Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

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2. The work in this thesis was carried out under the supervision of Dr Ami Eidels, Lecturer, University of Newcastle school of Psychology, and Mr Christopher Gregory, Senior Specialist Psychologist, Department of Family and Community Services.

3. I hereby certify that a section of the work embodied in this thesis includes a co-authored scholarly work of which I am a joint author. My supervisor’s signature appears below attesting to my contribution to the joint scholarly work.

Pamela Gaye Ambler

Dr Ami Eidels
Abstract

**Scope:** There is a known strong association between autism spectrum disorders (ASDs) and anxiety. There is also a perceived but less well researched link between high-functioning autism (HFA) or Asperger's disorder and aggressive behaviour. HFA and Asperger's disorder are autism spectrum disorders where there is no comorbid intellectual disability. Adolescents with autism spectrum disorders have been identified as being at increased risk of early exit from schooling due to behavioural problems.

**Purpose:** The purpose of this research was to investigate the link between anxiety and aggression in adolescents with autism using self-report measures of anxiety and anger and teacher ratings of behaviour. Anger is a primary emotion that is expressed behaviourally as aggression or violence. There are two kinds of anger: reactive anger, which is the immediate response to feelings of fear, frustration or being threatened; and instrumental anger, which is more likely to be goal-directed and malicious. It was hypothesised that aggression in adolescents with autism is characterised by high scores on measures of reactive anger but not instrumental anger, and is related to high scores on measures of anxiety. This would have implications for school policies and procedures for the management and prevention of incidents of aggression by children with autism.

**Methodology:** This research is a correlational study comparing levels of anger, anxiety and aggression in adolescents with autism and in a control group of their typically developing peers matched for age and gender. The research was conducted in 12 high schools in the Hunter Central Coast region of New South Wales, with 105 students participating. Measures used were:

- *Revised Children's Manifest Anxiety Scale: Second Edition (RCMAS-2)*
- *Adolescent Anger Rating Scale (AARS)*
- *Student Behavior Survey (teacher report)*
Results: We found significant differences between the students with autism and their typically developing peers on each of the measures of anxiety and anger as well as on teacher-reported behaviour problems. Students with autism are more likely to be suspended from school than their peers. Regression analyses showed that social anxiety is a significant predictor of aggression for students with ASDs, but not for control students. At low levels of social anxiety, levels of physical aggression for ASD students and control group students were equally low. As social anxiety increased, physical aggression also increased for the ASD group but there was no change for the control group. While there was no significant difference in self-reported anger control between the ASD group and the control group, the relationship between anger control and physical aggression was different for the two groups. Differing levels of anger control did not affect physical aggression for the control group. For the ASD group, a high level of self-reported anger control skills was associated with low levels of physical aggression. At low and average levels of anger control, physical aggression was high.

Conclusions and Implications: Students with autism who attend mainstream high school report higher levels of anxiety and reactive anger than their peers, and are at higher risk of being suspended from school for aggressive behaviour. Students with better developed anger control engage in less physical aggression. This has implications for the screening of anxiety in school students, and particularly of those with autism spectrum disorders, the provision of specific interventions for managing anxiety and the development of anger management skills, and for appropriateness of suspension as a mandatory response to incidents of physical aggression in schools.

Keywords: autism, anxiety, anger, aggression, adolescents
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1. CRITICAL LITERATURE REVIEW

1.1 Introduction

In 2010, a report published by the Commonwealth Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA, now known as the Department of Social Services) highlighted the difficulties faced by adolescents with ASDs:

The ASD related impairments that adolescents experience include challenging behaviours such as aggression, anxiety, depression, loneliness, and difficulties with school work and peers. High school can be an especially difficult time for children with ASD and their parents, as the typical turbulence of adolescence is compounded by the challenges of ASD (p. 112).

The research reported in this thesis sought to investigate and gain a better understanding of the links between anxiety and aggression in adolescents with ASD. The information so gained may assist educational authorities in planning and providing appropriate services to this vulnerable group.

To place this research study in perspective, it is necessary to discuss first the nature of autism spectrum disorders and the impact of recent changes to their diagnosis and classification. I will then summarise the research relating to anxiety and aggression in the context of autism.

1.2 Autism spectrum disorders

1.2.1 Definition and diagnostic criteria

Autism spectrum disorder is a developmental disorder characterised by impairments in social communication and interaction, accompanied by restricted interests or repetitive patterns of behaviours. Once a widely used but unofficial term, autism spectrum disorder is now the officially recognised term used in the Diagnostic
and Statistical Manual of Mental Disorders, Fifth Edition, (DSM-5), published by the American Psychiatric Association (APA, 2013). The disorder can vary greatly in severity, and its core symptoms may be manifested differently between individuals, hence the use of the term “spectrum”.

Prior to the publication of the DSM-5 in 2013, autism spectrum disorders were diagnosed and classified in Australia according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition – Text Revision (DSM-IV, APA, 2000). The DSM-IV criteria for autism were based on the “triad of impairments”: deficits in social interaction, language delay and restricted interests and repetitive behaviours. In the DSM-IV, under the section of Pervasive Developmental Disorders (PDD), there were five possible autism diagnoses:

- Autistic disorder
- Asperger’s disorder (also known as Asperger syndrome)
- Pervasive developmental disorder – not otherwise specified (PDD-NOS)
- Rett syndrome
- Childhood disintegrative disorder.

The last two diagnostic categories – Rett syndrome and childhood disintegrative disorder - are rare and generally considered separately from the other three categories. They have been removed from the DSM-5 ASD classification as separate categories of ASD. Childhood disintegrative disorder has been subsumed under the general category of autism spectrum disorder and Rett syndrome is now reported as an associated genetic condition. For this research, we were interested in adolescents who had been given one of the first two diagnoses.

*Helping Children with Autism*, the current autism website for the Department of Social Services (DSS) still refers to acceptable diagnoses as defined by the DSM-IV while the DSM-5 is gradually being adopted by health, education and disability services (DSS, 2013). Under transition arrangements, the DSM-5 provides for the acceptance
of well-established DSM-IV diagnoses as satisfying a diagnosis of autism spectrum disorder (APA, 2013).

In the DSM-5, a diagnosis of autism spectrum disorder is qualified by level of intellectual ability. In the past, the specific diagnosis given depended not only upon the presence or absence of intellectual impairment or language impairment, but also which classification system was being used. An alternative classification system, sometimes used in Australia, is the International Classification of Diseases 10th Revision (ICD-10), published by the World Health Organisation (1994). In Australia, health and educational departments generally use the DSM for determining eligibility for services with respect to autism, but ICD-10 terminology is also widely used and accepted. The term atypical autism, which is approximately equivalent to PDD-NOS, is an ICD-10 classification that is occasionally used in Australia, while Asperger syndrome is the ICD-10 equivalent to the DSM-IV’s Asperger’s disorder. Asperger syndrome (AS) is the term most commonly used in the general population.

1.2.2 High functioning autism and Asperger’s disorder

In the DSM-IV, Asperger’s disorder was a form of autism that, by definition, had no associated intellectual disability or language impairment. Children who did not have an intellectual disability but did not qualify for a diagnosis of Asperger’s disorder (usually because there were signs of language delay in the very early developmental period) were often given a diagnosis of “high functioning autism” (HFA). High functioning autism is an unofficial but widely used term for autism that satisfies all the criteria of autistic disorder, including early language delay, but with an IQ greater than 70. Others who did not fit the criteria for autistic disorder or Asperger’s disorder would be given the diagnosis of PDD-NOS or, sometimes, atypical autism. The key difference between the Asperger’s disorder and HFA was the presence or absence of early language delay. Many studies have sought to prove or disprove that the two diagnoses are distinct, but the distinction is no longer relevant under the DSM-5. An understanding of the distinction remains necessary, however, because most individuals
with autism were diagnosed according to DSM-IV criteria, and much of the previous research cited below distinguishes between them.

While some researchers have found evidence for distinguishing the two disorders (Koyama, Tachimori, Osada, Takeda, & Kurita, 2007), most have tended to agree that there is no significant difference and that the dimensional approach of the DSM-5 is appropriate. Koyama et al. compared cognitive profiles and autistic symptom profiles of the two diagnoses. They found that AS participants scored more highly on verbal tasks, lower on processing speed and less abnormal on social interaction and communication than the HFA participants. While they concluded that the results supported the existing classification system that distinguished between the two disorders, they also considered their findings to be consistent with a dimensional, or spectrum, approach.

Macintosh and Dissanayake (2004) evaluated a number of studies and found that there were few qualitative differences between autistic disorder and Asperger’s disorder. They concluded that there was insufficient evidence to support a distinction between Asperger’s disorder and HFA and that the differences could be better explained by their places on the autism spectrum. Mayes, Calhoun, Murray, and Zahid (2011) did not differentiate between HFA and Asperger’s disorder in their study of anxiety and depression in autism, considering that the two diagnoses differ only in symptom severity or IQ and were not, in fact, separate disorders.

Szatmari et al, (2009) suggested that the difference is better accounted for by structural language impairment and that, rather than their being distinct disorders, they merely differ in their place on the spectrum. They added, however, that differentiation might still be clinically useful. Kozlowski, Matson and Sipes (2012) investigated the differences in challenging behaviour between the two diagnoses and found no significant difference between them. Although HFA children exhibited a greater number of challenging behaviours, neither the topography of the behaviours nor the frequency of individual behaviours differed. They did, however, differ on level of
impairment in verbal communication skills, which was shown to be a significant predictor of challenging behaviour. They concluded that, rather than the two diagnoses being distinct, these results suggested that they fall on a continuum and therefore supportive of the dimensional approach in the anticipated revisions to the DSM.

Conversely, Lotspeich et al. (2004) conducted neuroanatomical studies of the difference between autism and AS. Although some measures showed no difference or difference that may be explained by difference in severity, they found some evidence that the two disorders may be neurobiologically distinct.

This study was completed following the release of the DSM-5 and the appropriate terminology is used wherever appropriate throughout this paper. However, all of the previous research cited was published prior to this time, and I have generally used the terminology of the papers cited. More importantly, the children who participated in this study were all diagnosed before the DSM-5 and inclusion criteria for the study were developed according to DSM-IV criteria. Students with the following diagnoses were eligible to participate:

- High functioning autism
- Asperger’s disorder or Asperger syndrome
- Autistic disorder without intellectual disability.

No distinction was made between the three categories in the study. PDD-NOS (atypical autism) was not included.

1.2.3 Prevalence of autism spectrum disorders

The most recent Australian prevalence data available was published by the Autism Advisory Board on Autism Spectrum Disorders in 2007, and estimated the rate to be 1 in 160, or 62.5 per 10 000 (MacDermott, Williams, Ridley, Glasson & Wray, 2007). These figures were based on Centrelink data available for children aged 6 to 12, as children in that age group were deemed to be the mostly likely to have been given a formal diagnosis and therefore would best reflect the true prevalence of the
disorder. The authors acknowledged that the data for adolescents between the ages of 13 and 16 were inaccurate. Estimates of the prevalence of autism in this older age group were obtained from government agencies of the Commonwealth, states and territories in 2003-2004, and ranged from 4.4 to 24.3 per 10,000, considerably lower than that for younger children. As parents and health professionals have become more aware of this disorder, early identification has become more common, and the estimated prevalence rate for children is likely to be reasonably accurate. Adults and adolescents, however, are less likely to have been identified at a young age and, as they mature, many develop skills that can mask the presence of this disorder or never come in contact with the appropriate services.

There is also a perception that the prevalence of autism is increasing, and this seems to be supported by a recent study from the United States estimating the prevalence rate to be 11.3 per thousand, or one in 88, of 8-year-old children (Baio, 2012). Some have suggested that this apparent increase is real and may be due to environmental factors; however others suggest that it is more likely to be due to changes in diagnostic criteria or to better rates of detection (King & Bearman, 2009). In the past, children may have given a sole diagnosis of intellectual disability (or mental retardation as it was known then) who would otherwise have met criteria for a diagnosis of autism. As awareness of the disorder has increased, these children have also been diagnosed with autism, resulting in an apparent increase in prevalence. The development of more accurate screening and diagnostic instruments, along with the much greater awareness of the disorder in parents, educational professionals and health professionals, has also contributed to the increase in detection and diagnosis. Brugha et al. (2011) undertook a study in the UK to investigate the possibility that there has been an actual increase in the incidence of autism. They found prevalence rates to be similar in adults and children, and concluded that there has been no actual increase. World wide, reported prevalence rates vary from 30 to 181 per 10,000, with the mean of 70 per 10,000 considered the best estimate (Roth, 2013).
Snowling (2010) cited the results of a longitudinal cohort study suggesting that there were far more children without a clinical diagnosis of autism who had the same level of severity of autistic traits as those who did have a diagnosis, and these undiagnosed children were much less likely to have been identified as having special needs at school. For the current study we included only those who had been given a formal diagnosis and were identified as having special educational needs on the basis of that diagnosis.

The DSM-5 stipulates that those who have well-established DSM-IV diagnoses of autistic disorder, Asperger’s disorder or PDD-NOS should be given the diagnosis of autism spectrum disorder, so individuals do not need to be reassessed under the new criteria to maintain services (APA, 2013). The change in criteria, however, will affect future diagnoses and those who need to be reassessed to retain their funding. There is some concern that the changes will exclude many individuals from receiving a diagnosis that can provide them with access to much needed services (Worley & Matson, 2012). Prior to the release of the DSM5, several studies were conducted to gauge the likely impact of the new diagnostic criteria on the numbers who would be eligible for a diagnosis. Matson, Belva, Horovitz, Kozlowski, and Bamburg (2012) investigated the effect of changing the diagnostic criteria on the numbers of people with ASD core symptoms who would meet criteria for diagnosis. They found that, although symptom count increased under the new system, fewer people would meet criteria. They predicted a decline of over 36% in the number of adults who would qualify for a diagnosis of autism spectrum disorder under the DSM-5.

In response to these concerns, the American Psychiatric Association released a fact sheet denying that there would be any significant changes in prevalence (APA, 2013). Huerta, Bishop, Duncan, Hus, and Lord (2012), on whose research the APA’s claims were based, found that most children with DSM-IV diagnoses would remain eligible for an ASD diagnosis under the new criteria. Their findings, however, seem to be the exception rather than the rule (Davis, 2012). Unlike Matson et al. (2012), who
looked at the impact on adults with ID, Worley and Matson (2012) investigated the effect on children and adolescents without ID, a group much like the participants in our study. They found that children who would no longer meet diagnostic criteria for ASD under DSM-5 would still have significant symptoms of ASD compared to typically developing children and this could have profound implications for the provision of educational services. Worley and Matson suggested that individuals with diagnoses of PDD-NOS or Asperger’s disorder would be the most likely to fail to meet criteria and consequently be no longer eligible for services based on the diagnosis, but would also be the most likely to be have comorbid anxiety.

1.2.4 Autism in schools

Autism is one of the categories of disability recognised by the New South Wales Department of Education and Communities (DEC). The DEC has a policy of inclusive education, guaranteeing all children to the right to equal access to educational opportunities (NSW DEC, 2006). Children with disabilities receive additional support to facilitate, where appropriate, their integration into mainstream schools and classes. Some attend special schools, but the majority attend mainstream schools (New South Wales Parliament, 2012, Para. 2.40). The DEC provides support to over 6 000 students with autism in regular classes (NSW DEC, 2011).

Students with autism have poorer outcomes in the school system; they are more likely to be suspended, excluded or be partially enrolled than typically developing students (NSW Parliament Legislative Council, 2012, Para. 4.69). The NSW DEC Disability Action Plan 2011-2015 noted that a major outcome of the previous Disability Action Plan (2004-2010) was increased professional learning opportunities for teachers and counsellors to provide understanding and skill development in Autism Spectrum Disorders. Nevertheless, practice often lags behind planning. In a submission to the inquiry by the NSW Parliament Standing Committee on Social Issues, one contributor stated that, regarding all students with a disability including autism, “Teachers frequently report that they do not possess the skills or experience to assist students
who cannot access the curriculum or school grounds in the way that typically
developing students do” (NSW Parliament Legislative Council, 2012, Para. 7:40).

1.3  Anxiety and ASD

1.3.1.  Comorbidity of ASD and anxiety

The DSM-IV specifically excluded other diagnoses such as anxiety disorders when a diagnosis of autism was made. Gillberg and Billstedt (2000) proposed that, in view of the prevalence of comorbid disorders with autism, the DSM exclusion criteria should perhaps be disregarded, as failure to recognise comorbid disorders could result in the affected individual not receiving appropriate treatment. In recent years, this practice of disregarding the exclusion criteria has become the norm, with diagnosis and treatment for comorbid disorders routinely applied. Now, in the DSM-5, the exclusion criteria have been discontinued.

Helverschou, Bakken, and Martinsen (2008) looked at discriminating between symptoms of autism and anxiety in people with autism and comorbid intellectual disability. They noted the particular difficulty associated with distinguishing the rituals and repetitive behaviours associated with ASD from the symptoms of OCD. They emphasised the clinical difference between the two, contrasting the sometimes pleasurable effect of the behaviours in autism with the clear distress associated with the compulsion in OCD. They concluded that anxiety disorder can be identified in those with ASD and ID using a similar set of symptoms as would be used for the general population.

Matson and Nebel-Schwalm (2007) highlighted the controversy regarding whether anxiety disorders in ASD (and particularly OCD) are distinct comorbid disorders or part of the ASD syndrome. They concluded that comorbid disorders could occur with ASD, but more research was needed to distinguish between the core symptoms of ASD and comorbid disorders by developing instruments sensitive to detecting the presence of psychopathology in ASD. This issue was addressed by
Kerns and Kendall (2012) in a comprehensive discussion of the role of anxiety in ASD. They concluded that there is evidence that anxiety is independent of and comorbid with ASD rather than a core characteristic of the disorder.

1.3.2 Prevalence and type of anxiety disorder in ASD

Anxiety in children and adolescents with ASD may be expressed in many ways. Social phobia, particularly in adolescents, is common, and is likely to have a bidirectional relationship with core social skills deficits (White, Oswald, Ollendick, & Scahill, 2009). Generalised anxiety disorder (GAD) separation anxiety disorder, obsessions and compulsions, and simple phobias are also common (Davis et al., 2010) as is a tendency to perfectionism (Ashburner, Ziviani, & Rodger, 2010). Although results of studies vary, GAD and social phobia seem to be the most common.

Gjevik, Eldevik, Fjaeran-Granum, and Sponheim (2011) found a prevalence rate of 42% for any anxiety disorder in 71 children and adolescents with ASD. They found specific phobia to be the most prevalent (31%) in their sample, followed by obsessive compulsive disorder (OCD, 10%) and social phobia (7%), but they did not find GAD, separation disorder, panic disorder or agoraphobia. They questioned whether social avoidance was a symptom of anxiety or a feature of ASD, and concluded that it was not sufficient to diagnose social anxiety. The participants in their study included many with low intellectual ability, with 57% participants having an IQ below 70.

Muris, Steerneman, Merckelbach, Holdrinet, and Meesters (1998) looked at anxiety in children and adolescents with IQs ranging from 59 to 116 and diagnoses of autistic disorder or PDD-NOS. They found that 84.1% met the full criteria for at least one anxiety disorder. Simple phobia was the most prevalent type of anxiety disorder, followed by agoraphobia, separation anxiety disorder, overanxious disorder, social phobia, avoidant disorder, OCD and panic disorder.

In a sample of children aged between 6 and 12 years with IQs of 55 to 100, and diagnosed with PDD-NOS, de Bruin, Ferdinand, Meester, de Nijs, and Verheij (2007)
found that 55% fulfilled criteria for an anxiety disorder. They too found simple phobia to be the most prevalent, then social phobia, separation anxiety disorder, agoraphobia, OCD and GAD. These children had been referred to the outpatient clinic of a child and adolescent psychiatric unit, so might be suspected of having more or more severe symptoms than average.

In a meta-analysis of 31 studies of anxiety and ASD, van Steensel, Bögels, and Perrin (2011) found that, overall, nearly 40% of young people with ASD had at least one anxiety disorder. Weisbrot, Gadow, DeVincent, and Pomeroy (2005) suggested that children and adolescents with Asperger’s syndrome have the highest anxiety levels followed by children with PDD-NOS and autistic disorder, respectively. Other studies showed no differences in anxiety levels between ASD subtypes (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000; Sukhodolsky et al., 2008).

