EMBARRASSMENT, THEORY OF MIND, AND EMOTION REGULATION IN ADOLESCENTS WITH ASPERGER'S SYNDROME AND HIGH-FUNCTIONING AUTISM

by

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DISSERTATION ABSTRACT

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Title: Embarrassment, Theory of Mind, and Emotion Regulation in Adolescents with Asperger's Syndrome and High-Functioning Autism

The purpose of the present study was to increase our understanding of the relations among embarrassment, Theory of Mind (ToM), and emotion dysregulation in adolescents with Asperger's Syndrome and High Functioning Autism (AS/HFA), topics that have not previously been the foci of research in this population. The research sample consisted of 42 participants, split equally between adolescents with AS/HFA and typically developing (TD) adolescents. Participants with AS/HFA were matched with TD participants for chronological age and gender. Parents of all participants, typically mothers, were also required to complete measures.

Participants were presented with vignettes of embarrassing or anger inducing scenarios, following which they were asked to provide ratings indicating the degree to which they would be embarrassed or angry in the protagonists' positions. Next they were asked to justify those ratings. Results indicated that the AS/HFA group experienced greater difficulty than the TD group with measures requiring ToM abilities. This was particularly true of embarrassment/social faux pas situations. In contrast, both groups performed similarly on measures involving anger-inducing situations that require less ToM. The significant difficulty of the AS/HFA group in understanding ToM in embarrassment measures was corroborated by their poor performance on an independent

ToM measure. In addition to having significant difficulty in understanding embarrassment, the AS/HFA group was significantly less able than the TD group to recount personally embarrassing experiences.

Regarding emotion regulation, participants with AS/HFA were significantly less able than their TD peers to regulate their emotions through reappraisal. Similarly, parents of the AS/HFA participants reported a significantly higher level of emotion dysregulation in their children than did the parents of the TD participants. Further, participants with AS/HFA had a significantly higher utilization frequency of negative strategies than their TD peers when embarrassed, which aligned with parent report. Negative strategies included internal, verbal, and physical self-injurious behaviors, as well as destructive interpersonal behaviors, e.g., falsely accusing, yelling at, or hitting others. These findings emphasize the critical and potentially harmful impact of embarrassing experiences in the daily lives of adolescents with AS/HFA.

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CHAPTER I

INTRODUCTION

Overview

Individuals with Asperger's Syndrome and Higher Functioning Autism (AS/HFA) experience significant challenges in their social and emotional interactions. These challenges may result in their experiencing fewer quality social interactions with others and increased emotional distress in emotionally confusing social situations. One particular struggle is in their understanding of self-conscious emotions, which are typically felt in the presence of others and require that an individual be conscious that others are observing and evaluating his or her behavior. One self-conscious emotion with which individuals with AS/HFA especially struggle is embarrassment.

In order to fully understand and experience the feeling of embarrassment, one must realize that in the perception of others, one has transgressed established societal rules and expectations, e.g., attending a birthday party without bringing a birthday gift (Winter-Messiers, Oswald, Gibson, & Moses, in preparation). Such recognition, however, requires that one have theory of mind (ToM), or the ability to attribute thoughts, intentions, beliefs, emotions, and desires to the self and others (Banerjee, 2002; Heerey, Keltner, & Capps, 2003). Individuals with AS/HFA may have underdeveloped ToM, making it challenging for them to process self-conscious emotions such as embarrassment (Capps, Yirmaya, & Sigman, 1992). As a result, when those with AS/HFA find themselves in situations that cause them to feel embarrassed, they may be flooded with overwhelming and confusing feelings that leave them unable to regulate

their emotions. The lack of emotion regulation in embarrassing situations may lead individuals with AS/HFA to manifest socially inappropriate responses.

My dissertation research focuses on embarrassment, ToM, and emotion regulation in adolescents with AS/HFA. In what follows, I first place my research in context by reviewing ASD and the defining characteristics of AS/HFA. I then briefly review the role of ToM in the perception of the self-conscious emotion of embarrassment and the challenge that embarrassment poses for emotion regulation in individuals with AS/HFA. Following this, I summarize my previous research findings on the self-conscious emotion of embarrassment in children and youth with AS/HFA. Next, I describe the specific unanswered questions and goals of the present study.

Autism Spectrum Disorder

In 2012, the Center for Disease Control and Prevention (CDC) announced that the prevalence of autism in the United States had reached epidemic proportions at 1:88 (CDC, 2012). The prevalence of autism in the United States further increased in 2013 to 1:50 children, in stunning contrast to the ratio of 1:10,000 announced just eleven years ago (Blumberg, Bramlett, Kogan, et al., 2013). With the rapid recent increase in prevalence, autism impacts children, families, homes, and classrooms as never before.

According to the *Diagnostic and Statistical Manual of Mental Disorders-IV* (DSM-IV-TR; APA, 1994), there are five diagnoses which comprise the overarching autism category of Pervasive Developmental Disorder: Autistic Disorder, Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder, and Pervasive Developmental Disorder--Not Otherwise Specified. More commonly referred to as Autism Spectrum Disorder (ASD), these diagnoses span a continuum ranging from lower

to higher functioning, signaled in part by the presence or absence of intellectual deficits. All DSM-IV (DSM-IV-TR; APA, 1994) autism diagnoses include in their profiles significant deficits in communication and social skill development and, across the spectrum, these challenges are further complicated by rigid, repetitive, and stereotypic patterns of behavior, interests, and routines (APA, 1994; Howlin, Baron-Cohen, & Hadwin, 1999; Siegel, 2003; Volkmar, Paul, Klin, & Cohen, 2005). ASD researchers have also identified additional deficits in emotion regulation (Attwood, 2007; Bormann-Kischkel, Vilsmeier, & Baude, 1995; Gillberg, 2002; Gillberg & Coleman, 2000; Szatmari, Brenmer, & Nagy, 1989; Volkmar et al., 2005).

Of the five ASD diagnoses, Asperger's Disorder, or the more typical appellation, Asperger's Syndrome (AS), represents individuals on the spectrum who display the highest level of functioning and demonstrate average to superior intelligence. Though not a DSM-IV (DSM-IV-TR; APA, 1994) diagnosis, the more vague designation "High Functioning Autism" (HFA) is occasionally used to identify individuals who may meet many, but not all, of the DSM-IV-TR criteria for Asperger's Syndrome. As with AS, individuals labeled HFA do not have an intellectual disability and may be included with AS participants in research studies.

Embarrassment

Following the developmental emergence of the non-self-conscious emotions, such as happiness, sadness, and anger, a group of affective states termed self-conscious emotions come online. These emotions include embarrassment, pride, shame, and guilt (Baron-Cohen, 1991; Bormann-Kischkel et al., 1995; Buitelaar, Van der Wees, Swaab-Barneveld, & Van der Gaag, 1999; Capps et al., 1992; Edelmann, 1987; Lewis, 2000;

Miller, 1996). They are thought to emerge only in the second or third year of a child's development, following the onset of self-awareness between 18 and 24 months of age (Lewis, 1992, 2000). Along with young children's self-awareness comes their growing consciousness of the existence of rules, which provide guidance as to whether a particular behavior is appropriate in a given situation. In keeping with this, the self-conscious emotions, such as embarrassment, are evaluative in nature (Lewis, Sullivan, Stanger, & Weiss, 1989).

Lewis et al. (1989) asserted that embarrassment emerges only after the critical self-referential developmental milestone of a child's ability to recognize him or herself in a photograph or mirror. Embarrassment is not evident in babyhood because it is evoked by situations that expose the self. Miller (1996) found that prior to the emergence of self-consciousness, young children display no signs of embarrassment, a thesis supported by Tangney and Fisher (1995). Rather, embarrassment manifests at about 21 months in concurrence with the emergence of cognitive self-awareness, when children become conscious of being the center of attention (Miller, 1996).

It is around this age, Lewis (1995) observed, that elements of failure and transgression emerge in children's self-consciousness. Miller (1996) reported that in children, embarrassment manifests in smiling, gaze aversion, and possibly self-referential behaviors such as nervous touching. Based on their study of embarrassment behaviors in young children, Buss, Iscoe, and Buss (1979) placed fuller displays of embarrassment behaviors, e.g., blushing, smiling, giggling, nervous laughter, and hands over the mouth, later at approximately five years of age.

Miller (1996) argued that a fuller sense of embarrassment does not generally occur in children before the age of 10, when there is a greater development of self-awareness and socialization. Even so, he posited that due to the uniquely complex aspects of embarrassment, many years of instruction and experience may be required to create in children the sense of embarrassment that adults typically feel. The socialization process brings children greater awareness of the social and cultural rules that apply and reinforces the capacity to feel embarrassed when those rules are broken.

Theory of Mind and Its Implications for Embarrassment in ASD

The term theory of mind (ToM) was coined by Premack and Woodruff (1978) and refers to one's ability to attribute mental states—beliefs, intentions, desires, and thoughts—to self and to others, and to realize that other people's mental states may be different from one's own (Baron-Cohen, Leslie, & Frith, 1985). ToM is critical to human development and plays a significant role in supporting one's social and emotional engagement with others. Although the development of ToM begins during infancy, it continues to mature throughout childhood and adolescence (Dumontheil, Apperly, & Blakemore, 2010; Flavell, 1999; Perner & Wimmer, 1985; Wimmer & Perner, 1983).

Children with ToM may perceive themselves as social objects and realize that others may view them as having done something out of alignment with social rules. As a result in certain situations they may become embarrassed. If, however, children cannot see themselves as social objects subject to the evaluation of others, they have no reason to feel embarrassment (Buss, Iscoe, & Buss, 1979).

Baron-Cohen et al. (1985) were the first to consider ToM in ASD. A new dimension of ToM research emerged from their seminal article, and a new understanding

of what some consider the key deficit in ASD, i.e., lack of ToM, common, in varying intensity, to all ASD diagnoses (Frith, 2003). The ToM account of ASD reflects the view that weak ToM results in many of the social cognitive deficits, including communication deficits, that are so characteristic of ASD. In this view, these difficulties typically stem from an impaired ability to see things from the perspective of someone else. ToM deficits may contribute to the core ASD impairments of communication and social skills. For example, a lack of ability to attribute beliefs to others can render clear communication more difficult, and failing to understand the distinction between theirs and others' knowledge can interfere with social interactions.

Baron-Cohen et al. (1985) found that their child participants with autism lacked ToM, and failed to understand the difference between their own knowledge and the knowledge of another. They found that children with ASD were unable to attribute beliefs to other people and functioned, therefore, at a significant disadvantage in not being able to correctly interpret and predict others' behaviors (see also Baron-Cohen, 1989; Perner, Frith, Leslie, & Leekham, 1989).

As a result of their ToM deficits, the self-conscious emotion of embarrassment may pose difficult challenges for those with ASD, including those with AS. Embarrassment may be challenging for those with ASD because of their poorer ToM capacity to take the perspective of others (Capps et al., 1992; Colonnesi, Engelhard, & Bögels, 2010; Tager-Flusberg, 1999). Though children with AS/HFA may have difficulty identifying emotions such as embarrassment conceptually, they may nonetheless experience these states. There may, however, be differences between how individuals with ASD and typically developing (TD) individuals experience embarrassment, in the

types of situations that they perceive as embarrassing or non-embarrassing, and in the mental state understanding that underlies how individuals with ASD and TD persons perceive others when they are embarrassed. A clear understanding of embarrassment in children with AS/HFA, however, has long eluded professionals in the autism field, and only a relatively small number of studies have examined embarrassment in individuals with AS/HFA.

Baron-Cohen (1991) posited that the ability of children with ASD to understand emotions caused by beliefs, among them, embarrassment, was particularly poor. Hillier and Allinson (2002) found that those with HFA rated embarrassing situations similarly to control groups but showed greater difficulty in understanding that other scenarios were not embarrassing. Hillier and Allinson also reported that participants with HFA performed poorly in providing justifications for their responses. Moreover, they rated vignettes that included an authority figure to be significantly more embarrassing than those that included a best friend present in contrast to the responses of the typically developing (TD) group. Additionally, a significant correlation was found between performance on false belief tasks and justification ratings. Researchers also found that only in situations where norm violations were intentionally brought to the attention of participants with ASD, eliminating the need for ToM, did children experience embarrassment (Hobson, Chidambi, Lee, & Meyer, 2006; Hobson & Ouston, 1989).

More specifically to AS/HFA, researchers have found particular differences in the impact of ToM on embarrassment in individuals with AS/HFA in comparison with TD individuals. For example, while embarrassment/physical scenarios may require some ToM, they do not require as much as embarrassment/ social faux pas scenarios.

Embarrassing situations differ in the degree to which they require ToM, from the highly complex (social faux pas) to the relatively simple (physical). In embarrassment/physical situations, the social rules tend to be black and white and more easily assimilated.

In addition, Capps et al.'s (1992) study of 18 participants with HFA, participants with HFA had difficulty describing their experiences with embarrassment in contrast to the TD participants. Those with HFA differed in their responses to the complex emotions of embarrassment, for which they required more frequent prompts and more time to discuss. Capps et al. also found that children with HFA displayed limited understanding of the salience of others present in embarrassing situations.

In a study of 25 participants with AS/HFA, Heerey et al. (2003), found that self-conscious emotions such as embarrassment did not occur spontaneously for children with AS/HFA. Further, they found that participants with AS/HFA performed significantly worse in identifying embarrassment in photos of facial expressions than did the TD participants.

In sum, embarrassment may pose difficult challenges for those with ASD. This may be at least in part due to the fact that embarrassment relies heavily on ToM. Though individuals with AS/HFA demonstrate some awareness of ToM, they also demonstrate ToM deficits (Attwood, 2007; Frith, 2003; Sigman & Capps, 1997; Volkmar et al. 2005). Further, although most TD individuals are often able to deal with embarrassing situations in good humor and move on emotionally, anecdotal reports suggest this is often not true of individuals with AS. For many children and youth with AS, embarrassment can lead to significant and frequent angry meltdowns. These outward signs of embarrassment seen in children with AS/HFA appear to be the visible reflection of profound internal distress,

evoked by embarrassing situations (Capps et al., 1992). The anecdotal literature strongly suggests that underlying the experience of embarrassment in persons with AS/HFA is a sense of vulnerability, frustration, potential perceived loss of face, poor self-image, the incapacity to judge whether given stimuli merits a small or large emotional response, and the inability to accurately read how one is perceived by others (Attwood, 2007; Klin, Volkmar, & Sparrow, 2000; Myles & Southwick, 2005; Prior, 2003).

Preliminary Research

The present study is based in part on findings from a previous study (Winter-Messiers et al., in preparation) investigating embarrassment in adolescents with AS, in which my colleagues and I studied how 34 children (17 with AS/HFA, and 17 TD participants, with equal gender representation) perceived embarrassment in themselves and others. We examined how adolescents with AS/HFA perceive themselves and others in embarrassing situations, and how they experience embarrassment, in comparison to their typically developing (TD) peers.

We gathered data from both the adolescents and their parents. Adolescents were administered a series of twelve vignettes representing four types of embarrassment and a fifth non-embarrassing vignette type: (a) Physical Embarrassment vignettes, e.g., dropping a lunch tray in the cafeteria; (b) Social Faux Pas Embarrassment vignettes, e.g., forgetting to bring a gift to a friend's birthday party; (c) Positive Attention Embarrassment vignettes, e.g., a teacher praises a student for an award and asks fellow students to clap for the student; (d) Negative Attention Embarrassment vignettes, e.g., a student is walking to school in the rain and a passing car throws mud up on her new white pants; and (d) Non-Embarrassment vignettes, similar in other respects to the four

embarrassment vignette types, e.g., a boy puts on his hat and coat at home while another boy waits, before walking to school together. After each vignette, participants were asked how embarrassing they would rate the vignettes, both for Most People ("How embarrassed would Most People be in Ramon's position?") and for You ("If you were Ramon, how embarrassed would You be?"), respectively, and then were asked to justify their ratings. Finally, we administered the Child Embarrassment Survey, developed by the researcher, and the Kaufman Brief Intelligence Test-2 (K-BIT-2; Kaufman & Kaufman, 1997).

