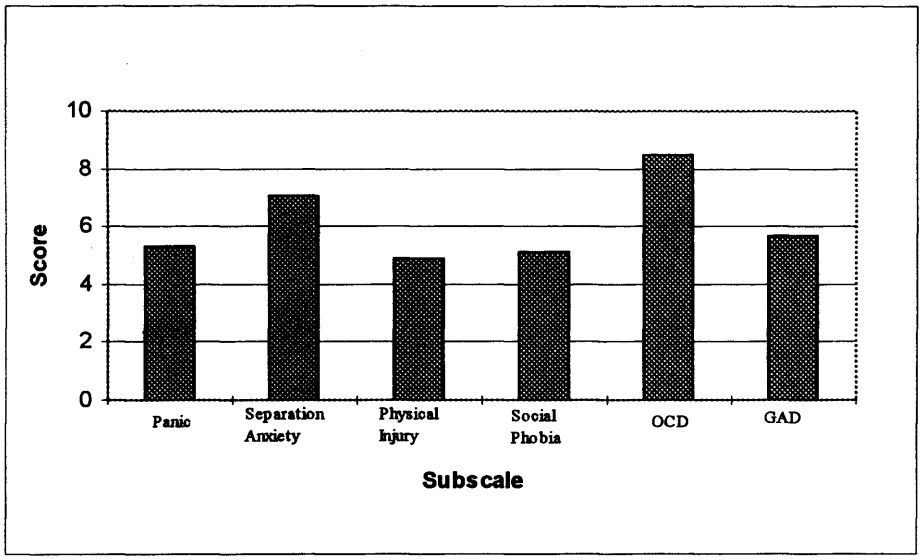


Figure 3. SCAS Subscale Means for the Language Disorder Group

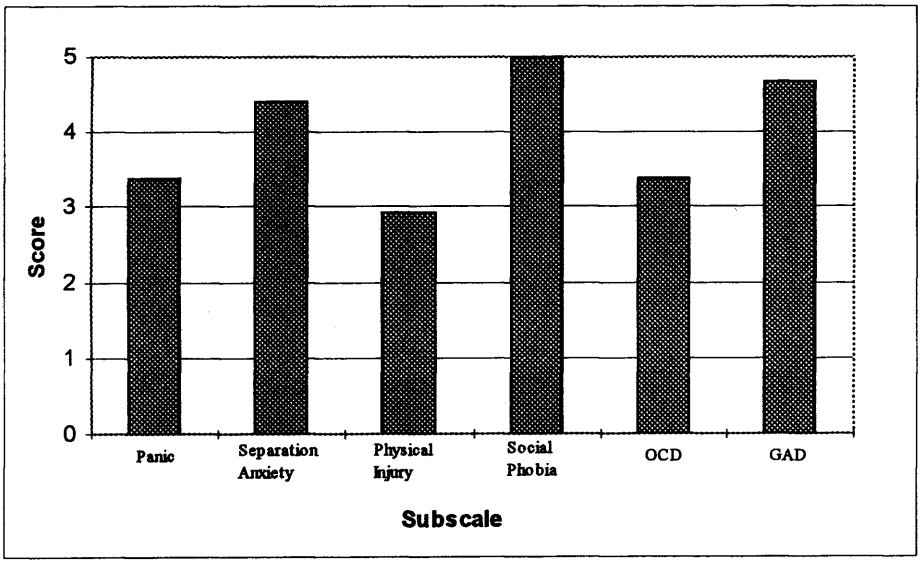
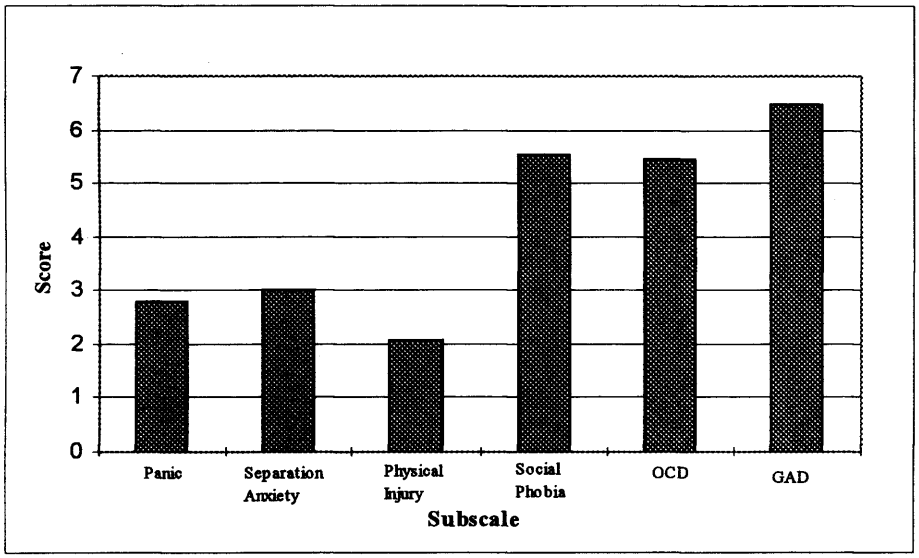


Figure 4. SCAS Subscale Means for the Typical Group



Question 2: Do high functioning children with autism display higher levels of social anxiety than two comparison control groups?

Using the Spence Social Worries Questionnaire, Table 9 shows the mean differences in social anxiety between the three groups. Pupil and Parent Questionnaire means are presented (as well as standard deviations). The means show the high functioning autism group to have higher levels of social anxiety compared to their matched controls.

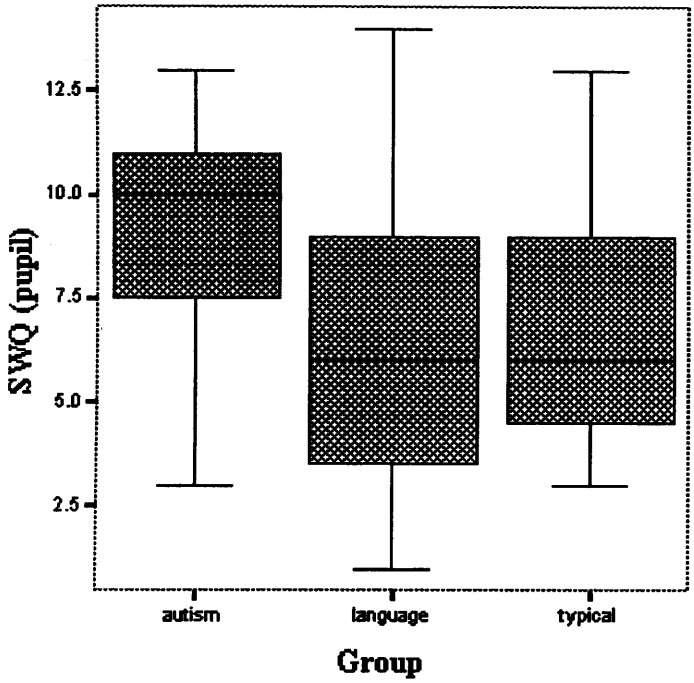
Table 9. Means and Standard Deviations for the Social Worries Questionnaire for the three Groups

	Autism n = 15		**Language** n = 15		**Typical** n = 15	
	Mean	**(s.d.)**	**Mean**	**(s.d.)**	**Mean**	**(s.d.)**
SWQ - Pupil	9.27	(2.89)	6.53	(3.94)	6.80	(2.76)
SWQ - Parent	10.67	(3.77)	6.07	(2.96)	4.33	(2.16)

Comparisons between the Pupil and Parent versions of the Social Worries Questionnaire show a discrepancy in levels of social anxiety expressed by children and their parent(s). Some differences between the scores were expected due to their being less items in the Parent version (giving a maximum score of 20, compared to 26 for the Pupil Questionnaire). This would suggest that for the autism group, parents have rated their children's social anxiety much higher than the children themselves.

Figure 5 displays a boxplot of the median and range of scores from the Social Worries Questionnaire (Pupil version) for each group. Once again, the language disorder group displayed the widest range of scores. The autism and typical groups showed a similar range of scores, although the autism group, on average, obtained much higher scores.

Figure 5. Boxplot for the Spence Social Worries Questionnaire (Pupil)



Kruskal-Wallis analysis of variance on data taken from the Pupil version of the Social Worries Questionnaire showed a significant group effect ($\chi 2$ = 6.39, d.f. = 2, p = < 0.05). Comparisons between pairs of groups for the Pupil Social Worries Questionnaire were made using Mann-Whitney U Tests. Pairwise comparisons between the autism and typical groups showed a significant difference (U = 57.5, p = < 0.05, 1-tailed). Comparisons between the autism and language disorder groups also showed a significant difference (U = 63.5, p = <0.05, 1-tailed). Comparisons between the language and typical groups showed no significant differences (U = 101.0, NS). A highly significant group effect was also found using the Parent version of the Social Worries Questionnaire ($\chi 2$ = 19.66, d.f. = 2, p = < 0.001), with the same pattern of between group differences.

Question 3: What are some of the possible factors associated with anxiety in high functioning children with autism?

Significant between group differences were found on both measures of anxiety and social anxiety. Some of the possible factors which may be associated with these differences were explored. These involved assessing theory of mind, recognition and expression of emotions, communication abilities and socialisation abilities. Between group differences on these measures were analysed. Correlations on these measures with the anxiety measures were also made for the autism group.

3a) Between Group Differences

Table 10. Means and Standard Deviations for the Strange Stories, Experience of Emotions Task, Vineland Communication and Vineland Socialization Domains

	Autism n = 15	**Language** n = 15	**Typical** n = 15
	Mean (s.d.)	**Mean (s.d.)**	**Mean (s.d.)**
Strange Stories	12.27 (6.90)	16.60 (3.11)	18.80 (3.14)
Experience of Emotions	14.93 (2.79)	15.60 (2.50)	17.20 (1.37)
Vineland Communication	75.80 (12.36)	72.40 (14.47)	100.27 (17.89)
Vineland Socialization	61.67 (13.36)	92.80 (15.76)	109.13 (7.83)

Theory of Mind

Theory of mind was tested using the Strange Stories. Answers to the Stories were scored as either correct or incorrect. Correct answers were scored as to whether a mental state (2 points) or physical (1 point) answer was given. Answers scored as mental state included "he doesn't want to hurt her feelings" (White Lie), "she was being sarcastic" (Sarcasm) and "she's just pretending" (Pretend). Answers scored as physical included "it looks like a telephone" (Pretend), "because her hair was short" (Joke) and "because its raining" (Sarcasm). The maximum score obtainable was 24. As can be seen from the means displayed in Table 10, children from the autism group performed less well than children from the language disorder group and the typical group. Kruskal-Wallis analysis of variance showed a significant between group difference ($\chi 2 = 8.08$, d.f. = 2, p = < 0.05).

Comparisons between the groups were made using Mann-Whitney U Tests. A significant difference was found between the autism and typical groups (U = 49.0, p = < 0.01, 1-tailed), but not between the autism and language disorder groups (U = 77.0, NS) or the typical and language disorder groups (U = 71.5, NS).

With regards to the types of responses given to the Stories, Table 11 shows the pattern of responses for each group, with observed and expected frequencies (based on the total number of stories for all group participants, n=180). Chi-square analysis showed a significant difference in the pattern of responses given between each group ($\chi 2 = 59.12$, d.f. = 4, p = < 0.001).

The table shows that children with autism were less likely to give a mental state answer than the control groups and that this was considerably less than the expected frequency. Unexpectedly though, almost half of the total responses from this group were mental state answers. However, they often used the same mental state answer repeatedly, regardless of context, for example, repeatedly saying "it was a joke". Children from the autism group were also more likely to give unfeasible answers such as "the lawnmower cut her hair" (Joke) or "because there [really] was a frog in her throat" (Idiom).

Table 11. Observed and Expected Frequency of Physical and Mental State answers in each Group

		Autism	**Language**	**Typical**
Incorrect answer	Observed	72	26	21
	Expected	40	40	40
Physical answer	Observed	32	51	31
	Expected	38	38	38
Mental state answer	Observed	76	103	128
	Expected	103	103	103

With regards to the language disorder and typical groups, while both groups give a similar amount of correct responses, children from the language disorder group gave a higher rate of concrete, physical, responses than the typical group.

Experience of Emotions Task

For this task, points were allocated for recognising and expressing an appropriate emotion, locus and controllability, and presence of an audience. A maximum score of 18 was obtainable. Table 10 displays the means and standard deviations for all three groups. Kruskal-Wallis analysis of variance found significant between group differences ($\chi 2 = 6.25$, d.f. = 2, p = <0.05).

Pairwise comparisons were made using Mann-Whitney U Tests. A significant difference was found between the autism and typical groups (U = 60.5, p = <0.05, 1-tailed) and the language disorder and typical groups (U = 68.0, p = <0.05, 1-tailed), but not between the autism and language disorder groups (U = 100.0, NS).

Pride and Happiness

In describing their experiences of pride, the children with autism mostly talked about doing well at their school work, passing tests, and winning races or computer games. These themes also emerged in the responses of the language disorder and typical groups.

For times when they were happy, themes that emerged from the autism group included doing well at their school work, going on outings and being given computer games. These experiences were similar to the language disorder and typical groups'

responses, with the exception of a notable lack of reference to birthdays and holidays by the children with autism.

Locus and Controllability: The majority of children in the autism group (93%) and all children from the language disorder and typical groups, referred to experiences of pride as internal and controllable events. All children in all three groups identified happiness as external and uncontrollable. Thus, all groups were able to differentiate pride from happiness in terms of their locus and controllability.

Embarrassment and Sadness

When recalling times when they felt embarrassed, the children from the autism group recalled times when they had to talk in front of the class, being called names or doing something wrong. The language disorder and typical groups shared similar experiences, but also experiences more directly involving others such as "when girls ask me out" or "when my mum is singing to the radio".