Van Steensel, Bögels and Dirksen (2012) compared children and adolescents with ASD to a similar group with anxiety disorders. Using a parent report measure, they found the children with ASD had higher scores on specific phobia, total anxiety, social anxiety disorder and panic disorder than the group of children with anxiety disorders, and similar scores for GAD, separation anxiety, OCD and post traumatic stress disorder (PTSD). When the child reports were compared, no significant differences were found between the ASD group and the anxious group. They also measured quality of life and found that higher anxiety severity was associated with lower quality of life. Compared to children and adolescents with ADHD, those with ASD had higher rates of anxiety disorders, but not mood disorders (Van Steensel, Bögels & de Bruin, 2013).

Mayes, Calhoun, Murray, and Zahid (2011) found a direct link between autism and anxiety in children and adolescent with ASD and given that anxiety was found to be present in most children with ASD, recommended that all children with autism be screened for anxiety.

Sometimes the behaviours evidenced in expression of anxiety may be
perceived as behaviours associated with the ASD (Tsai, 2006; White et al., 2009) and differentiating between the two can be difficult. Kim et al. (2000) suggested that, in order to differentiate symptoms of anxiety from the core symptoms of ASD, one should assess changes in the child’s behaviour in contrast to stable deficits. This may still be difficult if the symptoms of anxiety have been longstanding and have become part of the child’s typical behaviour. It has been suggested that anxiety in children with ASD are more likely to be expressed as externalising, acting out behaviours than typically developing children (White et al., 2009).

1.3.3 Aetiology of anxiety in ASD

The reasons for the high levels of anxiety in children, adolescents and adults with ASD remain unclear. Genetic, neurobiological, cognitive and environmental explanations have been proposed. Environmental stressors that could contribute to the development and maintenance of anxiety in children with autism include, but are not limited to: lack of order and predictability in the school environment; frequent changes and interruptions to their obsessions and self-soothing routines, social demands and expectations, bullying, and social exclusion (Ashburner, Ziviani, and Rodger, 2010). However, there remains a high level of anxiety when environmental factors are removed. Symptoms consistent with anxiety are a feature of ASD even in the absence of a specifically identifiable trigger. Is the insistence on sameness a key feature of autism that results in symptoms of anxiety when sameness cannot be achieved, or is it a coping mechanism developed to manage anxiety? Kanner (1943, cited in Davis et al., 2010) suggested that persons with autism are vulnerable to stress because they have restricted repertoires of coping mechanisms.

Neurobiological theories of anxiety implicate the limbic system, and particularly the amygdala (Kim & Gorman, 2005). They cited a study by Dolan et al. (1996), where the amygdala was found to be smaller on the left side in all anxiety disorders, but in normal controls and in those with anxiety who had received treatment with selective serotonin reuptake inhibitors (SSRIs) there was no difference. Juranek et al. (2006)
noted that the amygdala volume overall and right amygdala volume in particular was larger in children with ASD and anxiety disorders.

A review of the neurobiology of aggression and violence (Siever, 2008) also proposes a role for SSRIs in the neurological mechanisms of violent behaviour. This may also have implications for adolescents with AS who seem to be at risk of committing sudden and unexpected acts of violence. Although this research suggests that this may indeed form part of a neurobiological explanation for the comorbidity of anxiety and autism, it has also been noted that cognitive behavioural therapy may modulate the fear response by influencing cortical control of the amygdala (Hariri, Bookheimer & Mazziotta, 2000, cited in Kim & Gorman) and may produce longer-lasting changes than treatment with SSRIs (Nadiga, Hensley & Uhlenhuth, 2003, cited in Kim & Gorman). This raises the possibility that, rather than structural differences explaining anxiety in ASD, the structural differences may result from maladaptive physiological and cognitive responses that frequently occur in ASD. Genetic explanations may fit with either of these theories. Smalley, McCracken and Tanguay (1995) determined that social phobia occurs at a significantly greater rate among first-degree relatives of persons with ASD but no intellectual disability (ID) than those with comorbid ASD and ID, while Mazefsky, Folstein, and Lainhart (2008) also found that relatives of persons with ASD had higher rates of mood and anxiety disorders. Research is continuing, but at present it seems that the relationship between ASD and anxiety is most likely a combination of genetic predisposition, structural and functional impairments typical of ASD and cognitive and environmental factors.

Irrespective of the aetiology of anxiety in an individual with symptoms of anxiety, failure to treat or to treat appropriately can contribute to ongoing distress, functional and psychosocial impairment and worsening outcomes persisting throughout the lifespan (Ashburner et al, 2010; Davis et al., 2010). Many adults with ASD fail to obtain or maintain employment in jobs commensurate with their intellectual ability (Hurlbutt & Chalmers, 2004). Although many of the problems faced by people with ASD
are unavoidable consequences of the impact of the impairments that define autism, the impact of anxiety could be preventable.

1.3.4 Anxiety, ASD and IQ

Levels of anxiety are lower in children with autism and comorbid intellectual disability. Muris et al. (1998) suggested that this might be because social anxiety has a substantial cognitive component, and the limited cognitive capacity of those with ID may protect them from social anxiety. Others suggest that it is not so much IQ itself that influences level of anxiety, but that higher IQ permits a higher level of social understanding, and it is this understanding coupled with a level of social incompetence and problems with behavioural regulation that lead to anxiety (Niditch, Varela, Kamps, & Hill, 2012). In typically developing children, social anxiety has been associated with lower levels of aggression (DeWall, Buckner, Lambert, Cohen, & Fincham, 2010).

In Hofvander et al. (2009), 50% of adults with ASD and normal intelligence, had anxiety disorders. GAD was the most common (15%) followed by social phobia (13%), then panic disorder, agoraphobia and specific phobia. A majority reported that they had been bullied at school. They recommended reconsideration of exclusion criteria in DSM as, despite normal to high IQ, their participants showed considerable psychosocial impairment.

Mayes, Calhoun, Murray, Ahuja, and Smith (2011) assessed anxiety, depression and irritability in children and adolescents, some with HFA, some “low functioning autism”, typical children and children with other disorders such as depression, anxiety and ADHD. Mothers of 79% children with HFA reported anxiety, while 67% of children with low functioning autism were also identified by their mothers as being anxious. Incidence of depression was also high, though somewhat lower than for anxiety.

Witwer and Lecavalier (2010) found that in a sample of children with ASD who were identified as having significant emotional or behavioural problems, those with IQs below 70 reported fewer symptoms than those with IQs of 70 or over. They did not
distinguish between HFA and Asperger’s disorder, and included PPD-NOS in their study. In their sample, 55% of those with IQ \( \geq 70 \) worried more than other children their age, compared with 14% of those with IQ < 70.

Mayes, Calhoun, Murray, and Zahid (2011) found that the majority of high functioning children with autism of all ages in their sample had anxiety. However, there was little difference between high (IQ \( \geq 80 \)) and low (IQ < 80) functioning groups in the 11 to 17 age group, but substantial difference for the younger age groups. Van Steensel, Bögels and de Bruin (2013) found no association between ASD, anxiety and IQ.

In summary, although some researchers have found no association between IQ and anxiety in ASD, there is more evidence that those with higher IQ do experience higher levels of anxiety, and particularly social anxiety. In the current study we selected only participants who had a diagnosis of ASD but no intellectual disability.

1.3.5 Anxiety, ASD and age

Many studies have shown that anxiety, and particularly social anxiety, increases in age in children with autism. Mayes, Calhoun, Murray and Zahid (2011) found that maternal ratings of anxiety increased with the age of the child, with 89% of 11 to 17 year olds in their sample with HFA (and 88% LFA) having anxiety. The children in their sample were all referred to a psychiatry clinic, so are likely to have more symptoms than those drawn from the general population; however they considered the association between age and anxiety was likely to apply to the wider population.

Parents of adolescents with ASD and comorbid anxiety reported greater concern about their child’s wellbeing than the parents of younger children (McPheeters, Davis, Navarre and Scott (2010) and were very concerned about their child’s ability to cope with stress. They suggested that, despite the high incidence of depression and anxiety in their study, it may in fact still be an underestimate.

Other studies, however, have found no relationship between age and anxiety (Sukhodolsky, 2008; van Steensel, Bögels & de Bruin, 2013). Strang et al. (2012)
found that children and adolescents with ASD without intellectual disability are at higher risk of anxiety regardless of age or IQ. They emphasised the importance of screening all high functioning children and adolescents with ASD for anxiety.

In summary, the literature shows that anxiety is more prevalent in ASD than in the general population. There is evidence that adolescents may experience more anxiety than younger children, and that adolescents with HFA or AS are more anxious than those with low functioning autism.

1.4 Anger, Aggression, Violence and ASD

There is a perceived but unproven link between AS and violence which may also be related to the high levels of anxiety and social problems experienced by high-functioning autistic adolescents (Bjørkly, 2009; Newman & Ghaziuddin, 2008). Aggression and violence are external behaviours associated with the internal feeling of anger (Novaco, 1985, cited in Jahoda, Willner, Pert, & MacMahon, 2013). Anger may occur in two forms: instrumental anger and reactive anger. Instrumental anger is defined as a “negative emotion that occurs to achieve some desired and planned goal” whereas reactive anger is “an immediate response to some anger-provoking event that is perceived as negative, threatening, or fear provoking” (McKinnie Burney and Kromrey, 2001).

Newman and Ghaziuddin (2008) suggested that the first association between violent crime and AS was made by Mawson, Grounds, and Tantam (1985) in a case study of a 44 year old man with a history of violence. Mawson et al. concluded that the association between Asperger’s syndrome and violent behaviour is more common than has been recognised. Ono and Pumiarega (2008) discussed the apparent increase in violence perpetrated by youth, including in schools, and noted a link between violence and pervasive developmental disorders.

Bjørkly’s (2008) review of the literature, included seven of Newman and Ghaziuddin’s studies and a further four, searched for links between violence and AS.
Of the 11 studies reviewed, six were single case studies, and the remaining were based on only three or four individuals. Incidents of violence included physical assault, homicide, threats and arson. Although he found no empirical evidence for the link, he also was unable to preclude the possibility that there may be such a link. He compared AS with psychopathy and found marked qualitative differences between them. Amongst other differences, he noted that psychopathy involves instrumental or proactive violence, whereas in AS it appears to be primarily reactive. Cornell, Peterson and Richards (1999) used self-report scales to assess anger as predictor of aggression in juvenile offenders. They noted that aggression may occur in absence of anger, as in case of instrumental aggression motivated by personal gain, but high levels of anger increased the risk of aggressive behaviour.

Children with autism display significantly more oppositional behaviour and aggression than typically developing children (Brereton, Tonge & Einfeld, 2006). Kanne and Mazurek (2011) found that the prevalence of aggression in children and adolescents with ASD is high, with 68% have been aggressive toward a caregiver and 49% had been aggressive toward others. They found that with increasing age, aggressive behaviour became less likely. Rates of aggression were higher than for individuals with an intellectual disability and higher than previous studies, though they suggested that how aggression was defined may have been a factor in the apparent increase. They also found it equally common among girls as boys, an unexpected result, and not predicted by IQ or language ability, although ASD-related social and communication (as distinct from language) problems were predictive. They speculated that interruption of repetitive behaviours may precipitate reactive aggression. They did not investigate anxiety as a possible trigger.

Gillberg and Billstedt (2000) conducted a literature review of the coexistence of other clinical disorders with autism and Asperger syndrome. They noted aggression to be particularly common in adolescents (Horrigan & Barnhill, 1998), and more frequent in AS (Kohn, Fahum, Ratzon & Apter, 1998). They did not include anxiety disorders
other than OCD in their review, and referred to OCD only to highlight the similarities between OCD and the ritualistic and repetitive behaviours of ASDs.

Vazsonyi and Chen (2010) found that teacher-rated physical aggression, but not verbal aggression or hostility, predicted entry into the juvenile justice system, and may be the result of failure to learn appropriate alternative behaviours. Swogger, Walsh, Houston, Cashman-Brown, and Conner (2010) identified a relationship between GAD and PTSD with impulsive (reactive) aggression but not with proactive (instrumental) aggression in criminal offenders. Reif et al. (2007) proposed that a combination of early life experience (nurture) and serotonin transmission (nature) predispose an individual to violent behaviour and that there may be a neurobiological difference between the mechanisms underpinning defensive and offensive aggression.

DeWall et al. (2010) investigated the association between social anxiety, hostility and aggression in people without ASD. They found that social anxiety correlated positively with feelings hostility, but negatively with aggressive behaviours. Kozlowski, Matson, and Belva (2011) compared children and adolescents with diagnoses of AS, PDD-NOS and autistic disorder without ID. They found that the children with AS had better social skills than those with autistic disorder, but also showed higher levels of hostility. Snowling (2010) speculated whether aggressive children had unrecognised language or communication difficulties, possibly impairing their ability to engage in inner speech deemed vital to self-regulation (Barkley, 1997, cited in Snowling).

1.5 Assessment of anxiety, anger and aggression in ASD

1.5.1 Self-report rating scales and autism

In choosing the instruments that would be used to measure anxiety and anger in students with ASD, additional thought was required for their appropriateness for this special group. Did they have the insight the reliably assess themselves on these measures? This issue was considered in some of the studies reported below.
1.5.2 Assessing anxiety

There is a variety of instruments available to measure anxiety in children and adolescents. Silverman and Ollendick (2005) list 18 youth self-report rating scales, but most instruments that measure anxiety do not have normative data for ASD. MacNeil, Lopes, and Minnes (2009) recommended the use of multiple informants, multimodal assessment techniques and standardised assessment methods that are appropriate for ASD when assessing anxiety in ASD. Multiple informants and direct observation are recommended, as the child may have a limited understanding of the questions. Parents and teachers may have very different perspectives, with teachers frequently rating children’s anxiety higher than do parents. This has been suggested as being possibly due to the school environment being more stressful, to parents downplaying or not recognising the significance of a behaviour, or to parents not having benchmarks against which to compare their own child’s symptoms (Gadow, DeVincent, Pomeroy & Azizian, 2005).

We considered the suitability of measures that have been used to assess anxiety in children and adolescents with ASD for our research. MacNeil et al. (2009) described two scales that have been developed specifically: The Stress Survey Schedule for persons with Autism and Developmental Disabilities (Groden et al., 2001) and the Autism Co-morbidity Interview - Present and Lifetime Version (Leyfer et al., 2006). The Child and Adolescent Symptom Inventory (Sukhodolsky et al., 2008) was designed to assess anxiety independently of confounding disorders such as ASD. Self-report instruments may be adapted by incorporating visual aids to understanding, such as the emotional thermometer (Attwood, 2006, cited in White et al.). The Revised Children’s Manifest Anxiety Scale (RCMAS: Richmond & Reynolds, 1998) has been used in several studies investigation anxiety in ASD and found to be reliable measure (Chalfant, Rapee & Carroll, 2007).

Strang et al. (2012) used the Child Behavior Checklist (CBCL) to assess behavioural and emotional functioning of children and adolescents with IQs greater
than 80. They noted two main issues with using the CBCL. Firstly, they suspected that parents may have difficulty differentiating between symptoms of autism and emotional symptoms, though it was considered an advantage that parent reports would not be affected by impaired self-report abilities. Secondly, they did not have a control group, and could only compare scores to the standardisation sample norms.

Gjevik et al. (2011) used the “Kiddie-SADS” to assess comorbid disorders in children and adolescent with ASD. The Kiddie-SADS is a semi-structured interview usually used to assess comorbid psychiatric disorders in typically developing children and the authors expressed reservations about the appropriateness of its use for ASD children, but noted that are few alternatives available.

Hess, Matson and Dixon (2010) evaluated a new measure: the Autism Spectrum Disorders– Comorbid for Children (ASD-CC). They found the instrument detected significant differences between the ASD group and control group on the Worry/Depressed factor. Finding no significant difference between the two groups on the conduct and tantrum behaviours factors, they speculated that that these types of challenging behaviours may actually be symptoms of internalising disorders. They considered the exclusion of children with ID as a limitation for their study, but for the purposes of our current study, this would be a strength. They suggested the scale may be useful in differentiating between symptoms of comorbid disorders and symptoms associated solely with an ASD diagnosis.

Witwer and Lecavalier (2010) used the Children’s Interview for Psychiatric Symptoms – Parent Version (P-ChIPS) to assess DSM-IV disorders in children and adolescents and the Nisonger Child Behaviour Rating Form (NCBRF), which was developed for children with ID and includes an Insecure/Anxious scale, to provide a measure of behavioural equivalents of the DSM disorders. They found it difficult to differentiate between the symptoms of OCD and the repetitive behaviours associated with OCD. They found that participants without ID were more likely to meet criteria for GAD than not. They concluded that the PChIPS is unsuitable for use with ASD, but
speculated that internalising disorders may have been underrepresented in their sample. They noted that parents seemed to interpret most symptoms as relating the their child’s ASD diagnosis, and were unable to recognise the impact of comorbid symptoms.

Van Steensel, Bögels & Dirksen (2012) used both parent report and self report measures of anxiety and found that the children’s scores were lower than the parents’ on several scales. They suggested this may have been due to problems with insight, but also it could have been that parents overstated their children’s symptoms, again because of the difficulty in differentiating ASD symptoms from emotional symptoms. They noted that the instruments they used were not developed for ASD population, but considered this was necessary as they wanted to compare the ASD group with anxious but otherwise typically developing children. They used the Anxiety Disorders Interview Schedule (ADIS), both child and parent versions (Silverman and Albano, 1996) and the Screen for Child Anxiety Related Emotional Disorders (SCARED-71: Bodden, Bögels, & Muris, 2009). Kanne and Mazurek (2011) also expressed concern that the some of the results of their study may have been biased through relying on parent report measures.

After considering the instruments described above, we excluded most because they were not recommended for use with children with ASD, or were specifically for ASD and not suitable for the control group. We chose not to request information from parents for two reasons. Firstly, we were interested in anxiety at school, not at home nor what parents perceived, but did not directly observe, of the level of their children’s anxiety at school. Secondly, several studies cited above showed that parents’ ratings often did not correspond to the children’s ratings. Interview schedules were considered but excluded from consideration as the resources available for the research did not permit the additional time required to conduct individual interviews for a sample of sufficient size.
We considered the Revised Children’s Manifest Anxiety Scale - Second Edition (RCMAS-2; Reynolds & Richmond, 2008) and the Spence Children’s Anxiety Scale (SCAS; Spence, 1998), as they both have good psychometric properties, have a social anxiety component, have been used in ASD studies and are suitable for the control group (Spence, Barrett, and Turner, 2003). For our study we selected the self-report RCMAS-2. It is brief, easily administered, suitable for both typically developing children and children with ASD and of an appropriate language level for our proposed sample.

1.5.3 Assessing anger

Few measures of anger were available for consideration. The Anger Regulation and Expression Scale (ARES: DiGiuseppe & Tafrate, 2011) was not available during the design stage of this study, though it appears that it would have been an excellent instrument for our purpose. It is a self-report based on the Anger Disorder Scale (ADS: DiGiuseppe and Tafrate, 2004), a scale for adults that was therefore unsuitable for our sample.

Cornell, Petersen and Richards (1999) used the NAS (Novaco, 1994) and STAXI (Spielberger, 1988) to predict aggression in juvenile offenders, and found both moderately successful predictors over a three month period, but no more successful than history of prior violence. Adolescent norms were not available, and 17% of questionnaires were excluded from analysis because of inappropriate responses to validity items. The Children’s Inventory of Anger (Nelson & Finch, 2000) is a self-report measure for ages 6 to 16 years, and therefore also not adequate for our study, which includes adolescents up to the end of their secondary schooling at age 18. The Novaco Anger Scale and Provocation Inventory (NAS-PI, Novaco, 2003), suitable for ages 9 to 84, has separate norms for 9 to 18, but takes 25 minutes to complete and so, along with the accompanying anxiety questionnaire, may have been a little too taxing for our sample.
The Adolescent Anger Rating Scale (AARS; Burney, 2001) was designed for adolescents aged 11 to 19. The AARS produces four scales: Total Anger, which is calculated from the three subscales, Reactive Anger, Instrumental Anger and Anger Control. It takes only 5 to 10 minutes to complete, provides the minimum information required for our study, and was somewhat more cost-effective than the STAXI-2 (Spielberger, 1999) and so was the instrument we selected. It also asks students how often they had been suspended in the previous 12 months.

1.5.4 Assessing aggression

Four widely used teacher report measures are the Achenbach Teacher Report Form 6-18 (TRF; Achenbach, 2001), the Conners Comprehensive Behaviour Rating Scales - Teacher Form (Conners, 2001), the Behavior Assessment Scales for Children – Second Edition Teacher Rating Scales (BASC-2; Reynolds & Kamphaus, 2004) and the Student Behavior Survey (Lachar, Wingenfeld, Kline, & Gruber, 2000). While the TRF, CBRS and BASC-2 all produce scores for aggressive behaviours, the SBS differentiates between verbal aggression and physical aggression, a useful distinction for this study. It belongs to a family of measures with corresponding self-report and parent-report measures. Sample items include “argues and wants the last word” from the verbal aggression scale and “DESTROYS PROPERTY WHEN ANGRY” from the physical aggression scale. It also asks how frequently students had been suspended for misbehaviour. With good validity and reliability, the SBS was chosen as the most suitable for the purposes of this study.