Parents were administered the following measures: the Confirmation of Autism Spectrum Disorder Diagnosis and Intervention Survey, the Asperger's Syndrome Diagnostic Scale (ASDS; Myles, Bock, & Simpson, 2001), the Autism Quotient (AQ; Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001), the Parent Embarrassment Survey, and a Demographics Questionnaire.

Six primary findings emerged. First, adolescent participants with AS/HFA had greater difficulty than did TD participants in distinguishing embarrassing from non-embarrassing vignettes.

Second, the AS/HFA group performed on par with the TD group in rating the physical, negative attention, and positive attention vignettes. However, participants with AS/HFA rated the social faux pas vignettes as significantly less embarrassing than did the TD group. These results supported the hypothesis of a ToM deficit in ASD because the social faux pas vignettes required greater understanding of ToM.

Third, adolescents with AS/HFA provided significantly fewer appropriate justifications for their vignette ratings than did their TD peers. We attributed this to the

fact that those with AS/HFA may not be able to recognize intuitively why a situation is embarrassing, even when they have some sense that it is.

Fourth, consistent with the vignette data, when asked to describe personally embarrassing experiences at school, home, or elsewhere, significantly more participants with AS/HFA provided more perceived non-embarrassing personal experiences than did TD participants. This may be an indication in participants with AS/HFA of both their inability to recall personal experiences and describe them, and their fundamental lack of understanding about what constitutes, for most people, embarrassing situations (Attwood, 2007; Klin et al., 2000; Myles & Southwick, 2005; Prior, 2005).

Fifth, parents of the AS/HFA group provided significantly more descriptions of their children's unusual aggressive and/or negative behaviors in embarrassing contexts than did parents of the TD group, the strongest of which was self-injurious behavior, e.g., hitting, scratching, pinching, and punching themselves. Although no other research has been conducted to investigate a possible link between embarrassment and self-injurious behaviors in individuals with AS, researchers have, however, reported that meltdowns in those with ASD may result in an increase of self-injurious behaviors, repetitive behaviors, and aggression (Baker, 2008; Mazefsky, Pelphrey, & Dahl, 2012). In keeping with this finding, we also found a significant difference for the AS/HFA group in parents' descriptions of their children's typical non-self-injurious behaviors in embarrassing situations, e.g., yelling and screaming, avoiding contact with others, frustration, and physical reactions such as increased self-stimulating behaviors, tics, trembling, and hand flapping. Emerging as trends were such behaviors as crying, making self-deprecating comments, sending others out of the room, and using swearing and strong language.

Because the AS/HFA participants themselves did not describe all the aggressive behaviors that their parents did, this may indicate that those with AS/HFA are unaware of their behaviors and perhaps unable to recall and describe their behaviors after they have regained their composure (Attwood, 2007; Janzen, 2003; Myles & Southwick, 2005).

Finally, an additional important finding was that TD participants spontaneously referred significantly more often to their use of positive social strategies to ameliorate the personal and social impact of embarrassment than did the AS/HFA group. We found significant group differences for two strategies in particular used by the TD group, i.e., ceasing to talk when embarrassed, and the use of smiling and humor, consistent with the findings of Edelmann and Hampson (1981).

Unanswered Questions and Goals of the Present Study

Several unanswered questions emerged from this study that are addressed in the goals of the present study. These can be summarized in three categories: the need for a more thorough assessment of ToM in the context of embarrassment, the need for a comparator emotion in the vignette assessment, and the need for an assessment of in the study. These three categories align with the three research goals that follow this section.

Assessment of ToM and embarrassment. First, in the previous study, only one of the five vignette types presented situations involving embarrassing social faux pas, implying broken social rules. Therefore, demand on participants' ToM was relatively low in the other four, non-social faux pas vignette types. Participants had only to consider whether the protagonists, and they themselves, would be embarrassed in similarly embarrassing situations, and to what degree, without necessarily having to consider whether social rules had been broken in most vignettes.

In contrast, the present study increased the ToM demands on participants by employing a more complex vignette formula. In addition, the present study focused on only two types of vignettes, i.e., physical and social faux pas, increasing the complexity of the social faux pas vignettes and eliminating the less demanding vignette types. Previously, no study had investigated the impact of vignettes that place greater ToM demands on embarrassing situations, through augmenting the ToM complexity of the embarrassment/social faux pas vignettes in individuals with AS/HFA. In contrast to the previous study, the new vignette formula of the present study required a standardized audience and protagonist response, insuring a general audience of peers in addition to an individual peer interacting with the protagonist, thus increasing the potential for embarrassment and the ToM demand.

Second, the previous study did not include independent measures of ToM to which to compare the groups' understanding of embarrassment on the vignettes. If ToM is necessary for embarrassment understanding, especially in the case of social faux pas, then vignette performance should correlate with ToM performance. Therefore, the present study included independent measures of ToM, obtained both through adolescent assessment and parent report.

Comparator emotion. Second, in the previous study, participants were not given a comparator emotion on which to rate the vignettes along with embarrassment, which may have unintentionally communicated that participants were expected to find the vignettes embarrassing. In addition, the lack of a comparator emotion did not allow for testing participants' ability to distinguish embarrassment from another emotion. Perhaps participants would have responded similarly for any negative emotion, in which case we

would have overestimated their understanding of embarrassment.

In light of this, in the present study, I asked participants to rate to what degree each vignette elicits embarrassment or anger, respectively. I selected anger as the comparator basic emotion because it is a non-self-conscious, or basic, emotion that does not require ToM. Additionally, I selected anger as the comparator emotion because both the clinical and anecdotal literature have reported the tendency of those with AS/HFA to confuse their own emotions of embarrassment and anger in arousing social situations (e.g., Attwood, 2007; Myles & Southwick, 2005; Prior, 2003). As the mother of one participant with AS/HFA reported in my previous study, "I have never seen [my child] act traditionally embarrassed. He goes straight to anger" (Anonymous, Personal Communication, Nov. 22, 2008). Individuals with AS/HFA may experience embarrassment as quickly converting to anger, resulting in their having difficulty in identifying each emotion separately.

Assessment of emotion regulation. Third, a question emerged from the previous study finding concerning the TD group's mention of positive social strategies to ameliorate the personal and social impact of embarrassment. The AS/HFA group, in contrast, spontaneously referred to negative strategies they employ to deal with embarrassment, leading me to address emotion regulation in the present study.

Emotion regulation involves the ways in which individuals attempt to control which emotions they experience, when and how they experience those emotions, and how they express them. Emotion regulation also implies the need for positive emotion management strategies (Balter & Tamis-LeMonda, 2006; Gross, 2002; Salters-Pedneault, Steenkamp, & Litz, 2009). Research in emotion regulation in individuals with ASD and,

specifically, AS/HFA, is quite limited (Mazefsky et al., 2012). The general emotional immaturity of individuals with AS/HFA across the developmental age span, however, is well established and contributes to their difficulties in emotion regulation (Attwood, 2007; Mazefsky et al., 2012; Sofronoff, Attwood, Hinton, & Levin, 2007; Myles & Adreon, 2001; Myles & Southwick, 2005; Stoddart, 1999). Sofronoff et al. (2007) observed that the social and inner worlds of emotion represent "uncharted territory" for those with Asperger's Syndrome (p. 1203). Further, Sofronoff et al. reported that individuals with AS appear unable, in the face of emotionally arousing stimuli, to thoughtfully consider how to apply alternative coping strategies to regulate their emotions. The tendency of those with ASD to display greater levels of negative affect continues from childhood into adolescence and adulthood, as demonstrated in their higher levels of anxiety, disproportionate emotional responses, and frequent changes in mood (Capps, Kasari, Yirmiya, & Sigman, 1993; Mazefsky et al., 2012; White, Oswald, Ollendick, & Scahill, 2009). Referring to the "gross failure" of individuals with AS to regulate their emotions, Baker (2008) noted that this deficit results in disproportionate and rapid escalation of negative emotions. This lack of ability in individuals with AS/HFA to regulate their emotions may augment repetitive behaviors, withdrawal, and self-injurious behaviors (Mazefsky et al., 2012). The AS anecdotal literature is replete with examples of experiences which children and youth with AS find embarrassing (e.g., Myles & Adreon, 2001; Myles & Southwick, 2005; Shore, 2003; Willey, 1999). The narratives suggest that for many children and adolescents with AS, this overwhelmed emotional state while experiencing embarrassment is accompanied by intense downward emotional and behavioral spirals, often culminating in significant emotional meltdown, or

"neurological storm" (Baker, 2008; Myles & Southwick, 2005). The meltdowns experienced by some adolescents with AS/HFA in the face of embarrassment motivated me to examine emotion regulation in the present study.

The present study assessed emotion regulation through several means. Participants were given a novel measure that I created, based on my previous study data (Winter-Messiers, in preparation). This measure was designed to elicit participants' assessment of how frequently they utilize a given positive or emotion regulation strategy in response to embarrassing and anger-inducing situations. In addition, in the vignette measure, participants related narratively how they would respond if they were in the positions of the vignette protagonists. Finally, the present study rectified the lack of emotion regulation assessment in the previous study by including independent measures of emotion regulation, for both adolescent assessment and parent report.

In sum, my previous study resulted in several important findings but also revealed some important questions. Extending the previous study, I conducted a novel study examining the relations of embarrassment, ToM, and emotion regulation.

Present Study Research Goals and Hypotheses

In the present study, adolescents with AS/HFA and TD adolescents were presented with vignettes representing embarrassing and anger inducing situations and were asked to rate each vignette and justify their ratings. These vignettes were based on my previous research.

In the previous study, individuals with AS/HFA performed significantly worse than the TD group in justifying their vignette ratings, implying a ToM deficit in their intuitive understanding of the vignettes and the social rules that were broken. The present study

builds on these previous findings but employs vignette types that are more closely matched on extraneous factors such as a person who acts upon or with the protagonist in some way, an audience consisting of a group of unnamed classmates, and the absence of any named friends, family, or authority figures. In addition, the Happé Strange Stories, (White, Hill, Happé, & Frith; 2009) measure was administered to adolescent participants and the Interpersonal Reactivity Index Parent Version to parents (IRI; Davis, 1980; Appendix P), to determine whether the social faux pas vignettes are more strongly associated with an independent ToM measure than are other embarrassment vignettes.

Embarrassment vignette goals and hypotheses. The present study is designed primarily to more thoroughly explore the previous study's findings on social faux pas and embarrassment. It includes two types of embarrassment vignettes, i.e., embarrassment/ social faux pas and embarrassment/ physical, followed by protagonist responses to the situations. Although ToM deficits may impair the ability of adolescents with AS/HFA to understand all embarrassing situations, the first goal of this study was to explore whether ToM deficits had even greater impact on their perception of embarrassment in social faux pas vignettes in comparison with physical vignettes. To examine this goal I gathered data through the embarrassment vignettes, the Happé Strange Stories (White, et al., 2009), the IRI perspective-taking subscale (Davis, 1980), the Adolescent Survey of Simple and Complex Emotion (ASSCE), and the Parent Survey of Simple and Complex Emotion (PSSCE). Based on my previous research, I hypothesized that adolescents with AS/HFA, in contrast to TD adolescents, would perform more poorly on their ratings of the embarrassment/social faux pas vignettes, perform similarly on their ratings of the embarrassment/physical vignettes, perform significantly more poorly on their

justifications of the embarrassment/social faux pas vignettes, and would perform similarly on their justifications of the embarrassment/physical vignettes.

Anger vignette goals and hypothesis. In addition, clinical and anecdotal reports suggest the tendency of those with AS/HFA to confuse their own emotions of embarrassment and anger in arousing social situations (Attwood, 2007; Myles & Southwick, 2005; Prior, 2005). Therefore, the second goal of this study was to examine the ability of adolescents with AS/HFA to discriminate between the self-conscious, or complex, emotion of embarrassment and the non-self-conscious, or basic, emotion of anger. To examine this goal I gathered data through the anger as well as the embarrassment vignettes, and I asked participants to rate both anger and embarrassment. The study included two types of anger vignettes, i.e., anger/social interaction and anger/ physical, followed by protagonist responses to the situations. Based on my previous research and the research of Capps et al., (1992), I hypothesized that adolescents with AS/HFA, in comparison to their TD peers, would show poorer understanding of embarrassment vignettes than they would of anger vignettes. This is due to the fact that, as a self-conscious emotion, embarrassment inherently requires more ToM than anger.

Emotion regulation goals and hypothesis. The limited research on emotion regulation in ASD does not address the ability of adolescents with AS/HFA to regulate their verbal and physical responses to embarrassment in social situations. The third goal of the study was to examine (a) if adolescents with AS/HFA were able to identify whether others' reactions to embarrassing or anger-inducing situations were socially appropriate, (b) whether they were able to provide a socially appropriate response indicating what they would do in the same situation, and (c) whether their responses

would indicate poor emotion regulation. To examine this goal I gathered data through the vignette justifications and narrative responses, the ASSCE, the PSSCE, including the positive and negative strategies subscales, the Emotion Regulation Questionnaire Reappraisal and Suppression subscales (ERQ; Gross & John, 2003), and the Emotion Regulation Checklist lability and negativity, and emotion regulation subscales (ERC; Shields & Cicchetti, 1997). By asking participants how they perceive protagonists' responses to vignette situations, I assessed participants' negative and positive emotion regulation strategies in order to gain insight into their meta-cognition of emotion regulation. Based on my previous research, and others' (e.g., Mazefsky et al., 2012; Myles & Southwick, 2005; Sofronoff et al., 2007), I hypothesized that adolescents with AS/HFA, compared to their TD peers, would be less able to identify others' reactions to embarrassing and anger inducing situations as socially appropriate or inappropriate, and would be less able to provide a socially appropriate response indicating what they would do in the same situation. Further, I hypothesized that the responses of adolescents with AS/HFA would indicate poor emotion regulation.

In sum, my dissertation research explored relations among social faux pas, requiring ToM, and other vignette types that require less ToM. I also examined participants' ability to distinguish between the self-conscious emotion of embarrassment and the non-self-conscious comparator emotion of anger. Finally, I studied participants' ability to regulate their emotions, through the use of narrative responses to protagonists' situations and participants' utilization frequency of positive and negative strategies in dealing with embarrassment and anger.

CHAPTER II

METHOD

Participants and Measures

The sample consisted of 42 pre-adolescents and adolescents, aged 11-19 years. There were 21 participants with AS/HFA (11 males, 10 females), and 21 TD participants (11 males, 10 females). Typically developing participants were matched to participants with AS/HFA based on gender and chronological age within one year or less, beginning by recruiting participants with AS/HFA and then recruiting a matched TD participant. During telephone interviews with parents, TD adolescents were screened for several neurological and developmental disorders prior to confirming participation (see Appendix A).

Participant recruitment. Participants, some of whom had been included in my previous research (AS/HFA n = 19, TD n = 15), were recruited through three channels. An announcement was posted on the online monthly newsletter at Bridgeway House, a non-profit agency in Eugene that provides extensive services for families of children and adolescents with ASD. In addition, flyers were posted throughout Eugene at locations relevant to adolescents and their parents, e.g., video game stores, grocery stores, community centers, and doctors' offices. Finally, participants were recruited from the UO Department of Psychology autism database.

Participants were tested in two sessions. For Session One, TD participants ranged in age from 11.1 to 17.4 years, and participants with AS/HFA ranged in age from 10.2 to 17.7 years. For Session Two, TD participants ranged in age from 11.4 to 19.6 years and participants with AS/HFA ranged in age from 11.6 to 19.11 years. Table 1 shows the

means and standard deviations for participant ages in years by group and gender. Session One (M = 687, SD = 180 days prior to Session Two) included measures assessing ToM, K-BIT-2 (Kaufman & Kaufman, 1997), and likelihood of ASD and AS. Session Two included measures assessing embarrassment, ToM, and emotion regulation.

Table 1

Means and Standard Deviations for Participant Ages (Years) by Group and Gender

Session #	AS	TD
Session 1		
Male	14.25 (1.46)	14.70 (1.71)
Female	14.44 (2.42)	14.62 (2.47)
Session 2		
Male	16.10 (1.60)	16.73 (1.71)
Female	16.20 (2.58)	16.30 (2.70)

Note. The N for the sample was 42.