For this emotion, the presence of an audience was felt imperative for an appropriate response. Of the children in the autism group, 8 (53%) did not recall an audience implicated experience. From the language disorder group, 9 (60%) responses did not involve an audience and 1 (7%) from the typical group did not involve an audience.

For the emotion sadness, experiences of bullying and the death of a pet featured most for the children from the autism group. Bullying was also a frequently recalled experience by children in the language disorder group, but not the typical group. Themes of loss appeared more in the language disorder and typical groups than for the autism group, including the death of a relative or the loss of a parent through divorce, as well as the death of a pet.

Locus and Controllability: 9 (60%) children from the autism group identified embarrassment as being internal and controllable. This compared to 7 (47%) children from the language disorder group and all 15 (100%) from the typical group. In comparison, 13 (87%) children from the autism group and all children from the language disorder and typical groups were able to identify sadness as external and uncontrollable. Thus, embarrassment was more difficult than sadness to differentiate in terms of locus and controllability.

Worry and Fear

These emotions were added to those originally used by Capps, Yirmiya and Sigman (1992) as they were considered pertinent to the study. Findings from these emotions will therefore be given in greater detail.

In accordance with the other four emotions, points were allocated on the basis of recognising and expressing the appropriate emotion, locus and controllability and appropriate presence of an audience. Points were not given for responses considered

inappropriate to the emotion. For example, for the emotion worry: "when I played Monopoly and thought I was going to be bankrupt"; for fear: "when I had to watch myself on video".

Table 12 displays the frequency and types of worries expressed by all three groups. All but one of the children in the autism group were able to provide an answer for the emotion, although two of these answers were considered to be inappropriate. All children from the typical group were able to provide an answer (with one inappropriate answer); and 7 children from the language disorder group were unable to provide an answer (with one inappropriate answer). Thus, the language disorder group found the greatest difficulty either recognising or expressing this emotion.

All three groups found school performance or criticism regarding school work, to be their most prominent worry. Death and illness were also of concern to the autism and typical groups, but not the language disorder group.

Table 12. Frequency of Self Reported Worries by Group

Category	Autism	Language	Typical
School performance/criticism	4	3	6
Injury/illness	2	0	2
Death/dying/loss	2	1	1
Separation from parents	1	1	1
Strangers	1	1	3
Damage to property	0	1	0
The dark	0	0	1
New experience	2	0	0
Inappropriate answer	2	1	1
No answer	1	7	0
Total	15	15	15

Table 13 displays the frequency and types of fears expressed by all three groups. Children with autism found greater difficulty recognising or expressing this emotion with 5 (33%) being unable to do so, in comparison to no children in the language disorder and typical groups.

For the autism group, death again featured in their fears, along with people making noises (e.g. shouting "boo") and experiencing new places. For the language disorder

group, a fear of animals or insects was most prominent, and a fear of illness was reported most frequently by the typically developing group.

Table 13. Frequency of Self Reported Fears by Group

Category	Autism	Language	Typical
School performance/criticism	0	1	0
Injury/illness	0	0	4
Death/dying/loss	2	0	0
Separation from parents	0	1	0
Insects/animals	0	3	0
Fear of the dark/nightmares	1	1	2
Ghosts/monsters	0	1	1
Thunder/lightening	0	1	0
Burglars	1	1	2
The Dark	1	1	0
People making noises /fireworks	2	2	1
New experience	2	1	2
Inappropriate answer	1	2	1
No answer	5	0	2
Total	15	15	15

Locus and Controllability: 14 (93%) children from the autism group identified worry as being internal and controllable. This compared to 12 (80%) of children from the language disorder group and 15 (100%) from the typical group. For the emotion fear, 8 (53%) children from the autism group, 13 (73%) from the language disorder group and 13 (73%) from the typical group identified the emotion as being external and uncontrollable. Thus, fear was harder to recognise in terms of locus and controllability than worry, particularly for the autism group.

Communication and Socialisation

Table 10 shows the means and standard deviations for both the Vineland Adaptive Behavior Scales Communication and Socialization Domains. With regards to Communication, the language disorder group performed less well on this Domain compared to the autism and typical groups. Whilst the typical group mean score was within the average range (within one standard deviation of the mean), both the language disorder and autism groups performed well below the mean for children of their age (mean Domain Standard score = 100, standard deviation = 15). Significant between group differences for the Communication Domain were found using Kruskal-Wallis analysis of variance ($\chi^2 = 16.20$, d.f. = 2, $p = <0.001$).

For the Socialization Domain, the autism group performed less well than the two control groups. Both the language disorder and typical groups scored within the normal range for children their age. The children from the autism group scored well below the mean. Differences in performance on the Socialization Domain were compared using Kruskal-Wallis analysis of variance. This revealed highly significant between group differences ($\chi 2 = 30.52$, d.f. = 2, p = <0.001).

Pairwise comparisons for the Communication Domain were made using Mann-Whitney U Tests. Comparisons between the autism and typical groups found a significant difference (U = 30.0, p = < 0.001, 1-tailed), as did the comparisons between the language disorder and typical groups (U = 28.0, p = < 0.001, 1-tailed). The difference between the autism and language disorder groups was not significant (U = 110.0, NS). Thus, the degree of communication difficulty between the autism and language disorder groups did not differ significantly.

Pairwise comparisons for the Socialization Domain were also made using Mann-Whitney U Tests. A significant difference between the autism and typical groups was found (U = .000, p = < 0.001, 1-tailed) as well as for the autism and language disorder groups (U = 13.5, p = < 0.001, 1-tailed) and for the language disorder and typical groups (U = 42.5, p = < 0.05, 1-tailed).

3b) Autism Group Correlations

In order to explore the possible factors associated with higher levels of anxiety in the autism group, correlations were made using Spearman's RHO. These were correlations between the main anxiety measures (the Spence Children's Anxiety Scale and the Spence Social Worries Questionnaire - Pupil and Parent versions) and the Strange Stories, Experience of Emotions Task, Vineland Communication Domain and Vineland Socialization Domain. Results are shown in Table 14 with indication of levels of significance.

Correlations between the SCAS and the Strange Stories were not found to be significant (ρ = -.14, NS). Correlations between the SCAS and the Experience of Emotions task were also not significant (ρ = .08, NS). With regards to the Vineland Communication and Socialization Domains, correlations between the SCAS and the Communication Domain were not significant (ρ = -.23, NS) and correlations between the SCAS and the Socialization Domain were not significant (ρ = -.04, NS).

Correlations were also made using the measures of social anxiety. A significant correlation was found between the SCAS and the Pupil version of the Social Worries Questionnaire (ρ = .79, p = < 0.001), but not between the SCAS and the Parent version of the Social Worries Questionnaire (ρ = -.194, NS).

There was a significant negative correlation between the Social Worries Questionnaire (Pupil) and the Vineland Communication Domain (ρ = -.467, p = < 0.05). That is, children with autism who had good communication skills experienced lower social anxiety. No other measures correlated with scores on the Pupil or Parent versions of the Social Worries Questionnaires.

Table 14. Spearman's RHO Correlations between all measures for the Autism Group

	SCAS	SWQ - Pupil	SWQ - Parent	Strange Stories	Exp. of Emotions	Vineland Comm.
SCAS						
SWQ-Pupil	.788**					
SWQ - Parent	-.194	-.129				
Strange Stories	-.138	-.230	-.108			
Exp.of Emotions	.082	-.030	-.127	.365		
Vineland Comm.	-.234	-.467*	-.269	.411	.176	
Vineland Soc.	-.043	-.123	-.214	-.423	.318	.121

n = 15

** Correlation is significant at the .01 level (1-tailed).
* Correlation is significant at the .05 level (1-tailed).

4.0 Discussion

4.1 Main Findings

Anxiety in High Functioning Children with Autism

The main aim of this study was to explore whether high functioning children with autism would have higher levels of anxiety than two comparison control groups. This was found to be the case. The children with autism were found to have considerably higher levels of anxiety than both the expressive language disorder and typically developing groups, as measured by the Spence Children's Anxiety Scale (SCAS). It is not possible to make direct comparisons with previous studies as none have been carried out specifically with high functioning children with autism. However, the current findings can be compared to the normative data provided by Spence (1997a) from her standardisation trials. On average, the children with autism from this study scored over ten points higher than the non-clinical controls in the standardisation study (Spence's non-clinical control mean = 25.04). However, when compared to the clinically anxious population Spence used, the children with autism obtained lower scores on average, although some individual children within this group would have been considered clinically anxious (Spence's clinically anxious mean = 42.48).

These findings support the theory proposed by several clinicians (e.g. Attwood, 1997; Groden et al., 1994) and psychopharmacologists (e.g. Steingard et al., 1997) that individuals with autism are generally anxious. Past clinical case reports have found children with autism to be anxious and this is the first study to have explored anxiety in this population utilising standardised measures. Thus, the findings from the present study are important in that they have provided the first quantitative data on anxiety in high functioning children with autism.

The group mean SCAS scores for both the language disorder and typical groups were higher than the mean reported by Spence (1997a) in her standardisation trials. It was perhaps surprising that the children with expressive language disorder did not also have elevated SCAS scores in comparison to the typical group. Speech and language disorders have been found to be associated with high rates of psychiatric disturbance, particularly in childhood (Baker & Cantwell, 1987; Beitchman et al., 1996). Moreover, some studies have found disorders of expressive language to be specifically implicated in the development of these difficulties (Baker & Cantwell, 1987; Stevenson & Richman, 1978). Thus, for the language disorder group, findings from the present study do not support previous research findings. This may be due to differences in the participants selected. For example, Stevenson and Richman (1978) selected younger children than those in the present study; and Baker and Cantwell (1987) selected a wider age range, but with a younger mean age of 5 years and 7 months. This suggests that children with language disorders may grow out of associated emotional difficulties as they get older. Alternatively, as these studies did

not specify the types of psychiatric disturbance found in children with language disorder, it may be that these were not primarily anxiety-related.

With regards to the subscales of the SCAS, children with autism obtained higher scores than the comparison groups for Panic Attack and Agoraphobia, Separation Anxiety, Physical Injury Fears and Obsessive Compulsive Disorder. Compared to the normative data provided by Spence (presented in Table 1, Method section), the children with autism obtained higher than average subscale scores for Panic Attack and Agoraphobia, Separation Anxiety, Physical Injury Fears and Obsessive Compulsive Disorder. Scores for Social Phobia and Generalized Anxiety Disorder were below the reported mean for Spence's non-clinical group. While several subscale scores were elevated for the autism group, it is of interest that the highest score obtained was for the Obsessive Compulsive Disorder subscale. Many of the features associated with autism, such as repetitive play, need for sameness and a preoccupation with order and routine, are considered similar traits to those observed in obsessive-compulsive disorder (Groden et al., 1992; Szatmari et al., 1989; Tantam, 1991). Whether these characteristics of autism are, in fact, obsessive-compulsive disorder remains contentious (Baron-Cohen, 1989b). Despite this, the fact that obsessive-compulsive behaviours have been found to be prevalent in previous studies and in the present study, has real implications for interventions with children with autism. For children with autism, a propensity to develop obsessive-compulsive disorder in childhood also has implications for adult life. Anderson (1994) has noted that of all the anxiety disorders, obsessive-compulsive disorder is most likely to remain stable and constant into adulthood.

With regards to the comparison groups, the children with language disorder obtained the lowest scores, none of which were above the mean score reported in the standardisation trials. For the typical group however, Social Phobia and Generalized Anxiety Disorder were found to be higher than the mean for typical children, as found by Spence (1997a).

Research addressing anxiety in children suggests that the most prevalent anxiety disorders found are generalised anxiety disorder, overanxious disorder, separation anxiety and phobia (King & Ollendick, 1997). In the present study, these difficulties together with obsessive-compulsive disorder, yielded the highest SCAS mean scores for the typical group. For the children with autism, with the exception of separation anxiety, this was not found to be the case. Thus, it may be that while children with autism develop anxiety disorders, they may different to those of their typically developing peers.

Research into gender differences in childhood anxiety disorders suggests that there is a higher incidence of girls than boys affected. In terms of specific anxiety disorders, it has been found that girls are more likely than boys to display simple phobias, separation anxiety and generalised anxiety (Craske, 1997; Livingston, 1991). Whilst there were only a few girls in the present study, their results are of great interest. The SCAS total scores for both girls with autism were found to be considerably lower than the mean score (42.48) reported by Spence for her 'clinically anxious' group and one girl was also found to score below the general population mean of 25.04 (individual scores: 24 and 27). With regards to the SCAS subscale scores for

the girls with autism, some individual scores were elevated compared to Spence's non-clinical group means. These were for Separation Anxiety, Physical Injury Fears, and Obsessive Compulsive Disorder. Thus, with regards to overall levels of anxiety for the girls with autism, findings from the present study do not support previous data on anxiety in girls. With regards to the subscale data, with the exception of Separation Anxiety, these findings also do not support previously reported data. It has been suggested that one of the reasons girls have a higher propensity to anxiety disorders is because they are more aware of their emotions and are more likely to ruminate on their worries (Craske, 1997). While children with autism have been found to be less aware of their emotions than typically developing children (Capps, Yirmiya & Sigman, 1992; Snow, Hertzig & Shapiro, 1987), there is no reason to suggest that this gender difference would not also be evident in autism. However, due to the small number of girls in this study, it is not possible to generalise this finding to all girls with autism. With regards to the girls in the comparison groups, none had scores to place them above the clinical mean, although some of their individual scores were elevated in comparison to the girls from the autism group (typical group: 37 and 27; language disorder group: 14 and 34).