1.6 The current study

The research reported in the manuscript in Section 2 is a correlational study using self-report and teacher-reported measures comparing levels of anger, anxiety and aggression in adolescents with autism and in a control group of their typically developing peers matched for age and gender. The selected measures were:

- Revised Children's Manifest Anxiety Scale: Second Edition (RCMAS-2)
• Adolescent Anger Rating Scale (AARS)
• Student behaviour Survey (teacher report)

The following pages 25 to 57 are a copy of the manuscript submitted in December 2013 for review to the peer-reviewed journal Research in Autism Spectrum Disorders.
Abstract

The purpose of this research was to investigate the link between anxiety and aggression in adolescents with autism spectrum disorders (ASDs) using self-report measures of anxiety and anger and teacher ratings of behaviour. Participants were 104 high school students aged 12 to 18: 52 students with ASDs, without intellectual disability, and their typically developing peers matched for age and gender. We found that students with ASDs who attend mainstream high schools report higher levels of anxiety and reactive anger than their peers, are reported by their teachers to engage in more aggressive behaviours, and are at higher risk of being suspended from school. The results suggest that social anxiety is a significant moderator of the relationship between autism and physical aggression. For ASD students, but not for the control students, there was a strong, positive relationship: higher levels of anxiety were associated with higher levels of physical aggression. However, ASD students with high anger control did not display physical aggression. Our results have implications for screening students for anxiety, the provision of interventions for managing anxiety and the development of anger management skills, and for the appropriateness of suspension as a mandatory response to incidents of physical aggression in schools.

Keywords: autism, anxiety, anger, aggression, adolescents
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders
Attending Mainstream Schools

1. Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterised by persistent deficits in social communication and social interaction accompanied by restricted, repetitive patterns of behaviour, interests or activities (APA, 2013). Although only recently given official status in the DSM-5: Diagnostic and Statistical Manual of Mental Disorders (APA, 2013), the term has long been used as an umbrella term encompassing the DSM-IV (APA, 2000) diagnostic categories of autistic disorder, Asperger’s disorder (also known as Asperger syndrome) and pervasive developmental disorder not otherwise specified (PDD-NOS). The most official prevalence rate of autism for Australian children aged from 6 to 12 years is 62.5 per 10000 (MacDermott, Williams, Ridley, Glasson, & Wray, 2007). Most children with autism are educated in mainstream schools, often in regular classes. However, due to the emotional and behavioural problems associated with the disorder, children with autism experience many difficulties at school unrelated to academic ability (Australian Bureau of Statistics, 2011; Roth, 2013) and frequently experience suspension, exclusion or partial enrolment (New South Wales Parliament, 2012). In this study we investigated the relationships between autism, anxiety, anger and aggression and their potential effect on student suspension.

1.1 Anxiety and ASD

Studies consistently show that anxiety is one of the most common problems experienced by school age children and adolescents with ASD (Ghaziuddin, 2002). A meta-analysis of studies showed that anxiety disorders occur in around 40% of children with ASDs (van Steensel, Bogels, & Perrin, 2011). For the former categories of autism disorders that exclude intellectual disability, such as high-functioning autism or Asperger syndrome, estimates have been as high as 84% (J. A. Kim, Szatmari, Bryson, Streiner, & Wilson, 2000; Muris, Steerneman, Merckelbach, Holdrinet, &
Meesters, 1998). Severity ratings have also been noted to increase with age, with adolescents exhibiting more severe anxiety than children (Kuusikko et al., 2008; Lecavalier, 2006). Kerns and Kendall (2012) conducted a comprehensive review of the literature to try to ascertain whether anxiety is a separate disorder frequently comorbid with ASD or an atypical variant of anxiety unique to ASD. Their conclusions were not definitive, but point toward comorbidity of anxiety and ASD in higher functioning adolescents.

Despite the high prevalence of anxiety symptomatology in children and adolescents with ASD, anxiety disorders are commonly unrecognised or misdiagnosed (MacNeil, Lopes, & Minnes, 2009; Susan W. White, Oswald, Ollendick, & Scahill, 2009) due to diagnostic overshadowing. Diagnostic overshadowing is the tendency to either attribute comorbid mental health problems to a disability (Levitan & Reiss, 1983) or to ignore such problems because they are considered to be less significant than the effects of the disability (Mason & Scior, 2004). Sometimes the behaviours resulting from anxiety, such as aggression, may be perceived as behaviours associated with the ASD (Tsai, 2006; Susan W. White et al., 2009) and differentiating between the two can be difficult, particularly if the symptoms of anxiety are longstanding and have become part of the child’s typical behaviour. Farrugia and Hudson (2006) found in their study that few adolescents with ASDs who scored highly on measures of anxiety had received any psychological treatment at all for their symptoms.

Cognitive and environmental explanations have been proposed to account for the difference in levels of anxiety experienced by higher functioning children with autism compared to those with autism and comorbid ID. Cognitive impairments may preclude those types of anxiety disorders with substantial cognitive components, such as social phobia (Muris et al., 1998). Alternatively, the apparent association between IQ and anxiety may be mediated by higher social understanding (Niditch, Varela, Kamps, & Hill, 2012). Higher functioning children attend mainstream schools, and are therefore more exposed to daily stressors. Ashburner, Ziviani, and Rodger (2010) suggested a
number of school-related stressors which could contribute to the development and maintenance of anxiety in children with autism: lack of order and predictability in the school environment; frequent changes and/or interruptions to their narrow interests or obsessions; complexity of timetabling and curriculum; the pressures of adolescence and demand for a level of flexibility that students with ASD do not possess; and vulnerability to bullying and social exclusion.

The prevalence of anxiety disorders in children and adolescents with autism has also been attributed to their having a neurobiological predisposition to anxiety, and possibly also to aggression. The prefrontal cortex, the limbic system (and the amygdala, in particular) and serotonin have all been implicated in the fear response (Amaral, Bauman, & Schumann, 2003), anxiety (J. Kim & Gorman, 2005), aggression (Birger et al., 2003; Blair, 2010) and violence (Reif et al., 2007; Siever, 2008) and in the aetiology of autism spectrum disorders (Eigsti & Shapiro, 2003). Neurobiological predisposition combined with environmental stressors make the high functioning autistic child particularly vulnerable to aggressive outbursts, acts of violence and ‘meltdowns’, which are intense emotional and physical responses to stress (Mazefsky et al., 2013). On the other hand, some research suggests that, rather than anxiety causing aggression, aggression can lead to anxiety through peer rejection (Niditch et al., 2012).

1.2 Anger, aggression and ASD

Aggression may result from a predisposition to behave aggressively or to a deficit in the ability to inhibit such behaviour (Jahoda, Willner, Pert, & MacMahon, 2013). While children with autism and comorbid intellectual disability exhibit less anxiety than their higher functioning peers (Davis et al., 2011), they engage in more frequent and more severe challenging behaviours, including physical aggression (Kanne & Mazurek, 2011; Matson, 2009). In people with an intellectual disability and impairments in communication, challenging behaviours can be functional, serving to communicate needs and wants in the absence of language, whereas for those without an intellectual
disability aggression at school is a maladaptive behaviour, leading to social exclusion and disciplinary action such as suspension.

Anger is a primary emotion that may at times be expressed behaviourally as aggression or violence (Gardner & Moore, 2008). McKinnie Burney and Kromrey (2001) proposed two classes of anger: *instrumental anger* and *reactive anger*. Instrumental anger is defined as a “negative emotion that occurs to achieve some desired and planned goal” whereas reactive anger is “an immediate response to some anger-provoking event that is perceived as negative, threatening, or fear provoking”. Both may lead to aggression in the absence of anger control, which is a set of proactive behaviours used when responding to provocation.

Anxiety in children with ASD is more likely to be expressed as externalising, acting out behaviours than in typically developing children (White et al., 2009). Social anxiety has been shown to exacerbate hostility and aggression in adults with ASD (White, Kreiser, Pugliese, & Scarpa, 2012). However, other studies have shown that, when autism is not a factor, social anxiety is associated with low levels of violence and aggression (DeWall, Buckner, Lambert, Cohen, & Fincham, 2010).

### 1.3 Autism and schools

There is an increasing awareness of the special needs of children with autism, and their heightened risk of suspension, expulsion or early exit from school (New South Wales Government, 2010). Ashburner et al. (2010) observed that, because their intellectual capabilities are average, the behaviours of children with Asperger syndrome or high functioning autism are often misunderstood. They are frequently excluded from school because of disruptive or aggressive behaviour (Barnard, Prior & Potter, 2000) and parents claim that schools tend to blame the child and use management strategies based on punishment (Whitaker, 2007). Students with ASD are subject to the same discipline and welfare policies as typically developing peers. While taking into account factors such as the student's age, individual needs, any disability and developmental level, principals are required to suspend immediately any
student who is physically violent (New South Wales Department of School Education Student Welfare Directorate, 1996). Similar provisions exist in the United States and Canada (Ontario Human Rights Commission, 2003; US Department of Education, 2014). There has been increasing criticism of mandatory suspension or zero tolerance policies, which have resulted in the suspension or expulsion of students with disabilities, and particularly those with emotional or behavioural disorders, at a disproportionate rate (American Psychological Association, 2008). Given that violence perpetrated by a student with ASD may be the result of a phenotypic predisposition to high levels of anxiety and to aggressive behaviour, the otherwise equitable application of the suspension policy may be considered to be at odds with the principle and policy of inclusiveness. To date, there has been limited consideration given to aggression by students with autism being a mental health issue rather than a behavioural issue (Bjorkly, 2009; Newman & Ghaziuddin, 2008).

1.4 Measurement issues

There may be some questions as to the suitability of standardised written questionnaires for children with autism. Mazefsky, Kao, and Oswald (2011) warned that, although an anxiety questionnaire may be a useful diagnostic tool for adolescents with high-functioning autism spectrum disorders, it is difficult to control for the effects of medication. Many children with autism are prescribed anti-depressants or ADHD medications. Information about medications was requested in this study, but participants were not excluded if they were taking such medications.

Theory of Mind is the ability to recognise and understand the thoughts and beliefs of oneself and of others (Baron-Cohen, 1995). Because of the Theory of Mind impairments associated with autism, another question with respect to the suitability of self-report measures for this population concerns the ability of participants to identify and reflect on their thoughts. Chalfant, Rapee, and Carroll (2007) concluded from their study that children with high functioning autism disorders do have sufficient Theory of Mind abilities to reliably complete these self-report measures.
1.5 The current study

In this study, we tested whether physical aggression by high school students with ASDs could be attributed to anxiety and therefore should be considered a mental health issue rather than a behavioural issue. Our first hypothesis was that, in keeping with the results of prior research, the average level of anxiety in participants with autism would be higher than in their typically developing peers. Secondly, we hypothesised that levels of anxiety and aggressive behaviours would be positively related, and that this relationship would be stronger in adolescents with ASDs than in typically developing adolescents. This was tested by comparing self-reported anxiety scores with teacher ratings of student behaviour.

Thirdly, we tested whether aggression in adolescents with ASDs is characterised by high scores on measures of reactive anger but not instrumental anger (McKinnie Burney & Kromrey, 2001). That is, we predicted that incidents of aggression are more likely to be immediate responses to feelings of fear, frustration or being threatened rather than delayed and goal-directed, indicated by correlations between behavioural measures of aggression and reactive anger but not instrumental anger.

Our fourth and key hypothesis was that aggression in adolescents with autism may be explained by comorbid anxiety. We proposed that the apparent relationship between autism and physical aggression in schools is not directly related to autism, but could be the result of high levels of anxiety commonly experienced by high-functioning adolescents with autism spectrum disorders. That is, anxiety mediates the relationship between autism and aggression, and may be tested by mediation analysis using multiple regression (Hayes, 2013).

2. Method

2.1 Overview

This research is a correlational study comparing levels of anger, anxiety and aggression in adolescents with autism and in a control group of their typically developing peers matched for age and gender. Information was collected using self-
report measures of anxiety and anger completed by the students, and teacher-reported measures of behaviour.

2.2 Participants

This research was conducted in the Hunter and Central Coast region of New South Wales (NSW). Of the ten government school regions in NSW, it is the most demographically diverse and the second largest in population, comprising 15% of enrolments in the state. It includes metropolitan and rural schools in communities ranging from high to very low socio-economic status.

Following approval from the NSW Department of Education and Communities and the Catholic Schools Office, Maitland-Newcastle Diocese, principals of the 52 government high schools and 12 Catholic high schools in the region were invited to take part in the research. Principals of 10 public high schools and two Catholic high schools agreed to participate and students from those schools were then invited to take part. One staff member at each school was appointed by the principal to help facilitate the conduct of the research and encourage participation by eligible students.

Participants included students with a diagnosis of an autism spectrum disorder attending mainstream high schools (ASD group) and a control group of typically developing children matched for gender and age (control group). Eligible diagnoses included high functioning autism, Asperger’s disorder or Asperger syndrome, or autistic disorder without intellectual disability. To satisfy the NSW Department of Education’s disability criteria, which are also used by NSW Catholic Schools for funding students with special needs, (NSW Parliament, 2010) students with autism must have a current report confirming their diagnosis from a specialist medical practitioner or registered psychologist with appropriate clinical experience (NSW Department of Education and Training, 2003). The accuracy of participants’ diagnoses was not questioned for this research. Where possible, students were matched with other students from the same grade at the same school but, due to some difficulty in recruiting enough control group participants, some participants were matched with students from a different school or
grade. All were matched with a student of the same gender and less than 12 months difference in age.

Thus, a total of 104 students provided data for the study, 52 with autism spectrum disorders, matched for age and gender, with a control group of 52 typically developing students, along with 62 of their teachers. Some teachers completed surveys for both the student with autism and his or her matched peer, while others were only able to report on one student. There were 84 male student participants and 20 female. Students were aged from 12 to 18, with a mean age for the ASD group of 14.50 (SD = 1.77) and, for the control group, of 14.35 (SD = 1.68). All grades, from Year 7 to Year 12, were represented. Students from Year 8 had the highest participation rate (N=33) while those from year 10 had the lowest (N=3). The highest number of participants contributed by any one school was 27, and the least was 1.

2.3 Materials

Student participants were asked to complete two psychometric assessments to gauge their levels of anxiety and anger, and a brief additional survey. Their teachers were asked to complete a questionnaire assessing emotional and behavioural problems.

2.3.1 Revised Children’s Manifest Anxiety Scale: Second Edition (RCMAS-2).

The RCMAS-2 (Reynolds & Richmond, 2008) is a paper-and-pencil, 49-item self-report scale that takes respondents 10 to 15 minutes to complete. It was designed to assess the level and nature of anxiety in children and adolescents, and is suitable for children aged from 6 to 19. The scale provides a Total Anxiety score, as well as Physiological Anxiety, Worry, Social Anxiety and Defensiveness (Lie) subscales and an Inconsistent Responding Index.

Reliability coefficients (Cronbach’s alpha) for internal consistency for the RCMAS-2 range from .92 for Total Anxiety down to .75 for Physiological Anxiety for the full reference sample, with similar reliabilities for gender and age and for clinical
samples that included autism spectrum disorders. Test-retest reliability estimates ranged from a high of .76 for Total Anxiety down to .64 for Social Anxiety.

2.3.2 Adolescent Anger Rating Scale (AARS). The AARS (Burney, 2001) is a 41-item self-report measure intended to assess anger and control of anger response in adolescents, aged 11 to 19 years. Twenty items measure Instrumental Anger, a delayed, goal-related response that may include threatening and bullying, and include “When I am angry I enjoy hitting and kicking people” and “When I am angry I will find a weapon to deliberately hurt someone”. Eight items measure Reactive Anger, an immediate response to events perceived as negative, threatening, or fear provoking: “When I am angry I act without thinking”. Thirteen items measure Anger Control, and represent positive cognitive and behavioural responses to provocation, such as “When I am angry I walk away to avoid fighting”. Total Anger, a general index of anger expression, is calculated from the three scale scores.

Reliability coefficients for internal consistency ranged from .81 to .92. Test-retest reliability coefficients ranged from .71 to .79 over a two-week interval. A panel of school psychologists, school personnel and clinicians assessed content validity of the AARS. Overall, the scale was found to be a valid and reliable instrument to identify behavioural components of anger, aggression and violence in the schools (McKinnie Burney & Kromrey, 2001).

2.3.3 Brief additional survey for students. Students were also asked to complete a brief survey to provide information not obtained in the two surveys described above. This section contained the written instructions for completing the surveys and requested information about how often they had been involved in incidents that did not result in suspensions (parallel to that requested in the AARS about suspensions) and whether they were prescribed medication for anxiety. They were also provided the opportunity to write about significant relevant experiences or incidents if they so wished. This last section was optional and was not included in the data analysis. It was provided primarily as a courtesy to students in case they were frustrated by the
limited responses available to them on the questionnaires and wished to share their experiences in more detail.

2.3.4 Student Behavior Survey (SBS). The SBS (Lachar, Wingenfeld, Kline, & Gruber, 2000) is a brief assessment for rating student school behaviours by teachers and consists of 102 items in a Likert scale response format. It identifies emotional and behavioural maladjustment in children aged 5 to 18 years. It produces scores for 11 scales: Academic Performance, Academic Habits, Social Skills, Parent Participation, Health Concerns, Emotional Distress, Unusual Behaviour, Social Problems, Verbal Aggression, Physical Aggression and Behaviour Problems. These last six scales are grouped together in a section labelled Adjustment Problems, and are the scales of interest in this study.

Reliability estimates for internal consistency of the SBS lie between .80 and .90 for a standardisation sample of regular students and for a sample of students referred for behavioural and academic concerns. Test-retest reliability ranged from .86 for intervals of around two weeks to .71 at 6 months. Inter-rater reliability was reported to lie between .70 and .80.

2.4 Procedure

Informed consent was obtained from the students and their parents or caregivers, and from the teachers who were asked to complete a survey about the students. The researchers visited the schools to administer the surveys to student participants. Some were administered individually and some in groups to suit the timetable and personal preferences of the students and staff. Students were advised to contact their school counsellor or other appropriate person or service, as described in the information statements, should they wish to discuss the issues raised in the surveys. When students were absent on the day of the visit, the surveys were completed after their return under the supervision of an appropriate and informed member of staff. Teachers were provided with the SBS to complete at a time of their choosing.
3. Results

3.1 Anxiety

There was no difference between the two groups on the Inconsistency Index or the Defensiveness scale of the RCMAS-2. The overall Defensiveness $T$ scores for the whole group ($M = 51.63$, $SD = 10.96$) did not differ significantly from the standard $T$ score mean ($M = 50$, $SD = 10.00$), $t(103) = 1.52$, $p = .13$. Thus, the sample as a whole was not trying to give an overly positive impression.

One-tailed paired-samples t-tests were conducted to compare the ASD and Control groups on the Total Anxiety and Worry scales, as previous research has identified that children with ASD were higher on these two scales than children in a standardisation sample (Richmond and Reynolds, 2008). All remaining t-tests were two-tailed. Highly significant differences were found between the ASD group and the control group on Physiological Anxiety, Worry and Social Anxiety and on Total Anxiety, which is calculated from the scores on the three subscales (Table 1).

Table 1

*Descriptive Statistics and t-test Results for Anxiety*

<table>
<thead>
<tr>
<th>Scale</th>
<th>ASD</th>
<th>Control</th>
<th>95% CI for Mean Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M  SD</td>
<td>M  SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Anxiety</td>
<td>52.75</td>
<td>10.96</td>
<td>45.87 10.13</td>
<td>3.17 – 10.60</td>
</tr>
<tr>
<td>Physiological Anxiety</td>
<td>50.19</td>
<td>8.87</td>
<td>43.85 11.37</td>
<td>2.36 – 10.33</td>
</tr>
<tr>
<td>Worry</td>
<td>52.37 11.56</td>
<td>47.44 10.23</td>
<td>1.28 – 8.57</td>
<td>2.71††</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>53.83 10.78</td>
<td>47.19 9.71</td>
<td>2.96 – 10.31</td>
<td>3.62**</td>
</tr>
</tbody>
</table>

$N = 104$

* $p < .05$, two-tailed. ** $p < .01$, two-tailed. † $p < .05$, one-tailed. †† $p < .01$, one-tailed.