Participant demographics. The sample for this study appeared broadly representative of adolescents with AS/HFA and TD adolescents and their families, based on a number of characteristics (see Table 2).

A parent or guardian of each participant was required to participate in the study, typically the mother. Parents or guardians of child participants completed all measures after reading and signing study participation and video consent forms. Stipends of $25 were given to the adolescents for their participation in the study, $10 for Session One and $15 for Session Two.

Table 2

Parent/Family Demographics as a Proportion of the Sample

Characteristic	Parent *n*=42
Ethnicity of participant	
Caucasian	.79
Non-Caucasian	.21
Did not disclose	.00
Education level of parent	
Graduate degrees	.21
Undergraduate degrees	.29
Some college education	.29
High school diploma	.09
Did not disclose	.12
Annual household income of parent	
$100K or more	.17
$75-100,000	.19
$40-75,000	.36
$25-40,000	.09
$25,000 or less	.10
Participation in schools' free lunch programs	.10
Did not disclose	.00
Family composition	
Married	.52
Divorced / single	.29
Domestic partnerships	.07
Other family member guardians	.07
Did not disclose	.05
Participants with co-morbid diagnoses	
AS/HFA adolescent participants, e.g., clinical depression, social anxiety, ADD/ADHD, gastro-intestinal disorders, Tourette's Syndrome, encopresis, seizures, trichotillomania	1.00
TD adolescent participants	.00
Parents with disabilities	
Asperger's Syndrome	.21
Psychiatric disabilities, e.g., ADD/ADHD, clinical depression, bi-polar disorder	.31
Physical disabilities, including multiple severe	.12
Did not disclose	.36
Family religious affiliation	
Christian	.38
Jewish	.07
New Age	.07
Mormon	.07
Sikh	.02
Did not disclose	.39

Participant IQ Assessment: Kaufman Brief Intelligence Test–2

As a test of cognitive abilities, all adolescent participants were administered the K-BIT-2 (Kaufman & Kaufman, 1997). This instrument consists of three subtests of verbal knowledge, matrices, and riddles, and results in crystallized (verbal), fluid (nonverbal), and IQ composite scores designed to indicate the individual's general level of cognitive ability and intelligence. All participants earned a composite IQ score > 70, with the exception of one female participant with AS/HFA who earned a composite IQ = 68. Her verbal and non-verbal IQ scores, however, were 75 and 70, respectively, so she was retained in the study. I conducted a 2 (group) x 2 (gender) x 3 (IQ type) ANOVA to examine whether there were group differences for verbal and nonverbal IQ scores. There were no significant group differences in either verbal or nonverbal IQ (see Table 3).

It is noteworthy that of the four groups, the females with AS/HFA had the lowest composite IQ mean of 98.8 (*SD* = 23.43). Though lower than the other group means, this score falls above the minimum IQ of > 85 that Baron-Cohen et al. (2001) set as an inclusion criterion for AS/HFA.

Diagnostic Measures

All parents completed a form confirming ASD diagnosis. All TD parents reported that their children did not have any type of ASD diagnosis or other neurological disorder. In addition, for the purpose of confirming parent-reported diagnosis of ASD or typical development, all parents were asked to complete, in regard to their children, three measures indicating likelihood of ASD or AS, depending on the measure.

Table 3

Means and Standard Deviations for K-BIT IQ Scores by Group and Gender

Composite means

	AS	TD	Total
Male	113.45 (13.49)	106.91 (8.28)	110.18 (11.42)
Female	98.80 (23.42)	104.50 (13.52)	101.65 (18.85)
Total	106.48 (19.86)	105.76 (10.87)	106.12 (15.81)

Verbal means

	AS	TD	Total
Male	108.27 (13.02)	106.18 (9.00)	107.23 (10.97)
Female	102.70 (21.25)	106.30 (13.48)	104.50 (17.42)
Total	105.62 (17.21)	106.24 (11.06)	105.93 (14.29)

Nonverbal means

	AS	TD	Total
Male	113.64 (15.74)	105.00 (10.48)	109.32 (13.78)
Female	95.20 (21.29)	100.90 (11.87)	98.05 (17.03)
Total	104.86 (20.42)	103.05 (11.08)	103.95 (16.25)

Confirmation of Autism Spectrum Disorder Diagnosis and Intervention Survey. The researcher designed this measure for parents to provide their children's diagnostic history and the types of professionals who diagnosed and/or found their children eligible for special education services at school (Appendix J). Parents of TD children who reported that their children had no diagnosis of an ASD did not go any further in this measure. Parents of participants with AS/HFA were asked to report their

children's autism intervention history, providing types of interventions, such as the Picture Exchange Communication System (PECS; Frost & Bondy, 2002), social skills groups, and/or speech/language therapy. All parents completed all other measures in full.

Autism Spectrum Quotient--Adolescent Version. All parents completed the Autism Spectrum Quotient--Adolescent Version (AQ; Baron-Cohen, Hoekstra, Knickmeyer, & Wheelwright, 2006; Appendix K), a 50-item rating measure which assesses autistic traits in adolescents using a 4-point Likert scale with qualifiers ranging from "definitely agree" to "definitely disagree". Five areas of behavior are evaluated (social skills, attention switching, attention to detail, communication, and imagination). Items include such statements as: "In a social group, s/he can easily keep track of several different people's conversations", and "S/he tends to notice details that others do not".

Asperger's Syndrome Diagnostic Scale. All parents completed the Asperger's Syndrome Diagnostic Scale (ASDS; Myles et al., 2001; Appendix L) about their children. This measure consists of 50-items in a Yes/No format, and yields a score indicating the probability of an individual having AS. This measure addresses five different aspects of behavior: Cognition, Language, Social Interaction, Sensorimotor, and Maladaptive. Items include such statements as: "Displays an extreme or obsessive interest in a narrow subject" (Cognition subscale), "Speaks like an adult in an academic or bookish manner" (Language subscale), "Avoids or limits eye contact" (Social Interaction subscale), "Displays an unusual reaction to loud unpredictable noise" (Sensorimotor subscale), and "Exhibits a strong reaction to a change in his or her routine" (Maladaptive subscale).

Krug Asperger's Disorder Index. All parents completed the Krug Asperger's Disorder Index (KADI; Krug & Arick, 2003; Appendix M) for their children. The KADI

is comprised of 32 items and is designed for use with individuals six through 22 years of age to determine the likelihood of Asperger's Syndrome. Items include such statements as "Makes naïve remarks (unaware of reaction produced in others)", "Expresses opinions to strangers inappropriately," and "Does things others regard as unconventional." The KADI does not include subscales.

These three diagnostic measures indicated strong group differences, with participants with AS/HFA demonstrating significantly more autistic traits than TD participants (*ps* < .01). On the latter two measures, the scores for the AS/HFA participants indicated a high likelihood of having AS, while TD participants scored well below the autism threshold (see Table 4).

Adolescent Measures

Both the typically developing adolescents and adolescents with AS/HFA were administered a series of measures for understanding of self-conscious or complex emotion (embarrassment), non-self-conscious or simple emotion (anger; Baron-Cohen, 1991), theory of mind, and emotion regulation.

Emotion assessment measures. Participants were given several measures to assess their understanding of embarrassment and anger. Several were developed by the researcher and two were independent measures.

Embarrassment and anger vignettes. First, adolescent participants were shown a series of written vignettes. These vignettes, developed by the researcher, described typical social situations common to adolescents in the school context and consisted of two sets involving embarrassment and anger. Each set consisted of two vignette types:

Table 4

Diagnostic Measures AQ, ASDS, and KADI Scale Scores by Group

Measure	AS Mean (SD)	TD Mean (SD)	*F*	*p*	PE-S
AQ					
Social subscale	7.00 (2.45)	1.97 (1.97)	53.77	< .01	0.57
Commun. subscale	7.90 (2.54)	1.38 (1.43)	104.68	< .01	0.72
Total	33.66 (9.57)	13.84 (5.86)	65.44	< .01	0.62
ASDS					
Cognition subscale	12.86 (1.93)	4.24 (1.58)	250.85	< .01	0.86
Language subscale	13.19 (2.60)	2.14 (1.42)	291.57	< .01	0.88
Social int. subscale	11.95 (3.41)	1.48 (1.03)	181.34	< .01	0.82
Sensorimot. subscale	13.33 (2.97)	6.24 (0.70)	113.39	< .01	0.74
Maladapt. subscale	13.38 (2.29)	3.90 (1.34)	267.94	< .01	0.87
Total	120. 6 (15.98)	46.81 (9.65)	329.60	< .01	0.89
KADI					
Total	90.43 (17.26)	59.81 (3.71)	63.20	< .01	0.61

Note. The *N* for the group was 42.
† PE-S = Partial Eta-Squared
df = (1, 40)

For Embarrassment, these were Physical and Social Faux Pas vignettes, and for Anger these were Physical and Social Interaction vignettes (Appendix B). Each set (embarrassment, anger) included four vignettes. Each type in each set (embarrassment/ social faux pas and embarrassment/ physical, or anger/social interaction and anger/

physical) included two vignettes, for a total of eight vignettes. Following the computer presentation of each vignette, participants were asked to provide a rating for both embarrassment and anger, and a narrative justification for each of their ratings.

*Vignette design structure***.** The vignettes were written according to a strict design formula created to ensure consistency across vignettes. The formula regulated the total number of words, the nature of the protagonist, third person voice, verb tense (present), absence of mentalizing words, number of sentences used (three), location, and implied audience (Appendix C). In addition, certain social situations were avoided due to their complexity and potential for creating confusion and/or emotional distress, e.g., romance, bullying, and abuse.

Vignette types. The embarrassment/social faux pas vignettes measured a participant's ability to understand mental states, i.e., another's intentions, desires, beliefs, or thoughts. They measured the participant's ability to discern whether a situation involving a social faux pas would typically evoke embarrassment or anger, and to what degree on a Likert scale ranging from 0 to 3. The social faux pas vignettes taxed participants' ability to know that which is socially embarrassing about a given situation and which social rule has been broken. Social faux pas vignettes also allowed for a specific examination of the influence of ToM deficits on the experience of embarrassment. Following is one of the embarrassment/social faux pas vignettes:

> Monique is working on a project in the library with her classmates after lunch. Suddenly she loudly passes gas and the boy sitting next to her jumps up and moves to a seat across the room.

The embarrassment/physical vignettes measured a participant's ability to discern whether a situation involving a physical event would evoke embarrassment or anger, and to what degree. Following is one of the embarrassment/physical vignettes:

Janelle is getting on the bus with her schoolmates for a field trip. When she walks up the stairs of the bus, she trips and knocks the girl in front of her into the aisle.

The anger/social interaction vignettes measured a participant's ability to discern whether a social interaction that would evoke anger in most people, would also evoke anger or embarrassment in the participants, and to what degree. Following is one of the anger/social interaction vignettes:

Victoria is working in the gym after school, planning for the dance with the student committee. A girl who agreed to help Victoria plan dance activities for the dance says she is leaving early without finishing her part.

The anger/physical vignettes measured a participant's ability to discern whether a situation involving a physical event would evoke embarrassment or anger, and to what degree. Following is one of the anger/physical vignettes:

Pierre is running a timed lap around the track with his classmates during gym. Another boy who is also running shoves Pierre, which results in Pierre slowing down, and the other boy passes him.

Vignette-related queries. After reading each vignette, participants were asked to rate the vignette in response to two counterbalanced questions focusing on embarrassment and anger, respectively. For example, in the embarrassment/physical vignette they were asked, "If you were in Janelle's position, how embarrassed/angry might you be?" They were asked to select a response from a 4-point Likert scale ranging

from: 0 = Not at all; 1; 2; 3 = Very. The scale included descriptors on the low and high ends, with the numbers 1 and 2 in between. After participants rated each vignette for embarrassment and for anger, they were asked to justify each rating, i.e., "Could you tell me why you chose a rating of 3?"

Two coders, blind to participant group affiliation, worked from session transcripts verified against the session video recordings. Each justification was coded as a 0 for No Response or "I don't know", a 1 for Inappropriate, if a participant's comments were incomplete or irrelevant, or a 2 for Appropriate. Coders assigned a 2 for Appropriate if a participant gave a response that fit the vignette scenario and generally aligned with responses previously unanimously deemed socially appropriate by a panel of six of my research assistants. All of these men and women were quite familiar with the social rules of high school students, as they had graduated high school within the past three years. Examples of Appropriate participant justifications for the Monique vignette about a girl passing gas in the school library included "Passing gas is very pervasive, it's loud, and it smells. It is generally seen as socially inappropriate behavior and it calls attention to you in a very negative way" and for the Victoria vignette about a girl who is left to finish dance preparations by herself, "The girl leaving early is just going to leave me with the rest of the work by myself, leaving me [thinking] 'I don't know what to do!'" Examples of Inappropriate justifications for the Victoria vignette included "Let's see here, oh yeah, I'd just drag them back into the gym, the place, cause if it was in the gym, I'd just drag 'em back there" and for the Pierre vignette about a boy who is shoved while running a timed lap, "That's never happened to me so I have no idea; I hate running for the sake of running". Inter-rater reliability was "Substantial" (.60-.80; Landis & Koch, 1977),

Cohen's Kappa = .65, with 90% agreement between coders. Of their six levels of Cohen's Kappa inter-rater analysis, Landis and Koch identify four levels below "Substantial" and one level above, "Almost Perfect Agreement".

Following each vignette, participants were instructed, "We all want to react a certain way; even though we know what we should do, we may react differently. So, in [protagonist, e.g., Janelle]'s position, what would YOU actually do?" Two coders coded participants' open narrative responses to this question as appropriate or inappropriate. Responses were coded as socially appropriate if they followed basic social rules, such as being polite, apologizing when appropriate, inquiring about others' welfare when appropriate, and exhibiting physical and verbal emotion regulation. An example of a socially appropriate response for the vignette of Janelle knocking over the person in front of her on the school bus was, "I would get over to her, I would help her up, and I would say, 'Hey, are you OK? Next time, I will try to be more careful.' And then, if it were a friend, I would do something, like offer to buy them dinner. Well, dinner is expensive. I could buy them a coke." Responses were coded as socially inappropriate if they did not follow basic social rules, and included elements such as being rude, not apologizing when appropriate, ignoring the welfare of others, and exhibiting physical and/or verbal emotion dysregulation. A socially inappropriate response for the vignette of the girl who is getting ready for the school dance and addresses the girl who is leaving early without finishing her work would be, "I'd say, 'I've been doing most of the g--damn work, so f--k you, I want to work with someone who knows what they are doing and wants to do it.' They will be my slave and their family can be ashamed of them. I'd have them get my

groceries naked. They should be that ashamed!" Inter-rater reliability was "Substantial" (Landis & Koch, 1977), Cohen's Kappa = .65, with 90% agreement between coders.

In addition, participants' narrative responses to the question, "In [protagonist, e.g., Pierre]'s position, what would YOU actually do?" were also coded by two RAs for indicators of emotion dysregulation. Narrative responses that revealed evidence of emotion regulation were coded as 1, and responses with evidence of emotion dysregulation were coded as 0. Examples of dysregulation included "I would pick the ball up and throw it back at her", "I hate you—you sicken me!" and "All of you people are gonna be, you know, like, I don't know how to put it, the fact that you took all my hard work that I worked so hard for, and you were the one just sitting over there drooling, and whatever you dumb people do". Inter-rater reliability was "Almost perfect agreement" (Landis & Koch, 1977), Cohen's Kappa = .84, with 98% agreement between coders.