Social Anxiety in High Functioning Children with Autism

This study also addressed the question of whether high functioning children with autism had higher levels of social anxiety than two comparison control groups. This was also found to be the case. Children with autism reported considerably more social worries than both the language disorder and typical groups, as measured by

the Spence Social Worries Questionnaire. To date, there are no published data using this measure with children with autism. However, normative data was provided by Spence (1995) during clinical trials for the standardisation of the measure (Pupil Questionnaire mean = 8.44). Compared to this normative data, the children with autism displayed higher levels of social anxiety, as rated in the Pupil version of the Questionnaire (autism group mean = 9.27). The children with language disorder and the typically developing children scored below this normative mean (language disorder group = 6.53; typical group = 6.80). Parents also completed a version of the Social Worries Questionnaire, reporting on their perceptions of their children's social anxieties. This was a shorter version of the Pupil Questionnaire, with all items overlapping items from the Pupil version. With regards to the norms for the Parent version of the Questionnaire (normative mean = 6.17), parents of the language disorder group gave scores close to the mean (6.07), and parents of the typical group gave lower scores (4.33). However, for the children with autism, parents gave much higher scores than average and, in fact, gave higher ratings (pro-rata) for their children's social worries than did the children themselves (mean = 10.67).

Comparisons between the Social Phobia subscale of the SCAS and the Social Worries Questionnaire (Pupil) shows a marked discrepancy in scores for the children with autism. Their group mean Social Phobia score was found to be lower than the comparison groups and lower than the mean data reported for Spence's non-clinical group. In contrast, mean scores on the Social Worries Questionnaire (Pupil) for the autism group were higher than those of both comparison groups and those reported by Spence (1995) in her standardisation trials. Closer analysis of these Scales show a

difference in the aspects of social anxiety that they measure. Items on the Social Phobia subscale (see Appendix 2) are covert internal states and more specifically relate to social reaction. For example, some items relate to worries about looking a fool in front of other people and worries about what other people think about the rater. These are perhaps items which children with autism, by definition, would not be concerned about (Wing & Gould, 1979). By comparison, the Spence Social Worries Questionnaire asks very overt questions relating to actions, such as going to parties, asking other children if they can play with them and going to social clubs. There were some items which overlapped such as worries about taking tests, using public toilets and talking in front of the class. As well as a difference in what the two Scales were measuring, there was also a discrepancy in item loading. Social Phobia was one of six subscales in the SCAS, with only a few relevant items, whereas the Social Worries Questionnaire focused exclusively on this issue. Therefore, it was perhaps not unexpected that there was a difference in ratings on these measures for the autism group. However, the importance of this finding cannot be ignored. High functioning children with autism have been found here to demonstrate worries about social situations, whether this be rumination or active avoidance.

4.2 Possible Factors Associated with Anxiety in High Functioning Children with Autism

In addition to exploring levels of anxiety in high functioning children with autism, this study aimed to explore some of the possible explanations for anxiety. Factors identified as being problematic in children with autism, and thus possibly related, were theory of mind, recognising and expressing emotions, communication abilities and socialisation abilities. Between group differences on these measures were explored; and correlations of these measures with the anxiety measures were made for the autism group.

Between Group Differences

Theory of Mind

Children with autism are thought to have a deficit in the ability to understand other people's thoughts and beliefs, that is, they lack a theory of mind (Baron-Cohen, Leslie & Frith, 1985; Howlin, Baron-Cohen & Hadwin, 1999). In this study, theory of mind was assessed using the Strange Stories (Happé, 1994a). Children with autism were found to have significantly poorer theory of mind abilities compared to the typically developing group. This finding is consistent with those of Happé (1994a) who reported that children with autism experience more difficulty than

typically developing controls in understanding the speaker's intentions within the Story context.

With regards to the types of answers given, Happé (1994a) found that children and adults with autism provided as many mental state answers as the controls. However, she found that mental state answers were often used repeatedly or out of context to the Story. The present study found that children with autism gave fewer mental state answers overall, but in accordance with Happé, many of the mental state answers given were repetitive or inappropriate. For example, some children repeatedly said "it was a joke" regardless of the Story context. This could have been due to a lack of understanding of the Story's events (although this was confirmed with the comprehension question) or an inability to read the Story context. With regards to the physical answers given in the present study, many of the children with autism gave very unlikely responses such as "there [really] was a frog in her throat" for the Idiom Story. Similar findings were also reported by Happé. While applauding the explanations for being inventive, Happé hypothesised that these answers were perhaps attempts to make the Stories fit into the very concrete world of the individual with autism.

For the children with language disorder, results from this study are consistent with those found by Leslie and Frith (1988) and Ziatas et al. (1998), who found that children with specific language impairment were able to pass theory of mind tests. However, the overall group mean in the present study was lower than the perfect

performance which has been found with easier tests of theory of mind. This may be due to unreported receptive language problems, or perhaps these children do have theory of mind difficulties that have so far been undetected in the research. Children with language disorder in the present study were also found to respond with a higher proportion of physical, rather than mental state, answers than expected. This does not suggest however, that they viewed interactions concretely, in much the same way as those children with autism. Overall, this group provided more mental state answers than the autism group. One hypothesis may be that due to their expressive language problems, they found it harder to process and find words for mental state answers, finding it easier instead to give physical answers, with words they had already heard in the Story. The performance of the typically developing children in the present study supported that of previous research. Overall, they gave appropriate answers to the Strange Stories and the majority of these were mental state answers.

Experience of Emotions Task

The Experience of Emotions Task aimed to assess participants ability to recognise and express their own emotions. This is an area which has been identified as problematic in children with autism (Bormann-Kischkel, Vilsmeier & Baude, 1995; Capps, Yirmiya & Sigman, 1992; Yirmiya et al., 1992). It has been suggested that children with autism have difficulty recognising affect in others and in sharing their own affect in communicative situations, particularly positive affect (Kasari et al., 1990; Loveland & Tunali-Kotoski, 1997; Snow et al., 1987; Yirmiya et al., 1992).

Children with autism have also been found to display emotional responses which seem unusual, inappropriate or inadequate to the situation (Capps, Yirmiya & Sigman, 1992; Yirmiya et al., 1992).

The Experience of Emotions Task was previously utilised by Capps, Yirmiya and Sigman (1992) when they predicted that not only would children with autism find this task harder than a typically developing comparison group, but that there would be a difference in their performance on simple and complex emotions. Both of these hypotheses were supported, although the children with autism performed better than expected. In the present study, children from the autism group performed even better than those children reported in the Capps, Sigman and Yirmiya study, suggesting that not all participants were impaired in their ability to communicate their own emotional experiences. Moreover, the answers they gave were considered appropriate to the emotion and typical for children their age. However, it must be noted that in both studies, prompting stories were used. When participants were unable to provide an answer, a set story was read out to them as a prompt to recalling a time when the felt that particular emotion. Often in the present study it appeared that children from the autism group would use the example in the story as recollection of the own emotion, for example, being embarrassed when they tripped and fell over. Thus, the prompting stories may have influenced the overall performance of participants in the autism group.

When compared to the control groups, children from the autism group performed significantly less well than the typical group. However, interestingly, no significant

differences were found between the autism and language disorder groups. Whilst this measure has not previously been used with children with language disorders, they are not considered to have difficulty communicating emotional states (Leslie & Frith, 1988; Ziatas et al., 1998). Therefore, rather than a difficulty accessing emotions, as suggested in autism, their performance may again have been affected by their expressive, processing or word finding difficulties.

With regards to specific emotions, children from the autism group found it easier to recall the more simple emotions of 'happy' and 'sad' compared to the more complex emotion 'embarrassment'. This supports those findings by Capps, Yirmiya and Sigman (1992), but is in contrast to those of Snow et al. (1987) who found children with autism to have particular difficulty expressing positive emotion. However, participants from the Snow et al. study were younger than those in the present study (mean age 3 years and 4 months). In contrast to the Capps, Yirmiya and Sigman (1992) findings, the present study did not find the emotion 'pride' harder to access than the more simple emotions for the children with autism. This difference may have been affected by the prompting story given, as outlined above. Children from the autism group were also able to differentiate between emotions, in terms of their locus and controllability. This was with the exception of the emotion 'embarrassment' which they found difficult. Often this appeared to be due to confusion as to whether the emotion was internally or externally caused. These findings are consistent with those of previous research suggesting that for high functioning children, there is an impairment in affective understanding, rather than a complete deficit (Sigman, Arbelle & Dissanayake, 1995). The difficulties of locating

locus and controllability of more complex emotions found in this study suggests higher order difficulties, rather than simply being unable to recognise or communicate these emotions.

While overall the experiences recalled by the children with autism were appropriate to the emotion, there was a difference in the type of answers given, compared to the control groups. For the children with autism, competence at school work was expressed as a happy emotion as much as a proud emotion. Noticeably lacking from their experiences of being happy, were references to social events such as birthday parties. Some children from the comparison groups also recalled positive academic experiences as making them happy (as well as proud), but less so than for the autism group. This was perhaps due to the fact that children from the control groups were better able to provide a range of happy experiences than children from the autism group. In addition, when recalling times of sadness, children with autism were less likely than children in the control groups to talk about the death of a relative (although they did recall the death of a pet). Their experiences of embarrassment were also less likely to directly involve others, such as hearing their mum sing to a song on the radio, than the children from the language disorder and typical groups. Thus, for the children with autism, emotions were less likely to be related to interactions with other people.

In addition to the emotions selected by Capps, Yirmiya and Sigman (1992), the present study added the emotions 'worry' and 'fear' as they were thought pertinent to the experimental questions. For the emotion 'worry' most children from the

autism group were able to provide an appropriate response. Worries concerning school performance were most prominent, as were worries about death and illness. For two of the children, new experiences provided the most worry. It was perhaps surprising that this response was not given by more of the children from this group, as children with autism are often reported to have difficulty coping with change (Howlin, 1998). All children from the typically developing group were able to recall a time when they felt worried. School performance was also a prominent worry for this group. For children from the language disorder group, however, worry was the most difficult emotion to respond to, with seven being unable to recount an experience. This may have been due to the nature of their language disorder, with them finding it hard to find the words necessary to recount an experience of the emotion.

With regards to the emotion 'fear', five children from the autism group were unable to recount an experience. This may have been due to an increased difficulty recognising and communicating this emotion, or perhaps due to a lack of exposure to fearful situations. Of those who were able to provide a response, a range of experiences were recalled, such as fears of the dark, death and burglars. Fear of new experiences featured again for this group, as did a fear of loud noises, which has also been found to be problematic for individuals with autism (Howlin, 1998). For the comparison groups, both groups recalled a range of fears including animals/insects, the dark, ghosts, and fears of illness or death.

According to Klein (1994), worries and fears in children are frequently reported and change developmentally. The most commonly reported worries and fears in young children concern animals, heights, thunderstorms, darkness and medical/dental procedures (King & Ollendick, 1997). As children get older, worries concern school performance and parental criticism (Bauer, 1980; Perrin & Last, 1997; Spence & McCathie, 1993). Responses given by high functioning children with autism in the present study suggest that they display worries and fears similar to those reported by their typically developing peer group. It has been suggested that in addition to typical developmental fears, children with autism often have fears that are substantially different to those of their peer group, such a the sight of a vacuum cleaner (Howlin, 1998). However, perhaps with the exception of noise and new experiences, this was not found to be the case in the present study. This may have been due to the fact that the children with autism in the present study were high functioning and thus, were able to accept explanations that items such as vacuum cleaners are not dangerous.

Communication

Communication ability was assessed using the Vineland Adaptive Behavior Scales (Sparrow, Balla & Cicchetti, 1984). Irrespective of intellectual ability, all children with autism are considered to have difficulty with communication (Frith, 1989; Wing, 1997). In the present study, children with autism were found to have Communication scores below the mean for their age, although perhaps not as low as anticipated. Their group mean (of 75.80) suggests that these children had reasonably

good communication skills. Closer analysis however, might suggest that whilst these high functioning children have good speech and a wide vocabulary, their difficulties may be more subtle, such as the social use of language. For example, they may struggle with turn taking or have a limited range of conversation topics, which would highlight their difficulty with communication (Lord & Paul, 1997).

Children with language disorder had lower scores on average, than typically developing children their age and, in fact, lower scores than the children with autism. Scores below the mean for their age were not unexpected, due to the specific nature of their difficulties. However, it is of interest that their mean score was lower than that of the children with autism. Children with expressive language disorder were selected for the present study as they were felt to have very different language and communication problems to those found in autism (Ramberg et al., 1996; Rapin & Dunn, 1997). However, the Communication Domain of the Vineland may not have been sensitive enough to highlight those differences. Thus, while overall the children with language disorder were found to have poorer communication abilities than the autism group, this may have been for very different reasons.

Consistent with normative data from the Vineland Adaptive Behavior Scales (Sparrow, Balla & Cicchetti, 1984), typically developing children from the present study, on average, obtained scores within the normal range for their ages.

Socialization

Socialisation was also assessed using the Vineland Adaptive Behavior Scales (Sparrow, Balla & Cicchetti, 1984). For the children with autism, the group mean Socialization score was lower than the mean for children their age, as might have been predicted. Socialisation difficulties, such as preference for being alone, dislike of physical contact or a lack of social inhibition are frequently documented in individuals with autism (Wing & Gould, 1979). It was therefore not unexpected that children with autism were found to have poor social abilities. By comparison, children from the language disorder and typical groups scored within the normal range for children their age. With regards to the children with language disorder, this suggests that although they have specific communication difficulties, this does not impact on their social abilities. This finding is in accordance with those of Frith et al. (1994) and Fombonne et al. (1994) who found that the profile of social adaptive behaviour is different in autism to that of other impaired children.

Summary of Group Differences

Between group comparisons were made on measures of theory of mind, recognising and expressing emotions, communication abilities and socialisation abilities. Children with autism were found to be significantly poorer on all measures compared to children from the typically developing group. Compared to the language disorder group, children with autism were significantly poorer on the measure of socialisation, but performed equally well on measures of theory of mind, recognition and expression of emotions and communication. Thus, in exploring factors which may

contribute to increased levels of anxiety in children with autism, socialisation impairments may be important, as the performance of children with autism on this measure was found to be poorer compared to both comparison control groups.