3.2 Anger

As we had not predicted the direction of the difference between the two groups on measures of anger, 2-tailed paired-sample t-tests were conducted (Table 2). Mean scores for the ASD group were significantly higher than for the control group on all
three anger scales: Instrumental Anger, Reactive Anger and Total Anger. Anger Control measures the proactive behaviours that mitigate feelings of anger. The score for Anger Control is subtracted from the sum of the Instrumental Anger and Reactive Anger scales to produce the Total Anger scale, and is therefore negatively correlated with that scale. There was no significant difference between the two groups on the Anger Control scale.

Table 2

<table>
<thead>
<tr>
<th>Scale</th>
<th>ASD</th>
<th>Control</th>
<th>95% CI for Mean Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Total Anger</td>
<td>47.27</td>
<td>9.37</td>
<td>42.60</td>
<td>6.81</td>
</tr>
<tr>
<td>Instrumental Anger</td>
<td>48.06</td>
<td>8.09</td>
<td>44.52</td>
<td>4.74</td>
</tr>
<tr>
<td>Reactive Anger</td>
<td>52.88</td>
<td>10.36</td>
<td>46.65</td>
<td>8.74</td>
</tr>
<tr>
<td>Anger Control</td>
<td>53.60</td>
<td>9.35</td>
<td>56.25</td>
<td>9.97</td>
</tr>
</tbody>
</table>

N = 104
* p < .05. ** p < .01.

Standardised T-scores for reactive and instrumental anger within the ASD group were also compared and found to be significantly different. The mean score for Reactive Anger, as hypothesised, was significantly higher than for Instrumental Anger, \( t(51) = 3.98, p < .001 \).

3.3 Behaviour

All the scores in the Adjustment Problems section of the Student Behavior Survey were significantly different between the two groups, with the ASD group obtaining higher mean scores on all scales. Four scales were of particular interest in this study: Emotional Distress, Social Problems, Verbal Aggression and Physical Aggression (Table 3). Teachers perceived more symptoms of emotional distress in the ASD group than in the control group. Social problems, a key feature of autism spectrum disorders, were also rated much higher in the ASD group than in the control group. Both verbal and physical aggression were reported more for the ASD group.
However, the analyses and discussions in this paper have been based on physical rather than verbal aggression as the key measure of aggression, as it is physical aggression that is more likely to result in serious disciplinary action such as suspension.

Table 3

Descriptive Statistics and t-test Results for Teacher-reported Behaviour

<table>
<thead>
<tr>
<th>Scale</th>
<th>ASD M</th>
<th>ASD SD</th>
<th>Control M</th>
<th>Control SD</th>
<th>95% CI for Mean Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Distress</td>
<td>62.31</td>
<td>13.56</td>
<td>45.02</td>
<td>7.52</td>
<td>12.65 – 21.92</td>
<td>7.49**</td>
</tr>
<tr>
<td>Social Problems</td>
<td>61.04</td>
<td>10.01</td>
<td>43.79</td>
<td>7.38</td>
<td>13.83 – 20.66</td>
<td>10.15**</td>
</tr>
<tr>
<td>Verbal Aggression</td>
<td>52.13</td>
<td>10.83</td>
<td>45.29</td>
<td>7.02</td>
<td>3.39 - 10.31</td>
<td>3.97**</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>50.29</td>
<td>10.54</td>
<td>46.06</td>
<td>3.45</td>
<td>1.17 – 7.29</td>
<td>2.77*</td>
</tr>
</tbody>
</table>

N = 104
* p < .05. ** p < .01.

3.4 Relationships between anxiety, anger and behaviour

Pearson product-moment correlation coefficients were calculated between subscales of the anxiety, anger and behaviour measures. Total Anger and Total Anxiety were excluded as their scores are calculated using the subscale scores and do not provide any additional information. We found highly significant relationships between the three anxiety subscale scores and the reactive anger score for both groups (Table 4), as well as between reactive anger and the teacher-report scales for the ASD group. Instrumental anger correlated highly with worry and physiological anxiety for the control group but not for the ASD group, and correlated with social anxiety for the ASD group but not the control group. There were no significant correlations between the teacher-report measures or the self-report measures for the control group. For the ASD group alone, both verbal aggression and physical aggression correlated with the anger scales, including anger control, which showed a negative relationship. Physical aggression, but not verbal aggression, correlated highly with social anxiety for the ASD group.
Table 4

Pearson Correlations between Anxiety, Anger and Behaviour Subscales

<table>
<thead>
<tr>
<th></th>
<th>AARS</th>
<th>SBS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IA</td>
<td>RA</td>
</tr>
<tr>
<td>RCMAS</td>
<td>PHY Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD</td>
<td></td>
</tr>
<tr>
<td>WOR</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD</td>
<td></td>
</tr>
<tr>
<td>SOC</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD</td>
<td></td>
</tr>
<tr>
<td>AARS</td>
<td>IA Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RA Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ASD</td>
<td></td>
</tr>
</tbody>
</table>

PHY = Physiological Anxiety; WOR = Worry; SOC = Social Anxiety; IA = Instrumental Anger; RA = Reactive Anger; AC = Anger Control.

* p < .05.  **p < 0.01.

For the ASD group, Worry and Reactive Anger (but not Instrumental Anger), as reported by the students themselves, correlated highly with Emotional Distress as reported by teachers. These children were not only feeling anxious but also seen to be anxious by their teachers. Those who reported higher levels of anger, both instrumental and reactive, were reported by teachers as displaying more challenging behaviours on the verbal aggression and physical aggression scales, demonstrating convergent validity between the measures.

Anger Control showed highly significant negative correlations with Instrumental Anger and Reactive Anger for the ASD group. As hypothesised, the relationship between anxiety and reactive anger was stronger than between anxiety and instrumental anger. Reactive Anger correlated strongly with Physiological Anxiety, with Worry, and Social Anxiety, but only Social Anxiety showed a significant relationship with Instrumental Anger.
3.5 Predicting aggression

We conducted a standard multiple regression analysis to identify any significant predictors of physical aggression for the whole sample. Each of the three anxiety subscales and three anger subscales were entered, along with ASD (yes/ no). A significant model emerged with social anxiety as a significant predictor: $F(7,96) = 3.78$, $p = .001$, explaining 15.9% of the variance (Adjusted $R^2 = .159$). We then removed two “outliers” from the control group (see 3.8) and ran the analysis again. Anger Control joined Social Anxiety as a significant predictor: $F(7,94) = 4.96$, $p < .001$ (Adjusted $R^2 = .22$).

Table 5
Variables predicting physical aggression

<table>
<thead>
<tr>
<th>Group</th>
<th>Variable</th>
<th>$B$</th>
<th>$SE, B$</th>
<th>$\hat{\beta}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole group$^a$</td>
<td>Social Anxiety</td>
<td>0.24</td>
<td>0.11</td>
<td>0.31*</td>
</tr>
<tr>
<td>Excluding outliers$^b$</td>
<td>Social Anxiety</td>
<td>0.24</td>
<td>0.10</td>
<td>0.33*</td>
</tr>
<tr>
<td></td>
<td>Anger Control</td>
<td>-0.16</td>
<td>0.08</td>
<td>-0.19*</td>
</tr>
</tbody>
</table>

$^a n = 104.$ $^b n = 102.$ $^c n = 52.$

$p = .05.$ $**p < .01.$

3.6 Scatterplots

3.6.1 Social anxiety and physical aggression. We examined the relationship for social anxiety, physical aggression and autism. The scatterplot revealed strikingly different patterns of relationship between anxiety and aggression for the two groups, with little apparent effect of anxiety on aggression for the control group, but the suggestion of a significant effect for the ASD group (Figure 1).
Figure 1. Physical aggression T scores as a function of Social Anxiety T scores for the ASD and control groups showing lines of best fit and individual cases (represented by circles and triangles).

The apparent interaction shown in the scatterplot implied that, rather than being mediated by social anxiety as we had hypothesised, ASD was moderating the relationship between anxiety and aggression. To test this post-hoc hypothesis, we conducted a univariate analysis of variance, bootstrapped (IBM Corporation, 1989, 2011) with 1000 resamples and centred means. Firstly, we examined the main effects of ASD and social anxiety then added the interaction term to the model. There were statistically significant effects for social anxiety ($F(1,100) = 5.94, p = .02, \text{partial } \eta^2 = .06$) and – most interestingly – for the interaction ($F(1,100) = 5.85, p = .02, \text{partial } \eta^2 = .06$). These results suggest that social anxiety moderates the relationship between ASD and physical aggression. There appears to be a fundamental difference between the two groups. While social anxiety predicts an increase in physical aggression for the ASD group, it has no apparent effect on the control group, who engage in very low levels of physical aggression even at high levels of anxiety.
Further support for the differential relationship between social anxiety and physical aggression for ASD and controls comes from calculating Pearson's product-moment correlation between the former two, separately for each group. Linear correlation was significant for ASD ($r=.36, p<.01$) but not for Controls (negligible $r=-.02, p=.85$). Similar results were obtained with Spearman's rank order correlation.

All but two of the control group members fitted the regression line well. When we examined the raw data, we found that the two outliers were 13-year-old boys from different schools whose scores were relatively high on physical aggression, relatively low on both social anxiety and reactive anger, and high on anger control. The scores of these individuals were also low on instrumental anger. These two cases were qualitatively and well as quantitatively different from the rest of their cohort; yet, discarding them and repeating the same analyses had not altered the overall results.

3.6.2 Social anxiety and reactive anger. The ASD group and control group clearly differed on the scatterplot of anxiety and aggression. The relationships between reactive anger and social anxiety for the two groups, however, were very similar and highly significant, again suggesting mediation (Figure 2). These were within-subjects measures and therefore may violate assumptions of independence in regression, so further analysis was not pursued. Nevertheless, the data provide evidence of the positive relationship between social anxiety and reactive anger for all participants, and the differences between students with and without ASDs.
Figure 2. Reactive Anger T scores as a function of Social Anxiety T scores for the ASD and control groups showing lines of best fit and individual cases (represented by circles and triangles).

When physical aggression was plotted against reactive anger rather than anxiety, the moderating effect of autism again became apparent. This plot is not shown but closely resembles Figure 1. Particularly notable was the spread of high scores on physical aggression at high levels of anger for the ASD group.

3.6.3 Anger control and physical aggression. Lastly, we examined the patterns when anger control was included, plotted against physical aggression. Interaction with ASD was apparent, with little difference between the ASD group and the control group at high levels of anger control (resulting in low levels of aggression and anger), but a large difference at lower levels of anger control (Figure 3). Again, the two control group outliers stood out from the rest.
Figure 3. Physical Aggression T scores as a function of Anger Control T scores for the ASD and control groups showing lines of best fit and individual cases (represented by circles and triangles).

The analysis conducted in 3.7 showed that anger control was a significant predictor when the data from two control participants were excluded. By again removing these data, a significant moderation model was obtained. In the first step of the hierarchical multiple regression analysis, two variables were included: anger control and ASD. These variables accounted for a significant amount of variance in physical aggression, $R^2 = .13$, $F(2, 99) = 9.12$, $p < .001$. The interaction term between anger control and ASD was then added to the regression model, and accounted for significantly more of the variance in physical aggression, $\Delta R^2 = .07$, $\Delta F(1, 98) = 59.25$, $p = .005$, $b = .42$, $t(98) = 2.13$, $p = .04$. As anger control increased in the ASD group, physical aggression decreased. ASD students with low or average levels of anger control were more aggressive than the control group students but, with high anger control, physical aggression was low for both groups.
3.7 Suspension

Frequency data from both students and teachers relating to suspension and to other incidents that did not result in suspension were converted to yes/no scores. A Pearson’s chi-square test of independence was performed to examine the relationship between autism and suspension and the odds ratio calculated. The relationship between the presence of an autism spectrum disorder and being suspended was significant, $X^2(1, N = 89) = 5.62, p = .02$. Based on the student self-reports, students with autism were 3.67 times more likely to be suspended than their typically developing peers. Although teachers reported fewer suspensions than students, they still identified a higher but non-significant rate of suspensions for students with autism than for their peers, $X^2(1, N = 104) = 1.77, p = .18$.

3.8 Medication

Of the 52 control group participants, 51 were not prescribed any medication for anxiety and one was not sure. Seven of the ASD group were not sure: three of those reported that they were prescribed methylphenidate (usually prescribed for attention deficit/hyperactivity disorder) and the remaining four did not provide any additional information. Of the 19 who answered yes to anxiety medication, three were prescribed methylphenidate only, and sixteen were prescribed one or more of the following classes of medication: antidepressants (SSRIs and SNRIs), atypical antipsychotics, clonidine, or methylphenidate. As all these medications can help with anxiety, we scored all those who reported being prescribed any one or more of them, including methylphenidate, as “yes” responses. As no control group participants were prescribed medications (apart from the one who was not sure), we compared the mean social anxiety scores for the ASD group. There was a significant difference in the mean anxiety scores between those that answered “yes” ($M = 53.55, SD = 10.14$), “no” ($M = 52.30, SD = 9.87$) and “not sure” ($M = 69.67, SD = 14.43$). Those who were not sure had by far the highest scores, $F(2,49) = 3.92, p = .03$. There was no significant difference between those that answered yes or no $t(47) = .44, p = .67$. 
4. Discussion

4.1 Hypotheses

In accordance with our first hypothesis, students with autism spectrum disorders reported significantly more symptoms of anxiety and feelings of anger than their typically developing peers and their teachers reported more behavioural issues and symptoms of distress in the students.

Our second hypothesis, that anxiety and aggressive behaviours would be positively related, was partially supported by the data. For the ASD group, only social anxiety showed a strong relationship with physical aggression. This result is consistent with the findings of Pugliese, White, White, and Ollendick (2013) and Susan Williams White et al. (2012). None of the anxiety measures was significantly related to verbal aggression. For the control group, no anxiety measures were associated with verbal or physical aggression.

For our third hypothesis, we predicted that there would be a relationship between reactive anger and physical aggression for the ASD students, but not between instrumental anger and physical aggression. The results indicate that this relationship exists for both types of anger, but the relationship is significantly stronger for reactive anger. This suggests that, when children with autism spectrum disorders engage in acts of verbal or physical aggression, we should first suspect reactive anger rather than instrumental anger as the precursive emotion. Stressors can be cumulative and the actual trigger for the incident may be seen as trivial or even non-existent. This can lead to the assumption that there is no reasonable explanation for the behaviour and disciplinary action is taken, when in fact the precipitant may have been some trivial remark or interruption to routine that was just enough to tip the student’s anxiety to an intolerable level, resulting in the outburst of rage (Attwood, 2007).

Anger control was negatively correlated with verbal aggression and physical aggression for the ASD group. This suggests a causal relationship, with those
students who are able to exercise anger control skills being less likely to engage in aggressive behaviours. This may be because they are able to use strategies to control their anger, but the data also suggest the possibility that students who have higher anger control experience lower levels of anger. Insufficient skills may lead to more frustration, thus fostering feelings of anger. Although this post-hoc hypothesis was supported by subsequent analysis, it does not explain the mechanism by which this occurs. It may be that the similarities in the neurobiology of autism, anxiety and aggressive behaviour result in the increased predisposition to aggression for students with autism disorders (Kim & Gorman, 2005; Siever, 2008). Alternatively, there may be an environmental or social explanation, whereby those with autism disorders have not had the same opportunities to develop pro-social anger control skills and thus, when high levels of social anxiety lead to high levels of reactive anger, low levels of anger control result in increased physical aggression. We cannot discount the possibility that the nature or relentlessness of the incidents leading up to the expression of anger as aggression are more severe for the ASD group and that the response is less disproportionate that it may seem at face value.

Our final and key hypothesis, that aggression in adolescents with autism can be explained by social anxiety, was partially supported by the data. We performed mediation and moderation analyses (Hayes, 2013), using multiple regression techniques to explore the relationships between our main dependent variable, physical aggression, and the significant predictor variables. Anxiety did not explain physical aggression for the group of students as a whole, as we expected, as the control students without autism in our study generally did not engage in physical aggression even at higher levels of anxiety. For the ASD students, however, there was a clear and positive relationship: higher levels of anxiety were associated with higher levels of physical aggression. With respect to the incidence of physical aggression, and thereby suspension, anxiety has a far greater impact on students with ASD than for their peers. The association between instrumental anger and aggression is suggestive of a more
complicated relationship, as is the finding that control group students high on social anxiety or reactive anger engage in fewer incidents of physical aggression. There seems to be something associated with autism that increases the likelihood of anger being expressed as aggressive behaviour that cannot be explained by anxiety alone. Whatever the reason, be it biological, cognitive or environmental, the results of this study may help in devising programs that better fit the needs of this group of children. Effective interventions should result in there being no difference in aggression or suspension statistics for students with autism compared to their peers. The results of this study suggest that intervention should occur at two early stages, one to identify and manage anxiety and another to develop proactive anger management skills. Intervention at the endpoint, by punishing aggression with suspension, may not address the special needs of students with ASDs.

4.2 Further research

Prospective participants were given information statements and invited to volunteer for the study. We had a pleasingly high volunteer rate by students with ASDs, which we understood to be due to the research being very meaningful for them. Recruitment of the control group was very difficult, and those who were motivated to participate in the research may not have been particularly representative of the population. The mean scores for the control group on anxiety, anger and adjustment problems were all somewhat below the standardised means and test norms. True random sampling in a natural setting is difficult to obtain with vulnerable groups such as children.

This study collected data from the students and their teachers only, and did not include parents or caregivers. This was intentional when the study was designed, as the focus was on the feelings and experiences of these children at school, not at home, but future research can complement the picture by including all three perspectives. Including the parents would have also given the opportunity to obtain better quality information about prescription medication. The design initially allowed two teachers to
provide information for each child, but this was reduced to one when it became apparent that recruitment of teachers was more problematic than recruiting the students.

The results of this study suggest that higher levels of aggression as reported by teachers are related to higher levels of suspensions reported by the students. However, information was not collected on the grounds for suspension so, although the data indicate that students with autism are more likely to be suspended than their typically developing peers, we do not know the underlying reasons. We cannot conclude from the data that suspension was due to aggression or to other factors, nor do we know whether there was a difference between the two groups in the nature or severity of the behaviours that led to suspension. Further research is required to explore these issues in more detail.

Lastly, no information was collected from students or school staff about the programs and resources they have provided for students with autism or their effectiveness. Level of support varies and seems to be highly dependent on a key member of staff having a special interest in the needs of this group of students.

5. Conclusion

Students with autism attending mainstream schools experience higher levels of anxiety, anger and aggression than their typically developing peers, and they are more likely to be suspended from school. This study suggests that aggression in students with autism can be partially explained by social anxiety but, at similar levels of anxiety or anger, students with autism engage in more frequent teacher-reported aggression than their peers. The explanation for this anomaly may lie in the students’ ability to manage the feelings of anger that arise from their anxiety. While there was no significant difference overall between students with autism and their typically developing peers on self-reported measures of anger control, low and average anger control in the ASD group was associated with higher levels of aggression while both ASD and typically developing students with high anger control displayed little physical
aggression. These findings suggest a two-part approach to managing aggression in students with autism. Firstly, we recommend that students with ASDs be screened for anxiety, even when anxiety has not been previously suspected. Those who exhibit symptoms of anxiety should be provided with appropriate treatment and environmental support. Secondly, students with ASDs should be provided the opportunity to learn and to practise anger control skills, giving them greater ability to regulate their emotions and behaviour, and improving their experiences and outcomes in mainstream schools.
References


3. Discussion

With a background in education, juvenile justice and challenging behaviours in disabilities, I drew on personal experience when I first conceived this research. Reviewing the literature showed that there was much previous research that supported my hypotheses about anxiety, anger and aggression in students with ASDs, but none that drew together all these variables in one study. The results of the research, reported in the manuscript above, show statistically and clinically significant differences in the effect of social anxiety on the ASD and control groups. Whereas increasing levels of social anxiety was associated with more physical aggression for the students with autism, there was no apparent relationship for the control group. Even at high levels of social anxiety, control group students did not engage in physically aggressive behaviour. There seems to be a fundamental difference in the incidence of aggression for the two groups that cannot be explained by anxiety alone. The results are described and discussed below in more detail than was included in the journal manuscript.

3.1 Methodology

3.1.1 Sampling and recruitment

All children with a diagnosis of autism spectrum disorder without an intellectual disability and who attended regular classes in government or Catholic secondary schools in NSW were eligible to participate. The number of children who met these criteria was not publicly available during the design stage of this study but, from the available data, we estimated the population to be 610. More recent data available from the Department of Education and Communities suggests this may have been an overestimate (DEC, 2011). We sought to recruit a sufficiently large sample from this population to detect a medium effect. Given a desired power estimate of .80, the
minimum required sample size for paired samples with $\alpha = .05$ was calculated to be 51 in each group.