Following their personal narrative responses regarding what they would do in the position of the protagonist, participants were shown an additional, final sentence to the relevant vignette. This sentence described an action on the part of the protagonist, and each vignette was paired with one of four responses (Appendix D), which followed a counterbalancing scheme (Appendix E). The four responses may or may not be socially appropriate, depending on the vignette. Participants were asked to state whether this final protagonist response was socially appropriate or inappropriate. For example, in the vignette in which Victoria's classmate leaves the meeting without finishing her tasks, the response, "Victoria doesn't do anything, acting as if nothing happened," is inappropriate because one would expect her to ask her fellow student why she is leaving early and request that she stay to help finish the work or make arrangements to complete it at

another time. In the scenario in which Monique passes gas in the library, the response, "Monique blames the boy who moved to another seat" is inappropriate. Although this event would be quite embarrassing, it is nevertheless inappropriate to blame someone else. In the vignette in which Pierre is running a timed lap with his classmates and another boy shoves him, resulting in Pierre slowing down. Pierre's response is, "Pierre says nothing but tries to outrun him," which is socially appropriate.

Vignette piloting criteria. All vignettes and related queries were piloted through the UO Department of Psychology Sona Experiment Management System. In order to ensure that only the emotions of embarrassment or anger emerged as primary emotions in respective vignettes, 16 trial vignettes were piloted for eight different emotions, both basic and complex, i.e., sadness, happiness, anger, fear, pride, jealousy, embarrassment, and shame.

First, Sona participants were asked to assign a score of 0 – 3 for each emotion on each vignette, e.g., for this vignette, in Carrie's position, how happy would you feel? The highest possible score was a 3.00. To determine the scoring criteria I reviewed how the first two rounds of students ($N = 26$) scored the vignettes; in order to ensure that embarrassment (or anger) would be clearly isolated from the comparator emotions, I set the highest threshold for the competing emotions at 1.25 and the lowest threshold for the target emotion at 1.75. These criteria were also designed to ensure that the mean for each emotion could not be 1.50.

Next, Sona participants were asked to score protagonist responses as appropriate or inappropriate, given the vignette action, e.g., "Carrie gives an explanation for what just happened", on a scale of 1-4. To be acceptable, responses written as appropriate had to be

scored by participants at ≥ 1.75. Responses written as inappropriate following the vignette action, e.g., "Monique blames the boy who moved to another seat", had to be scored by participants at ≤ 1.25 to be acceptable.

Finally, a new sample of Sona participants (N = 36) was asked to assign each of the 16 vignettes to a category, i.e., embarrassment/social faux pas, embarrassment/ physical, anger/social interaction, and anger/physical. Each vignette had to be scored at ≥ 60% for assigned category (4 categories meant 25% accuracy by chance alone). When collapsed, 100% of these vignettes were appropriately classified in the general embarrassment or anger category. There was a range of 62 – 95% category accuracy across vignettes with category means of embarrassment/social faux pas, 83%; embarrassment/physical, 75%; anger/social interaction, 73%; and anger/physical 79%. The final round of Sona piloting yielded eight vignettes that met full criteria. These were the vignettes used in the present study. In the process, however, the gender equity among vignette protagonists was lost.

Piloting ensured that young adult college students were not confounding embarrassment with anger in the vignette emotion categories, and were not confounding embarrassment or anger with any of the other six piloted emotions. In addition, piloting ensured that protagonist vignette action responses were correctly interpreted as appropriate or inappropriate, and that all vignettes were accurately interpreted as belonging to one of the four types, embarrassment/social faux pas, embarrassment/physical, anger/social interaction, and anger/physical.

Emotion Regulation Questionnaire. The ERQ (Gross & John, 2003; Appendix F) consists of ten items divided into two subscales: Reappraisal (six items), on which a

higher score indicates greater ability to regulate one's emotions, and Suppression (four items), on which a higher score indicates lesser ability to regulate one's emotions. The ERQ employs a 7-point Likert scale, ranging from one (strongly disagree) to seven (strongly agree). An example of a Reappraisal subscale item is, "When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm" and an example of a Suppression subscale item is, "I control my emotions by not expressing them."

Adolescent Survey of Simple and Complex Emotion. Adolescents were given the Adolescent Survey of Simple and Complex Emotion (ASSCE; Appendix G) that the researcher designed for the present study, in order to collect quantitative data on emotion-related behaviors shared in open narrative qualitative interviews by participants in an earlier study. This is a survey that asks adolescents questions regarding their embarrassment- and anger-related verbal and physical behaviors. For all of the aforementioned questions, participants were asked to select the frequency with which they or others experience a given behavior on a 4-point Likert scale of Never, Sometimes, Often, or Always, 0-3.

One section presents questions regarding, "How often do these types of situations tend to embarrass/anger you?", e.g., "I have tripped, fallen, or dropped something." These are situations that would be embarrassing to most people. Another section presents questions requesting the participant's perspective of how others experience embarrassment, e.g., "How might other people feel when they are embarrassed?" and "How might other people act when they are embarrassed?" A subsequent section asked for the participant's perspective, e.g., "How might YOU feel

when you are embarrassed/ angry?" and "How might YOU act when you are embarrassed?" Example items are "Blame someone else for what happened", "Change the subject", and "Verbally hurt other people, for example, through yelling or strong language". Strategies included those that might be adopted either during or after the event, e.g., "I laugh or giggle", or "I bite my skin".

The remaining section presented an open narrative question: "Could you describe an embarrassing experience that happened to you in the last two years around teens your age?" (No experiences regarding anger were requested in the anger portion of the measure out of concern for participant testing fatigue.) These experiences were coded by two coders who scored the narratives as a 2 for a story that most TD adolescents would likely find embarrassing, a 1 for stories that most TD adolescents would likely find non-embarrassing, and a 0 for a response of "I don't know" or no response given.

Following are examples of story narratives coded as embarrassing: (a) "OK, yeah, my birthday! I was playing guitar in front of my friends. I forgot the words, strumming, everything, and completely screwed it up;" (b) "I was getting dressed and one of my brothers walked into the room and my mother was with them and she got embarrassed. I had gotten embarrassed because my mother had gotten embarrassed. When you see someone getting embarrassed, you feel embarrassed;" (c) "When I was talking to my girlfriend and I kept tripping over my words, so to speak. I couldn't talk straight. I fumbled with words and just mumbled a bunch;" and (d) "One time when I was explaining the quadratic formula in class, I stuttered and I said a bad word. I covered my mouth and put my head down for a few seconds."

Following are examples of story narratives that were coded as non-embarrassing: (a) “One time in school I was wearing leggings,” (b) “I don’t like to remember things that are unpleasant. The past is in the past. I like to think about happy things. There was a time I guess where I felt embarrassed where there might have been, I can’t really remember, I’m just kind of frozen”; (c) “I don’t meet with people my age. I can’t think of anything that’s embarrassing. Words have no value. If you speak it has no meaning and no hold on anybody--if you write, it has a hold on people,” and (d) “When I was in diapers at the beach, mom would catch me stuffing sand in my diapers.” Inter-rater reliability was “Substantial” (Landis & Koch, 1977), Cohen’s Kappa = .65, with 80% agreement between coders.

Happé Strange Stories. In order to assess ToM, adolescents were given the Happé Strange Stories measure in the version adapted by White et al. (2009; Appendix H). The Happé Strange Stories are designed to assess group differences in ToM in children with ASD and TD children. The measure consists of four story categories that assess varying aspects of ToM, i.e., double bluff, persuasion, white lies, and misunderstanding. There are two stories in each category. These stories are the basis for evaluating participants’ understanding of the thoughts, intentions, beliefs, and desires of others. After reading the stories, participants respond to questions that evaluate their perception of why story characters chose particular words or actions. One of the stories involving a disturbing theme of animal abuse, as written by Happé, was adapted to reflect a less troubling plot. In addition, British words used throughout the stories were exchanged for terms more easily recognized by adolescents in the United States, e.g.,

"angry" was substituted for "cross." Inter-reliability was "Substantial" (Landis & Koch, 1977), Cohen's Kappa = .70, with 90% agreement between coders.

Parent Measures

In addition to the diagnosis confirmation measures (Appendices I, J, K, L), all participants' parents were administered three other measures.

Emotion Regulation Checklist. First, parents were given the ERC (Shields & Cicchetti, 1997; Appendix M). The ERC is a 24-item parent report measure of adolescents' emotion regulation. It examines reactivity, affective intensity, and dysregulated positive emotions. Items include such statements as: "[S/he] responds positively to neutral or friendly overtures by adults", "[S/he] is empathic toward others; shows concern when others are distressed or upset", and "[S/he] displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive, or intrusive acts by peers". Parents selected from Rarely, Sometimes, Often, and Almost Always for each item.

Interpersonal Reactivity Index. Second, parents were given the Interpersonal Reactivity Index, parent version (IRI; Davis, 1980; Appendix N). This is a 28-item, parent-report measure of dispositional empathy. For this study, I used only the perspective taking (PT) subscale, which measures the reported tendency to "…adopt the psychological point of view of others in everyday life" (Davis, 1980). Following are sample items, "S/he sometimes finds it difficult to see things from the 'other guy's' point of view" and "S/he sometimes tries to understand her/his friends better by imagining how things look from their perspective". Parents selected from a five-point Likert scale ranging from "Does not describe my child" to "Describes my child very well".

Parent Survey of Simple and Complex Emotion. Third, parents were given the Parent Survey of Simple and Complex Emotion (PSSCE; Appendix O), similar to the adolescents' measure described earlier. This is a survey that asks parents about their children's utilization frequency of embarrassment- and anger-related verbal and physical behaviors on a 4-point Likert scale of 0-3.

In the first half of the PSSCE, regarding embarrassment, parents indicated behaviors such as "S/he physically hurts herself/himself, e.g., hits herself/himself, or picks at her/his skin", "S/he feels depressed", and "S/he feels like s/he has no friends". Next, parents were asked to indicate which given situations cause their children to feel embarrassed, including "S/he has said the wrong thing, used a wrong word, etc.", "S/he has felt s/he looked weak in front of her/his peers", and "S/he has misbehaved."

Parents then were asked to indicate how often their children feel like behaving in certain ways when they are embarrassed, e.g., "S/he wants to scream at someone", "S/he does not want to be touched", and "S/he wants a hug". The corresponding next section presented the same items and asked parents to indicate how often their children *act* in the given ways when they are embarrassed, e.g., "S/he tells a joke", "S/he argues with other people", and "S/he throws something".

Parents were then asked for Yes/No responses to the questions, "Does your child act embarrassed in situations in which other children would NOT?" and "Does your child NOT act embarrassed in situations in which other children WOULD act embarrassed?" and "Do you ever wish that your child WOULD show embarrassment in certain situations when he or she usually does not?" In addition, when parents responded "Yes"

to any of these questions, they were asked to provide narrative examples from experiences they had observed in their children.

Finally, parents were asked, "Please tell us something else about how your child thinks about embarrassment" and "Please tell us something else about how your child experiences embarrassment". Among these comments were parent references to their children rarely or never being embarrassed. These were coded as 1 for reference to never being embarrassed, e.g., "My child tells me that she never gets embarrassed—I do not ever remember her telling me that she has been embarrassed" or "He says he has not been embarrassed in years." Parents who made no mention of this were coded as 0.

In the second half of the PSSCE, all but one of the same sections with identical items are included, asking parents to respond with regard to how their children experienced and demonstrated anger rather than embarrassment. The final section of the embarrassment portion of the PSSCE, asking parents to provide examples of their children's experiences, was left out of the anger section to prevent unnecessarily lengthening this time-intensive measure. This extensive emotion survey allowed for collection of parent-report data on the adolescent samples' abilities to regulate their emotional responses to potentially embarrassing and anger-inducing social situations.

Procedure

I conducted both test sessions with the aid of research assistants (RAs). I designed and delivered ten training presentations to the RAs between summer 2011 and spring 2012. During these training sessions, RAs were instructed in the DSM-IV-TR (APA, 1994) criteria for AS, taught how to interact and work appropriately with families, in

particular, participants (both adolescents and parents) with AS/HFA, and how to administer and answer questions regarding each measure.

In Session One, participants were given the Happé Strange Stories (White et al., 2009) and the three-part K-BIT-2 (Kaufman & Kaufman, 1997). Procedures followed in Session One were the same as those followed in Session Two.

In Session Two, an RA and I oriented families to the lab and video recording equipment, after which the adolescent was invited to the adjoining testing room and asked to sit at a table with testing documents. I administered all measures to adolescent participants. Each adolescent was given a variety of measures and activities. First, using one of a series of eight complete notebooks of identical but counter-balanced vignette stimuli, I presented the participant with a sequence of eight vignettes of embarrassing or anger-evoking social situations, shown individually in counterbalanced order, which the adolescent was asked to read, silently or aloud, as he or she wished. After reading each vignette, the participant read a series of prompts which asked him or her to provide two ratings and two justifications, state what the participant would do in the position of the protagonist, and respond to a follow-up question regarding whether the protagonist's response was appropriate. Next, participants were asked to complete the Emotion Regulation Questionnaire (Davis, 1980). Finally, I administered the Adolescent Survey of Simple and Complex Emotion described above. Throughout the testing, participants were frequently offered breaks, water, and a variety of healthy snacks. Adolescents remained in the lab for approximately two to two and a half hours, though TD adolescents sometimes completed the tasks in less time than the adolescents with AS/HFA.

Throughout the testing, adolescents were recorded using a discreet computerized audio and video recording system. Parents were encouraged to communicate with the RA or me regarding any questions or concerns about the testing. Parents completed the series of questionnaires and surveys in the following order: Confirmation of ASD Diagnosis and Intervention Survey, the Autism-Spectrum Quotient--Adolescent Version (Baron-Cohen et al., 2006), the Asperger's Syndrome Diagnostic Scale (Myles et al., 2001), the Krug Asperger's Disorder Index (Krug & Arick, 2003), the Emotion Regulation Checklist (Shields & Cichetti, 1997), the Parent Simple and Complex Emotion Survey, and the Interpersonal Reactivity Index (Davis, 1980). Parents of four female and two male participants with AS/HFA indicated that the research lab environment was too stressful and anxiety producing for their children and stipulated, as a condition of their participation, that they be tested in their homes. All home sessions were recorded and conducted with at least one parent present in the home.

CHAPTER III

RESULTS

All analyses were conducted utilizing a complete participant data set ($N = 42$). There were no missing adolescent or parent data. Unless otherwise indicated, all group comparisons were analyzed using Analysis of Covariance (ANCOVA) with age in months (as of Session Two) and Composite IQ as centered covariates.

Vignette Ratings

Table 5 shows the means and standard deviations for all embarrassment and anger vignettes broken down by rating type (embarrassment and anger) for AS/HFA and TD groups. In the following analyses I first assessed participants' ability to distinguish embarrassment from anger before moving to a more fine-grained analysis of their understanding of specific types of embarrassment.

Distinguishing embarrassment from anger. In the following analyses I assessed participants' ability to distinguish embarrassment from anger. In these analyses I collapsed across the two social and two physical vignettes within each emotion category, thus yielding scores across four vignettes ranging from 0 to 12.

I initially ran a 2 (Group) X 2 (Emotion Type: embarrassment vignettes vs. anger vignettes) x 2 (Rating Type: embarrassment vs. anger) ANCOVA with repeated measures on the last two factors to find whether the groups would distinguish embarrassment from anger. I had hypothesized that both the TD and AS/HFA groups would rate the embarrassment vignettes as more embarrassing than anger inducing and vice versa for the anger vignettes. Hence, an overall Emotion Type by Rating Type interaction was

Table 5

Means and Standard Deviations Vignette Embarrassment and Anger Ratings

Vignette	Embarrassment rating		Anger rating	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
EMB / SFP Monique passed gas in library	2.19 (1.12)	2.81 (.40)	.48 (.87)	.71 (.96)
Donald entered girls' bathroom	2.38 (1.07)	2.67 (.58)	.43 (.81)	.52 (.75)
EMB / PHYS Janelle tripped girl on bus	1.48 (1.12)	1.90 (.77)	.81 (1.17)	.29 (.56)
Suzanne petted puppy who urinated on her	1.76 (1.30)	1.76 (.94)	1.10 (.94)	.95 (.97)
ANG/SOCINT Carrie did all project work and teammate claimed credit	.81 (1.08)	.67 (1.11)	2.52 (.75)	2.81 (.40)
Victoria counted on girl who left w/o finishing work	.62 (1.02)	.19 (.40)	1.67 (.97)	2.10 (.70)
ANG / PHYS Pierre shoved by boy and slows down in race	.76 (1.22)	.86 (.96)	2.33 (.80)	1.95 (.67)
Tiffany hit hard by opposing team ball	.33 (.91)	.67 (.91)	2.29 (.85)	2.38 (.74)

Note: Possible range of scores is 0 to 3.

predicted. In addition, however, I hypothesized that the TD group would be better able to distinguish embarrassment from anger than the AS/HFA group and that the difficulty would be specific to embarrassment ratings of the embarrassment vignettes. Hence a 3-way interaction was expected.