Within Autism Group Correlations

In addition to exploring between group differences, the present study was also interested in the potential for any of the above measures to correlate for the autism group. In particular, analyses were made of correlations between the two anxiety measures (The Spence Children's Anxiety Scale and the Spence Social Worries Questionnaire) and the measures of theory of mind, experience of emotions, communication abilities and socialisation abilities. This was in order to explore whether these factors might be possible variables contributing to the levels of anxiety experienced by the children with autism.

The only reliable correlation found between these variables and the anxiety measures was the negative correlation found between the Vineland Communication Domain and the Pupil version of the Social Worries Questionnaire. That is, where communication abilities increased, social worries decreased. This suggests that

children were confident enough in their communicative abilities to cope with anxieties about the social situation.

Between group analyses showed significant differences between the autism group and the comparison groups on the measure of socialisation. However, socialisation did not correlate with anxiety in the autism group. A scatter plot of SCAS scores against Vineland Socialization scores was plotted for all individual participants (presented in Appendix 16). This showed that while there were clear differences between the autism group and the two control groups, there was little variability in Vineland Socialization scores within the autism group. Therefore, the possibility that this factor relates to levels of anxiety in high functioning children with autism cannot be ruled out. Further research exploring the distinctions between children with autism with high anxiety and those with low anxiety may provide more clarification on this.

Studies by Frith, Happé and Siddons (1994) and Fombonne et al. (1994) found that communication abilities were related to theory of mind abilities. However, in the present study, scores from the Vineland Communication Domain were not found to correlate with those from the Strange Stories. Closer comparisons of these studies to the present study shows that as well as utilising different measures of theory of mind, participants from the previous studies were less intellectually able and were of different ages than those in the present study. This may explain why communication and theory of mind variables were not found to correlate in this study.

4.3 Problems with the Research Design

This study made some interesting explorations into anxiety in high functioning children with autism. However, as in many studies, the design of this study was far from perfect. Consideration of the following limitations may be of benefit for the planning of future research in this area.

As a result of time and resource limitations, the present study involved just fifteen children in each group. The incidence of individuals with autism is now thought to be around one in a thousand (Gillberg, 1998a), with considerable variation in presentation. Therefore, the findings reported here may not be representative of all children with autism, or even all high functioning children with autism. As a result of this limitation, caution must be given before any generalisations from the findings are made.

The design of this study was that of a three group comparison: high functioning children with autism, children with expressive language disorder and typically developing children. Whilst all children in the autism group had received a diagnosis of autism according to DSM-IV criteria (American Psychiatric Association, 1994) and were of average intelligence, there was some variability within the group, on both of these factors. During the interviews it was apparent that for some children, their autism was less pervasive than for others and they would possibly have been considered as having Asperger's syndrome. Additionally, despite being labelled 'high functioning' there were some differences in ability levels, which may have

affected scores obtained on some measures. The debate on the differences between high functioning autism and Asperger's syndrome has yet to be resolved (Gillberg, 1998b; Happé, 1994b; Kurita, 1997), so it may have not been possible to separate these children. With regards to differing levels of ability, matching based on formal tests of ability would have controlled for this.

With regards to the language disorder group, again a formal diagnosis of 'expressive language disorder' was a prerequisite for entry into the study. However, Chapman (1991) has argued that children with language disorder can be variable in their language skills. Therefore, whilst the children in the present study had received a diagnosis, there may have been some variability within the group.

There are possible methodological implications for within group variability. Factors such as severity of autism may affect the outcome on individual scores. Additionally, if there is variability in language disorder and language skills, not only could this affect individual outcome, but could also mean that the language difficulties of children from the language disorder group could overlap with those of the children from the autism group. Thus, reasons for any findings from the research would be less clear.

With regards to the measures utilised, the present study primarily involved the use of self-report instruments. Researchers such as Yule (1997) and Greig and Taylor (1999) have found that using self-report measures with children can yield reliable and informative results. However, while self-report measures can provide valuable

insights into children's feelings and perceptions, there are limitations to their use. Factors such as age and intellectual ability need to be considered, as well as abilities to self-report. James et al. (1994) have argued that some measures of fear and anxiety can be particularly problematic as they are not situation-specific, but measure anxiety in more general terms. Even where instruments are specific, they argue, they may not be specific enough for measuring unique and personal fears. This may have been a difficulty in the present study. Previous research has noted that children with autism often have different fears and anxieties to their typically developing peers (Howlin, 1998). However, due to the nature of the anxiety measures utilised, it may not have been possible to access different or unusual fears, as answers were bound by the specific questions asked. The main anxiety measures utilised in this study were those developed by Spence (1997a, 1995). These measures were selected as they measured not only overall levels of anxiety, but also discriminated between specific types of anxiety. The terminology used in the questionnaire items was also considered. Items in these measures were considered to be unambiguous and did not rely on familiarity with words such as 'anxiety' (choosing instead, more colloquial words such as 'worry'). This seemed a particularly important factor when considering the ages of the participants and their abilities to interpret potentially ambiguous questions. The difficulty of missing specific types of fears experienced by children with autism could be overcome by the development of a new self-report instrument, or a more open-ended style questionnaire.

Another issue related to the use of self-report instruments concerns the ability of children with autism to introspect. Previous researchers have noted that children

with autism lack insight into their feelings, which impacts on their ability to self-report (Baron-Cohen, 1989; Baron-Cohen, Leslie & Frith, 1985; Capps, Yirmiya & Sigman, 1992). The present study relied heavily on the ability of participants to talk about their own emotions. However, previous research has mainly focused on those most profoundly affected by the disorder. The children selected for this study were of average intelligence and had good language skills. Rarely did it seem apparent that participants struggled to answer questions, particularly those regarding their worries and anxieties.

The very nature of being a participant in a research study may also have had implications for the outcome, particularly for the autism group. Factors such as meeting an unknown person in a strange environment could potentially have been stressful for the children with autism. Their needs were taken into consideration as much as possible (such as interviewing them in their own home if preferred) and attempts were made to put them at their ease. It was not possible to avoid all potential stressors. However, one methodological implication for these potential stressors is how they may have impacted on participant's performance, particularly on 'test' type measures, such as the Strange Stories.

4.4 Theoretical Implications

Two main theoretical hypotheses addressing the core deficits in autism have been

presented: the theory of mind hypothesis and the social-affective hypothesis. Affective accounts (Hobson, 1986a,b; Capps, Yirmiya & Sigman, 1992) suggest a deficit in the ability to recognise and understand emotion; whereas cognitive accounts (Baron-Cohen, Leslie & Frith, 1985; Frith, 1989) suggest an inability to mind read as the primary deficit in autism.

The aim of the present study has not been to challenge either of these theories, but to utilise them in the exploration of possible factors linked with anxiety in high functioning children with autism. Measures were selected on the basis of evidence gained from both theories. In particular, the Strange Stories were selected as a reliable measure for assessing everyday theory of mind abilities in able children; and the Experience of Emotions Task was selected as a measure of assessing ability to label and understand emotions. Findings from the present study support previous data on both of these measures and thus, both theories.

Social ability was found to differentiate the children with autism (who also had higher levels of anxiety) from the two control groups (who had lower anxiety levels). The pattern of between-group differences on theory of mind ability, communication skills and ability to accurately describe emotions, by contrast, did not correspond to the pattern of differences for anxiety. The increased levels of anxiety in the children with autism thus appear to be associated with fundamental differences in social ability, rather than problems with theory of mind, general communication or communication about the child's own emotional state.

It has not been a contention of the present study that anxiety is a core feature of autism. Rather, it is argued that the primary deficits in autism (such as poor social abilities) result in a greater propensity to anxiety for children with autism, than their typically developing peers.

4.5 Clinical Implications

The literature on general populations of children, suggests that most children display some degree of anxiety and, that for a substantial minority of children, this is pathological in nature (Klein, 1994). It has also been suggested that children with disabilities and children with autism, are as susceptible as others to anxiety, if not more so (Allen, 1989; Groden et al., 1994).

Drawing on theories of autism, it has been suggested here that children with autism, by the vary nature of the disorder, are susceptible to anxiety, particularly in a continually changing environment which they often struggle to make sense of (Attwood, 1997; Schopler & Mesibov, 1994). Furthermore, it has been suggested that those individuals considered to be high functioning have an increased likelihood of disturbance due to both their increased integration and their increased awareness of their differences from other people (Howlin, 1997).

Factors specific to autism such as resistance to change, ritualistic behaviours and difficulty coping with interaction, can result in anxiety. Other factors such poor adaptive skills, lack of theory of mind and difficulty recognising and expressing emotion, have also been implicated in the difficulties experienced by individuals with autism (Baron-Cohen et al., 1985; Capps, Yirmiya & Sigman, 1992; Fombonne et al., 1994).

In terms of the present study, the finding that high functioning children with autism have a great propensity to anxiety, has important implications for clinical psychology. Often children with autism are referred to clinical psychology services as a result of their challenging or disruptive behaviour, self-injury, or increased stereotypies. It has been suggested that these behaviours are often the result of internalised anxiety (Thomas et al., 1998). The idea that such behaviours may be anxiety based, has great implications for the assessment, formulation and management of such difficulties.

Howlin (1998) has suggested that recognising the cause of problem behaviours, rather than focusing on the symptoms, can lead to more appropriate interventions. Thus, where children with autism are referred to clinical psychology services with a range of emotional and behavioural problems, clinicians may find it useful to assess the child's level of anxiety. The present study also suggests that for many able children with autism, measures for the general child population (such as the Spence Children's Anxiety Scale or the Spence Social Worries Questionnaire) can readily be used. Anxiety as a potential underlying difficulty also has implications for

formulation and clinical intervention. Gaining an understanding of the aetiology and maintenance of problem behaviours needs to incorporate the total world of the child such as home, school and any social activities in which the child may be engaged. Any number of factors within these environments may be potentially stressful to the child with autism, resulting in anxiety. This may result in very specific interventions, such as placing more structure within the home, or allowing the child time to engage in a specific ritual or routine. Relaxation techniques, breathing control and cognitive distraction may also be of benefit (Howlin, 1998). Therapeutic outcomes could be measured by pre and post intervention self-report questionnaires, such as those utilised in the present study. Able children with autism could also be involved in measuring their own outcomes, such as using Likert type scales to measure their anxiety on a situational, daily or weekly basis.

The current findings also suggest that a deficit in socialisation abilities may be implicated in anxiety for high functioning children with autism. Significant group differences were found, as measured by the Vineland Socialization Domain, with the autism group displaying a much poorer performance compared to both control groups. Thus, this factor may be implicated in the levels of anxiety experienced by children with autism. It may therefore be of value to work on social skills with children with autism, as a means of reducing anxiety, although such interventions are not without difficulty (Howlin, Baron-Cohen & Hadwin, 1999).

4.6 Future Research

This study found that high functioning children with autism reported substantially higher levels of anxiety than two comparison control groups. In addition, they also reported greater levels of social anxiety. The clinical picture of autism reported in the literature (Howlin, 1998; Wing & Gould, 1979) has suggested that, by definition of the disorder, individuals with autism are susceptible to anxiety as much as, if not more so, than typically developing individuals. This study has been able to provide data to support this clinical picture. However, as this is the first study of its kind, replication studies would be of value in order to support or refute the present findings.

This would also necessitate studying these difficulties in a wider context. Due to time and resource limitations, the present study involved only a limited number of children and within a specific age band. Thus, in order to provide some generalisability of the findings, it would be of particular importance to explore levels of anxiety in children from a broader range of age, gender and ability. Of particular interest would be older children, particularly those experiencing adolescence, as this transitional stage has been found to be particularly problematic in this population (Gillberg, 1984; Komoto, Usui & Hirata, 1984).

Of particular interest in the findings of the present study, were the high scores obtained on the Obsessive Compulsive Disorder subscale of the Spence Children's Anxiety Scale. This was not an unexpected finding due to the obsessive type traits

found in autism, such as repetition and insistence on sameness. Whether these commonly reported traits are, in fact, symptomatic of clinically diagnosable obsessive-compulsive disorder is disputed (Baron-Cohen, 1989b). To date, there have been only a few studies exploring the possibility of these behaviours being symptoms of obsessive-compulsive disorder. Therefore, in the context of measuring anxiety, it would be of great interest to explore obsessive-compulsive traits in children with autism further.

Whilst the present study provided data on the levels and nature of anxiety in children with high functioning autism, it was not possible to consider the possible precipitants of anxiety, nor the behavioural or emotional responses to it. Based on clinical reports and current theories of autism, it is possible to hypothesise that situations such as a change in routine could be a possible precipitant of anxiety; and immersion into ritualistic behaviours a coping mechanism. Exploration into these areas would be of great clinical value. As some children with autism can lack insight into their emotions (Capps, Yirmiya & Sigman, 1992; Yirmiya et al., 1992), parental report may provide the best avenue into this area.

It may also be of interest to look at the role of perceived self-competence in terms of anxiety in children with autism. Capps, Sigman and Yirmiya (1995) looked at perceived self-competence and emotional understanding in high functioning children with autism. They found that children who perceived themselves as less socially competent demonstrated greater understanding of their own and others' emotional experiences than those who perceived themselves as more socially competent.

Thus, perceived self-competence could be related to anxiety, particularly in social situations.

Finally, while there were very few girls in the present study, their results were of great interest. Their pattern of type and level of anxiety was different not only to the boys with autism in the present study, but also the clinical pattern of anxiety in girls in the general population. Researchers are currently hypothesising that the presentation of autism in girls may be different to that of boys, resulting in a lack of diagnosis, or even mis-diagnosis (Gillberg, 1998a). Thus, further exploration into this area may prevent anxiety in girls with autism from being missed.

4.7 Conclusions

In conclusion, this study has found significantly higher levels of anxiety and social anxiety in high functioning children with autism compared to two comparison control groups. Theory of mind, recognition and expression of emotion, communication ability and socialisation ability have been found to be problematic in children with autism, both in this study and previous research. In particular, the present study found social ability to differentiate the children with autism from the two comparison control groups; and that this pattern of between-group differences corresponds to the pattern of differences for anxiety. Increased levels of anxiety in the children with

autism thus appear to be associated with fundamental differences in social abilities. Furthermore, this study found communication ability to be negatively correlated with social worries for the autism group. These findings are of interest to both autism and childhood anxiety theorists and have clinical implications for the management of children with autism. However, due to the small numbers involved, it is difficult to make generalisations about the findings. Therefore, further work needs to be carried out in this area, with greater numbers and a broader range of age, gender and ability.