The original design of the study provided for true random selection of the ASD sample from the population of students with ASDs attending NSW government high schools. Due to constraints imposed by the NSW Department of Education and Communities, we were unable to obtain access to the database of students identified as having special needs due to an ASD diagnosis and recruitment was to be conducted by issuing a general invitation to participate. A further constraint was that the data was to be collected personally by the researchers to minimise the amount of time and effort required of school staff. This resulted in the planned statewide research becoming unfeasible, and the geographical area was restricted to the Hunter and Central Coast regions. The Hunter Central Coast region is the second largest in enrolments of the ten government school regions in NSW, comprising 14.4% of the state total. The Catholic Schools Office, Maitland-Newcastle Diocese, covers a similar geographical area.

Principals of 52 public high schools in the selected region were invited to participate. Thirteen agreed, one declined and the remainder did not respond. One invitation was returned unopened. Of the 12 Catholic high schools two agreed.

Despite the limitations imposed by the Department and the disappointing response rate from schools, we were able to obtain a sufficient volunteer sample of students with ASDs. By chance, the proportion of 4.1 ASD male volunteers for every female reflects the naturally occurring gender ratio. In one school, 100% of the ASD students who were eligible to participate volunteered. We interpreted the good response rates from most participating schools as indicating that the research as described in the information statements was meaningful to the students with ASDs and their parents, though it was in no small measure also attributable to the enthusiasm of key members of staff who distributed the statements and encouraged the return of signed consent forms. Recruitment of the control group was more problematic.
Apparently few students without autism were sufficiently motivated to volunteer. Nevertheless, we were able to obtain just enough control group participants to match the ASD group by age and gender, and 28 of the 52 ASD group were able to be matched with students from the same class. While the original design was deemed sufficiently random and robust to obtain a fairly representative control sample, we have concerns about the characteristics of the sample that was finally obtained. Although one student cheerfully confessed he only volunteered to get out of class, most seemed to motivated by a genuine desire to help and one cannot help but suspect that they may possibly be somewhat better adjusted and with fewer mental health and behaviour problems than average. The results of the assessments seem to support this as the control group scores were consistently lower than the scores of the normative samples of the assessments administered. If, on the other hand, some of these students were motivated by a personal interest in the study, as we believe the ASD group were, then we might anticipate two opposite effects. For example, if anxiety were a key consideration, some anxious students would be more likely to volunteer because the anxiety component was meaningful for them, whereas others would be less likely to volunteer because the experience itself might provoke anxiety.

3.1.2 Data collection

A total of 102 students provided valid data. Of the 58 students with autism who gave their consent to participate, 53 completed the surveys but the data from one student participant were excluded. That student had marked only the first response in both surveys and had clearly compromised the validity of the data. All 52 control group surveys were deemed valid. Student surveys were complete except for a very small number of missing rating scale items that were dealt with according to the instructions set down in the manuals, and missing data on suspension on the AARS for 15 participants. The missing suspension data could only produce a more conservative result that underestimates suspension rates, so we were not overly concerned by their
omission. Several teacher surveys were missing essential data. Where there were only one or two missing responses on any one scale, a conservative response was substituted in accordance with the guidelines set down in the SBS manual. For a small number of forms there were more than two missing responses and the teachers concerned were contacted and encouraged to complete the forms to the best of their knowledge.

Of the five ASD students who initially volunteered but then did not complete the survey, three had stopped attending or changed schools, reportedly due to the types of difficulties that this research was investigating. One declined for unknown reasons. Data from one was unable to be obtained because of frequent or prolonged absences and several attempts were required for some students for the same reason. One student was suspended on the day he was first scheduled to participate. Despite the inconvenience his absence created, we were reassured that we were on the right track.

The process ran most smoothly at schools where there was one identified staff member with whom I had made personal contact and that person remained the primary contact throughout the recruitment and data collection phases. Staff members who worked most closely with the students were the most enthusiastic and helpful. They saw a real need for this research and expressed hope that it would result in positive changes for their students. Difficulties arose when the staff member who originally volunteered to assist with the study was no longer able to help and passed on the responsibility to another staff member with little interest. This highlighted the benefits of early and sustained personal contact when conducting research in such settings.

3.2 Results

Each of the survey instruments provides $T$ score equivalents of their scale and subscale raw scores. $T$ scores have a mean of 50 and a standard deviation of 10, allowing for easy comparison of scores within and between instruments. The obtained raw scores for each of our participants were converted to $T$ scores and the resultant
means calculated. $T$ scores above 60 or below 40, being more than one standard deviation away from the mean, generally indicate more or fewer problems respectively than are typically reported for students of the same age and/or gender. Scores over 70 or below 30 indicate a highly significant difference. However, for some of the subscales in these surveys, there is a floor effect. For example, there are no $T$ scores below 41 for Instrumental Anger on the AARS for boys or below 43 for girls, while there are no $T$ scores below 45 for males or below 47 for females aged 12 to 18 on the Physical Aggression subscale of the SBS.

3.2.1 Measures of anxiety

The RCMAS-2 was standardised using a full reference sample of 3086 children aged from 6 to 19. Average scores were also obtained for children in clinical settings, including those with autism spectrum disorders. The clinical sample of 32 children aged from 8 to 18 with ASDs scored slightly higher than the standardisation sample on Total Anxiety and Worry. Scores were lower, however, for Physiological Anxiety and higher for Social Anxiety, but these were not commented upon, the implication being that the differences were not significant.

The average raw scores for the RCMAS-2 standardisation sample, this study’s control group, the RCMAS-2 ASD sample, and this study’s ASD group are shown in Table 6.

Table 6

<table>
<thead>
<tr>
<th>Scale</th>
<th>RCMAS-2 sample$^a$</th>
<th>Control group$^b$</th>
<th>RCMAS-2 ASD sample$^c$</th>
<th>ASD group$^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Total Anxiety</td>
<td>15.7</td>
<td>8.0</td>
<td>11.0</td>
<td>8.4</td>
</tr>
<tr>
<td>Physiological</td>
<td>5.0</td>
<td>2.7</td>
<td>3.2</td>
<td>2.9</td>
</tr>
<tr>
<td>Worry</td>
<td>6.4</td>
<td>3.9</td>
<td>4.9</td>
<td>4.0</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>4.3</td>
<td>2.9</td>
<td>3.2</td>
<td>2.8</td>
</tr>
<tr>
<td>Defensiveness</td>
<td>3.6</td>
<td>2.3</td>
<td>3.6</td>
<td>2.4</td>
</tr>
</tbody>
</table>
The standardisation sample reported more symptoms of anxiety on every scale, (excluding Defensiveness) than our control group, but the scores for the RCMAS-2 clinical sample and our ASD group were very similar.

Total Anxiety. Total Anxiety is the sum of the scores of the three anxiety subscales, but does not include the Defensiveness scale scores. The scores of the ASD group were significantly higher than the scores for the control group. A score of zero on the scale indicates no reported symptoms of anxiety. No ASD participants scored zero on the Total Anxiety scale, while only one of the control participants scored zero. Overall, all but one of the 104 participants reported at least one symptom of anxiety. While the scores of the ASD and control groups were compared with each other, no further analyses were based on this score, as it provided no additional information not provided by the individual scales.

Ten of the ASD participants scored over 60 on the Total Anxiety scale, with one of those being in the “extremely problematic range” over 70. Six of the control students scored over 60, with one over 70. The mean score for the control group was 45.87. The average age-adjusted $T$ scores in the RCMAS-2 full reference sample for Total Anxiety ranged from 47.7 for 12 year olds up to 51.3 for 15 year olds, so the control group was reporting fewer symptoms of anxiety than would be expected from a representative sample. This may be a result of group characteristics as discussed in the section on sampling and recruitment (3.1.1).

Physiological Anxiety. The average score for Physiological Anxiety (PHY) in our control group was very similar to the average score for the RSMAS-2 clinical sample group, and both of those scores were greater than the average for our control group. Only three of the ASD group reported no symptoms of physiological anxiety compared to 11 of the control group. The most notable and inexplicable feature of the data with respect to this scale seems to be that the average score for the standardisation sample was higher than for the clinical sample and our two groups.
The full set of questions from the RCMAS-2 is shown in Appendix C1. Sample questions from this subscale are shown below.

1. Often I feel sick in my stomach.
15. Often I have trouble getting my breath.
25. It is hard for me to get to sleep at night.

Although Physiological Anxiety correlated highly with both Instrumental Anger (.47) and Reactive Anger (.62) for the control group, and with Reactive Anger (.43) for the ASD group, there was no significant relationship between Physiological Anxiety and any of the behavioural measures as reported by the teachers.

**Worry.** The scores on the Worry subscale for the clinical ASD sample and our ASD group were comparable, higher than the standardisation sample and much higher than our control group. In a pattern similar to that for Physiological Anxiety, Worry correlated highly with Instrumental Anger (.36) and Reactive Anger (.49) for our control group, and with Reactive Anger (.36) for our ASD group. There was also a strong relationship between Worry and teacher-reported Emotional Distress for the ASD group (.40). The authors of the RCMAS-2 (Reynolds and Richmond, 2008) suggest that Worry indicates internalisation of anxiety. This is supported by our data showing teachers perceiving symptoms of emotional distress but no significant relationship between Worry and either Verbal Aggression or Physical Aggression. Items from the Worry subscale include:

18. I am afraid of a lot of things.
35. I worry about what is going to happen.
45. I worry about someone beating me up.

Several of the Worry items have a strong social component, such as “8. I get nervous around people” or have strong similarities to items on the Social Anxiety subscale. For example, Worry includes the item “17. I feel bad if people laugh at me” while Social Anxiety has “10. I fear other people will laugh at me” and “4. I fear other kids will laugh at me in class”. Not surprisingly, the authors obtained high correlations between the
two scales (.73), but concluded that internal consistency and factor analysis supported the scale structure. Nevertheless, they warn that the Total Anxiety score is the most stable measure and scores on the subscales should be interpreted with caution. Given the high correlation between Worry and Social Anxiety (Table 7) and the lack of a significant correlation between Worry and aggression, for the purposes of this study Worry was excluded from most analyses.

Table 7

*Intercorrelations Between Anxiety Subscales (Whole Sample)*

<table>
<thead>
<tr>
<th></th>
<th>Total Anxiety</th>
<th>Physiological</th>
<th>Worry</th>
<th>Social Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defensiveness</td>
<td>-.19</td>
<td>-.31</td>
<td>-.11</td>
<td>-.13</td>
</tr>
<tr>
<td>Total Anxiety</td>
<td>.77**</td>
<td>.90**</td>
<td>.89**</td>
<td></td>
</tr>
<tr>
<td>Physiological</td>
<td></td>
<td>.61**</td>
<td>.55**</td>
<td></td>
</tr>
<tr>
<td>Worry</td>
<td></td>
<td></td>
<td></td>
<td>.71**</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01

Social Anxiety. While raw scores on the Social Anxiety subscale for the RCMAS-2 clinical ASD sample did not differ significantly from the standardisation sample, the scores for our ASD group exceeded the scores for the other three groups. No details were given for the composition of the RCMAS-2 ASD sample but, if selection criteria did not specify level of cognitive functioning, the group is likely to have had participants with low IQ. Research has shown that ASD children and adolescents with low IQ exhibit fewer symptoms of social anxiety (White, Oswald, Ollendick & Scahill, 2009) and would therefore be expected to have lower scores than their higher functioning peers on instruments such as the RCMAS-2. Some examples of Social Anxiety items have already been given above in discussing the similarities with items on the Worry scale. Other items that do not resemble Worry items include:

13. Others seem to do things easier than I can.

27. I feel alone even when there are people with me.

28. I get teased at school.
Twenty of the ASD group (38%) reported that they get teased at school, compared to 11 of the control group. Four of the ASD students who responded “no” to teasing indicated with additional comments that they were not being teased or bullied now but had been in the past.

Scores on Social Anxiety correlated highly with scores on the Reactive Anger for the control group, but not with Instrumental Anger, Anger Control or the teacher-reported behaviours. For the ASD group, Social Anxiety correlated with Instrumental Anger, Emotional Distress and Social Problems, and correlated highly with Reactive Anger and Physical Aggression. There was no significant correlation between Social Anxiety and Verbal Aggression. Previous research has shown that social anxiety may be related to lower levels of aggressive behaviour, possibly due to fear of negative evaluation by others (DeWall et al., 2010). However, in that study, aggressive behaviour was measured in a contrived laboratory experiment involving the direction of noise blasts toward a fictitious opponent. Our control group data, where the correlation coefficient between Social Anxiety and Physical Aggression was .00, does not contradict their findings, but the results were very different for our ASD group. Of the three anxiety subscales, social anxiety was the only one significantly related to physical aggression.

3.2.2 Measures of anger

We predicted that adolescents with ASDs would score highly on reactive anger if, as we hypothesized, the feelings of anger in this group are driven by anxiety. Unlike the RCMAS-2, the AARS does not provide comparison scores for clinical groups apart from one group described as severely emotionally disturbed. Results for the normative sample \( (n = 4187) \) show that scores for Instrumental Anger, Reactive Anger and Total Anger are slightly higher for boys than girls and decrease with age, while Anger Control is higher for girls and increases with age. As raw scores were converted to \( T \) scores
based on these demographics, the results for our participants were not dependent on age or gender when we used the $T$ scores for analysis.

The AARS normative sample of girls in grades 9 to 12 reported the lowest mean anger scores and highest mean anger control scores of the four normative sample groups. Their scores differ the least from our ASD and control groups. The mean raw scores for the three groups are reported in Table 8.

Table 8

<table>
<thead>
<tr>
<th>Scale</th>
<th>AARS Girls in Grades 9-12</th>
<th>ASD</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Total Anger</td>
<td>73.78</td>
<td>16.51</td>
<td>76.10</td>
</tr>
<tr>
<td>Instrumental Anger</td>
<td>25.56</td>
<td>7.64</td>
<td>27.23</td>
</tr>
<tr>
<td>Reactive Anger</td>
<td>16.41</td>
<td>5.15</td>
<td>18.31</td>
</tr>
<tr>
<td>Anger Control</td>
<td>33.30</td>
<td>8.28</td>
<td>34.25</td>
</tr>
</tbody>
</table>

$n = 1213$. $^b n = 52$.

The ASD group scored higher on the anger scale and subscales but also, less predictably, higher on the anger control subscale. The control group scored lower on the anger scale and subscales and higher on the anger control subscale. The lowest scores possible on each scale equated to “Hardly ever”. Many students struggled with there being no option to select “Never”.

**Instrumental Anger.** Twenty items from the AARS contribute to the Instrumental Anger subscale. The author of the AARS describes the Instrumental Anger subscale as a measure of “the rate and intensity of delayed angry responses that result in a desired and planned goal of revenge and/or retaliation” (Burney, 2001, p. 8). Despite our prediction that anger in the ASD group would be characterised more by reactive anger than instrumental anger, the mean Instrumental Anger score for the ASD group ($M = 48.06$, $SD = 8.09$) was significantly higher than for the control group ($M = 44.52$, $SD = 4.74$), $t = 2.61$, $p = .01$. We might hypothesise, from this result and from the knowledge that adolescents with ASDs are more likely to be the victims than the
perpetrators of bullying, that some of the items that contribute to the scale would be more likely to be selected by students with ASD than other items. We might predict that they would be more motivated by revenge than personal gain or wanton destruction. Items consistent with revenge include:

4. When I am angry I will hurt the person who upset me.
12. When I am angry I have thoughts about how to kill the person who made me angry.
34. When I am angry I feel relieved after hurting the person who upset me.

Items less clearly related to revenge include:

8. When I am angry I bully others.
25. When I am angry I pick fights on anyone.
38. When I am angry I enjoy hitting and kicking people.

Inspection of the responses for these items for the five participants (four ASD and one control) who scored moderately high to very high on Instrumental Anger did not support the prediction. Although scores (based on the frequency with which the participant reported experiencing the feeling or behaviour described by the item) were higher for the first set of items ("revenge"), two items from the second set ("not revenge") were also rated as occurring at least once a month. The exception was “Pick fights on anyone”, which only one participant selected. All but one of these five participants reported enjoying hitting and kicking people. As Social Anxiety and Instrumental Anger were significantly correlated for the ASD group but not for the control group, further research may shed some light on the nature of this relationship. A preliminary hypothesis would be that it may be related to the impairments in empathy attributed to autism or to identifying emotions in others.

Reactive Anger. The most striking feature of the correlation matrix (Manuscript Table 4) for the anxiety and anger measures is the strength of the relationships between Reactive Anger and other measures. For the ASD and control groups, the correlations between Reactive Anger and the anxiety subscales as well as Instrumental
Anger were highly significant, while the correlations between Reactive Anger and the teacher-reported behavioural measures were also significant. Burney (2001) described the Reactive Anger subscale as measuring “the rate and intensity of angry responses that are immediately expressed when an event is perceived as negative, threatening or fearful” (p. 8). The DSM-5 (APA, 2013) defines fear as the emotional response to real or perceived imminent threat, while anxiety is the anticipation of future threat. Anxiety predisposes an individual to perceive events as fearful or threatening, and therefore the high correlations support construct validity of the two measures. Sample items from the Reactive Anger subscale are:

6. When I am angry I act without thinking.

19. When I am angry I have difficulty controlling my temper.

29. When I am angry I can’t focus on anything else.

These items indicate a degree of emotional dysregulation, where physical responses override positive cognitive responses such as problem solving. Burney (2008) notes that reactive anger is associated with deficits in cognitive processing, social skills and anger control, and behaviours commonly resemble those associated with attention deficit/hyperactivity disorder.

The mean raw score for Reactive Anger for the control group is lower than for the AARS normative samples (which range from 16.30 to 17.43), while the mean raw score for the ASD group, as predicted, is higher (Table 8).

Anger Control. An unanticipated result from the study was the importance Anger Control would assume. While there was no significant difference on Anger Control scores between our ASD group and control group, subsequent analyses showed that high scores on Anger Control for the ASD group were associated with low scores on Physical Aggression.

Anger Control measures the ability of the adolescent to use proactive cognitive-behavioural responses to events that provoke instrumental or reactive anger (Burney, 2001). Items that contribute to the Anger Control subscale include:
3. When I am angry I try to work out the problem without fighting.

9. When I am angry I have self-control to walk away to avoid a fight.

23. When I am angry I can ignore it when put down by others.

One poorly worded item cause much confusion:

13. When I am angry I do not plan to use a weapon to hurt someone.

Confusion on this item is most likely to result in a slightly lower Anger Control score, due to responding “Hardly Ever” (score 1) or “Sometimes: (score 2) rather than the expected “Very Often” (score 4). The consequences of an error on this item would have little effect on the outcome so the subscale was scored as reported.

Highly significant negative correlations were obtained between Anger Control and both Verbal and Physical Aggression (Manuscript Table 4). The lack of a significant relationship between these variables for the control group was interpreted as an artefact of the low level of physical aggression reported in this group.

3.2.3 Measures of behaviour

The Student Behaviour Survey was completed by 62 teachers. In the original design for the study, we proposed that two teachers complete the SBS for each ASD participant and their matched control participant, thus increasing reliability of the data, but when this proved problematic on several occasions the requirement was dropped.

The SBS provides scores for three scales: Academic Resources, Disruptive Behaviour and Adjustment Problems. While the information obtained from the Academic Resources and Disruptive Behaviour Scales would be of interest, they are not directly relevant to this study. An exception to this is the Social Skills subscale of the Academic Resources scale. It has items similar to the Social Problems subscale of the Adjustment Problems scale, but high scores on Social Skills indicate better functioning whereas high scores on Social Problems indicates impairments in functioning. The eight items of the Social Problems subscale include:

23. Helps other students.
24. Liked by other students.

27. Participates in class activities.

Stated conversely, the 12 items of the Social Problems subscale include:

64. Angers other students.

66. Avoids social interaction in class.

67. Criticised by other students.

As one of the core deficits in autism spectrum disorders is impairment in social interaction, high scores on the Social Problems scale for the ASD group was predictable.

Normative data for the SBS provides mean raw scores for males and females from two groups: a “regular education” sample and a “clinically and educationally referred” sample. The Adjustment Problems scores for the males from these two groups as well as our ASD and control groups are shown in Table 9.