The predicted two-way interaction between Emotion Type and Rating Type was significant, Wilkes' $\Lambda = .12$, $F(1,38) = 275.15$, $p < .01$, $\eta^2 = .88$. As is clear from Figures 1 and 2, both groups rated the anger vignettes as more anger inducing than embarrassing and rated the embarrassment vignettes as more embarrassing than anger inducing. In contrast, the predicted three-way interaction was not significant, $p = .12$, although the effect was in the expected direction. No other significant effects were found.

Because of the a priori nature of the hypothesis, I explored the 3-way interaction further by running separate ANCOVAs for the anger vignettes and the embarrassment vignettes. I had hypothesized that both the AS/HFA and TD groups would rate anger vignettes as more anger inducing than embarrassing and that they would do so to a similar degree. In contrast, for the embarrassment vignettes, I predicted that TD group would rate the embarrassment vignettes as more embarrassing than would the AS/HFA group, but that the groups would be similar in their anger ratings of these vignettes.

A 2 x 2 ANCOVA on the anger vignettes with Group as a between subjects factor and Rating Type as a within-subjects factor (anger vs. embarrassment) revealed only a significant main effect for Rating Type**,** Wilkes' $\Lambda = .14$, $F(1, 38) = 226.64$, $p < .01$, $\eta^2 = .86$. The anger vignettes were rated significantly more anger inducing than embarrassing. As predicted, the interaction with group was not significant, $p > .46$. As is

clear from Figure 1, both groups recognized that anger, rather than embarrassment, was the most likely reaction to the anger vignettes.

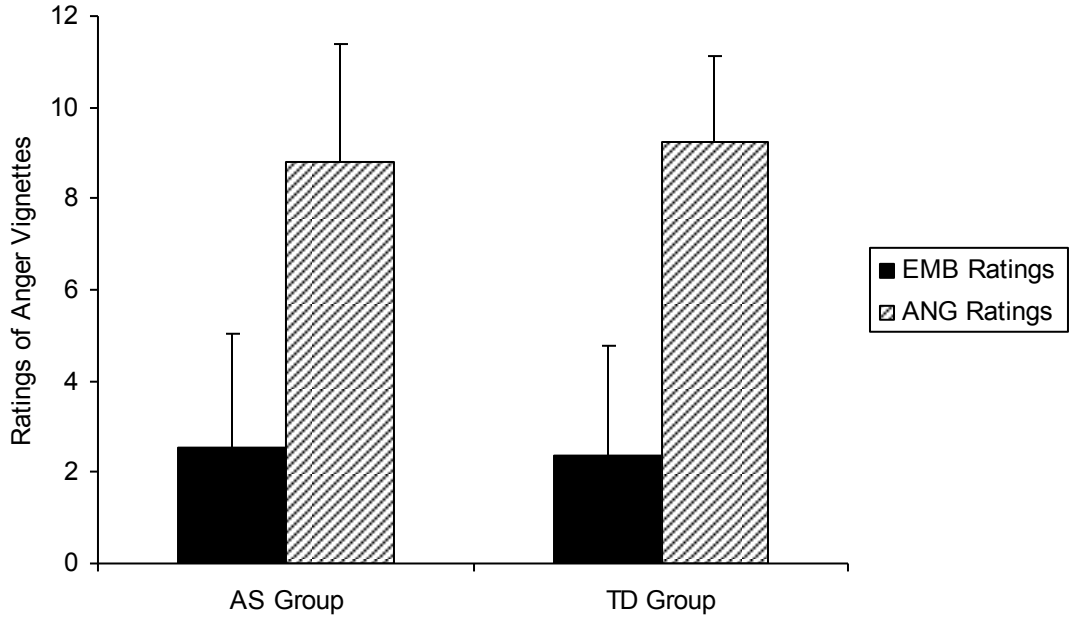

Figure 1. Anger and embarrassment ratings for anger vignettes broken down by group. Error bars represent standard deviations.

A corresponding ANCOVA on the embarrassment vignettes revealed a different pattern. Once again there was a significant main effect for Rating Type, Wilkes' $\Lambda = .18$, $F(1, 38) = 172.80$, $p < .01$, $\eta^2 = .82$. As Figure 2 shows, the embarrassment vignettes were rated significantly more embarrassing than they were rated anger inducing. In contrast to the anger vignettes, however, the predicted interaction was near significant, Wilkes' $\Lambda = .91$, $F(1, 38) = 3.61$, $p < .07$, $\eta^2 = .09$.

A follow-up simple effects ANCOVA revealed as predicted that the TD group tended to rate the embarrassment vignettes as more embarrassing than the AS/HFA

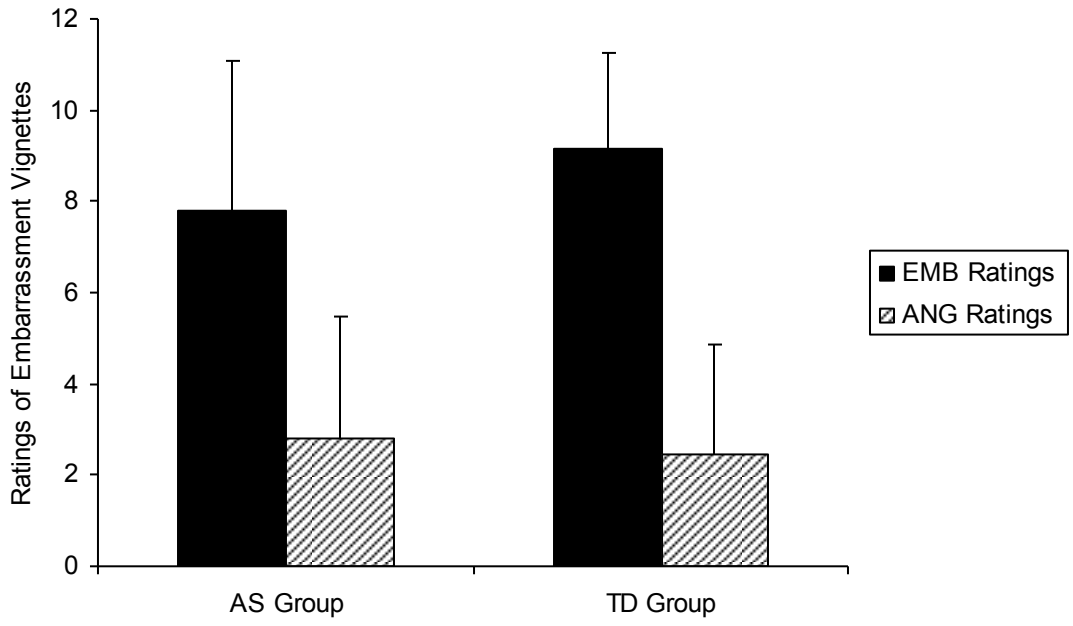

Figure 2. Embarrassment and anger ratings for embarrassment vignettes broken down by group. Error bars represent standard deviations.

group, $F(1,38) = 3.82$, $p < .06$, whereas no significant group difference emerged for embarrassment vignettes rated as anger-inducing, $p > .70$. Further simple effects ANCOVAS were run for each group separately. Both the TD and AS/HFA groups rated the embarrassment vignettes as significantly more embarrassing than anger-inducing, Wilkes' $\Lambda = .12$, $F(1,18) = 135.28$, $p < .01$, $\eta^2 = .88$ and Wilkes' $\Lambda = .26$, $F(1,18) = 51.49$, $p < .01$, $\eta^2 = .74$, respectively.

Ratings of specific embarrassment and anger vignette types. The analyses just described show that although adolescents with AS/HFA generally differentiated anger from embarrassment, they tended to rate the embarrassment vignettes as less embarrassing than did the TD group. As previously indicated, however, I had predicted that the embarrassment/social faux pas vignettes would pose particular difficulty for the AS/HFA group in comparison to the embarrassment/physical vignettes. The next set of

analyses tested this hypothesis as well as assessing differences for the anger/social interaction and anger/physical vignettes. Table 6 shows the means and standard deviations for the social and physical anger and embarrassment vignettes, collapsing across the two vignettes within each category (performance on the within-category vignettes was very similar; see Table 5).

***Embarrassment vignettes*.** In this section I examine whether the group difference on the embarrassment ratings for embarrassment vignettes varies as a function of Vignette Type (social vs. physical). I ran a 2 x 2 ANCOVA with Group as a between-subjects factor and Vignette Type as a within-subjects factor (social faux pas versus physical). As shown in the earlier analysis, there was a near significant main effect for Group, $F(1,38) = 3.82$, $p < .06$. The AS/HFA group tended to rate the embarrassment vignettes as less embarrassing than did the TD group. There was also a significant main effect for Vignette Type, Wilkes' $\Lambda = .41$, $F(1,38) = 54.12$, $p < .01$, $\eta^2 = .59$. The social faux pas vignettes ($M = 2.51$, $SD = .61$) were rated as significantly more embarrassing than the physical vignettes ($M = 1.73$, $SD = .93$). Finally, there was no significant interaction effect, $p > .34$.

Because I had a specific a priori hypothesis regarding group differences for each vignette type, I ran simple effects tests. Simple effects ANCOVAs revealed that as predicted AS/HFA group rated the social faux pas vignettes as significantly less embarrassing than did the TD group, $F(1,38) = 7.98$, $p < .01$, $\eta^2 = .17$, whereas there was no significant group difference for physical vignettes, $p > .31$. Further simple effects ANCOVAs for each group separately revealed that both the AS/HFA and TD groups

Table 6

Means and Standard Deviations for Vignette Categories Embarrassment and Anger Ratings

Vignette type	Embarrassment rating		Anger rating	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
Embarrassment				
Social faux pas	2.29 (.70)	2.74 (.41)	.45 (.82)	.62 (.76)
Physical	1.62 (1.10)	1.83 (.75)	.95 (.76)	.62 (.69)
Anger				
Social interaction	.71 (.86)	.43 (.62)	2.10 (.78)	2.45 (.44)
Physical	.55 (.91)	.76 (.64)	2.31 (.73)	2.17 (.62)

Note. Possible range of scores is 0 to 6.

rated the embarrassment/social faux pas vignettes as significantly more embarrassing than the embarrassment/physical vignettes, Wilkes' $\Lambda = .24$, $F(1,18) = 58.41$, $p < .01$, $\eta^2 = .76$ and Wilkes' $\Lambda = .57$, $F(1,18) = 13.37$, $p < .01$, $\eta^2 = .43$, respectively.

I also ran a secondary analysis to determine whether anger ratings for embarrassment vignettes varied as a function of Vignette Type. Both groups attributed low levels of anger for both embarrassment vignette types. The ANCOVA revealed no significant main effect for Group, but a near significant effect for Vignette Type, Wilkes' $\Lambda = .91$, $F(1,38) = 3.91$, $p < .06$, $\eta^2 = .09$. Participants tended to rate the embarrassment/ physical vignettes as more anger-inducing ($M = .79$, $SD = .73$) than the embarrassment/ social faux pas vignettes ($M = .54$, $SD = .78$). Finally, there was a marginally significant interaction effect, Wilkes' $\Lambda = .92$, $F(1,38) = 3.37$, $p < .08$, $\eta^2 = .08$.

Follow-up simple effects ANCOVAs for each group taken separately revealed no significant differences for either social faux pas or physical vignettes. They also revealed, however, that the AS/HFA group rated the embarrassment/physical vignettes as

significantly more anger inducing than the embarrassment/social faux pas vignettes, Wilkes' $\Lambda = .73$, $F(1,18) = 6.70$, $p < .03$, $\eta^2 = .27$. In contrast, there was no significant difference for the TD group, $p > .86$. Because the interaction effect was not significant and the simple effect was not predicted, these findings are not discussed further.

Anger vignettes. Corresponding ANCOVAs were also run for the anger vignettes. A 2 x 2 ANCOVA on the anger ratings revealed no significant main effects for Group or Vignette Type. There was, however, a significant interaction effect, Wilkes' $\Lambda = .83$, $F(1,38) = 7.93$, $p < .01$, $\eta^2 = .17$.

A follow-up simple effects ANCOVA revealed that the TD group tended to rate the anger/social interaction vignettes as more anger-inducing than did the AS/HFA group, $F(1,38) = 4.06$, $p < .06$. In contrast, there was no significant group difference for anger physical vignettes, $p > .39$. Further simple effects ANCOVAs revealed that the TD group rated the anger/social interaction vignettes as significantly more anger-inducing than the anger/physical vignettes, Wilkes' $\Lambda = .71$, $F(1,18) = 7.46$, $p < .02$, $\eta^2 = .29$, whereas the AS/HFA group did not, $p > .14$.

Finally, I conducted a secondary analysis to determine whether there was a group difference on the embarrassment ratings for anger vignettes and whether this varied as a function of Vignette Type (see Table 6). Neither group attributed much embarrassment on the anger vignettes. The ANCOVA revealed no significant main effects for Group or Vignette Type and no significant interaction effect.

Summary of Ratings Results

In sum, I found that both the TD and AS/HFA groups rated the embarrassment vignettes as significantly more embarrassing than anger inducing and the anger vignettes

as significantly more anger inducing than embarrassing. Consistent with my hypothesis, however, the AS/HFA group rated the embarrassment/social faux pas vignettes as significantly less embarrassing than did the TD group, even with age and IQ controlled. In addition, the TD group differed significantly on the anger vignettes, rating the anger/social interaction as more anger-inducing than the anger/physical vignettes, but the AS/HFA group did not.

Vignette Justifications

After participants rated each vignette for embarrassment and for anger, they were asked to justify each rating. Tables 7 and 8 show sample responses receiving scores of 0 - 2 for justifications of embarrassment and anger ratings for embarrassment vignettes. Table 9 shows the means and standard deviations for the embarrassment vignettes broken down by Group and Justification Type (embarrassment and anger). Analyses corresponding to those carried out for the ratings were conducted.

Distinguishing embarrassment from anger. I first assessed participants' overall ability to justify embarrassment ratings versus anger ratings for embarrassment and anger vignettes. In these analyses I collapsed across the two social and two physical vignettes within each emotion category, yielding scores across four vignettes ranging from 0 - 8.