This is the first study to provide quantitative data on anxiety in high functioning children with autism. Clinical case reports have suggested that children with autism are anxious, but this is the first study to confirm that finding utilising standardised measures. An important finding of the present study is that high functioning children with autism display not only significantly high levels of anxiety, but also social anxiety.

References

Achenbach, T.M. (1978). *Manual for the Child Behavior Checklist.* Burlington, VE: University of Vermont

Allen, E.A. (1989). Behavioural treatment of anxiety and related disorders in adults with mental handicaps. *Mental Handicap Research,* 2 (1), 47-60

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders (4th ed.).* Washington, DC: American Psychiatric Association

Anderson, J.C. (1994). Epidemiological issues. In T.H. Ollendick; N.J. King & W. Yule (Eds.), *International handbook of phobic and anxiety disorders in children and adolescents.* New York: Plenum

Asperger, H. (1944). Autistic psychopathology in childhood. (U. Frith trans.). In U. Frith (Ed.) (1991). *Autism and Asperger syndrome.* Cambridge: Cambridge University Press

Attwood, T. (1997). *Asperger's syndrome. A guide for parents and professionals.* London: Jessica Kingsley

Baker, L. & Cantwell, D.P. (1987). Factors associated with the development of psychiatric illness in children with early speech/language problems. *Journal of Autism and Developmental Disorders*, 17 (4), 499-510

Baron-Cohen, S. (1989a). The autistic child's theory of mind: a case of specific developmental delay. *Journal of Child Psychology and Psychiatry*, 30 (2), 285-297

Baron-Cohen, S. (1989b). Do autistic children have obsessions and compulsions? *Journal of Clinical Psychology*, 28, 193-200

Baron-Cohen, S.; Jolliffe, T.; Mortimore, C. & Robertson, M. (1997). Another advanced test of theory of mind: evidence from very high functioning adults with autism and Asperger syndrome. *Journal of Child Psychology and Psychiatry*, 38 (7), 813-822

Baron-Cohen, S.; Leslie, A.M. & Frith, U. (1985). Does the autistic child have a "theory of mind"? *Cognition*, 21, 385-395

Bauer, D. (1980). Childhood fears in developmental perspective. In L. Hersov & I. Berg (Eds.), *Out of school*. Chichester: Wiley

Beitchman, J.H.; Brownlie, E.B.; Inglis, A.; Wild, J.; Ferguson, B.; Schachter, D.; Lancee, W.; Wilson, B. & Mathews, R. (1996). Seven-year follow-up of

speech/language impaired and control children: psychiatric outcome. *Journal of Child Psychology and Psychiatry*, 37 (8), 961-970

Benjamin, R.S.; Costello, E.J. & Warren, M. (1990). Anxiety disorders in a paediatric sample. *Journal of Anxiety Disorders*, 4, 293-316

Bishop, D.V.M. (1989). Autism, Asperger's syndrome and semantic-pragmatic disorder: where are the boundaries? *British Journal of Disorders of Communication*, 24, 107-121

Bormann-Kishkel, C.; Vilsmeier, M. & Baude, B. (1995). The development of emotional concepts in autism. *Journal of Child Psychology and Psychiatry*, 36 (7), 1243-1259

Bryman, A. & Cramer, D. (1997). *Quantitative data analysis with SPSS for windows*. London: Routledge

Capps, L.; Sigman, M. & Yirmiya, N. (1995). Self-competence and emotional understanding in high-functioning children with autism. *Development and Psychopathology*, 7, 137-149

Capps, L.; Yirmiya, N. & Sigman, M. (1992). Understanding of simple and complex emotions in non-retarded children with autism. *Journal of Child Psychology and Psychiatry*, 33 (7), 1169-1182

Chapman, R.S. (1991). Child language disorders: a 25 year retrospective. *Journal of Speech Language Pathology and Audiology*, 15 (2), 5-10

Cicchetti, D.V. & Sparrow, S.S. (1981). Developing criteria for establishing interrater reliability of specific items. Application to assessment of adaptive behavior. *American Journal of Mental Deficiency*, 86, 127-137

Clark, D.M. (1989). Anxiety states: panic and generalized anxiety. In K. Hawton; P.M. Salkovskis; J. Kirk & D.M. Clark (Eds.), *Cognitive behaviour therapy for psychiatric disorders*. Oxford: Oxford University Press

Cohen, D.J. & Volkmar, F.R. (Eds.) (1997). *Handbook of autism and pervasive developmental disorders (2nd ed.)*. New York: Wiley

Cox, A.D. (1991). Is Asperger's a useful diagnosis? *Journal of Disease in Childhood*, 66, 259-262

Craske, M.G. (1997). Fear and anxiety in children and adolescents. *Bulletin of the Menninger Clinic*, 61 (2), 4-36

Despert, J.L. (1965). *The emotionally disturbed child - then and now*. New York: Robert Brunner Incorporated

Dissanayake, C.; Sigman, M. & Kasari, C. (1996). Long-term stability of individual differences in the emotional responsiveness of children with autism. *Journal of Child Psychology and Psychiatry*, 37 (4), 461-467

Fleiss, J.L. (1981). *Statistical methods for rates and proportions (2nd ed.)*. New York: Wiley

Fombonne, E.; Siddons, S.; Achard, S.; Frith, U. & Happé, F.G.E. (1994). Adaptive behaviour and theory of mind in autism. *European Child and Adolescent Psychiatry*, 3 (3), 176-186

Frith, U. (1989). *Autism. Explaining the enigma.* Oxford: Blackwell

Frith, U. (1991). *Autism and Asperger's syndrome.* Cambridge: Cambridge University Press

Frith, U.; Happé, F.G.E. & Siddons, F. (1994). Autism and theory of mind in everyday life. *Social Development*, 3 (2), 108-124

Gillberg, C. (1984). Autistic children growing up: problems during puberty and adolescence. *Developmental Medicine and Child Neurology*, 26, 122-129

Gillberg, C. (1998a). Prevalence. Paper presented at *The Autism Spectrum: Theory into Action Conference*. 20-21 November 1998, London

Gillberg, C. (1998b). Asperger syndrome and high-functioning autism. *British Journal of Psychiatry*, 172, 200-209

Gillberg, I. & Gillberg, C. (1989). Asperger syndrome: some epidemiological considerations. A research note. *Journal of Child Psychology and Psychiatry*, 30 (4), 631-638

Gillberg, C. & Schaumann, H. (1981). Infantile autism at puberty. *Journal of Autism and Developmental Disorders*, 11 (4), 365-371

Gorden, C.T.; Rapoport, J.L.; Hamburger, S.D.; State, R.C. & Mannheim, G.B. (1992). Differential response of seven subjects with autistic disorder to clomipramine and desipramine. *American Journal of Psychiatry*, 149 (3), 363-366

Grandin, T. (1984). My experiences as an autistic child and review of selected literature. *Journal of Orthomolecular Psychiatry*, 13 (3), 144-174

Grandin, T. (1992). An inside view of autism. In E. Schopler & G.B. Mesibov (Eds.), *High-functioning individuals with autism*. New York: Plenum Press

Greig, A. & Taylor, J. (1999). *Doing research with children*. London: Sage

Groden, J.; Cantela, J.; Prince, S. & Berryman, J. (1994). The impact of stress and anxiety on individuals with autism and developmental disabilities. In E. Schopler & G.B. Mesibov (Eds.), *Behavioural issues in autism*. New York: Plenum

Happé, F.G.E. (1994a). An advanced test of theory of mind: understanding of story characters' thoughts and feelings by able autistic, mentally handicapped, and normal children and adults. *Journal of Autism and Developmental Disorders*, 24 (2), 129-148

Happé, F.G.E. (1994b). *Autism. Introduction to psychological theory*. London: UCL Press

Happé, F.G.E. (1994c). Wechsler IQ profile and theory of mind in autism: a research note. *Journal of Child Psychology and Psychiatry*, 35 (8), 1461-1471

Happé, F.G.E. (1995). The role of age and verbal ability in the theory of mind task performance of subjects with autism. *Child Development*, 66, 843-855

Happé, F.G.E. (1997). Central coherence and theory of mind in autism: reading homographs in context. *British Journal of Developmental Psychology*, 15, 1-12

Happé, F.G.E. & Frith, U. (1994). Theory of mind and social impairment in children with conduct disorder. *Journal of Developmental Psychology*, 14, 385-398

Hare, D.J. (1997). The use of cognitive-behavioural therapy with people with Asperger syndrome. *Autism*, 1 (2), 215-225

Hare, D.J. & Paine, C. (1997). Developing cognitive behavioural treatments for people with Asperger syndrome. *Clinical Psychology Forum*, 110, 5-8

Hawton, K.; Salkovskis, P.M.; Kirk, J. & Clark, D.M. (Eds.) (1989). *Cognitive behaviour therapy for psychiatric disorders*. Oxford: Oxford University Press

Herbert, M. (Ed.) (1991). *Clinical child psychology. Social learning, development and behaviour*. Chichester: Wiley

Hobson, P. (1986a). The autistic child's appraisal of expressions of emotion. *Journal of Child Psychology and Psychiatry*, 27 (3), 321-342

Hobson, P. (1986b). The autistic child's appraisal of expressions of emotion: a further study. *Journal of Child Psychology and Psychiatry*, 27 (5), 671-680

Holtum, J.R.; Lubetsky, M.J. & Eastman, L.E. (1994). Comprehensive management of trichotillomania in a young autistic girl. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33 (4), 577-581

Howlin, P. (1997). *Autism. Preparing for adulthood*. London: Routledge

Howlin, P. (1998). *Children with autism and Asperger syndrome.* A guide for practitioners and carers. Chichester: Wiley

Howlin, P.; Baron-Cohen, S. & Hadwin, J. (1999). *Teaching children with autism to mind read.* Chichester: Wiley

Howlin, P. & Rutter, M. (1987). The consequences of language delay for other aspects of development. In W. Yule & M. Rutter (Eds.), Language development and disorders. *Clinics in Developmental Medicine*, Nos. 101/102. London: Mac Keith Press

James, E.M.; Reynolds, C.R. & Dunbar, J. (1994). Self-report instruments. In T.H. Ollendick; N.J. King & W. Yule (Eds.), *International handbook of phobic and anxiety disorders in children and adolescents.* New York: Plenum

Jolliffe, T.; Lansdown, R. & Robinson, T. (1992). *Autism: A personal account.* London: National Autistic Society

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2, 217-250

Kanner, L. (1949). Problems of nosology and psychodynamics in early childhood autism. *American Journal of Orthopsychiatry*, 19, 416-426

Kasari, C.; Sigman, M.; Mundy, P. & Yirmiya, N. (1990). Affective sharing in the context of joint attention interactions in normal, autistic and mentally retarded children. *Journal of Autism and Developmental Disorders*, 20, 87-100

King, N.J. & Ollendick, T.H. (1997). Annotation: treatment of childhood phobias. *Journal of Child Psychology and Psychiatry*, 38 (4), 389-400

King, N.J; Hamilton, D.I. & Ollendick, T.H. (1988). *Children's phobias. A behavioural perspective*. Chichester: Wiley

Klein, R.G. (1994). Anxiety disorders. In M. Rutter; E. Taylor & C. Hersov (Eds.), *Child and adolescent psychiatry. Modern approaches* (3rd ed.). Oxford: Blackwell.

Komoto, J.; Usui, S. & Hirata, J. (1984). Infantile autism and affective disorder. *Journal of Autism and Developmental Disorders*, 14 (1), 81-84

Kurita, H. (1997). A comparative study of Asperger's syndrome with high functioning atypical autism. *Psychiatry and Clinical Neurosciences*, 51 (2), 67-70

Lainhart, J.E. & Folstein, S.E. (1994). Affective disorders in people with autism: a review of published cases. *Journal of Autism and Developmental Disorders*, 24 (5), 587-601

Lesley, A.M. & Frith, U. (1988). Autistic children's understanding of seeing, knowing and believing. *British Journal of Developmental Psychology*, 6, 315-324

Lewis, M. (Ed.) (1991). *Child and adolescent psychiatry: a comprehensive textbook*. Baltimore, MD: Williams & Wilkins

Lindsay, W.R.; Michie, A.M.; Baty, F.J. & McKenzie, K. (1988). Dog phobia in people with mental handicaps: anxiety management training and exposure treatments. *Mental Handicap Research*, 1 (1), 39-48

Livingstone, R. (1991). Anxiety disorders. In M. Lewis (Ed.), *Child and adolescent psychiatry: a comprehensive textbook*. Baltimore, MD: Williams & Wilkins

Lord, C. & Paul, R. (1997). Language and communication in autism. In D.J. Cohen & F.R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders (2nd ed.)*. New York: Wiley

Lotter, V. (1966). Epidemiology of autistic conditions in young children. 1: prevalence. *Social Psychiatry*, 1, 124-137

Loveland, K.A. & Tunali-Kotoski, B. (1997). The school-age child with autism. In Cohen, D.J. & Volkmar, F.R. (Eds.), *Handbook of autism and pervasive developmental disorders (2nd ed.)*. New York: Wiley

McCathie, H. & Spence, S.H. (1991). What is the revised fear survey schedule measuring? *Behaviour Research and Therapy*, 29 (5), 495-502

Miller, J.N. & Ozonoff, S. (1997). Did Asperger's cases have Asperger disorder? *Journal of Child Psychology and Psychiatry*, 38 (2), 247-251

Nordin, V. & Gillberg, C. (1998). The long term course of autistic disorders: update and follow-up studies. *Acta Psychiatrica Scandinavica*, 97, 99-108