Table 9
Average Raw Scores for SBS Subscales

<table>
<thead>
<tr>
<th>Scale</th>
<th>SBS Regular Sample – Male</th>
<th>SBS Clinical Sample – Male</th>
<th>ASD Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Health Concerns</td>
<td>9.14</td>
<td>3.37</td>
<td>11.03</td>
<td>3.96</td>
</tr>
<tr>
<td>Emotional Distress</td>
<td>23.86</td>
<td>8.35</td>
<td>30.44</td>
<td>9.49</td>
</tr>
<tr>
<td>Unusual Behaviour</td>
<td>11.58</td>
<td>5.31</td>
<td>16.59</td>
<td>6.52</td>
</tr>
<tr>
<td>Social Problems Verbal</td>
<td>21.01</td>
<td>6.87</td>
<td>27.03</td>
<td>7.06</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>10.95</td>
<td>4.45</td>
<td>14.98</td>
<td>6.13</td>
</tr>
<tr>
<td>Behaviour Problems</td>
<td>6.38</td>
<td>2.44</td>
<td>8.74</td>
<td>3.97</td>
</tr>
</tbody>
</table>

\*n = 1,267. \*\*n = 952. \*\*n = 52. \*\*\*n = 51 (Health Concerns and Behaviour Problems).

The SBS was chosen specifically because, unlike other teacher report forms, it differentiates between verbal and physical aggression. As shown in Table 10, the ASD group returned higher mean scores for Emotional Distress, Unusual Behaviour and Social Problems than the other groups, including those referred for clinical or
educational problems. The control group’s scores were the lowest of all four groups on all seven subscales. Given the core symptoms of ASD include deficits in social skills and the presence of repetitive behaviours, the high scores for the ASD group on Social Problems and Unusual Behaviour are predictable. We have interpreted the high score for Emotional Distress as consistent with the self-reported higher levels of anxiety. Both Worry and Social Anxiety (but not Physiological Anxiety) correlated significantly with Emotional Distress. An interesting feature of the data shown in Table 10 is that the ASD group scored lower than the regular education sample on the Physical Aggression and Behaviour Problems subscales, but on none of the other scales. This could be due to lower levels of aggression in Australian schools than US schools, lower levels of awareness of teachers of the behaviour of students outside their own classes or a tendency to rate aggressive and problematic behaviours less harshly. This discrepancy may merit further research.

As physical aggression is a key variable in this study, the five items that contribute to this subscale are listed below in full:

83. Attempts to seriously hurt another student
84. Destroys property when angry
85. Hits or pushes other students
86. Starts fights with other students
87. Strikes or pushes school personnel.

The available responses for this subscale, as for all the subscales on the Adjustment Problems scale, are “Never”, “Seldom”, “Sometimes”, and “Usually”, giving raw scores ranging from 5 to 20. The highest score given to any one student in this study was 14.

3.2.4 Suspension

The Behaviour Problems subscale included a wide range of behaviours but only two items were used in the analysis, providing information about the frequency of students being sent to the office for misbehaviour and being suspended for
misbehaviour. Twelve control students were reported as having been sent to the office for misbehaviour (two of those “sometimes” and four “usually”) and three suspended. Only nine ASD students were sent to the office for misbehaviour (five “sometimes” and one “usually”) but seven were suspended. This suggests that either misbehaviour is treated differently for the two groups (perhaps tolerated more in the ASD students, resulting in being sent from class less often), or that misbehaviour by students with ASDs is more severe and, when it does occur, is more likely to result in suspension.

Data relating to suspension and other disciplinary action was obtained from three sources: from the Behaviour Problems items mentioned above, from the AARS (frequency of suspensions reported by students) and from the brief additional survey (frequency of other incidents reported by students). Unfortunately, these items had the greatest number of missing responses, both by students and teachers. Teachers reported that three of the control group students and none of the ASD group with missing responses had been sent to the office for misbehaviour, so the difference may be less than the results suggests. Given this concern and doubts about the characteristics of the control group sample discussed above (that they are possibly somewhat better adjusted and better behaved than most) I have limited confidence in the calculated odds ratio of 3.67. Nevertheless, the results show that ASD students are far more likely to be suspended than the control students.

3.2.5 Medication

Questions regarding anxiety medication were originally included as it was expected that the use of medication may affect anxiety scores. There was no intention to exclude or otherwise treat differently the results from those students who were prescribed medication, and minimal information was obtained. Where a student indicated that he or she was prescribed antidepressants or antipsychotic medications, methylphenidate for ADHD or clonidine, a “yes” rating was applied. Methylphenidate
(Ritalin) was included because it too has been shown to reduce symptoms of anxiety (Ahmann et al., 1993).

The results suggest that medication may be an important factor in the incidence of physical aggression. Regardless of levels of social anxiety, the only students who had $T$ scores for physical aggression over 60 reported taking no medication for anxiety or, in three cases, were “not sure” if they were taking such medication. The quality of the data obtained, small numbers and the lack of verification from another reliable source such as parents preclude the drawing of any reliable conclusions, but the results are suggestive that this relationship should be more closely investigated.

3.2.6 Narrative responses

The brief additional survey requesting information about incidents not resulting in suspension and prescribed medications also provided the opportunity for students to comment upon some of their experiences at school, such as incidents that resulted in disciplinary action, incidents where they were bullied or teased, or something arising from the questionnaires. The question was optional, and most declined the opportunity to comment. Twenty of the participants provided additional information. There were notable differences between the ASD group and the control group in the nature of the responses. Of the eight control group participants, seven wrote a single sentence, mostly related to a past incident of bullying or teasing:

When i got angry about something I would lie about things. (Boy, 13).

Used to get bullied, due to weight, now don’t due to work & maturity. (Boy, 17).

In primary school i use to get picked on in year 2. (Boy, 13).

I sometimes anoy someone, even when I don’t mean to. And get stabbed with a pen & hit. (Boy, 14).

A kid spat on me and I did not like it so I hit him and he is now spreading rumers. (Boy, 13).

I told my old best friend a secret. And they told all my friends … (Boy, 14).
Some ASD participants wrote similar brief comments:

At school I get teased by a boy in my year and he makes me feel scared to be around him. (Boy, 14).

The only reason I got into fights was to stick up for someone I know or to stick up for myself or for when I was getting bullied. (Boy, 17).

In Year 7 I was teased fairly relentlessly. Eventually I chose to sit in isolation, which I did for nearly 2 years. My temper used to be much worse, before I did this. (Boy, 17).

I’ve gotten strangled before and hung upside down by my ankles and swung around. (Girl, 15).

One control group participant wrote an extended and passionate account of perceived bullying and unjust treatment by teachers at a previous school:

.... Private schools are jails. If you’re not one of them, they WILL ruin you. (Girl, 16).

Six of the ASD students wrote an extended account, extracts from which are shown here:

I had a month off school because I got bullied a lot and couldn’t even walk around the playground without people throwing stuff at me, saying nasty stuff or shoving me... (Girl, 14).

... This school is stupid, corrupt, broken and discriminates everyone with disabilities!!! (Boy, 14).

... I was told that i had no proof so….the kid got a red card only and he got away with stabbing me with the file. (Boy, 17).

... I feel slightly worthless compared to usual students. I use to feel disadvantaged and now that I am older I also feel as if I were a let down to
some of my teachers and my parents. … I hope the info given to you better helps future children. (Girl, 17).

For someone with loose screws inside my head. I am going rather okay at school. … School is hard for me because I worry about marks and being overwhelmed with ten new sheets of homework every day. … I hate school (Boy, 17).

… I believe the majority of my anger issues originated at my first primary school, where I was for three years before I transferred, but after good experiences at my second and high school I believe I have gotten most under control. … (Boy, 16)

These comments hint at the levels of distress these students are experiencing.

3.2.7 Anxiety and aggression and ASD

The main hypothesis of the study was that social anxiety, not autism, predicts physical aggression. We expected to find that, when we took social anxiety into account, the significant relationship between autism and aggression would become non-significant. While our results failed to support this hypothesis, the relationship suggested by our analyses was even more interesting. While social anxiety was not associated with physical aggression for the control group at all, it was highly significant for the ASD group. At low levels of social anxiety, levels of physical aggression for ASD students and control group students were equally low. As social anxiety increased, physical aggression also increased for the ASD group but there was no change for the control group. There was something intrinsically different about the two groups. This relationship became even more interesting when the influence of anger control was considered. While there was no significant difference in self-reported anger control between the ASD group and the control group, the relationship between anger control and physical aggression was strikingly different for the two groups. Differing levels of anger control did not affect physical aggression for the control group.
On the whole, students from this group did not engage in physical aggression, irrespective of levels of anxiety, reactive anger or anger control. For the ASD group, a high level of self-reported anger control skills was associated with low levels of physical aggression. At low and average levels of anger control, physical aggression was high. This suggests there may be a significant cognitive component in refraining from behaving aggressively. This is not inconsistent with biological or environmental explanations for the association between autism and aggression. If the reason for the difference between the ASD and control groups is a biological predisposition toward anxiety and aggression, at some point cognitive skills may be sufficiently developed to counteract the biological imperative to respond physically to provocation. Similarly, well-developed anger control skills may allow anxious ASD students to remove themselves from situations or control the environmental stressors that would otherwise trigger the uncontrolled emotional and physical response typical of the autistic “meltdown”.

3.2.8 The “outliers”

In the scatterplots comparing physical aggression to social anxiety, reactive anger and anger control, two of the control group participants stood out as very different from their peers. They reported low levels of anxiety and anger (instrumental as well as reactive) and high anger control. Their scores on the RCMAS-2 Defensiveness (Lie) scale were normal and they admitted to being suspended. Their teachers reported them as being physically aggressive. We do not know what distinguished these two 13-year-old boys. They may have been unusually low on empathy or high on psychopathy, possibly diagnosed or eligible for diagnosis with conduct disorder and at risk of developing antisocial personality disorders, or raised in a culture where problems are solved with violence. When we excluded them from the regression analyses for ASD, social anxiety and aggression, there was little effect on
the results. Exclusion from the analysis of ASD, anger control and physical aggression did improve the significance of the result.

3.3 Implications

Highly significant results show that, for ASD students, social anxiety predicts physical aggression, and better anger control is associated with lower levels of physical aggression. The results strongly suggest that, rather than punish physical aggression with suspension, more effort and resources should be directed toward prevention by recognising and treating the anxiety that precipitates aggression and nurturing the anger control skills that mitigate it. This would entail firstly screening students with ASDs for anxiety, even where perhaps anxiety had not been suspected and providing appropriate interventions. Secondly, students with ASDs should be explicitly taught and given the opportunity to practise anger control skills. Putting these children into situations (that is, classrooms and playgrounds) that exacerbate their feelings of anxiety and distress and then failing to address these issues while maintaining suspension as an automatic disciplinary response to aggression does not address the special needs of students with ASDs and may in fact be a breach of their human rights (United Nations Convention on the Rights of Persons with Disabilities, Article 24).

3.4 Limitations and Future Research

3.4.1 Methodology

Random sampling. One of the difficulties in conducting this study was the constraints imposed on recruitment. Perhaps given the significance of the results of this study, or with the backing of an organisation such as Autism Spectrum Australia (ASPECT), it may be possible to conduct future research with a truly random sample from the school population. Furthermore, and particularly given the changes in diagnostic criteria associated with the introduction of the DSM-5, such research may have sufficient resources to confirm diagnoses and refine the exclusion criteria for both ASD and control participants.
Method triangulation. This was an exploratory study to investigate the links between anxiety, anger and aggression in adolescents with ASDs, using only rating scales completed by the students themselves and their teachers. Now that we have established that there are statistically significant links between these variables, further research may shed more light on the nature of these links by using multiple informants, including parents or caregivers and school executive staff.

Qualitative research. The collection of the students' comments about their experiences was only incidental to this study. However, the students' written comments, along with some verbal comments offered during administration, suggest that a qualitative study would contribute a great deal to our understanding of these relationships.

3.4.2 Data

Anger. This study was primarily concerned with the relationship between anxiety and reactive anger, which were significantly correlated for both the ASD and control groups. There was a very different pattern of relationships between instrumental anger and the differing types of anxiety for the two groups. Given the significant relationship between instrumental anger and physical aggression for the ASD group, further research could investigate the nature of this relationship and whether deficits in empathy associated with autism are a factor. The implications for school discipline may be very different for instrumental aggression, a delayed and planned response to instrumental anger, than for reactive aggression resulting from reactive anger.

Medication. The data relating to medication obtained in this study was very limited, but analyses suggested that it might be a very important factor in improving outcomes for students with ASDs at school. Medication is frequently prescribed for students with ASDs for anxiety, depression, ADHD and challenging behaviour, including self-injury and aggression, but I am unaware of any studies relating the role
of medication to better educational outcomes for the individual with respect to discipline, suspension and successful completion of schooling. Parents and the children themselves can be understandably resistant to the use of medication to manage behaviour and many choose to rely on behavioural and psychological strategies rather than pharmacotherapy. Further research in this area may provide useful information to help them in making these difficult decisions.

3.4.3 Where to from here?

Interventions. Research has shown that cognitive behavioural therapy can be effective for children and adolescents with autism spectrum disorders, but often adjustments need to be made, particularly in reducing the cognitive components of therapy and increasing the behavioural component. New resources and interventions, such as the Secret Agent Society Social Skills Training Program (Beaumont & Sofronoff, 2008) continue to be developed and evaluated. More needs to be known about when is the best time to intervene, and whether skills taught (but possibly not acquired) need to be revised regularly (Hughes et al., 2012).

Anxiety or anger management? Following from the last point, more also needs to be known about the balance of anxiety treatment and anger management. Issues to be considered include whether it is best to treat anxiety or anger first, or to treat them concurrently. For students with subclinical anxiety symptoms, would anger management be the better use of limited resources?

Discipline. What alternatives can we provide to suspension as a mandatory response to incidents of physical aggression by students with ASDs in our schools given that the results of this study suggest that it is a mental health rather than behaviour management issue?

3.5 Conclusion

The results of this study suggest that there may be an interaction between biological, environmental and cognitive factors leading to increased levels of physical
aggression in adolescents with autism spectrum disorders. An hypothesis consistent with the results and prior research would be that, for adolescents with ASDs, there is biological predisposition to anxiety and aggression that, in the presence of environmental stressors (and particularly stressors related to social interactions), results in the intense physical and emotional response known as a “meltdown”, often resulting in an act of physical aggression. This response can be mitigated by the individual using cognitive skills associated with anger control.

In summary, this study has demonstrated that social anxiety is a significant predictor of physical aggression for students with autism spectrum disorders, but not their typically developing peers, and that students with autism are more likely to be suspended from school than their peers. This implies that suspension may be a consequence of untreated or even unidentified anxiety and as such may be an inappropriate disciplinary response to a mental health issue. Providing students with appropriate treatment for anxiety and helping them develop effective anger control skills may help prevent incidents of physical aggression and improve the educational outcomes and quality of life for these students.
References


New South Wales Department of Education and Communities (2011). Educational services supporting students with a disability.


https://www.det.nsw.edu.au/policies/general_man/general/spec_ed/PD20050243.shtm?level=Schools&categories=Schools%7Caccess+%26+equity%7Cdisabilities


Autism Spectrum Disorders, 6(1), 406-412. doi:
http://dx.doi.org/10.1016/j.rasd.2011.06.015

http://dx.doi.org/10.1007/s10802-007-9165-9


Appendix A: Research Approvals

A.1 NSW Department of Education and Communities
A.2 Catholic Schools Office, Diocese of Maitland Newcastle
I refer to your application to conduct a research project in New South Wales government schools entitled *Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools*. I am pleased to inform you that your application has been approved. You may now contact the Principals of the nominated schools to seek their participation. **You should include a copy of this letter with the documents you send to schools.**

This approval will remain valid until 24/04/2013.

The following researchers or research assistants have fulfilled the Working with Children screening requirements to interact with or observe children for the purposes of this research for the period indicated:

<table>
<thead>
<tr>
<th>Name</th>
<th>Approval expires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pamela Ambler</td>
<td>22/10/13</td>
</tr>
</tbody>
</table>

I draw your attention to the following requirements for all researchers in New South Wales government schools:

- School Principals have the right to withdraw the school from the study at any time. The approval of the Principal for the specific method of gathering information for the school must also be sought.
- The privacy of the school and the students is to be protected.
- The participation of teachers and students must be voluntary and must be at the school’s convenience.
- Any proposal to publish the outcomes of the study should be discussed with the Research Approvals Officer before publication proceeds.

When your study is completed please forward your report marked to Manager, Schooling Research, Department of Education and Training, Locked Bag 53, Darlinghurst, NSW 2010.

You may also be asked to present on the findings of your research.

Yours sincerely

Bill Tomlin
Acting Senior Manager
Student Engagement and Program Evaluation
21 October 2012

Student Engagement and Program Evaluation Bureau NSW Department of Education and Communities
Level 3, 1 Oxford Street, Darlinghurst NSW 2010–Locked Bag 53, Darlinghurst NSW 1300 Telephone: 02 9244 5619–Fax: 02 9266 8233–Email: serap@det.nsw.edu.au
22 March 2013

Ms Pamela, Gaye Ambler
60 Forest Hill Drive
Oakhampton Heights 2320

Dear Pamela

Thank you for your Application Letter to conduct research in Diocese of Maitland-Newcastle which we received on 1 March 2013. Research approval for the study into Anxiety and Aggression in Adolescents with Autism Spectrum Disorders has been granted.

We always stress the following points in relation to research requests:

- It is the school principal, who gives final permission for research to be carried out in their school.
- Confidentiality needs to be observed in reporting and must comply with the requirements of the Commonwealth Privacy Amendment (Private Sector) Act 2000.
- There should be some feedback to schools and a copy of the findings of the research forwarded to this office.
- This letter of approval should accompany any approach to schools.

I look forward to the results of this study and wish you the best over the coming months. If you require any further assistance or wish to discuss any aspect of this research in our diocese, please do not hesitate to contact me.

Yours sincerely,

Vicki Sheriff
PROFESSIONAL ASSISTANT TO THE DIRECTOR
Appendix B: Information Statements and Consent Forms

B.1 Principals' Information Statement
B.2 Principals' Consent Form
B.3 Parent/Caregiver Information Statement – Autism Group
B.4 Parent/Caregiver Information Statement – Control Group
B.5 Student Information Statement – Autism Group
B.6 Student Information Statement – Control Group
B.7 Parent/Participant Consent Form
B.8 Teacher Information Statement
B.9 Teacher Consent Form
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Principal’s Information Statement

Selected students and their teachers from your school are invited to take part in the research project “Anxiety and Aggression in Adolescents with Autism Spectrum Disorders” which is being conducted by Mrs Pamela Gaye Ambler as part of her Doctor of Clinical Psychology research under the supervision of Dr Ami Eidels from the School of Psychology at the University of Newcastle and Mr Christopher Gregory from the Department of Family and Community Services.

Why is the research being done?
Previous research has shown that children with autism spectrum disorders are likely to experience higher levels of anxiety compared to children without autism. There is also evidence that anxiety can, at times, trigger feelings of anger or incidents of aggressive behaviour. The aim of this research is to better understand the relationship between anxiety and different types of anger or aggressive behaviour, and how this relationship may differ between children with autism and typically developing children.

We are seeking adolescents with autism spectrum disorders, between the ages of 12 and 17, who attend mainstream classes in secondary schools in New South Wales, as well as typically developing children who attend the same school and who are of the same age and gender. Children from your school who identify as having an autism spectrum disorder (but no intellectual disability) and their classmates are eligible to participate in the study.

What choice do you have?
Your school’s participation in this research is entirely your choice. Only students from schools whose principals have given informed consent will be included in the project.

If you do decide to allow your school to participate, you may withdraw your school from the project at any time without giving a reason.

What would your school be asked to do?
If you agree to allow your school to participate, we ask you to provide information sheets and consent forms to parents of children with an autism spectrum disorder attending your school. If and when those children and their parents have consented to participate, we ask you to then provide information sheets and consent forms to the parents of their classmates. Testing would take place at your school during normal class time and be conducted under the supervision of Mrs Ambler.

Only children whose parents have been informed and given their written consent by returning the consent form to the school will then be included in the study. However, the final decision to
participate rests with the child. Only children who have verbally assented to participate and whose parents have given informed consent will be allowed to participate in the study.

**What would the children and their teachers be required to do?**

Each child will be asked to complete three questionnaires. One questionnaire asks children about their fears and worries (The Revised Children’s Manifest Anxiety Scale), one about feelings of anger (The Adolescent Anger Rating Scale), and one gives them the opportunity to comment about their experiences at school, including suspensions. The student questionnaires, in total, take less than 30 minutes to complete. All student questionnaires will be completed during normal class time and will be conducted under the supervision of Mrs Ambler. In addition, two of the child’s teachers will be asked to complete a survey about the child’s behaviour at school (The Student Behavior Survey). These should be the teachers who normally have the most face-to-face contact with the child at school. The teachers’ questionnaires take around 15 to 20 minutes to complete. The questionnaires contain some questions that are of a personal nature, but answers will remain completely confidential.