I initially ran a 2 (Group) X 2 (Emotion Type: embarrassment vignettes vs. anger vignettes) x 2 (Justification Type: embarrassment vs. anger) ANCOVA with repeated measures on the last two factors to find how appropriately the groups were able to justify their embarrassment and anger ratings. I hypothesized that the AS/HFA group would

Table 7

Sample Embarrassment Vignette Justifications and Scores

Vignette type	Score of 0	Score of 1	Score of 2
Embarrassment justifications for embarrassment ratings			
Social faux pas Monique passed gas in the library	I don't care. [Girl with AS aged 16]	It's a classically embarrassing experience. [TD boy aged 16]	Passing gas is very pervasive, it's loud, and it smells. It is generally seen as socially inappropriate behavior and it calls attention to you in a very negative way. [Boy with AS aged 17]
Physical Janelle tripped girl on bus	"I don't know! I can't explain emotion; it's just too hard." [Girl with AS aged 16]	"It's not going to be something that the school is going to be talking about for a month—people trip on stairs." [TD boy aged 18]	"I would say sorry because I would have accidentally hurt someone and that is the thing to get embarrassed about." [Boy with AS aged 16]
Anger justifications for anger ratings			
Social faux pas Monique passed gas in the library	"I would just move to another seat." [TD girl aged 19]	"Not much to be angry about." [TD girl aged 15]	"I would be slightly upset at myself. Just because of the socially awkward environment I have just created." [Boy with AS aged 17]
Physical Janelle tripped girl on bus	"Because I guess I probably could have caught myself." [TD boy aged 18]	"I don't know how you could be angry in this situation." [Girl with AS aged 16]	"Not only is it a violation of space, but they are messing up what I was trying to do. It is not a fun thing at all. It would really make me angry." [Boy with AS aged 18]

Table 8

Sample Anger Vignette Justifications and Scores

Vignette type	Score of 0	Score of 1	Score of 2
Anger justifications for anger ratings			
Social interaction Carrie did all project work and team mate claimed credit	"Because putting time into any kind of project with another person means that the other person deserves credit." [TD girl aged 17]	Depends on who it was and how enthusiastically they claimed to have done everything. If they kind of jokingly or sarcastically said they did everything, making fun of the fact that they didn't do anything, I wouldn't be angry." [Girl with AS aged 17]	"I'd be pissed. You do not take credit for something you did not do and if you do you a are a shit." [Girl with AS aged 17]
Physical Pierre shoved by boy and slows down in race	(Shrugged shoulders, no answer given) [Girl with AS aged 16]	"I would be more annoyed than anything. To me personally, a timed lap isn't very important, so it's not that big a deal." [TD girl aged 18]	"I would NOT be happy if he would push me down if it was a friend or not and I'd probably have to tell the PE teacher." [Girl with AS aged 10]
Embarrassment justifications for embarrassment ratings			
Social interaction Carrie did all project work and team mate claimed credit	"Because knowing I am the one who did it and she really didn't—the truth." [TD girl aged 18]	"Bitch, PLEASE, you didn't do a damn thing. I'd straight up say, no, you didn't do crap, so shut up!" [Girl with AS aged 17]	"Because in front of everybody else, now everybody else thinks, oh, that girl did all the work and Carrie didn't do any and now people think that I am lazy." [TD girl aged 17]
Physical Pierre shoved by boy and slows down in race	"That's never happened to me so I have no idea. I'm pathetic in track. I hate running for the sake of running. I'm okay with running to get somewhere, but running for the sake of running, I don't understand that. I don't like the way it makes me feel after like	"It would depend how close I was to the timed lap—if I was almost done and then he shoved me, then I would feel more embarrassed. I don't think I would be blushing and stuff, I'd just be angry." [TD girl aged 11]	"Because it probably looks weird to other people and people care about how they look to others surrounding them." [TD girl aged 17]

have greater difficulty justifying their embarrassment ratings of the embarrassment vignettes than the TD group. In contrast, I did not expect group differences for anger justifications on embarrassment vignettes or for either anger or embarrassment justifications for anger vignettes. Hence, the main prediction was a 3-way interaction between Group, Emotion Type, and Justification Type.

Against prediction, the ANCOVA revealed a significant main effect for Group, $F(1,38) = 7.04$, $p < .02$, $\eta^2 = .16$. Overall, the AS/HFA group ($M = 5.67$, $SD = 1.78$) was less able than the TD group ($M = 6.74$, $SD = 1.26$) to provide appropriate justifications. There was also a significant two-way interaction between Emotion Type and Justification Type, Wilkes' $\Lambda = .70$, $F(1,38) = 16.48$, $p < .01$, $\eta^2 = .30$. As is clear from Figures 3 and 4, justifications for embarrassment ratings on embarrassment vignettes were rated as more appropriate than justifications for anger ratings on embarrassment vignettes and vice versa for anger vignettes. Further, the predicted three-way interaction was nearly significant, Wilkes' $\Lambda = .90$, $F(1,38) = 4.01$, $p < .06$, $\eta^2 = .09$. To explore the 3-way interaction further, I examined the embarrassment and anger vignettes separately.

Embarrassment versus anger justifications for embarrassment vignettes. First, I considered whether there were group differences on the embarrassment vignettes for embarrassment versus anger justifications. I predicted that the AS/HFA group would perform significantly more poorly in justifying their embarrassment ratings than would the TD group but that there would be no group difference on the anger ratings for embarrassment vignettes. I ran a 2 x 2 ANCOVA with Group as a between-subjects factor and Justification Type as a within-subjects factor (embarrassment and anger). Figure 3 shows the group differences on embarrassment vignettes for embarrassment

versus anger justifications. There was a significant main effect for Group, $F(1, 38) = 6.59$, $p < .02$, $\eta^2 = .15$. The AS/HFA group had significantly greater difficulty than the TD group in justifying both their embarrassment and their anger ratings for the embarrassment vignettes. There was also a significant main effect for Justification Type, Wilkes' $\Lambda = .87$, $F(1, 38) = 5.67$, $p < .03$, $\eta^2 = .13$. The embarrassment justifications for the embarrassment vignettes were significantly more appropriate than the anger justifications for the embarrassment vignettes. Finally, contrary to my prediction, the interaction was not significant, $p = .16$.

Anger versus embarrassment justifications for anger vignettes. In this section I consider whether there were group differences on the anger vignettes for anger versus embarrassment justifications. I predicted that both the AS/HFA and TD groups would appropriately justify their anger vignette ratings to a similar degree. Figure 4 shows the group differences on anger versus embarrassment justifications for anger vignette ratings.

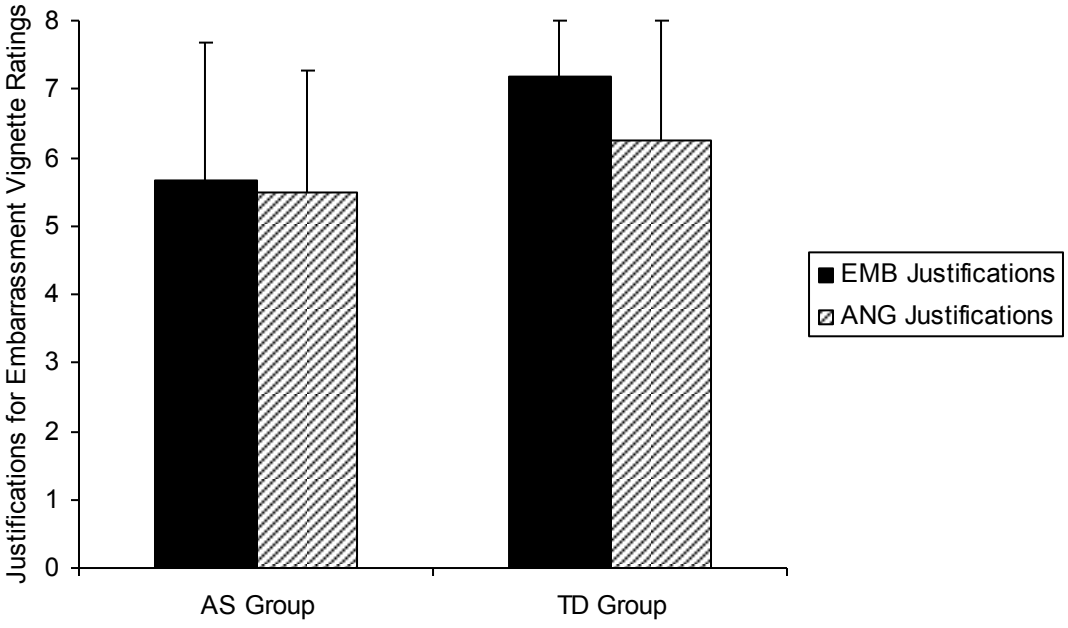

Figure 3. Embarrassment and anger justifications for embarrassment vignettes by group. Error bars represent standard deviations.

A 2 x 2 ANCOVA on the anger vignettes with Group as a between subjects factor and Justification Type as a within-subjects factor (anger vs. embarrassment) revealed a significant main effect for Group. In contrast to my prediction, the AS/HFA group performed significantly more poorly in justifying their anger vignette ratings than did the TD group, $F(1, 38) = 5.97$, $p < .02$, $\eta^2 = .14$. There was also a significant effect of Justification Type**,** Wilkes' $\Lambda = .69$, $F(1, 38) = 16.82$, $p < .01$, $\eta^2 = .31$. The anger justifications for the anger vignettes were significantly more appropriate than the embarrassment justifications for the anger vignettes. Finally, the interaction with group was marginally significant, $p < .09$.

Follow-up simple effects ANCOVAs revealed no significant group difference for embarrassment justifications for anger vignette ratings, $p > .22$, but a significant group difference for anger justifications for anger vignette ratings $F(1,38) = 8.49$, $p < .01$, $\eta^2 = .18$. The AS/HFA group had significantly greater difficulty than the TD group in justifying their anger ratings for anger vignettes.

Justifications of specific embarrassment and anger ratings. The analyses just described show that adolescents with AS/HFA had significantly greater difficulty than their TD peers in justifying their ratings, and that this was true for both anger and embarrassment vignettes. As previously indicated, however, I predicted that the justifications of the embarrassment vignette ratings for social faux pas scenarios would pose particular difficulty for the AS/HFA group in comparison to the physical scenarios.

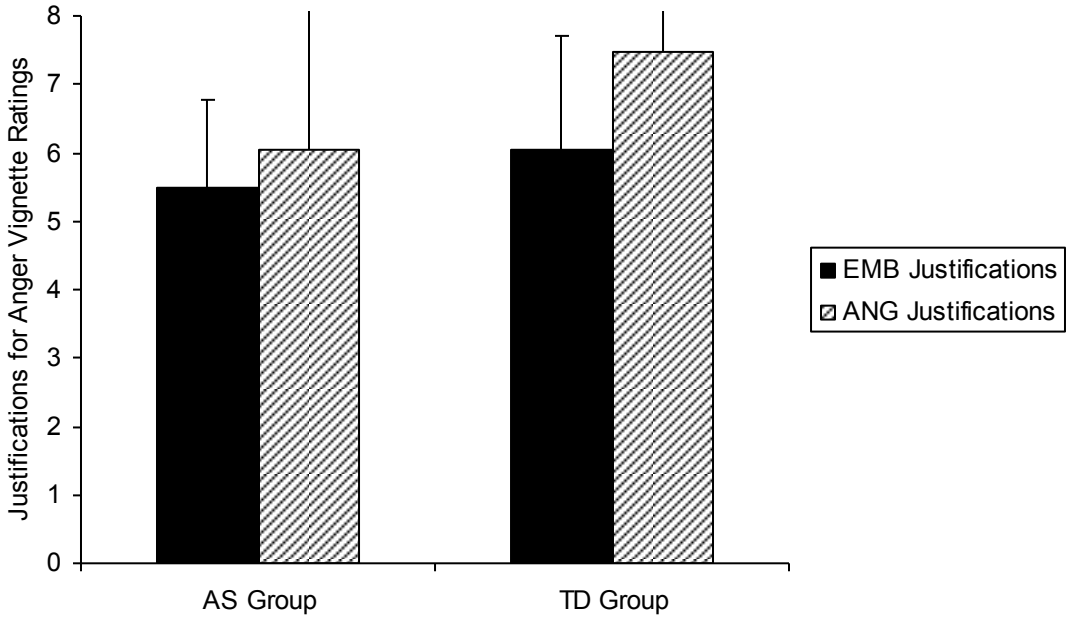

Figure 4. Embarrassment and anger justifications for anger vignettes by group. Error bars represent standard deviations.

Because the justification scores for the two vignettes within the social faux pas and physical categories (and for the two vignettes within the social and physical anger categories) were generally similar (see Table 9), I aggregated the within-category vignette justifications yielding scores ranging from 0 to 4. Table 10 shows the means and standard deviations for the aggregated vignette justifications.

Embarrassment vignettes. In this section I consider whether group differences on the embarrassment justifications for embarrassment vignettes vary as a function of vignette type (social vs. physical). I ran a 2 x 2 ANCOVA with Group as a between-subjects factor and Vignette Type as a within-subjects factor (social faux pas vs. physical). There was a significant main effect for group, $F(1,38) = 9.69$, $p < .01$, $\eta^2 = .20$. The AS/HFA group had significantly greater difficulty providing justifications for their embarrassment/social faux pas and physical vignette ratings than did the TD group. The

main effect for Vignette Type was not significant, $p > .90$. Contrary to my prediction, there was no significant interaction effect, $p > .82$. Embarrassment justifications for the social faux pas vignettes were not uniquely more difficult to justify than the physical vignettes for the AS/HFA group. A corresponding ANCOVA on the anger justifications for embarrassment vignettes revealed no significant effects.

Anger vignettes. In this section I considered whether group differences on the anger justifications for anger vignettes vary as a function of vignette type. I ran a 2 x 2 ANCOVA with Group as a between-subjects factor and Vignette Type as a within-subjects factor (social vs. physical). There was a significant main effect for Group, $F(1,38) = 8.49$, $p < .01$, $\eta^2 = .18$. The AS/HFA group had significantly greater difficulty providing anger justifications for their anger/social interaction and physical vignette ratings than the TD group. There was, however, no significant main effect for Vignette Type, $p > .40$ and no significant interaction effect, $p > .27$. A corresponding ANCOVA on the embarrassment justifications for anger vignettes revealed no significant effects.

Summary of Justification Results

In sum, I found that the AS/HFA group generally had greater difficulty than the TD group in justifying their ratings across both embarrassment and anger vignettes. The only exception to this pattern was that I found no significant group difference for embarrassment justifications for anger vignette ratings. Finally, there were no significant effects for social versus physical vignettes for either embarrassment or anger vignettes, and this was the case for both the AS/HFA and TD groups.

Table 9

Means and Standard Deviations Vignette Embarrassment and Anger Justifications

Vignette	Embarrassment justifications		Anger justifications	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
EMB/SFP Monique passed gas in library	1.19 (.87)	1.90 (.30)	1.14 (.73)	1.43 (.60)
Donald entered girls' bathroom	1.62 (.59)	1.71 (.46)	1.38 (.67)	1.62 (.50)
EMB/PHYS Janelle tripped girl on bus	1.48 (.68)	1.86 (.36)	1.48 (.60)	1.52 (.60)
Suzanne petted puppy who urinated on her	1.38 (.59)	1.71 (.46)	1.48 (.68)	1.67 (.58)
ANG/SOCINT Carrie did all project work and teammate claimed credit	1.29 (.46)	1.62 (.59)	1.62 (.67)	1.90 (.44)
Victoria counted on girl who left w/o finishing work	1.24 (.77)	1.38 (.59)	1.38 (.87)	2.00 (.00)
ANG/PHYS Pierre shoved by boy and slows down in race	1.48 (.60)	1.52 (.51)	1.67 (.58)	1.76 (.44)
Tiffany hit hard by opposing team ball	1.48 (.51)	1.52 (.51)	1.38 (.74)	1.81 (.40)

Note: Possible range of scores is 0 to 2

Participant Responses to Protagonists' Actions

In this section I compared both groups' ability to provide an appropriate narrative concerning how they themselves would respond were they in the protagonists' positions. I then examined their evaluations of specific protagonist follow-up actions. Finally, I

Table 10

Means and Standard Deviations for Embarrassment and Anger Justifications Broken Down by Vignette Categories

Vignette type	Embarrassment justifications		Anger justifications	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
Embarrassment				
Social faux pas	1.40 (.58)	1.81 (.29)	1.26 (.58)	1.52 (.49)
Physical	1.43 (.53)	1.79 (.30)	1.48 (.54)	1.60 (.49)
Anger				
Social interaction	1.26 (.49)	1.50 (.47)	1.50 (.63)	1.95 (.22)
Physical	1.48 (.29)	1.52 (.46)	1.52 (.60)	1.79 (.30)

Note. Possible range of scores is 0 to 2.

analyzed evidence of both groups' emotion regulation in vignette rating justifications and narrative responses to protagonists' actions.

Participant narrative responses to vignettes. After the participants provided ratings justifications, they were asked for narrative responses indicating how they would respond in the protagonists' positions in the vignette scenarios. Table 11 shows sample narrative responses and scores. I predicted that the AS/HFA group would have greater difficulty providing appropriate narrative responses for both types of vignettes.