Ollendick, T.H. & King, N.J. (1991). Fears and phobias of childhood. In M. Herbert (Ed.), *Clinical child psychology. Social learning, development and behaviour*. Chichester: Wiley

Ollendick, T.H.; King, N.J. & Yule, W. (Eds.) (1994). *International handbook of phobic and anxiety disorders in children and adolescents*. New York: Plenum

Ollendick, T.H.; Mattis, S.G. & King, N.J. (1994). Panic in children and adolescents: a review. *Journal of Child Psychology and Psychiatry*, 35 (1), 113-134

Ollendick, T.H.; Yule, W. & Ollier, K. (1991). Fears in British children and their relationship to manifest anxiety and depression. *Journal of Child Psychology and Psychiatry*, 32, 321-331

Perner, J.; Frith, U.; Leslie, A.M. & Leekam, S.R. (1989). Exploration of the autistic child's theory of mind: knowledge, belief and communication. *Child Development*, 60, 689-700

Perner, J.; Leekam, S.R. & Wimmer, H. (1987). Three-year-olds difficulty with false belief: the case for a conceptual deficit. *British Journal of Developmental Psychology*, 5, 125-137

Perner, J. & Wimmer, H. (1985). "John thinks that Mary thinks that ..." Attribution to second-order beliefs by 5-10 year old children. *Journal of Experimental Child Psychology*, 39, 437-471

Perrin, S. & Last, C.G. (1997). Worrisome thoughts in children clinically referred for anxiety disorder. *Journal of Clinical Child Psychology*, 26 (2), 181-189

Prior, M.; Dahlstrom, B. & Squires, T.L. (1990). Autistic children's knowledge of thinking and feeling states in other people. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31 (4), 587-601

Ramberg, C.; Ehlers, S.; Nyden, A.; Johansson, M. & Gillberg, C. (1996). Language and pragmatic functions in school age children on the autism spectrum. *European Journal of Disorders of Communication*, 31 (4), 387-413

Ramirez, S.Z. & Kratochwill, T.R. (1997). Self-reported fears in children with and without mental retardation. *Mental Retardation*, 35 (2), 83-92

Rapin, I. & Dunn, M. (1997). Language disorders in children with autism. *Seminars in Pediatric Neurology*, 4 (2), 86-92

Reynolds, C.R. & Richmond, B.O. (1985). *Revised Children's Manifest Anxiety Scale: Manual*. Los Angeles, C.A.: Western Psychological Services

Robinson, R.J. (1991). Causes and associations of severe and persistent specific speech and language disorders in children. *Developmental Medicine and Child Neurology*, 33 (11), 943-962

Rumsey, J.M.; Rapoport, J.L. & Sceery, W.R. (1985). Autistic children as adults: psychiatric, social and behavioural outcomes. *Journal of the American Academy of Child Psychiatry*, 24 (4), 465-473

Rutter, M. (1999). The Emanuel Miller Memorial Lecture 1998. Autism: two-way interplay between research and clinical work. *Journal of Autism and Developmental Disorders*, 40 (2), 169-188

Ryan, R.M. (1992). Treatment resistant chronic mental illness: is it Asperger's syndrome? *Hospital and Community Psychiatry*, 43 (8), 807-811

Schopler, E. & Mesibov, G.B. (Eds.) (1992). *High functioning individuals with autism*. New York: Plenum

Schopler, E. & Mesibov, G.B. (Eds.) (1994). *Behavioural issues in autism*. New York: Plenum

Sclare, I. (Ed.) (1997). *Child psychology portfolio*. Windsor: NFER-Nelson

Seidner, L.B.; Stipek, D.J. & Feshbach, N.D. (1988). A developmental analysis of elementary school-aged children's concepts of pride and embarrassment. *Child Development*, 59, 367-377

Sigman, M.; Arabelle, S. & Dissayake, C. (1995). Current research findings in childhood autism. *Canadian Journal of Psychiatry*, 40, 289-294

Sigman, M. & Capps, L. (1997). *Children with autism. A developmental perspective*. Cambridge, MA: Harvard University Press

Simons, J.M. (1974). Observations on compulsive behavior in autism. *Journal of Autism and Childhood Schizophrenia*, 4 (1), 1-10

Snow, M.E.; Hertzig, M.E. & Shapiro, T. (1987). Expression of emotion in young autistic children. *Annual Progress in Child Psychiatry and Child Development*, 26 (6), 514-522

Sparrow, S.S.; Balla, D. & Cicchetti, D.V. (1984). *The Vineland Adaptive Behavior Scales: Interview edition, survey form.* Circle Pines, MN: American Guidance Service

Spielberger, C.D. (1973). *State Trait Anxiety Inventory for Children.* Palo Alto, CA: Consulting Psychologists Press

Spence, S.H. (1994). *The structure and assessment of anxiety in children.* Paper presented at the meeting of the Association for the Advancement of Behavior Therapy, San Diego, CA

Spence, S.H. (1995). *The Social Worries Questionnaire.* In social skills training. Enhancing social competence with children and adolescents. Windsor: NFER-Nelson

Spence, S.H. (1997a). The Spence Children's Anxiety Scale. In I. Sclare (Ed.), *Child psychology portfolio.* Windsor: NFER-Nelson

Spence, S.H. (1997b). Structure of anxiety symptoms among children: a confirmatory factor-analytic study. *Journal of Abnormal Psychology,* 106 (2), 280-297

Spence, S.H. & McCathie, H. (1993). The stability of fears in children: a two year prospective study: a research note. *Journal of Child Psychology and Psychiatry*, 34 (4), 579-585

Steingard, R.J.; Zimnitzky, B.; DeMaso, D.R.; Bauman, M.L. & Bucci, J.P. (1997). Sertraline treatment of transition-associated anxiety and agitation in children with autistic disorder. *Journal of Child and Adolescent Psychopharmacology*, 7 (1), 9-15

Stevenson, J. & Richman, N. (1978). Behavior, language and development in 3 year old children. *Journal of Autism and Childhood Schizophrenia*, 8, 299-313

Stevenson-Hinde, J. & Shouldice, A. (1995). 4.5 to 7 years: fearful behaviour, fears and worries. *Journal of Child Psychology and Psychiatry*, 36 (6), 1027-1038

Strauss, C.C. (1991). Assessment of anxiety in children. In R.J. Prinz (Ed.), *Advances in behavioural assessment of children and families*. London: Jessica Kingsley

Szabo, C.P. & Bracken, C. (1994). Imipramine and Asperger's. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33 (3), 431-432

Szatmari, P.; Bartolucci, G.; Bremner, R.; Bond, S. & Rich, S. (1989). A follow-up study of high-functioning autistic children. *Journal of Autism and Developmental Disorders*, 19 (2), 213-225

Tager-Flusberg, H. (1992). Autistic children's talk about psychological states: deficits in the early acquisition of a theory of mind. *Child Development*, 63, 161-172

Tager-Flusberg, H. (1997). Perspectives on language and communication in autism. In D.J. Cohen & F.R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders (2nd ed.)*. New York: Wiley

Tantam, D. (1991). Asperger syndrome in adulthood. In U. Frith, (Ed.), *Autism and Asperger's syndrome*. Cambridge: Cambridge University Press

Thomas, G.; Barratt, P.; Clewley, H.; Joy, H.; Potter, M. & Whitaker, P. (1998). *Asperger Syndrome - practical strategies for the classroom*. London: National Autistic Society

Tsai, L.Y. (1992). Diagnostic issues in high-functioning autism. In E. Schopler & G. B. Mesibov (Eds.), *High functioning individuals with autism*. New York: Plenum

Tasi, L.Y. (1996). Brief Report: comorbid psychiatric disorders of autistic disorder. *Journal of Autism and Developmental Disorders*, 26 (2), 159-163

Williams, D. (1992). *Nobody nowhere*. London: Corgi

Williams, D. (1994). *Somebody somewhere*. London: Corgi

Wing, L. (1981). Asperger's syndrome: a clinical account. *Psychological Medicine*, 11, 115-129

Wing, L. (1988). The continuum of autistic characteristics. In E. Schopler & G.B. Mesibov (Eds.), *Diagnosis and assessment in autism*. New York: Plenum

Wing, L. (1993). The definition and prevalence of autism. *European Child and Adolescent Psychiatry*, 2 (2), 61-74

Wing, L. (1996). *The autism spectrum. A guide for parents and professionals.* London: Constable

Wing, L. (1997). Syndromes of autism and atypical development. In D.J. Cohen & F.R. Volkmar (Eds.), *Handbook of autism and pervasive developmental disorders (2nd ed.)*. New York: Wiley

Wing, L. & Gould, J. (1979). Severe impairments of social interaction and associated abnormalities in children: epidemiology and classification. *Journal of Autism and Developmental Disorders*, 9 (1), 11-29

Yirmiya, N. & Sigman, M. (1991). High-functioning individuals with autism. Diagnosis, empirical findings and theoretical issues. *Clinical Psychology Review*, 11, 669-683

Yirmiya, N.; Sigman, M.; Kasari, C & Mundy, P. (1992). Empathy and cognition in high-functioning children with autism. *Child Development*, 63, 150-160

Yirmiya, N.; Solomonica-Levi, D.; Shulman, C. & Pilowsky, T. (1996). Theory of mind abilities in individuals with autism, Down's syndrome, and mental retardation of unknown etiology: the role of age and intelligence. *Journal of Child Psychology and Psychiatry*, 37 (8), 1003-1014

Yule, W. (1997). Anxiety, depression and post-traumatic stress in childhood. In I. Sclare (Ed.), *Child psychology portfolio*. Windsor: NFER-Nelson

Yule, W. & Rutter, M. (Eds.) (1987). Language development and disorders. *Clinics in Developmental Medicine*, Nos. 101/102. London: Mac Keith Press

Ziatas, K.; Durkin, K. & Pratt, C. (1998). Belief term development in children with autism, Asperger syndrome, specific language impairment, and normal development: links to theory of mind development. *Journal of Child Psychology and Psychiatry*, 39 (5), 755-763

Appendices

SPENCE CHILDREN'S ANXIETY SCALE (SCAS)

NFER-NELSON
INFORMING YOUR DECISIONS

Your name: _____ Date: _____

Please tick the box under the word that shows how often each of these things happen to you. There are no right or wrong answers.

	Never	Sometimes	Often	Always
1. I worry about things	☐	☐	☐	☐
2. I am scared of the dark	☐	☐	☐	☐
3. When I have a problem, I get a funny feeling in my stomach	☐	☐	☐	☐
4. I feel afraid	☐	☐	☐	☐
5. I would feel afraid of being on my own at home	☐	☐	☐	☐
6. I feel scared when I have to take a test	☐	☐	☐	☐
7. I feel afraid if I have to use public toilets or bathrooms	☐	☐	☐	☐
8. I worry about being away from my parents	☐	☐	☐	☐
9. I feel afraid that I will make a fool of myself in front of people	☐	☐	☐	☐
10. I worry that I will do badly at my school work	☐	☐	☐	☐
11. I am popular amongst other kids of my own age	☐	☐	☐	☐
12. I worry that something awful will happen to someone in my family	☐	☐	☐	☐
13. I suddenly feel as if I can't breathe when there is no reason for this	☐	☐	☐	☐
14. I have to keep checking that I have done things right (like the switch is off, or the door is locked)	☐	☐	☐	☐
15. I feel scared if I have to sleep on my own	☐	☐	☐	☐
16. I have trouble going to school in the mornings because I feel nervous or afraid	☐	☐	☐	☐
17. I am good at sports	☐	☐	☐	☐
18. I am scared of dogs	☐	☐	☐	☐
19. I can't seem to get bad or silly thoughts out of my head	☐	☐	☐	☐
20. When I have a problem, my heart beats really fast	☐	☐	☐	☐
21. I suddenly start to tremble or shake when there is no reason for this	☐	☐	☐	☐
22. I worry that something bad will happen to me	☐	☐	☐	☐
23. I am scared of going to the doctor or dentist	☐	☐	☐	☐

2

	Never	Sometimes	Often	Always
24. When I have a problem, I feel shaky	☐	☐	☐	☐
25. I am scared of being in high places or lifts (elevators)	☐	☐	☐	☐
26. I am a good person	☐	☐	☐	☐
27. I have to think of special thoughts (like numbers or words) to stop bad things from happening	☐	☐	☐	☐
28. I feel scared if I have to travel in the car, or on a bus or train	☐	☐	☐	☐
29. I worry what other people think of me	☐	☐	☐	☐
30. I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds)	☐	☐	☐	☐
31. I feel happy	☐	☐	☐	☐
32. All of a sudden I feel really scared for no reason at all	☐	☐	☐	☐
33. I am scared of insects or spiders	☐	☐	☐	☐
34. I suddenly become dizzy or faint when there is no reason for this	☐	☐	☐	☐
35. I feel afraid if I have to talk in front of my class	☐	☐	☐	☐
36. My heart suddenly starts to beat too quickly for no reason	☐	☐	☐	☐
37. I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	☐	☐	☐	☐
38. I like myself	☐	☐	☐	☐
39. I am afraid of being in small closed places, like tunnels or small rooms	☐	☐	☐	☐
40. I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order)	☐	☐	☐	☐
41. I get bothered by bad or silly thoughts or pictures in my mind	☐	☐	☐	☐
42. I have to do some things in just the right way to stop bad things happening	☐	☐	☐	☐
43. I am proud of my school work	☐	☐	☐	☐
44. I would feel scared if I had to stay away from home overnight	☐	☐	☐	☐
45. Is there something else that you are really afraid of?	Yes ☐		No ☐	

Please write down what it is:

_____

_____

_____

	Never	Sometimes	Often	Always
How often are you afraid of this thing?	☐	☐	☐	☐

Subscales of the Spence Children's Anxiety Scale

Panic Attack/Agoraphobia	
13.	I suddenly feel as if I can't breathe when there is no reason for this.
21.	I suddenly start to tremble or shake when there is no reason for this.
28.	I feel scared if I have to travel in the car, or on a bus or train.
30.	I am afraid of being in crowded places (like shopping centres, the movies, buses, busy playgrounds).
32.	All of a sudden I feel really scared for no reason at all.
34.	I suddenly become dizzy or faint when there is no reason for this.
36.	My heart suddenly starts to beat too quickly for no reason.
37.	I worry that I will suddenly get a scared feeling when there is nothing to be afraid of.
39.	I am afraid of being in small closed places like tunnels or small rooms.
Separation Anxiety	
5.	I would feel afraid of being on my own at home.
8.	I worry about being away from my parents.
12.	I worry that something awful will happen to someone in my family.
15.	I feel scared if I have to sleep on my own.
16.	I have trouble going to school in the mornings because I feel nervous or afraid.
44.	I would feel scared if I had to stay away from home overnight.
Physical Injury Fears	
2.	I am scared of the dark.
18.	I am scared of dogs.
23.	I am scared of going to the doctor or dentist.
25.	I am scared of being in high places or lifts.
33.	I am scared of insects or spiders.
Social Phobia	
6.	I feel scared when I have to take a test.
7.	I feel afraid if I have to use public toilets or bathrooms.
9.	I feel afraid that I will make a fool of myself in front of people.
10.	I worry that I will do badly at my school work.
29.	I worry what other people think of me.
35.	I feel afraid if I have to talk in front of my class.