There are no known risks to the children participating in this research. However, we cannot promise the children any benefit from participating in this research. In the unlikely event that a child becomes distressed or shows signs of anxiety while completing the questionnaire, the administrator will immediately conclude the session and allow the child to return to class. If, in completing the questionnaire, a child becomes concerned, or if parent or teachers become concerned about the child, we will advise them to contact their school counsellor to discuss the specific issues by letting you or an executive teacher know that they need to speak to the counsellor. For the students, we have also provided the telephone number for Kids Helpline (1800 55 1800) and the web address for Headspace (http://www.headspace.org.au/). Both of these organisations are recommended on the Department of Education and Communities website for high school students seeking help (http://www.dec.nsw.gov.au/students/high-school/help-when-you-need-it).

**How will the children’s and school’s privacy be protected?**

Any information obtained from children in this study will remain confidential to the researchers. No names will be stored with any recorded information. Completed consent forms will be kept in a locked filing cabinet, separately from other collected data. This collected data will be kept on a password-protected hard drive at the University of Newcastle for 5 years, after which time the information will be destroyed. Only the members of the research team will have access to this information.

If, in the course of conducting this research, a child or young person is identified as being at risk of abuse, neglect or harm from themselves or someone else, the researchers are required, as a condition of their approval to undertake the research, to make a report to the school principal. We have advised students who are concerned for their own safety to speak to their parents, to you or to a teacher they can trust, or to call the Child Protection Hotline on 132 111. We have also provided this number for parents and advised to teachers to report child protection concerns to you, the principal, in accordance with departmental policy (Protecting and Supporting Children and Young People Procedures, April 2011.)

The information collected as part of this study will be reported in a thesis to be submitted for Mrs Ambler’s degree, as well as in papers in scientific journals and at conferences. Individual children will not be identifiable in any reports arising from this project, as all data analysis will be conducted on group results.

If you give permission for your school to participate, you will be sent a summary of the results from this research at the completion of the study. Parents who consent to their child’s participation will also be given the option of having the group results sent to them directly.

**What do I need to do to allow my school to participate?**

Please read this Information Statement and be sure you understand its contents before you give consent for your school to participate. If there is anything you do not understand, or you have any questions, please contact Dr Ami Eidels on (02) 4921 7089, School of Psychology, Faculty of Science and Information Technology, University of Newcastle.

If you would like your school to participate, please complete the attached Consent Form and return it to Mrs Ambler.
Thank you for considering this invitation.

The Research Team

Dr Ami Eidels  Christopher Gregory  Pamela Gaye Ambler
Lecturer  Clinical Psychologist  DClinPsych Candidate
School of Psychology  School of Psychology

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2011-0162. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Principal’s Consent form

Researchers: Dr Ami Eidels, Mr Christopher Gregory, Mrs Pamela Gaye Ambler

- I agree for my school to participate in the above research project and give my consent freely.
- I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.
- I understand that I can withdraw my school from the project at any time and do not have to give any reason for withdrawing.
- I consent to teachers handing out information sheets and consent forms to parents of children who are eligible to participate in this research.
- I consent to children enrolled in my school and their teachers being given the opportunity to participate in this research if informed consent is given by each child’s parents and by the children themselves.
- I understand that my school’s information and the children’s personal information will remain confidential to the researchers.
- I have had the opportunity to have questions answered to my satisfaction.

Print Name: ________________________________
Signature: ___________________________ Date: ________________
School: ________________________________
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Parent/Caregiver Information Statement

Your child’s school has been invited to take part in the research project “Anxiety and Aggression in Adolescents with Autism Spectrum Disorders” which is being conducted by Mrs Gaye Ambler as part of her Doctor of Clinical Psychology research under the supervision of Dr Ami Eidels from the School of Psychology at the University of Newcastle and Mr Christopher Gregory from the Department of Family and Community Services.

Why is the research being done?
Previous research has shown that children with autism spectrum disorders are likely to experience higher levels of anxiety compared to children without autism. There is also evidence that anxiety can, at times, trigger feelings of anger or incidents of aggressive behaviour. The aim of this research is to better understand the relationship between anxiety and different types of anger or aggressive behaviour, and how this relationship may differ between children with autism and typically developing children.

We are seeking adolescents with autism spectrum disorders, between the ages of 12 and 17, who attend mainstream classes in secondary schools in New South Wales, as well as typically developing children who attend the same school and who are of the same age and gender. Your child’s school has agreed to participate in this research and therefore your child may be eligible to participate. The principal has given you and your child these information statements and consent forms so that you may have the opportunity to participate if you so wish.

What choice do you have?
Only children whose parents have given informed consent will be invited to participate in the project. However, the final decision to participate rests with the child. If you give permission for your child to participate, then your child will be required to give her or his verbal assent to participating in the study before completing the questionnaires. Whether or not you decide to let your child participate, your decision will not affect your child’s schooling in any way. Similarly, your child’s decision regarding participation will also not affect her or his schooling in any way.

If you do decide to let your child participate, you may withdraw your child from the project at any time without giving a reason. A child who has agreed to participate may also withdraw from the project at any time without giving a reason.

What would your child be required to do?
If you agree to let your child participate, your child will be asked to complete three questionnaires. One questionnaire asks children about their fears and worries (The Revised...
Children’s Manifest Anxiety Scale), one about feelings of anger (The Adolescent Anger Rating Scale), and one gives them the opportunity to comment about their experiences at school, including suspensions. The student questionnaires, in total, take less than 30 minutes to complete. In addition, two of your child’s teachers will be asked to complete a survey about your child’s behaviour at school (The Student Behavior Survey). All student questionnaires will be completed at your child’s school during normal class time and will be conducted under the supervision of Mrs Ambler. The questionnaires contain some questions that are of a personal nature, but answers will remain completely confidential.

There are no known risks to your child from participating in this research. However, we cannot promise your child any benefit from participating in this research. In the unlikely event that a child becomes distressed or shows signs of anxiety while completing the questionnaires, the administrator will immediately conclude the session and allow the child to return to class. We have advised students that, if they become distressed, they should speak to their parents or school counsellor. They can make an appointment to see the counsellor by letting their teacher or principal know that they wish to do so. You may also see the school counsellor by making an appointment through the principal. Students have also been provided with the telephone number of Kids Helpline (1800 55 1800) and the web address of Headspace (the National Youth Mental Health Foundation - http://www.headspace.org.au/). Both Kids Helpline and Headspace provide services for parents – Parentline NSW – (1300 1300 52 or http://www.parentline.org.au) and http://www.headspace.org.au/parents-and-carers.

How will your child’s privacy be protected?
Any information obtained from children in this study will remain confidential to the researchers. No names will be stored with any recorded information. Completed consent forms will be kept in a locked filing cabinet, separately from other collected data. This collected data will be kept on a password-protected hard drive at the University of Newcastle for 5 years, after which time the information will be destroyed. Only the members of the research team will have access to this information.

If, in the course of conducting this research, a child or young person is identified as being at risk of abuse, neglect or harm from themselves or someone else, the researchers are required, as a condition of their approval to undertake the research, to make a report to the school principal. If you become concerned about any child protection issues with regard to your child, the Department of Family and Community Services provides a 24 hour support and counselling service: the Child Protection Helpline on 132 111.

The information collected as part of this study will be reported in a thesis to be submitted for Mrs Ambler’s degree, as well as in papers in scientific journals and at conferences. Individual children will not be identifiable in any reports arising from this project, as all data analysis will be conducted on group results.

At the conclusion of the study, Mrs Ambler will provide a brief report that you may request to be sent to you directly by ticking the appropriate box on the attached consent form.

What do I need to do to allow my child to participate?
Please read this Information Statement and be sure you understand its contents before you give consent for your child to participate. If there is anything you do not understand, or you have any questions, please contact Dr Ami Eidels on (02) 4921 7089, School of Psychology, Faculty of Science and Information Technology, University of Newcastle.

If you would like your child to participate, please complete the attached Consent Form and return it to your child’s school.

We would ask that you please discuss the project with your child before making a decision. Even if you give your permission for your child to participate, the final decision to participate will rest with your child.

Thank you for considering this invitation.

The Research Team
Dr Ami Eidels  
Lecturer  
School of Psychology

Christopher Gregory  
Clinical Psychologist  
School of Psychology

Gaye Ambler  
DClinPsych Candidate  
School of Psychology

Complaints about this research

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Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Parent/Caregiver Information Statement

Your child is invited to take part in the research project “Anxiety and Aggression in Adolescents with Autism Spectrum Disorders” which is being conducted by Mrs Gaye Ambler as part of her Doctor of Clinical Psychology research under the supervision of Dr Ami Eidels from the School of Psychology at the University of Newcastle and Mr Christopher Gregory from the Department of Family and Community Services.

Why is the research being done?
Previous research has shown that children with autism spectrum disorders are likely to experience higher levels of anxiety compared to children without autism. There is also evidence that anxiety can, at times, trigger feelings of anger or incidents of aggressive behaviour. The aim of this research is to better understand the relationship between anxiety and different types of anger or aggressive behaviour, and how this relationship may differ between children with autism and typically developing children.

We are seeking children between the ages of 12 and 17 who attend mainstream classes in secondary schools in New South Wales. Your child’s school has agreed to participate in this research and therefore your child is eligible to participate. Please note that giving your consent does not guarantee that your child will be selected to participate in this research.

What choice do you have?
Only children whose parents have given informed consent will be invited to participate in the project. However, the final decision to participate rests with the child. If you give permission for your child to participate, then your child will be required to give her or his verbal assent to participating in the study before completing the questionnaires. Whether or not you decide to let your child participate, your decision will not affect your child’s schooling in any way. Similarly, your child’s decision regarding participation will also not affect her or his schooling in any way.

If you decide to let your child participate, you may withdraw your child from the project at any time without giving a reason. A child who has agreed to participate may also withdraw from the project at any time without giving a reason.

What would your child be required to do?
If you agree to let your child participate, your child will be asked to complete three questionnaires. One questionnaire asks children about their fears and worries (The Revised Children’s Manifest Anxiety Scale), one about feelings of anger (The Adolescent Anger Rating Scale), and one gives them the opportunity to comment about their experiences at school, including suspensions. The student questionnaires, in total, take less than 30 minutes to
complete. In addition, two of your child’s teachers will be asked to complete a survey about your child’s behaviour at school (The Student Behavior Survey). All student questionnaires will be completed at your child’s school during normal class time and will be conducted under the supervision of Mrs Ambler or a designated member of the school’s staff. The questionnaires contain some questions that are of a personal nature, but answers will remain completely confidential.

There are no known risks to your child from participating in this research. However, we cannot promise your child any benefit from participating in this research. In the unlikely event that a child becomes distressed or shows signs of anxiety while completing the questionnaires, the administrator will immediately conclude the session and allow the child to return to class.

How will your child’s privacy be protected?
Any information obtained from children in this study will remain confidential to the researchers. No names will be stored with any recorded information. Completed consent forms will be kept in a locked filing cabinet, separately from other collected data. This collected data will be kept on a password-protected hard drive at the University of Newcastle for 5 years, after which time the information will be destroyed. Only the members of the research team will have access to this information.

The information collected as part of this study will be reported in a thesis to be submitted for Mrs Ambler’s degree, as well as in papers in scientific journals and at conferences. Individual children will not be identifiable in any reports arising from this project, as all data analysis will be conducted on group results.

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Thank you for considering this invitation.

The Research Team

Dr Ami Eidels
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Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Student Information Statement

Your school has been invited to take part in a research project from the University of Newcastle about "Anxiety and Aggression in Adolescents with Autism Spectrum Disorders". You have been given this information statement by your school principal because you are a student who has autism or Asperger's disorder and may wish to participate in this study.

Why is the research being done?
We know that some children, especially kids with autism or Asperger’s disorder, feel more anxious than others do. This means they may worry more or have more fears. We also know that sometimes kids can get very angry and become aggressive. When this happens at school they may get formal warnings or be suspended. The aim of this research is to better understand how anxiety and anger are related, and how it may be different for children with autism and those without.

What choice do you have?
You can only participate if your parent or caregiver has discussed this research with you and given written consent. Even if your parent gives consent, you do not have to participate if you do not want. If you agree but then change your mind, you can withdraw. You do not have to give any reason.

What will you be asked to do?
If you agree to participate, you will be asked to complete three questionnaires. One questionnaire asks you about your fears and worries. Another one asks about feelings of anger. You can use the third one to write about some of your experiences at school, if you want to tell us more. The questionnaires take less than 30 minutes to complete and you can do them in class time. Mrs Ambler (one of the researchers) will help you. Two of your teachers will be asked to complete a questionnaire about how you are going at school. No one except the researchers will see what you or your teachers have written. If the researchers become aware at the time that you are at risk of harm from yourself or others we must report it to the principal. If you are concerned for your safety, please speak to your parents, principal or a teacher you can trust, or call the Child Protection Hotline on 132 111.

If you find any of the questions upsetting, you can stop completing the questionnaires and go back to class. You do not have to explain why. If, after completing the questionnaires, you have any questions about the research, please ask Mrs Ambler. If you have concerns of a personal nature, please talk to your parent or school.
counsellor. You can contact your school counsellor by letting your principal or executive teacher know that you need to speak to the counsellor. If you want to talk to someone straight away, you can ring Kids Helpline on 1800 551800. You can also visit your local Headspace centre or chat online to a Headspace counsellor. Details are available at http://www.headspace.org.au/.

There is more information about this research in the Parent/Caregiver Information Sheet. Please discuss it with your parent. If you decide that you would like to participate, sign the Consent Form with your parent and return it to your school.

Thank you for considering this invitation.

The Research Team

Dr Ami Eidels
Lecturer
School of Psychology

Christopher Gregory
Clinical Psychologist
School of Psychology

Gaye Ambler
DClinPsych Candidate
School of Psychology

Complaints about this research
This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2011-0162. Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.
Student Information Statement

Your school has been invited to take part in a research project from the University of Newcastle about “Anxiety and Aggression in Adolescents with Autism Spectrum Disorders”. You have been given this information statement because, even though you do not have an autism spectrum disorder, you are eligible to participate in this research if you wish. Other children at your school have also been invited to participate.

Why is the research being done?
We know that some children, especially kids with autism or Asperger’s disorder, feel more anxious than others do. This means they may worry more or have more fears. We also know that sometimes kids can get very angry and become aggressive. When this happens at school they may get formal warnings or be suspended. The aim of this research is to better understand how anxiety and anger are related, and how it may be different for children with autism and those without.

What choice do you have?
You can only participate if your parent or caregiver has discussed this research with you and given written consent. Even if your parent gives consent, you do not have to participate if you do not want. If you agree but then change your mind, you can withdraw. You do not have to give any reason. If you decide that you want to participate, we cannot guarantee that you will be one of the students selected.

What will you be asked to do?
If you agree to participate, you will be asked to complete three questionnaires. One questionnaire asks you about your fears and worries. Another one asks about feelings of anger. You can use the third one to write about some of your experiences at school, if you want to tell us more. The questionnaires take less than 30 minutes to complete and you can do them in class time. Mrs Ambler (one of the researchers) will help you. Two of your teachers will be asked to complete a questionnaire about how you are going at school. No one except the researchers will see what you or your teachers have written. If the researchers become aware at the time that you are at risk of harm from yourself or others we must report it to the principal. If you are concerned for your safety, please speak to your parents, principal or a teacher you can trust, or call the Child Protection Hotline on 132 111.

If you find any of the questions upsetting, you can stop completing the questionnaires and go back to class. You do not have to explain why. If, after completing the questionnaires, you have any questions about the research, please ask Mrs Ambler.
you have concerns of a personal nature, please talk to your parent or school counsellor. You can contact your school counsellor by letting your principal or executive teacher know that you need to speak to the counsellor. If you want to talk to someone straight away, you can ring Kids Helpline on 1800 551800. You can also visit your local Headspace centre or chat online to a Headspace counsellor. Details are available at http://www.headspace.org.au/.

There is more information about this research in the Parent/Caregiver Information Sheet. Please discuss it with your parent. If you decide that you would like to participate, sign the Consent Form with your parent and return it to your school.

Thank you for considering this invitation.

The Research Team

Dr Ami Eidels          Christopher Gregory          Pamela Gaye Ambler
Lecturer               Clinical Psychologist         DClinPsych Candidate
School of Psychology   School of Psychology

Complaints about this research

This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2011-0162 Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Parent / Participant Consent form

Researchers: Dr Ami Eidels, Mr Christopher Gregory, Mrs Pamela Ambler

- I agree for my child to participate in the above research project and give my consent freely.
- I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.
- I understand that I can withdraw my child, and that my child can withdraw him/herself, from the project at any time and do not have to give any reason for withdrawing.
- I consent to my child completing the Adolescent Anger Rating Scale, the Revised Children’s Manifest Anxiety Scale and some questions about her or his experiences at school, and to my child’s teachers completing the Student Behavior Survey.
- I understand that my personal information and my child’s personal information will remain confidential to the researchers.
- I have had the opportunity to have questions answered to my satisfaction.

Child’s Name: _____________________________ Child’s Date of Birth: ___/___/____
Child’s School: ____________________________

Consent of parent/caregiver:

Print Name: ________________________________
Signature: ________________________________ Date: ______________

Consent of participant (child):

Print Name: ________________________________
Signature: ________________________________ Date: ______________

☐ Please tick this box if you wish to receive a summary of the results of this research. Please supply your name and postal or email address below. A summary will be sent to you at this address at the completion of the study.

Name: ________________________________
Postal or Email Address: ________________________________
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Teacher Information Statement

Your school has been invited to take part in the research project “Anxiety and Aggression in Adolescents with Autism Spectrum Disorders” which is being conducted by Mrs Pamela Ambler as part of her Doctor of Clinical Psychology research under the supervision of Dr Ami Eidels from the School of Psychology at the University of Newcastle and Mr Christopher Gregory from the Department of Family and Community Services.

Why is the research being done?
Previous research has shown that children with autism spectrum disorders are likely to experience higher levels of anxiety compared to children without autism. There is also evidence that anxiety can, at times, trigger feelings of anger or incidents of aggressive behaviour. The aim of this research is to better understand the relationship between anxiety and different types of anger or aggressive behaviour, and how this relationship may differ between children with autism and typically developing children.

A child from your class who has an autism spectrum disorder has volunteered to participate in the study. We are asking you to complete a questionnaire about this child as well as a classmate who does not have an autism spectrum disorder and has also agreed to participate.

What choice do you have?
Your participation in this research is entirely your choice. If you do decide to participate, you may withdraw from the project at any time without giving a reason.

What would you be asked to do?
If you agree to participate, we will ask you to complete a questionnaire (The Student Behavior Survey) about each child in your class who is participating in the study. You have been selected as you have substantial face-to-face contact with the children and know them well enough to be able to complete the questionnaires with some confidence. The questionnaire takes around 15 to 20 minutes to complete. All answers will remain completely confidential.
There are no known risks related to participating in this research. However, we cannot promise any benefit from participating in this research. If, in completing the questionnaire, you experience feelings of distress or become concerned about a child, we recommend that you contact the school counsellor or your principal or executive teacher to discuss the specific issues. You are also welcome to contact the researchers for information or advice. Students have been advised to speak to their parents or school counsellor if they become distressed. They have also been provided with the Kids Helpline number: 1800 55 1800, and the web address of Headspace (the National Youth Mental Health Foundation - http://www.headspace.org.au/). These services are endorsed by the Department of Education and Communities.

**How will your privacy be protected?**

Any information obtained in this study will remain confidential to the researchers. No names will be stored with any recorded information. Completed consent forms will be kept in a locked filing cabinet, separately from other collected data. This collected data will be kept on a password-protected hard drive at the University of Newcastle for 5 years, after which time the information will be destroyed. Only the members of the research team will have access to this information.

If, in the course of conducting this research, a child or young person is identified as being at risk of abuse, neglect or harm from themselves or someone else, the researchers are required, as a condition of their approval to undertake the research, to make a report to the school principal. If you have concerns about the safety of one of your students, please speak to your principal who will, if required, contact the Department's Child Wellbeing Unit or make a report to the Child Protection Helpline.

The information collected as part of this study will be reported in a thesis to be submitted for Mrs Ambler’s degree, as well as in papers in scientific journals and at conferences. Individual participants will not be identifiable in any reports arising from this project, as all data analysis will be conducted on group results. Your school will be sent a summary of the results from this research at the completion of the study.