Table 12 shows the means and standard deviations for the narrative responses broken down by Emotion Type and Group. A 2 X 2 ANCOVA with Group as the

Table 11

Sample Narrative Responses and Scores

Vignette type	Score of 0	Score of 1
Embarrassment vignettes		
Social faux pas Monique	Yell at the kid for being stupid. [Girl with AS aged 17]	Just keep working and try to act like it never happened. [TD boy aged 18]
Social faux pas Donald	I would make the most of the situation. I'd be like, "'Ladies!' and snap my fingers and look very cool, and then I'd be like, "oh shit, oh shit, oh shit!" [Boy with AS aged 15]	I would say, "Sorry, I thought this was the boys' bathroom", and then just leave. [Boy with AS aged 15]
Physical Janelle	I would laugh when the girl fell down. [TD boy aged 15]	I would apologize, help the girl up, and see if she was all right. [Boy with AS aged 17]
Physical Suzanne	I'd probably kick the dog. [TD girl aged 13]	I would laugh it off and pretend it never happened [TD boy aged 17]
Anger vignettes		
Social inter. Carrie	I'd straight up say, "You didn't do crap, so shut up!" [Girl with AS aged 17]	I would stand up and tell the truth about the whole thing. [Boy with AS aged 15]
Social Inter. Victoria	I'd yell at her. [TD girl aged 11]	I would ask the girl if she could please stay because she signed up for it. [TD boy aged 18]
Physical Pierre	I would tell him off. I'd probably call him a couple of names. [Girl with AS aged 16]	I would just keep running. [TD girl aged 18]
Physical Tiffany	I will shove him back. [Boy with AS aged 19]	I would probably just kind of stay still for a while and gage the situation before continuing onward. [Girl with AS aged 18]

between-subjects factor and Emotion Type as the within-subjects factor (Embarrassment vs. Anger Vignettes) revealed only a significant effect of Group, $F(1,38) = 15.42$, $p < .01$, $\eta^2 = .29$. As predicted, the AS/HFA group provided significantly fewer socially appropriate narrative responses concerning their imagined actions in embarrassing and anger-inducing situations than the TD group.

Participants' evaluations of protagonists' follow-up responses to vignettes. Following the presentation of each protagonist's response to the vignette, e.g., "Pierre says nothing but tries to outrun him", participants were asked, "Is this response socially appropriate or inappropriate?" I predicted that the AS/HFA group would have greater difficulty than the TD group in correctly identifying appropriate and inappropriate responses. Table 12 shows the means and standard deviations for participant evaluations of protagonist follow-up responses broken down by group. The ANCOVA revealed only a significant main effect of Group, $F(1,38) = 27.31$, $p < .01$, $\eta^2 = .42$. As predicted, the AS/HFA group provided significantly more incorrect evaluations of protagonists' follow-up responses than the TD group.

Emotion Regulation in Vignette Justifications and Narrative Responses

All participant embarrassment and anger justifications and vignette narrative responses were coded dichotomously as evidencing emotion regulation or dysregulation. The higher the score, the greater the emotion regulation. I predicted that the AS/HFA group would demonstrate greater emotion dysregulation in the embarrassment and anger justifications and narrative responses than the TD group. I aggregated the data across the justifications and narrative responses with a possible range of scores of 0-12 within each Emotion Type (i.e., four embarrassment justifications for the embarrassment vignettes,

four embarrassment justifications for the anger vignettes, and four narrative responses for the embarrassment vignettes, and the same for anger).

Table 13 shows the means and standard deviations for participants' emotion regulation in vignette justifications and narrative responses by Group and Emotion Type. The main effect of Group was significant, $F(1,38) = 17.34$, $p < .01$, $\eta^2 = .31$. The coders scored the AS/HFA group as indicating significantly more emotion dysregulation in their justifications for embarrassment ratings and in narrative responses for embarrassment vignettes than the TD group. The main effect of Emotion Type was also significant, Wilks' $\Lambda = .86$, $F(1,38) = 5.97$, $p < .02$, $\eta^2 = .14$. There was significantly more emotion dysregulation in responses related to the embarrassment vignettes than to the anger vignettes. The Group by Emotion Type interaction was not significant, $p > .96$.

Additional Adolescent and Parent Measures

Additional adolescent measures. In addition to the vignettes, three other measures were administered to adolescent participants: the Emotion Regulation Questionnaire (Gross & John, 2003), the Happé Strange Stories (White et al., 2009), and the Adolescent Survey of Simple and Complex Emotion.

Emotion Regulation Questionnaire. The ERQ (Gross & John, 2003) consists of two subscales: Reappraisal, on which a higher score indicates greater ability to regulate one's emotions, and Suppression, on which a higher score indicates lesser ability to regulate one's emotions. I expected that the AS/HFA group would report utilizing reappraisal significantly less frequently than their TD peers, and report utilizing suppression significantly more frequently than their TD peers, to regulate their emotions. Table 14 shows the means and standard deviations for the ERQ broken down by Group.

Table 12

Means and Standard Deviations for Participant Responses by Group and Emotion Type

Group	Embarrassment		Anger	
	M	*SD*	*M*	*SD*
Participant narrative responses to vignettes				
AS	2.95	.74	2.33	1.39
TD	3.81	.40	3.24	.89
Participants' evaluations of protagonists' responses				
AS	2.81	.75	2.57	.75
TD	3.52	.68	3.38	.59

For reappraisal, a one-way ANCOVA with Group as the independent variable (IV) and Reappraisal as the dependent variable (DV) revealed a significant effect of Group, $F(1,38) = 11.99$, $p < .01$, $\eta^2 = .24$. The AS/HFA group was significantly less able to regulate their emotions through reappraisal than the TD group. In contrast, for suppression, the AS/HFA and TD groups did not differ significantly, $p > .51$.

Happé Strange Stories. The Happé Strange Stories (White et al., 2009) were created to assess differences in ToM ability in children with ASD and TD children. I

predicted that the AS/HFA group would demonstrate significantly poorer ToM than the TD group.

Table 13

Means and Standard Deviations Indicating Participants' Emotion Regulation in Vignette Justifications and Narrative Responses by Group and Emotion Type

Group	Embarrassment		Anger	
	M	*SD*	*M*	*SD*
AS	10.52	1.40	9.95	2.04
TD	11.90	.30	11.43	.93

A one-way ANCOVA with Group as the IV and score on the Happé Strange Stories (White et al., 2009) as the DV resulted in a significant effect of Group, $F(1,38) = 10.74$, $p < .01$, $\eta^2 = .22$. The AS/HFA group demonstrated significantly poorer ToM ability than the TD group (see Table 14).

Adolescent Survey of Simple and Complex Emotion. The ASSCE includes subscales of select situations that may embarrass or anger adolescents, participant perspectives on how other people feel and act when embarrassed, and negative or positive strategies utilized in the face of embarrassing or anger-inducing situations. It also includes open-ended questions eliciting personal stories of embarrassing experiences (stories about situations in which the participants were angry were not requested due to

potential participant testing fatigue). All subscales were analyzed using one-way ANCOVAs with aggregated total score per participant per subscale. For several subscales, sub-categories were created and analyzed as indicated.

Table 14

Group Means and Standard Deviations for ERQ and Happé Strange Stories

Measure	AS *M (SD)*	TD *M (SD)*
Emotion Regulation Questionnaire		
Reappraisal	23.81 (8.42)	30.86 (5.29)
Suppression	12.95 (7.37)	14.29 (4.10)
Happé Strange Stories		
	10.52 (2.80)	12.48 (2.52)

Group comparison of situations that cause adolescents to feel embarrassed or angry. In these subscales, participants responded according to how frequently select situations would embarrass them or induce anger. For both the embarrassment and anger subscales the effect of group was not significant (see Table 15). Collapsed across situations, the AS/HFA group did not differ from the TD group in the extent to which they felt the situation was embarrassing or anger-inducing.

How most people feel and act when embarrassed or angry. In these four subscales, participants responded according to how frequently they thought most people would feel or act in specified ways when embarrassed or angry. All four subscales were analyzed using one-way ANCOVAs with aggregated total score per participant per subscale. For several subscales, sub-categories were created and analyzed as indicated.

For the "How Most People Feel When Embarrassed" and "How Most People Feel When Angry" subscales, the AS/HFA and TD groups did not differ significantly. Similarly, for the "How Most People Act When Embarrassed" and "How Most People Act When Angry" subscales, which include sub-categories of adaptive and maladaptive behaviors, the AS/HFA and TD groups also did not differ significantly (see Table 15).

How participants feel and act when embarrassed or angry. In these four subscales, participants responded according to how frequently they would feel or act in these ways when embarrassed or angry. No significant group differences emerged with respect to how AS/HFA and TD participants felt or actually acted when embarrassed or angry (see Table 15).

Group comparison of negative and positive strategies for embarrassment and anger. Participants were presented with 80 strategies (not identified as negative or positive) and asked how often they utilized each one when embarrassed or angry. Fifty-eight of these strategies comprised the Negative Strategy subscale and 22 of them comprised the Positive Strategy subscale. Table 16 shows the means and standard deviations for adolescents' utilization of negative strategies toward themselves or others when embarrassed or angry, and their utilization of positive strategies.

The negative and positive strategies were also analyzed separately to assess the specificity of group differences (see Table 16). For the Embarrassment Negative Strategies Total, the effect of Group was significant, $F(1,38) = 12.72$, $p < .01$, $\eta^2 = .25$. The AS/HFA group reported using negative strategies significantly more frequently when embarrassed than the TD group. In contrast, for the Anger Negative Strategies Total, the effect of Group was not significant, $p > .11$.

Table 15

Means and Standard Deviations for Adolescents' Report on Situations, How Most People Would Feel and Act, and How Adolescents Would Feel and Act When Embarrassed or Angry

	Embarrassment		Anger	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
Situations that cause participants to feel embarrassment or anger				
	6.10 (3.51)	6.62 (3.14)	4.00 (4.10)	5.00 (3.19)
How most people would *feel* when embarrassed or angry				
	10.43 (3.88)	9.86 (4.63)	11.43 (3.40)	11.00 (4.29)
How most people would *act* when embarrassed or angry				
Sub-category				
Adaptive behaviors	12.19 (3.70)	13.33 (4.09)	8.05 (2.96)	7.67 (3.54)
Maladaptive behaviors	7.33 (2.76)	6.19 (2.89)	9.62 (3.69)	8.29 (2.69)
How participants *feel* when embarrassed or angry				
	6.86 (3.61)	6.48 (4.20)	9.90 (4.35)	9.24 (4.48)
How participants *act* when embarrassed or angry				
Sub-category				
Adaptive behaviors	8.95 (3.71)	8.95 (3.02)	5.67 (3.25)	6.00 (2.61)
Maladaptive behaviors	5.24 (2.68)	6.00 (2.28)	6.52 (3.76)	5.38 (2.54)

Table 16

Means and Standard Deviations for Adolescents' Negative and Positive Strategies

Sub-category	Embarrassment		Anger	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
Negative strategies by subcategories				
Internalizing to self	28.71 (13.77)	16.95 (8.98)	28.38 (15.61)	20.67 (13.41)
Externalizing to self	10.29 (4.97)	6.24 (3.46)	10.52 (7.15)	8.52 (6.78)
Externalizing to others	8.67 (4.45)	4.90 (2.72)	9.10 (5.51)	6.90 (4.37)
Overall negative emotion total	47.67 (20.74)	28.10 (12.91)	48.00 (24.81)	36.10 (22.78)
Group comparison of positive strategies				
	24.48 (4.57)	22.76 (5.71)	19.19 (6.76)	20.05 (5.89)

For the Negative Strategy subscale, I also created three sub-categories, Internalizing to Self (e.g., thinking to oneself, "I am such a loser"), Externalizing to Self (e.g., hitting oneself), and Externalizing to Others (e.g., blaming others for the situation although it was not their fault). Each Negative Strategy subscale item was assigned to one

of these three sub-categories. For the three subcategories within the Negative Strategy subscale, the effect of Group was also significant. The AS/HFA group utilized significantly more negative strategies when embarrassed than the TD group: Internalizing to self, $F(1,38) = 10.13$, $p < .01$, $\eta^2 = .21$; Externalizing to Self, $F(1,38) = 9.57$, $p < .01$, $\eta^2 = .20$; and Externalizing to Others, $F(1,38) = 10.35$, $p < .01$, $\eta^2 = .21$. There were no significant group differences for any of the negative subscales for anger. For both the Embarrassment and Anger Positive Strategies totals, the AS/HFA and TD groups did not differ significantly, $p > .27$ and $p > .71$, respectively.

Personal story narratives of embarrassing experiences. Each participant was asked to share two stories of a time in the previous two years when he or she personally felt embarrassed in front of peers. Of the AS/HFA group, 38% could not provide any story whatsoever, in comparison with only 10% of the TD group.

Of those participants who were able to provide stories, their two Storytelling Opportunity scores were collapsed into a single score ranging from 0 - 4, indicating whether coders found their stories to be normatively embarrassing or not. As predicted, a one-way ANCOVA revealed that the AS/HFA group's stories ($M = 1.71$, $SD = 1.74$) were rated significantly less embarrassing than the stories of the TD group ($M = 3.43$, $SD = 1.29$), $F(1,38) = 12.35$, $p < .01$, $\eta^2 = .24$. Inter-rater reliability was "Almost Perfect Agreement" (.81 – 1.00; Landis & Koch, 1977), Cohen's Kappa = .95, with 95% agreement between coders.

Additional parent measures. In addition to the diagnostic measures, parents were given the following measures.

Emotion Regulation Checklist. The ERC (Shields & Cichetti, 1997) consists of

two subscales: Lability and Negativity, for which a higher score indicates greater emotion dysregulation through higher negativity, and Emotion Regulation, for which a higher score indicates greater emotion regulation through higher ability to control one's emotions. Table 17 shows the Group means and standard deviations for the ERC. The effect of group was significant in the predicted direction for both subscales. Parents of the AS/HFA group rated their children as significantly higher in lability and negativity than the parents of the TD group, $F(1,38) = 15.35$, $p < .01$, $\eta^2 = .29$, and significantly lower on emotion regulation than parents of the TD group, $F(1,38) = 13.50$, $p < .01$, $\eta^2 = .26$.

Interpersonal Reactivity Index. The perspective taking subscale of the IRI (Davis, 1980) was given to parents to assess their perception of their children's perspective-taking ability. I predicted that parents of the AS/HFA group would score their children significantly lower in perspective taking than would the parents of the TD group. The effect of Group was significant, $F(1,38) = 34.08$, $p < .01$, $\eta^2 = .47$. Parents of the AS/HFA group rated children's perspective taking ability significantly lower than did parents of the TD group (see Table 17).

Parent Survey of Simple and Complex Emotion. The PSSCE contains nearly all the same measures as the adolescent version and was analyzed in the same way.

Group comparison of situations that parents report may embarrass or anger their children. Table 18 shows the means and standard deviations for situations that parents reported could cause their children to feel embarrassment or anger. These are situations that would typically embarrass most people.

For the embarrassing situations subscale, the effect of Group was significant, $F(1,38) = 4.22$, $p < .05$, $\eta^2 = .10$. In contrast to the parents of the TD group, parents of the

AS/HFA group reported that their children would be significantly more frequently embarrassed in the given situations. For the anger-inducing situations subscale, the effect

Table 17

Group Means and Standard Deviations for Parent Emotion Regulation Checklist and Interpersonal Reactivity Index

Subscale	AS *M (SD)*	TD *M (SD)*
Emotion Regulation Checklist		
Lability / Negativity[1]	30.76 (3.42)	26.86 (2.94)
Emotion Regulation[2]	20.57 (2.60)	23.05 (2.04)
Interpersonal Reactivity Index		
	11.95 (3.69)	17.86 (2.90)

Note. [1]Higher score equals greater emotion dysregulation; [2]Higher score equals greater emotion regulation

of Group was marginally significant, $F(1,38) = 3.39$, $p < .08$, $\eta^2 = .08$. In contrast to the parents of the TD group, parents of the AS/HFA group tended to perceive that their children would feel somewhat more frequently angry in the given situations.

Group comparisons of how parents report that their children feel and act when embarrassed or angry. Table 18 shows the means and standard deviations for how often parents perceived their children might feel like acting, and how they actually act, when embarrassed or angry.