Appendix 2

Obsessive Compulsive Disorder	
14.	I have to keep checking that I have done things right (like the switch is off or the door is locked.
19.	I can't seem to get bad or silly thoughts out of my head.
27.	I have to think of special thoughts (like numbers or words) to stop bad things from happening.
40.	I have to do some things over and over again (like washing my hands, cleaning or putting things in a certain order).
41.	I get bothered by bad or silly thoughts or pictures in my mind.
42.	I have to do some things in just the right way to stop bad things from happening.
Generalized Anxiety Disorder/Overanxious Disorder	
1.	I worry about things.
3.	When I have a problem, I get a funny feeling in my stomach.
4.	I feel afraid.
20.	When I have a problem, my heart beats really fast.
22.	I worry that something bad will happen to me.
24.	When I have a problem I feel shaky.

NFER-NELSON
INFORMING YOUR DECISIONS

Social Worries Questionnaire – PUPIL

Date: Name: Sex:

Class: School: Age:

Please put a circle around the rating which best describes you *over the past four weeks.*

Please answer all questions.

('Avoid' means to try to get out of doing something.)

1	I avoid or get worried about going to parties	Not true	Sometimes true	Mostly true
2	I avoid or get worried about using the telephone	Not true	Sometimes true	Mostly true
3	I avoid or get worried about meeting new people	Not true	Sometimes true	Mostly true
4	I avoid or get worried about presenting work to the class	Not true	Sometimes true	Mostly true
5	I avoid or get worried about attending clubs or sports activities	Not true	Sometimes true	Mostly true
6	I avoid or get worried about asking a group of kids if I can join in	Not true	Sometimes true	Mostly true
7	I avoid or get worried about talking in front of a group of adults	Not true	Sometimes true	Mostly true
8	I avoid or get worried about going shopping alone	Not true	Sometimes true	Mostly true
9	I avoid or get worried about standing up for myself with other kids	Not true	Sometimes true	Mostly true
10	I avoid or get worried about entering a room full of people	Not true	Sometimes true	Mostly true
11	I avoid or get worried about using public toilets or bathrooms	Not true	Sometimes true	Mostly true
12	I avoid or get worried about eating in public	Not true	Sometimes true	Mostly true
13	I avoid or get worried about taking tests at school	Not true	Sometimes true	Mostly true

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NFER-NELSON
INFORMING YOUR DECISIONS

Social Worries Questionnaire – PARENT(S)

Date: Young person's name: His/Her sex:

Class: School: His/Her age:

Name of parent completing the form:

Please put a circle around the rating which best describes your son or daughter *over the past four weeks.*

Circle the number 0 if the item is not true. Circle the number 1 if the item is sometimes true. Circle the number 2 if the item is mostly true.

Please answer all items.

	He or she:	Not true	Sometimes true	Mostly true
1	Avoids or gets worried about going to parties	0	1	2
2	Avoids or gets worried about using the telephone	0	1	2
3	Avoids or gets worried about meeting new people	0	1	2
4	Avoids or gets worried about presenting work to the class	0	1	2
5	Avoids or gets worried about attending clubs or sports activities	0	1	2
6	Avoids or gets worried about approaching a group of kids to ask to join in	0	1	2
7	Avoids or gets worried about talking in front of a group of adults	0	1	2
8	Avoids or gets worried about going into a shop alone to buy something	0	1	2
9	Avoids or gets worried about standing up for him/herself with other kids	0	1	2
10	Avoids or gets worried about entering a room full of people	0	1	2

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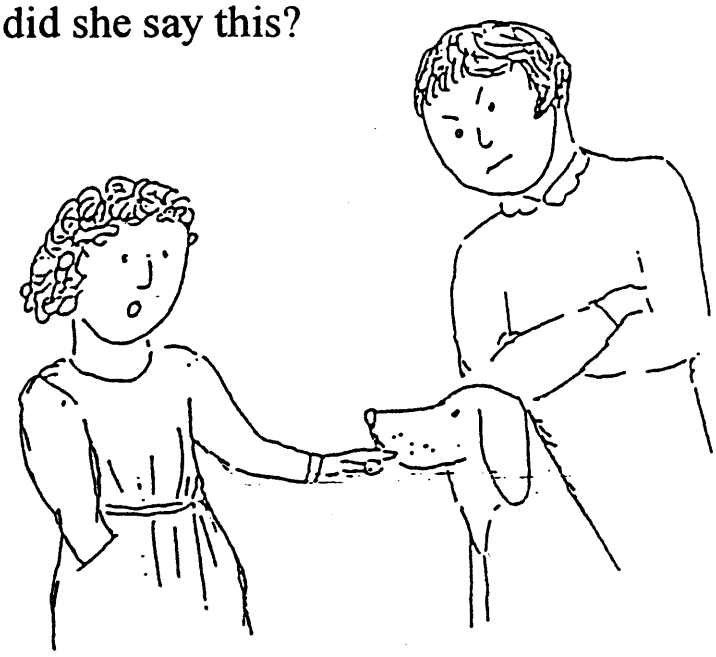
Strange Stories

Story Type	Story
1. LIE	Vase
2. WHITE LIE	Hat
3. PRETEND	Banana
4. JOKE	Haircut
5. IDIOM	Cough
6. MISUNDERSTANDING	Glove
7. DOUBLE BLUFF	Soldier
8. SARCASM	Picnic
9. PERSUASION	Sausage
10.CONTRARY EMOTION	Painting
11.APPEARANCE/ REALITY	Ghost
12.FORGETTING	School

Vase

One day, while she is playing in the house, Anna accidentally knocks over and breaks her mother's favourite crystal vase. Oh dear, when mother finds out she'll be very cross. So when Anna's mother comes home and sees the broken vase and asks Anna what happened, Anna says "The dog knocked it over, it wasn't my fault!".

What it true, what Anna told her mother?
Why did she say this?



Hat

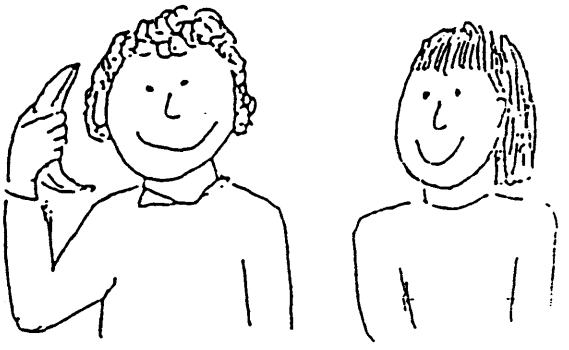
One day Aunt Jane came to visit Peter. Now Peter loves his Aunt very much, but today she is wearing a new hat; a new hat which Peter thinks is very ugly indeed. Peter thinks his Aunt looks silly in it and much nicer in her old hat. But when Aunt Jane asks Peter, "How do you like my new hat?", Peter says, "Oh, its very nice".

Was it true what Peter said?
Why did he say it?

Banana

Katie and Emma are playing in the house. Emma picks up a banana from the fruit bowl and holds it up to her ear. She says to Katie, "Look! This banana is a telephone!".

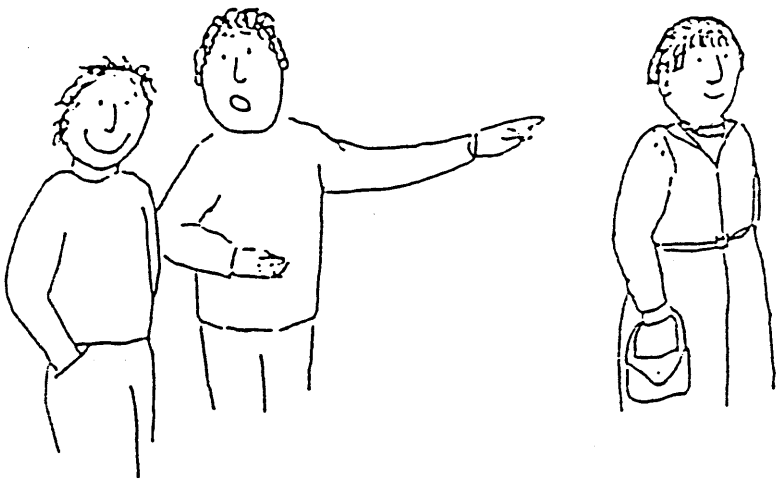
Is it true what Emma says?
Why does Emma say this?



Haircut

Daniel and Ian see Mrs Thompson coming out of the hairdresser's one day. She looks a bit funny because the hairdresser has cut her hair much too short. Daniel says to Ian, "She must have been in a fight with a lawnmower!".

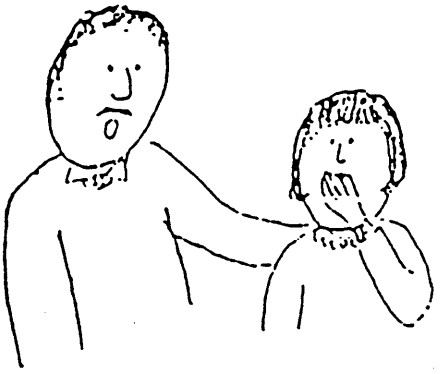
Is it true, what Daniel says?
Why does he say this?



Cough

Emma has a cough. All through lunch she coughs and coughs and coughs. Father says, "Poor Emma, you must have a frog in your throat!".

Is it true, what Father says to Emma?
Why does he say that?



Glove

A burglar who has just robbed a shop is making his getaway. As he is running home, a policeman on his beat sees him drop his glove. He doesn't know the man is a burglar, he just wants to tell him he dropped his glove. But when the policeman shouts out to the burglar, "Hey you! Stop!", the burglar turns round, sees the policeman and gives himself up. He puts his hands up and admits he did the break-in at the local shop.

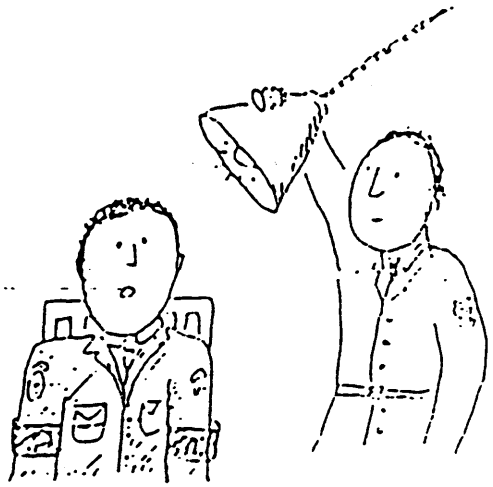
Was the policeman surprised by what the burglar did?

Why did the burglar do this, when the policeman just wanted to give him back his glove?

Soldier

During the war, the Red army capture a member of the Blue army. They want him to tell them where his army's tanks are; they know they are either by the sea or in the mountains. They know that the prisoner will not want to tell them, he will want to save his army, and so he will certainly lie to them. The prisoner is very brave and very clever, he will not let them find his army's tanks. The tanks are really in the mountains. Now when the other side ask him where his tanks are, he says, "They are in the mountains".

Is it true, what the prisoner said?
Where will the other army look for his tanks?
Why did the prisoner say what he said?



Picnic

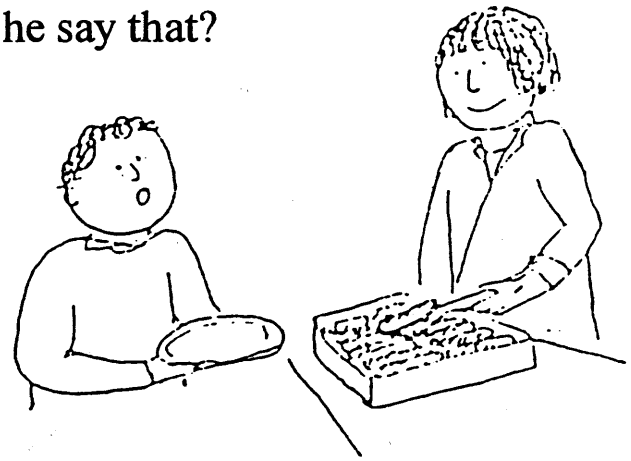
Sarah and Tom are going on a picnic. It is Tom's idea, he says it is going to be a lovely sunny day for a picnic. But just as they are unpacking the food, it starts to rain, and soon they are both soaked to the skin. Sarah is cross. She says, "Oh yes, a lovely day for a picnic alright!".

Is it true, what Sarah says?
Why does she say this?

Sausages

Brian is always hungry. Today at school it is his favourite meal - sausages and beans. He is a very greedy boy, and he would like to have more sausages than anybody else, even though his mother will have made him a lovely tea when he gets home! But everyone is allowed two sausages and no more. When it is Brian's turn to be served, he says, "Oh please can I have four sausages, because I won't be having any tea when I get home!".