**What do I need to do to participate?**

Please read this Information Statement and be sure you understand its contents before you give your consent to participate. If there is anything you do not understand, or you have any questions, please contact Dr Ami Eidels on (02) 4921 7089, School of Psychology, Faculty of Science and Information Technology, University of Newcastle. If you then decide to participate, please complete the attached Consent Form and return it to Mrs Ambler.

Thank you for considering this invitation.

The Research Team

Dr Ami Eidels        Christopher Gregory        Pamela Gaye Ambler
Lecturer        Clinical Psychologist        DClinPsych Candidate
School of Psychology        School of Psychology

**Complaints about this research**

This project has been approved by the University’s Human Research Ethics Committee, Approval No. H-2011-0162

Should you have concerns about your rights as a participant in this research, or you have a complaint about the manner in which the research is conducted, it may be given to the researcher, or, if an independent person is preferred, to the Human Research Ethics Officer, Research Office, The Chancellery, The University of Newcastle, University Drive, Callaghan NSW 2308, Australia, telephone (02) 49216333, email Human-Ethics@newcastle.edu.au.
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Researchers: Dr Ami Eidels, Mr Christopher Gregory, Mrs Pamela Ambler

- I agree to participate in the above research project and give my consent freely.
- I understand that the project will be conducted as described in the Information Statement, a copy of which I have retained.
- I understand that I can withdraw from the project at any time and do not have to give any reason for withdrawing.
- I consent to completing the Student Behavior Survey.
- I understand that all personal information will remain confidential to the researchers.
- I have had the opportunity to have questions answered to my satisfaction.

Print Name: ___________________________________

Signature: _______________________________ Date: ____________________

School: ___________________________________
Appendix C: Survey Materials

C.1 Revised Children’s Manifest Anxiety Scale – Second Edition
C.2 Adolescent Anger Rating Scale
C.3 Student Behavior Survey
C.4 Instructions and Additional Questions
Circle one answer for each sentence. Please press hard when marking your responses.

1. Often I feel sick in my stomach. ........................................... Yes  No
2. I am nervous. ...................................................................... Yes  No
3. I often worry about something bad happening to me. ...... Yes  No
4. I fear other kids will laugh at me in class. ......................... Yes  No
5. I have too many headaches. .............................................. Yes  No
6. I worry that others do not like me. ...................................... Yes  No
7. I wake up scared sometimes. ............................................. Yes  No
8. I get nervous around people. ............................................. Yes  No
9. I feel someone will tell me I do things the wrong way. ...... Yes  No
10. I fear other people will laugh at me. ................................. Yes  No

Continue with Item 11 unless you have been told to stop here.

11. I have trouble making up my mind. ................................. Yes  No
12. I get nervous when things do not go the right way for me. Yes  No
13. Others seem to do things easier than I can. ...................... Yes  No
14. I like everyone I know. .................................................... Yes  No
15. Often I have trouble getting my breath. ........................... Yes  No
16. I worry a lot of the time. .................................................. Yes  No
17. I feel bad if people laugh at me. ......................................... Yes  No
18. I am afraid of a lot of things. ........................................... Yes  No
19. I am always kind. .......................................................... Yes  No
20. I get mad easily. ............................................................ Yes  No
21. I worry about what my parents will say to me. ................ Yes  No
22. I feel that others do not like the way I do things. .............. Yes  No
23. I am afraid to give a talk to my class. .............................. Yes  No
24. I always have good manners. ......................................... Yes  No

What I Think and Feel (RCMAS-2) 
AutoScore™ Form

Cecil R. Reynolds, Ph.D., and Bert D. Richmond, Ed.D.

Directions
First fill in the background information. If you don’t know your ID number, ask your examiner.

The sentences on this form tell how some people think and feel about themselves. Read each sentence carefully, then circle the word that shows your answer. Circle Yes if you think the sentence is true about you. Circle No if you think it is not true about you. Give an answer for every sentence, even if it is hard to choose one that fits you. Do not circle both Yes and No for the same sentence. If you want to change an answer, draw an X through your first answer and then circle your new choice.

There are no right or wrong answers. Only you can tell us how you think and feel about yourself. Remember, after you read each sentence, ask yourself, “Is it true about me?” If it is, circle Yes. If it is not, circle No.

Date: ................................................................. 
Name or ID number: ..................................................

Age: ______ Grade: ______ Gender: □ Girl □ Boy
Race/Ethnicity: □ American Indian/Alaska Native □ Asian 
□ Black/African American □ Hispanic/Latino
□ Native Hawaiian/Pacific Islander □ White 
□ Other

School: ..................................................................
Examiner: ..............................................................
<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>It is hard for me to get to sleep at night.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I worry about what other people think about me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>I feel alone even when there are people with me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>I get teased at school.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>I am always good.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>My feelings get hurt easily.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>My hands feel sweaty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>I worry about making mistakes in front of people.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>I am always nice to everyone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>I am tired a lot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>I worry about what is going to happen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Other people are happier than I am.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>I am afraid to speak up in a group.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>I tell the truth every single time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>I have bad dreams.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>I get angry sometimes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>I worry about being called on in class.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>I worry when I go to bed at night.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>It is hard for me to keep my mind on my schoolwork.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>I sometimes say things I should not say.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>I worry about someone beating me up.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>I wiggle in my seat a lot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>A lot of people are against me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>I have told a lie.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>I worry about saying something dumb.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Instructions

Circle the number that best tells about you when you become angry.

**Hardly Ever:** This response means that you normally do not behave this way.

**Sometimes:** This response means that you behave this way one to three times a month.

**Often:** This response means that you behave this way one or more times a week.

**Very Often:** This response means that you behave this way one or more times a day.

### Example:

**When I am angry, I...**

<table>
<thead>
<tr>
<th></th>
<th>Hardly Ever</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hit right back if someone hits me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

If you need to change an answer, mark an X through the incorrect number and circle the correct number.

<table>
<thead>
<tr>
<th></th>
<th>Hardly Ever</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hit right back if someone hits me.</td>
<td>1</td>
<td>X</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
Circle the number that best tells about you when you become angry.

<table>
<thead>
<tr>
<th>When I am angry, I...</th>
<th>Hardly Ever</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hit right back if someone hits me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. Cheat to get even.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. Try to work the problem out without fighting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. Will hurt the person who upset me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. Leave class without permission.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. Act without thinking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. Try to understand the feelings of others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. Bully others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. Have self-control to walk away to avoid a fight.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. Will find a weapon to deliberately hurt someone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. Have thoughts about starting fires.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. Have thoughts about how to kill the person who made me angry.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. Do not plan to use a weapon to hurt someone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Think about how to make peace with the person who upset me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Have a hot temper.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Plan to destroy property.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. Talk loudly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. Plan to fight.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. Have difficulty controlling my temper.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. Plan how to talk nicely to avoid arguing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>21. Just can’t sit still.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>22. Will hurt myself to get back at others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. Can ignore it when put down by others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>24. Try to hurt someone on purpose.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>25. Pick fights with anyone.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Handly Ever</td>
<td>Sometimes</td>
<td>Often</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>------------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>26. Use anything as a weapon to fight.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Have enough self-control not to hit back.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Set fires on purpose.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Can’t focus on anything else.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Ignore it when called bad names.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Take it out on animals.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
<td></td>
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<tr>
<td>32. Get into trouble because of my temper.</td>
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<td>1 2 3 4</td>
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<tr>
<td>33. Avoid people to stay out of trouble.</td>
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<td>1 2 3 4</td>
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<tr>
<td>34. Feel relieved after hurting the person who upset me.</td>
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<td>1 2 3 4</td>
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<tr>
<td>35. Talk too much.</td>
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<td>1 2 3 4</td>
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<tr>
<td>36. Run away from home.</td>
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<td>1 2 3 4</td>
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<tr>
<td>37. Walk away to avoid fighting.</td>
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<td>1 2 3 4</td>
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<tr>
<td>38. Enjoy hitting and kicking people.</td>
<td></td>
<td>1 2 3 4</td>
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<tr>
<td>39. Get into trouble with the police.</td>
<td></td>
<td>1 2 3 4</td>
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<tr>
<td>40. Still make good choices.</td>
<td></td>
<td>1 2 3 4</td>
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<tr>
<td>41. Break rules.</td>
<td></td>
<td>1 2 3 4</td>
<td></td>
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</tr>
</tbody>
</table>
# Student Behavior Survey

## AutoScore Form

David Lachar, Ph.D., Sabine A. Wingenfeld, Ph.D.,
Rex B. Kline, Ph.D.,
and Christian P. Gruber, Ph.D.

## Academic Resources

Please rate this student's current class performance and behavior compared to the performance and behavior of regular education students of the same age. Circle one number for each item to indicate performance level (Items 1-8) or behavior frequency (Items 9-102).

To change a rating you have already circled, draw an X through it, and then circle your new choice.

### Academic Performance

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>1. Reading Skills</td>
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<tr>
<td>2. Reading Comprehension</td>
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<td>3. Spelling</td>
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<td>4. Communication by Writing</td>
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<td>5. Speech Articulation</td>
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<td>6. Communication by Speaking</td>
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<tr>
<td>7. Mathematics</td>
<td></td>
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<td>8. Handwriting</td>
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### Academic Habits

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>9. Clearly expresses thoughts and ideas</td>
<td></td>
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<tr>
<td>10. Completes class assignments</td>
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<tr>
<td>11. Completes homework assignments</td>
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<tr>
<td>12. Demonstrates a logical and organized approach to learning</td>
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<tr>
<td>13. Eager to learn new material; motivated</td>
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<tr>
<td>14. Follows the teacher's directions</td>
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<tr>
<td>15. Maintains alert and focused attention to class presentations</td>
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<tr>
<td>16. Performance consistent with ability</td>
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<tr>
<td>17. Persists even when activity is difficult</td>
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<td>18. Remembers teacher's directions</td>
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<tr>
<td>19. Stays seated; sits still when necessary</td>
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<tr>
<td>20. Waits for his/her turn</td>
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<tr>
<td>21. Works independently without disturbing others</td>
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</table>

### Social Skills

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
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<th>4</th>
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</thead>
<tbody>
<tr>
<td>22. Demonstrates polite behavior/good manners</td>
<td></td>
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<tr>
<td>23. Helps other students</td>
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<tr>
<td>24. Likes by other students</td>
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<tr>
<td>25. Listens when other students speak</td>
<td></td>
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<tr>
<td>26. Maintains eye contact when speaking</td>
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<tr>
<td>27. Participates in class activities</td>
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<tr>
<td>28. Takes successes and failures in stride</td>
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<tr>
<td>29. Works cooperatively with other students</td>
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</table>

### Parent Participation

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<thead>
<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>30. Parent expectations of school resources and responsibilities are realistic</td>
<td></td>
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<tr>
<td>31. Parent(s) meet with school staff when asked</td>
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<tr>
<td>32. Parent(s) cooperate with school efforts to improve class behavior and achievement</td>
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<tr>
<td>33. Parent(s) encourage achievement</td>
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<tr>
<td>34. Parent expectations concerning child's potential for achievement are realistic</td>
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<tr>
<td>35. Parent(s) facilitate completion of homework when necessary</td>
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</tbody>
</table>

Please turn form over and complete items 36-102.

Please press hard when marking ratings.

**Student ID:**

**Gender:** [ ] M [ ] F [ ] Other [ ]

**Age:**

**Months Observed:**

**Rater ID:**
### Adjustment Problems

**Please rate this student's current behavior compared to the behavior of regular education students of the same age.**

Circle one number for each item to record the frequency of that behavior.

#### Health Concerns

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
</tr>
</thead>
<tbody>
<tr>
<td>36. Appears tired, exhausted, or sleepy</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>37. Complains of headaches</td>
<td>1 2 3 4</td>
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<tr>
<td>38. Complains of stomachaches</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
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<tr>
<td>39. School absences due to poor health</td>
<td>1 2 3 4</td>
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<tr>
<td>40. Talks about being sick</td>
<td>1 2 3 4</td>
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<tr>
<td>41. Visits the school nurse</td>
<td>1 2 3 4</td>
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</table>

#### Emotional Distress

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
</tr>
</thead>
<tbody>
<tr>
<td>42. Afraid of little things</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>43. Appears moody or too serious</td>
<td>1 2 3 4</td>
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<tr>
<td>44. Appears sad or unhappy</td>
<td>1 2 3 4</td>
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<tr>
<td>45. Becomes upset by constructive criticism</td>
<td>1 2 3 4</td>
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<tr>
<td>46. Becomes upset for little or no reason</td>
<td>1 2 3 4</td>
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<tr>
<td>47. Blames himself/herself for the problems of others</td>
<td>1 2 3 4</td>
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<tr>
<td>48. Cries or appears tearful</td>
<td>1 2 3 4</td>
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<tr>
<td>49. Does not seem to have fun</td>
<td>1 2 3 4</td>
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<tr>
<td>50. Expects to fail or do poorly</td>
<td>1 2 3 4</td>
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<tr>
<td>51. Mood changes without reason</td>
<td>1 2 3 4</td>
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<tr>
<td>52. Overcritical of himself/herself</td>
<td>1 2 3 4</td>
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<tr>
<td>53. Pessimistic about the future</td>
<td>1 2 3 4</td>
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<tr>
<td>54. Talks about running or killing himself/herself</td>
<td>1 2 3 4</td>
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<tr>
<td>55. Worries about little things</td>
<td>1 2 3 4</td>
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<tr>
<td>56. Worries about what others think</td>
<td>1 2 3 4</td>
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</tbody>
</table>

#### Unusual Behavior

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
</tr>
</thead>
<tbody>
<tr>
<td>57. Behavior is strange and peculiar</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>58. Confused by what other people say</td>
<td>1 2 3 4</td>
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<tr>
<td>59. Daydreams or seems preoccupied</td>
<td>1 2 3 4</td>
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<tr>
<td>60. Does not trust other people</td>
<td>1 2 3 4</td>
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<tr>
<td>61. Says strange or bizarre things</td>
<td>1 2 3 4</td>
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<tr>
<td>62. Seems lost or disoriented</td>
<td>1 2 3 4</td>
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<tr>
<td>63. Talks or laughs to himself/herself</td>
<td>1 2 3 4</td>
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</tbody>
</table>

#### Social Problems

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
</tr>
</thead>
<tbody>
<tr>
<td>64. Angers other students</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>65. Appears uncomfortable when talking to other students</td>
<td>1 2 3 4</td>
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<tr>
<td>66. Avoids social interaction in class</td>
<td>1 2 3 4</td>
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<tr>
<td>67. Criticized by other students</td>
<td>1 2 3 4</td>
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<tr>
<td>68. Engages in solitary activities</td>
<td>1 2 3 4</td>
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<tr>
<td>69. Ignored/rejected by other students</td>
<td>1 2 3 4</td>
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</table>

#### Social Problems—continued

<table>
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<tr>
<th>Item</th>
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<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
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</thead>
<tbody>
<tr>
<td>70. Interrupts when others are speaking</td>
<td>1 2 3 4</td>
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<tr>
<td>71. Overly dependent on other students</td>
<td>1 2 3 4</td>
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<tr>
<td>72. Prefers the company of adults over peers</td>
<td>1 2 3 4</td>
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<tr>
<td>73. Shy/uncomfortable with adults</td>
<td>1 2 3 4</td>
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<tr>
<td>74. Teased by other students</td>
<td>1 2 3 4</td>
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<tr>
<td>75. Unaware of the feelings of others</td>
<td>1 2 3 4</td>
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#### Verbal Aggression

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<th>Score</th>
<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
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</thead>
<tbody>
<tr>
<td>76. Argues and wins the last word</td>
<td>1 2 3 4</td>
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<tr>
<td>77. Complains about the requests of adults</td>
<td>1 2 3 4</td>
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<tr>
<td>78. Insults other students</td>
<td>1 2 3 4</td>
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<tr>
<td>79. Swears at school personnel</td>
<td>1 2 3 4</td>
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<tr>
<td>80. Teases or taunts other students</td>
<td>1 2 3 4</td>
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<tr>
<td>81. Threatens other students</td>
<td>1 2 3 4</td>
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<td></td>
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<tr>
<td>82. Threatens school personnel</td>
<td>1 2 3 4</td>
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</table>

#### Physical Aggression

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<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
</tr>
</thead>
<tbody>
<tr>
<td>83. Attempts to seriously hurt another student</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>84. Destroys property when angry</td>
<td>1 2 3 4</td>
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<tr>
<td>85. Hits or pushes other students</td>
<td>1 2 3 4</td>
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<tr>
<td>86. Starts fights with other students</td>
<td>1 2 3 4</td>
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<tr>
<td>87. Strikes or pushes school personnel</td>
<td>1 2 3 4</td>
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#### Behavior Problems

<table>
<thead>
<tr>
<th>Item</th>
<th>Score</th>
<th>Data</th>
<th>Observation</th>
<th>Confirmation</th>
<th>Unusual</th>
</tr>
</thead>
<tbody>
<tr>
<td>88. Associates with students who are often in trouble</td>
<td>1 2 3 4</td>
<td></td>
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<tr>
<td>89. Blames others for his/her own problems</td>
<td>1 2 3 4</td>
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<tr>
<td>90. Disobeys class or school rules</td>
<td>1 2 3 4</td>
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<tr>
<td>91. Disrupts class by misbehaving</td>
<td>1 2 3 4</td>
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<tr>
<td>92. Impulsive; acts without thinking</td>
<td>1 2 3 4</td>
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<tr>
<td>93. Uses alcohol or drugs</td>
<td>1 2 3 4</td>
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<tr>
<td>94. Lies to school personnel</td>
<td>1 2 3 4</td>
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<tr>
<td>95. Misbehaves unless closely supervised</td>
<td>1 2 3 4</td>
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<tr>
<td>96. Overactive; constantly on the go</td>
<td>1 2 3 4</td>
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<tr>
<td>97. Preoccupied with sex</td>
<td>1 2 3 4</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>98. Sent to the office because of misbehavior</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>99. Skips classes</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100. Steals from others</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101. Suspended from school due to misbehavior</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102. Talks excessively</td>
<td>1 2 3 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please press hard when marking ratings.
Anxiety and Aggression in Adolescents with Autism Spectrum Disorders Attending Mainstream Schools

Research Project 2013

Instructions for students

Part 1:
- Write your name on the slip attached to this page, but do not write it on the questionnaires. After we check that you have completed all the questions, the slip will be removed and there will be no way of matching what you wrote with who you are.
- Complete Question 1 and Question 2 below.
- Turn to the back of this page for Question 3.

Part 2:
- Read the instructions on the questionnaires. Please think carefully about the questions and answer them as honestly and accurately as you can. There are no right or wrong answers.
- Complete the questionnaire “What I Think and Feel”.
- Complete the AARS Test Booklet.
- Remember to complete the background information at the side of the “What I think and Feel” questionnaire and at the top of the AARS.

Question 1.
In part of the AARS, you are asked how many times you have been suspended in the last year. You may also have been involved in incidents where you were not suspended but you did receive a formal warning from the school or your parents/caregivers were contacted. In the last 12 months, how many times did this happen? (Do not include times you were suspended.)

Circle one: 0 1-2 3-4 5 or more

Question 2.
Do you take any prescription medications for anxiety?
Yes ☐ Name of your medication if you know it: ____________________
No ☐
Not sure ☐
Please turn over for Question 3.

**Question 3.**
This section is optional. You may wish to comment on some of your experiences at school, such as incidents that resulted in disciplinary action, or incidents where you were bullied or teased, or about something from one of the questionnaires.
Appendix D: Journal – Supporting Documents

D.1 Research in Autism Spectrum Disorders: Author Information Pack (includes Aims and Scope and Guide for Authors)
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- Audience p.1
- Impact Factor p.1
- Abstracting and Indexing p.2
- Editorial Board p.2
- Guide for Authors p.3

DESCRIPTION

Autism Spectrum Disorders are problems of social skills, empathy, and effective use of language for communication. Many challenges exist to better identify and treat the range of symptoms these persons display. These issues are compounded by the fact that upwards of 70% of these individuals have an intellectual disability and many also evince challenging behaviors such as self-injury and/or aggression, and comorbid mental health conditions such as depression or anxiety disorders. Furthermore, while great advances are being made with young children with the potential for even greater gains, little is known about assessment or intervention with teenagers and adults.

Research in Autism Spectrum Disorders (RASD) will publish high quality empirical articles and reviews with a primary focus on applied topics. These areas will include but not be limited to diagnosis, incidence and prevalence, methods of evaluating treatment effects, educational, pharmacological, and psychological interventions across the life span. The primary audience for the journal will be researchers and clinicians with advanced degrees in the areas of mental health, education, communication disorders, rehabilitation, and allied disciplines.

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