Is it true, what Brian says?
Why does he say that?



Painting

Jane and Sarah are best friends. They both entered the same painting competition. Now Jane wanted to win this competition very much indeed, but when the results were announced it was her best friend Sarah who won, not her. Jane was very sad she had not won, but she was happy for her friend who got the prize. Jane said to Sarah, "Well done, I'm so happy you won!". Jane said to her mother, "I am sad I did not win that competition!".

Is it true what Jane said to Sarah?
Is it true what Jane said to her mother?
Why does Jane say she is happy and sad at the same time?

Ghost

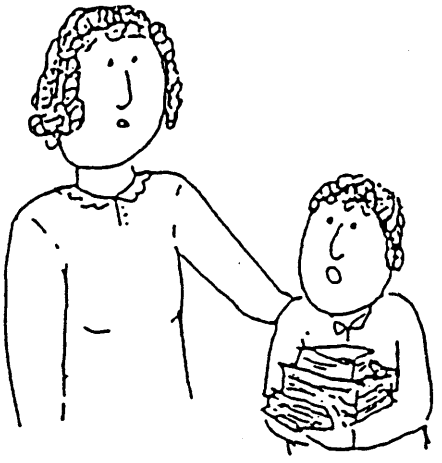
It is Halloween, and Chris is going to a fancy-dress party. He is going as a ghost. He wears a big white sheet with eyes cut out to see through. As he walks to the party in his ghost costume, he bumps into Mr Brown. It is dark, and Mr Brown says, "Oh! Who is it?". Chris answers, "I'm a ghost Mr Brown!".

Is it true, what Chris says?
Why does Chris say this?

School

At school today, John was not present. He was away ill. All the rest of Ben's class were at school though. When Ben got home after school, his mother asked him, "Was everyone in your class at school today?". Ben answers, "Yes mummy".

Is it true what Ben said?
Why did Ben say that?



Appendix 6

Strange Stories Record Form

Code: Age: Gender: Date of assessment:

Story Type	Story	True?	Why?
1. LIE	Vase	.....	.....
2. WHITE LIE	Hat	.....	.....
3. PRETEND	Banana	.....	.....
4. JOKE	Haircut	.....	.....
5. IDIOM	Cough	.....	.....
6. MISUNDER-STANDING	Glove	.....	.....
7. DOUBLE BLUFF	Soldier	.....	.....
8. SARCASM	Picnic	.....	.....
9. PERSUASION	Sausage	.....	.....
10.CONTRARY EMOTION	Painting	.....	.....
11.APPEARANCE/ REALITY	Ghost	.....	.....
12.FORGETTING	School	.....	.....

Experience of Emotions Task Record Form

Code: Age: Gender: Date:

1. Sadness

2. Happiness

3. Embarrassment

4. Pride

5. Worry

6. Fear

Experience of Emotions Task
Prompting Stories

Sadness
I remember a time when I ran in the school race and really thought I was going to win it. But, when we ran the race, I came second and was really sad.

Happiness
I remember a time at school when the most popular girl in class invited me to her birthday party. I was really happy.

Embarrassment
I remember a time when I was skipping in the playground with my friends and I tripped over my rope and fell over. I was really embarrassed.

Pride
I remember a time when I entered a drawing competition at school and won first prize. I felt really proud of myself.

Worry
I remember a time when we had to do a test in class, but I hadn't studied for it. I was really worried that I was going to fail.

Fear
I remember a time when I was walking in the park and a really big dog came running towards me. I was fearful that it was going to bite me.

Appendix 9

Coding Categories for Experience of Emotions Task

The following coding categories as defined by Capps, Yirmiya and Sigman (1992):

Dimension	Definition	Examples
Locus Internal-controllable	Related to and centred on the child and over which the child could exert some control	"I ran fastest" "I was bad at school"
Internal-uncontrollable	Related to and centred on the child but not in the child's control	"I'm too tall"
External-uncontrollable	Not directly centred on, or controllable by the child	"My uncle got married"
Audience explicit	Specific reference to or others who had observed the emotion-inducing event	"I fell and the other kids saw" "I won and people clapped"
Audience Implied	No observer mentioned, but the event described generally implies the presence of an audience	"I was running and I tripped"
No Audience	No specific reference to an audience, no contextual implications of an audience	

Appendix 10

Dear Parent

Anxiety in Children

As part of my training to be a Clinical Psychologist, I am required to carry out a piece of research. I am carrying out a study into the nature of worries and anxieties in children and how they might differ in children with autism or communication difficulties.

I am writing to ask if you would be willing to allow your child to participate in the study. The next page provides more information regarding the nature of the study and what is involved. If you are willing to allow your child to participate, please could you sign the consent form below and return it to me in the enclosed envelope. Upon receipt of your consent, you will be contacted again to arrange a suitable time to meet.

If you would like to know more about the study or what is involved, please do not hesitate to contact us by telephone. You can contact Alinda Gillott on (01332) 625542 or Dr Fred Furniss on (0116) 252 2492.

Many thanks

Alinda Gillott
Clinical Psychologist in Training

Supervised by Dr Fred Furniss
Clinical Tutor

I give / do not give consent for my child to participate in the 'anxiety in children' study.

Signed _____ Date _____

Name of child _____ D.O.B. _____

Address _____

_____

Telephone no. _____

Anxiety in Children
Parent's Information Sheet

Background to the study

As part of my training to be a Clinical Psychologist, I am required to carry out a piece of research. I am carrying out a study into the nature of worries and anxieties in children and how they might differ in children with autism or communication difficulties.

Who the study involves

The study will involve children between the ages of 8 to 12 years. Three groups of children will be involved: children with a language disorder, children without a disability, and children like yours who have autism.

What the study involves

The study will involve two interviews, one with you and one with your child . It is estimated that these interviews will take no longer than 90 minutes in total. During the interviews, both you and your child will be asked questions about anxiety and worries.

The results

Your child's results will be available to you, should you wish to receive them. No one else will have access to their individual results.

In terms of the study, each participant will be given a number, so that the information can be kept confidentially. After information is collected from all the participants, the results will be analysed and written into my doctoral thesis. As this is a relatively new area, these results may also be published in a psychology journal to advance our understanding of anxiety in different groups of children. No names will be given in the journal.

Alinda Gillott
Trainee Clinical Psychologist

Dr Fred Furniss
Clinical Tutor

Worries in Children
Children's Information Sheet

Background to the study

I am studying to be a Clinical Psychologist. A Clinical Psychologist is a person who talks to children about their worries and problems. As part of my course, I have to do a project. For my project, I want to find out about the kind of things children worry about.

Who the study involves

I want to talk to boys and girls between the ages of 8 to 12 years.

What the study involves

The study will involve two meetings, one with you and one with your mum or dad . These meetings will not take more than 90 minutes. During the meetings, both you and your mum or dad will be asked questions about worries.

Confidentiality

If you become involved in the project, I will not talk to anybody else about what you have said, apart from your mum or dad.

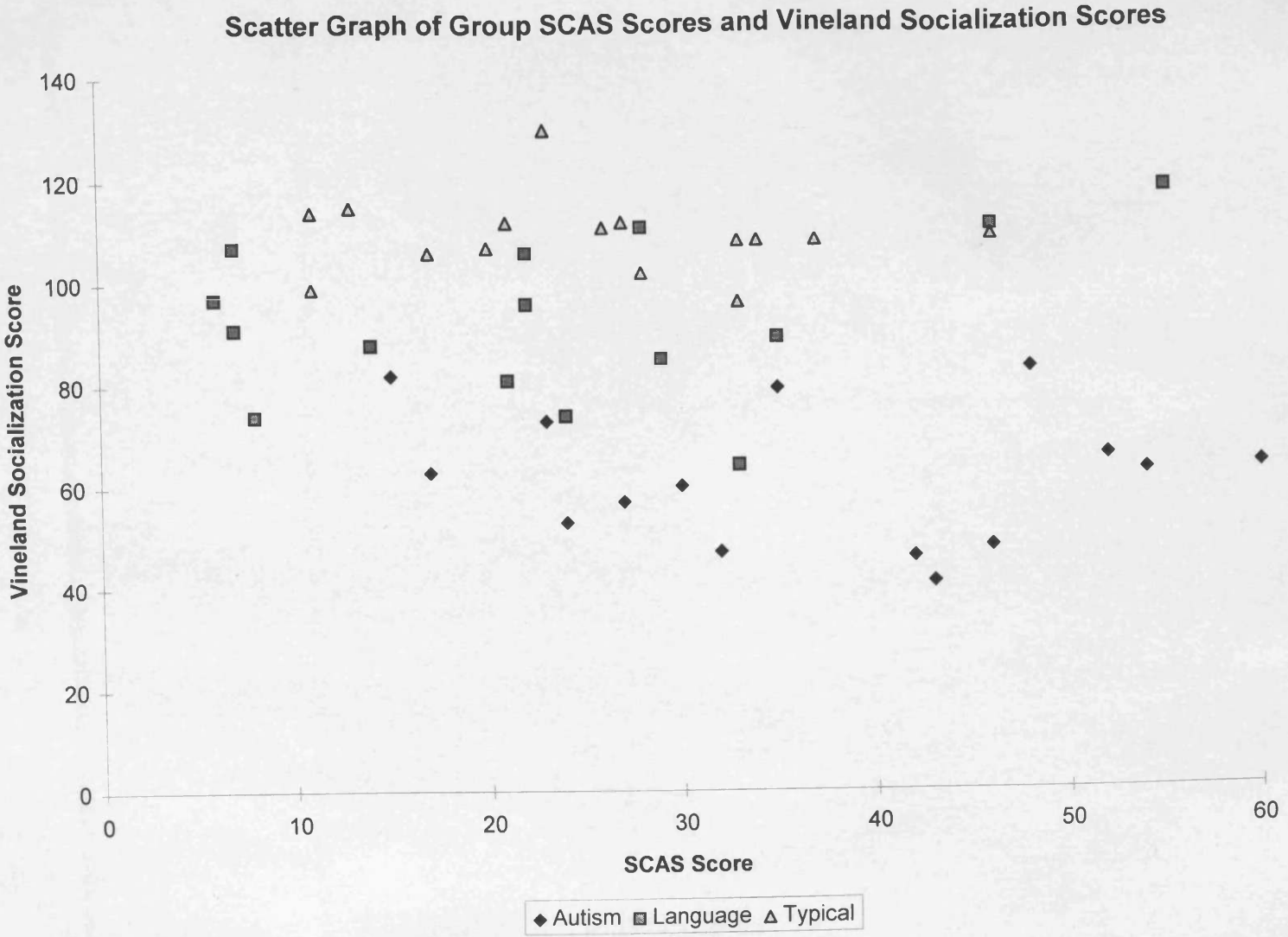
Your results will then be written into my project.

Appendix 13
Raw Data for all Measures

typical	10.04	male	26	6	5	21	18	77	111
typical	10.06	male	33	10	6	14	15	59	96
typical	9.03	male	33	4	4	15	18	104	108
typical	11	male	28	7	5	15	18	78	102
typical	11.11	male	23	6	3	22	17	115	130
typical	12.09	male	17	6	6	20	18	103	106
typical	12.09	male	21	9	4	19	18	103	112
typical	9.04	male	46	13	6	17	18	120	109
typical	11.04	male	11	4	9	16	18	86	99
typical	8.11	male	13	5	3	18	18	121	115
typical	12.06	female	37	9	6	23	18	103	108
typical	12	female	27	7	1	24	18	100	112
typical	8.09	male	34	9	4	22	15	105	108
typical	10.11	male	11	4	2	19	17	113	114
typical	8	male	20	3	1	17	14	117	107

Appendix 14
Raw Data for SCAS Subscales

Group	Panic	Separation	Physical	Soc.Phobia	OCD	GAD	Total
autism	2	6	3	7	10	4	32
autism	2	6	0	6	11	5	30
autism	8	7	11	5	5	8	43
autism	3	9	0	14	13	7	46
autism	3	3	3	1	4	3	17
autism	3	12	3	3	12	9	42
autism	1	4	3	3	7	5	23
autism	3	1	8	1	0	2	15
autism	7	15	6	11	10	11	60
autism	15	9	10	6	10	2	52
autism	10	11	7	3	8	9	48
autism	12	12	4	7	12	7	54
autism	1	3	8	5	5	2	24
autism	4	6	4	1	8	4	27
autism	6	2	4	4	12	7	35
language	0	6	6	9	3	9	33
language	7	6	2	13	10	8	46
language	11	10	5	8	8	13	55
language	6	4	2	2	4	4	22
language	4	4	1	7	8	4	28
language	0	2	1	1	1	2	7
language	6	6	4	4	1	3	24
language	0	1	2	0	1	3	7
language	3	4	3	9	5	5	29
language	0	3	1	5	2	3	14
language	4	4	8	10	2	7	35
language	1	2	3	0	0	2	8
language	2	9	4	1	3	3	22
language	4	3	2	6	2	4	21
language	3	2	0	0	1	0	6
typical	0	2	1	6	7	10	26
typical	7	5	0	8	6	7	33
typical	6	3	1	5	12	6	33
typical	1	1	5	11	5	5	28
typical	2	4	2	5	4	6	23
typical	1	2	1	6	1	6	17
typical	0	2	2	4	7	6	21
typical	7	7	3	9	12	8	46
typical	0	2	1	3	1	4	11
typical	1	1	0	2	4	5	13
typical	1	4	6	10	6	10	37
typical	6	3	1	4	3	10	27
typical	2	5	5	7	8	7	34
typical	3	1	2	1	1	3	11
typical	5	3	1	2	5	4	20


Scatter Graph of Group SCAS Scores and Vineland Socialization Scores
Vineland Socialization Score
140
120
100
80
60
40
20
0
0
10
20
30
40
50
60
SCAS Score
Autism
Language
Typical

Appendix 15