For parents' reports of how their children would feel like acting when embarrassed, the effect of Group was significant, $F(1,38) = 16.66$, $p < .01$, $\eta^2 = .30$. In contrast to the TD parents, parents of the AS/HFA group reported their children as

feeling like acting in particular ways significantly more frequently when embarrassed. For anger, the effect of Group was also significant, $F(1,38) = 14.56$, $p < .01$, $\eta^2 = .28$. In contrast to the TD parents, parents of the AS/HFA group reported their children as feeling like acting in particular ways significantly more frequently when angry.

For parents' reports of how their children would actually act when embarrassed, for adaptive embarrassment behaviors, the effect of Group was not significant, $p > .23$. For maladaptive behaviors, however, the effect of Group was significant, $F(1,38) = 14.26$, $p < .01$, $\eta^2 = .27$. In contrast to the TD parents, parents of the AS/HFA group reported their children as significantly more frequently utilizing maladaptive behaviors when embarrassed. Similarly, for adaptive behaviors for anger the effect of Group was not significant, $p > .81$, whereas it was significant for maladaptive behaviors, $F(1,38) = 19.99$, $p < .01$, $\eta^2 = .34$. In contrast to parents of the TD group, parents of the AS/HFA group reported their children as significantly more frequently utilizing maladaptive behaviors when angry.

Group comparison of negative and positive strategies for embarrassment and anger. For the Embarrassment Negative Strategies Total, the effect of Group was also significant, $F(1,38) = 19.08$, $p < .01$, $\eta^2 = .33$. In contrast to the parents of the TD group, the parents of the AS/HFA group reported that overall, their children utilized negative strategies significantly more frequently when embarrassed. Similarly, for the Anger Negative Strategies Total, the effect of Group was also significant, $F(1,38) = 23.39$, $p <.01$, $\eta^2 = .38$. In contrast to the parents of the TD group, the parents of the AS/HFA group reported that overall, their children utilized negative strategies significantly more frequently when angry (see Table 19).

Table 18

Means and Standards Deviations for Parent Reports of Situations That Embarrass or Anger Their Children and of How Their Children Feel and Act

	Embarrassment		Anger	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
Situations that parents report may embarrass or anger their children				
	7.48 (2.98)	5.67 (2.82)	5.38 (3.26)	3.81 (2.40)
How parents report their children feel when embarrassed or angry				
	10.33 (4.07)	5.62 (3.14)	10.86 (3.34)	6.86 (3.27)
How parents report their children act when embarrassed or angry				
Sub-category				
Adaptive behaviors	9.00 (2.41)	7.81 (3.61)	6.76 (3.00)	6.52 (3.64)
Maladaptive behaviors	6.48 (2.77)	3.48 (2.34)	7.38 (3.02)	3.81 (1.96)

For the three Negative Strategy subscales for embarrassment, the effect of group was significant. In contrast to parents of the TD group, parents of the AS/HFA group reported their children utilizing negative strategies significantly more frequently when embarrassed, across the three subscale categories: Internalizing to self, $F(1,38) = 15.54$, $p < .01$, $\eta^2 = .29$; Externalizing to Self, $F(1,38) = 20.16$, $p < .01$, $\eta^2 = .35$; and Externalizing to Others, $F(1,38) = 12.10$, $p < .01$, $\eta^2 = .24$. For the three Negative Strategy subscales for anger, the effect of group was also significant; in contrast to the parents of the TD group, parents of the AS/HFA group reported their children utilizing negative strategies significantly more frequently when angry, across the three subscale categories:

Internalizing to self, $F(1,38) = 15.88$, $p < .01$, $\eta^2 = .29$; Externalizing to Self, $F(1,38) = 15.63$, $p < .01$, $\eta^2 = .29$; and Externalizing to Others, $F(1,38) = 26.37$, $p < .01$, $\eta^2 = .41$.

The parents of the AS/HFA and the parents of the TD groups did not differ significantly for the Embarrassment Positive Strategies Total, $p > .22$, or for the Anger Positive Strategies Total, $p > .73$.

Parents' comparisons of their children to other children in embarrassing situations. Parents were asked three Yes/No questions concerning their children in comparison to other children when in embarrassing situations. Table 20 shows the percentages of Yes/No responses for each question by group. As predicted, chi-square tests of independence revealed that parents of AS/HFA group felt significantly differently than parents of the TD group for each question. The first question, "In situations that generally embarrass other children your child's age, would your child also be embarrassed?" revealed that parents of the AS/HFA group answered "No" significantly more often than parents of the TD group, $X^2(1, N=42) = 10.71$, $p < .01$. Parent narrative examples in support of a "No" answer to this question included, "When a young man has an erection [in my daughter's presence]", "He has no problem calling me Mommy [as a teen] or jumping up and down excitedly in public", "Burping and farting in public, [he] wouldn't be embarrassed until it was pointed out to him that he shouldn't have done it", and "Putting his head on mom's shoulder in public".

Next, the second question, "In situations which other children your child's age do not generally find embarrassing, would your child be embarrassed?" revealed that parents of AS/HFA participants answered "Yes" significantly more often than parents of TD peers, $X^2(1, N=42) = 5.08$, $p < .03$ (see Table 20). Parent narrative examples in support

Table 19

Means and Standard Deviations for Parents' Report of Their Children's Negative and Positive Strategies For Embarrassment or Anger

Sub-category	Embarrassment		Anger	
	AS *M (SD)*	TD *M (SD)*	AS *M (SD)*	TD *M (SD)*
Negative strategies by subcategories				
Internalizing to self	31.62 (14.64)	16.19 (9.39)	32.29 (12.07)	18.52 (9.94)
Externalizing to self	13.14 (6.49)	6.05 (3.54)	12.33 (6.56)	5.95 (3.79)
Externalizing to others	11.86 (6.76)	5.52 (4.62)	12.10 (4.85)	5.76 (2.96)
Overall negative emotion total	56.62 (24.80)	27.76 (16.30)	56.71 (19.91)	30.24 (15.38)
Positive strategies				
	25.67 (4.65)	23.67 (5.80)	20.00 (7.00)	20.81 (5.78)

of a "Yes" answer to this question included "Wearing bathing suit or shorts", and "If someone quietly tells her she needs to do something, such as pick up her shoes, she gets mad and defensive."

Finally, the third question, "Do you ever wish that your child would show embarrassment in certain situations when s/he usually does not?" revealed that parents of AS/HFA group answered "Yes" significantly more often than parents of TD group, X^2(1,

N=42) = 17.53, $p < .01$ (see Table 20). Parent narrative examples in support of a "Yes" answer to this question included "[He] loves to chew plastic and rubber items [in front of others]," "When her voice is too loud in public and she is giving her opinion about someone or something," "When she chooses not to wear a belt with her shorts or pants, because she doesn't realize that her pants will show her bottom when she sits down or bends over," "Speaking in public about people or topics when silence is preferred," and "If someone gets hurt he tends to laugh instead of showing compassion. When others notice [that] he isn't embarrassed at all, he defends his response by making light of it. I wish he would be more sympathetic at times like these to avoid the social embarrassment most of us would feel."

Parents' narrative comments on additional ways in which their children think about and experience embarrassment. In these two sections, parents were asked, "Tell us something else about how your child thinks about/experiences embarrassment", respectively. In response to these open narrative questions, 52% of parents of the AS/HFA group voluntarily included references in their comments to their children rarely or never becoming embarrassed, whereas none of the parents of the TD group did.

Correlations Among Vignette Ratings and Other Measures

In a final set of analyses I explored whether individual adolescent differences in ability to distinguish embarrassment from anger (DEA) and ability to distinguish anger from embarrassment (DAE) in vignette ratings, correlated with individual differences in other primary measures (Happé Strange Stories, IRI Perspective-taking subscale, ERC Lability/Negativity subscale, ERC Emotion Regulation subscale, ERQ Reappraisal

subscale, Negative Strategies Embarrassment Total, Negative Strategies Anger Total, and the three autism diagnostic measures, AQ, ASDS, and KADI). The DEA was computed

Table 20

Percentages of Parents' Yes/No Responses on Child Embarrassment by Group

Question	AS/HFA		TD	
	Yes	No	Yes	No
Situations that embarrass other children	42.9	57.1	90.5	9.5
Situations that do not embarrass other children	52.4	47.6	19.0	81.0
Wish their children would show embarrassment	66.7	33.3	4.8	95.2

by summing the embarrassment ratings for the embarrassment vignettes minus the anger ratings for embarrassment vignettes. This score represents participants' ability to distinguish embarrassment from anger in embarrassing situations. The DAE was computed by summing the anger ratings for the anger vignettes minus the embarrassment ratings for anger vignettes. This represents their ability to differentiate anger from embarrassment in anger inducing situations. For the TD and AS/HFA groups taken separately, I examined the raw correlations and partial correlations (controlling for Age

in Months and Composite IQ) among the vignette ratings and the other measures (see Tables 21 and 22).

TD group. In the raw correlations, relatively few correlations were significant among the predictor variables. In both the raw and partial correlations, the Negative Embarrassment and Negative Anger Strategies were significantly positively correlated, $p < .01$. Adolescents whose utilization frequency of negative embarrassment strategies was high also had high utilization frequency of negative anger strategies. In both the raw and partial correlations, the Negative Embarrassment Strategies and Negative Anger Strategies were significantly negatively correlated with the ERQ Reappraisal, $p < .05$. The ERC Lability/Negativity was marginally positively correlated with the ERC Emotion Regulation subscale, $p < .08$. In the partial correlations, the ERC Lability/Negativity and Emotion Regulation were marginally positively correlated, $p < .07$**.** In the partial, but not raw, correlations the IRI and the ERC Emotion Regulation subscale were marginally positively correlated, $p <. 09$.

In general for the TD group, correlations between the predictor variables, the DEA and DAE were negatively but not significantly correlated in both the raw and partial correlations (see Table 21). In both the raw and partial correlations, the ERQ Reappraisal subscale was marginally positively correlated with the DEA and the DAE, $p < .10$. In both the raw and partial correlations, the ERC Emotion Regulation subscale was marginally negatively correlated with both the DEA and DAE, $p < .10$, $p < .09$, but was not significant in the partial correlations. In the raw correlations, the Happé Strange Stories (White et al., 2009) and the DAE were not significantly correlated, but in the partial correlations, they were surprisingly marginally negatively correlated, $p < .07$.

Contrary to my prediction, the Happé Strange Stories and the IRI were not significantly correlated with the DEA in either the raw or the partial correlations.

AS/HFA group. For the raw and partial correlations, the Happé Strange Stories (White et al., 2009) score was significantly negatively correlated with the ERQ Reappraisal subscale, $p < .01$. Surprisingly, adolescents with AS/HFA who demonstrated higher ToM ability also demonstrated lower Reappraisal ability. Similarly, for the raw correlations, the Happé Strange Stories and the ERC Emotion Regulation subscale were significantly negatively correlated, $p < .05$, but not in the partial correlations, $p < .13$. Also in the raw correlations, the ERQ Reappraisal was significantly positively correlated with the ERC Emotion Regulation subscale, $p < .05$, but not in the partial correlations. In both the raw and the partial correlations, the Negative Embarrassment and Negative Anger Strategies were significantly positively correlated, $p < .01$. Adolescents who had high utilization frequency of negative embarrassment strategies also had high utilization frequency of negative anger strategies.

The DEA and the DAE were significantly positively correlated in both the raw and partial correlations ($p < .01$; see Table 22). Not surprisingly, adolescents who demonstrated stronger ability to distinguish embarrassment from anger also demonstrated stronger ability to distinguish anger from embarrassment. Neither the DEA nor the DAE were significantly correlated with the other measures in either the raw or the partial correlations. In addition, they were not significantly correlated with the embarrassment/social faux pas ratings; the pattern remained the same. In particular, and against prediction, the Happé Strange Stories and the IRI were not significantly correlated.

Table 21

Raw and Partial Correlations for TD Group

Index	Happé	IRI	ERQ^{R}	NSET	NSAT	L&N	ER	DEA	DAE
Happé		-.22(-.03)	-.17(-.03)	-.07(.13)	-.13(.18)	.22(.14)	.08(.25)	-.12(-.14)	-.34(-.44†)
IRI			.14(.09)	.11(.04)	-.27(-.32)	-.20(.02)	-.35(.40†)	.06(.01)	.14(.16)
ERQ^{R}				-.48*(-.57*)	-.46*(-.47*)	-.21(-.20)	-.31(-.37)	.38† (.39†)	.38† (.39†)
NSET					.70***(.73***)	-.27(-.26)	.20(.16)	-.06(.06)	-.20(-.21)
NSAT						-.13(-.13)	.16(.16)	-.09(-.10)	-.29(-.29)
L&N							.39† (.43†)	-.36(-.35)	-.28(-.27†)
ER								-.39† (-.39†)	-.37† (-.37)
DEA									.21(.21)

Note. Partial correlations in parentheses. Happé = Happé's Strange Stories. IRI: Interpersonal Reactivity Index Reappraisal Subscale; NSET = Negative Strategies Emb. Total; NSAT = Negative Strategies Anger Total; L&N = ERC Lability & Negativity; ER= ERC Emotion Reg.; EU = Embarrassment Understanding; AU = Anger Understanding. Partial Correlation df = 17.
† $p \leq .10$ *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Finally, I explored whether individual adolescent differences in ability to distinguish embarrassment from anger (DEA) and ability to distinguish anger from embarrassment (DAE) in vignette ratings, correlated with individual differences in the three ASD or AS diagnostic measures, i.e., the AQ, ASDS, and the KADI. In the raw correlations, the DEA and the KADI were significantly negatively correlated,

Pearson $r(42) = -.41$, $p < .01$, as were the DEA and the ASDS, $r(42) = -.31$, $p < .05$. The DEA was moderately correlated with the AQ, $r(42) = -.30$, $p < .06$. As expected, adolescents who had high diagnostic scores for probability of ASD and AS also had low embarrassment rating scores. The DEA, however, was not significantly correlated with the diagnostic measures in the partial correlations. The DAE was not correlated with any of the three diagnostic measures in either the raw or the partial correlations.

Summary

In sum, regarding the analysis of the adolescent measures, I found that consistent with my hypothesis, the AS/HFA group rated the social faux pas vignettes as significantly less embarrassing than did the TD group, even with age and IQ controlled.

Both groups rated the embarrassment vignettes as significantly more embarrassing than anger inducing and the anger vignettes as significantly more anger inducing than embarrassing. In addition, the TD group differed significantly on anger/social interaction versus anger/physical, but the AS/HFA group did not.

I also found that there were no significant effects for social versus physical vignettes for either embarrassment or anger vignettes; this was the case for both the AS/HFA and TD groups. In addition, the AS/HFA group generally had greater difficulty than the TD group in justifying their ratings across both embarrassment and anger vignettes, with one exception; I found no significant group difference for embarrassment justifications for anger vignette ratings. In addition, the AS/HFA group showed significantly poorer emotion regulation and ToM than their TD peers.

Table 22

Raw and Partial Correlations for the AS/HFA Group

Index†	Happé	IRI	ERQ^{R}	NSET	NSAT	L&N	ER	DEA	DAE
Happé		.09(.15)	-.76***(-.58**)	-.07(.00)	-.05(-.07)	.21(.13)	-.47*(-.35)	.21(.26)	.35(.20)
IRI			.03(.10)	.16(.29)	.05(.19)	-.36 (-.34)	.16(-.02)	-.01(.10)	.05(.16)
ERQ^{R}				.23(.21)	.14(.13)	-.21(-.16)	.50*(.36)	-.01(.01)	-.01(.19)
NSET					.87***(.86***)	-.53*(-.60**)	.06(-.09)	-.20(-.30)	-.09(-.15)
NSAT						-.45*(-.54*)	.05(.09)	-.01(-.11)	.05(-.03)
L&N							-.09(-.10)	-.10(-.17)	.20(.12)
ER								.36(.35)	.10(.14)
DEA									.56**(.54**)

Note. Partial correlations in parentheses. Happé = Happé's Strange Stories. IRI: Interpersonal Reactivity Index Reappraisal Subscale; NSET = Negative Strategies Emb. Total; NSAT = Negative Strategies Anger Total; ERC L&N = ERC Lability & Negativity; ERC ER = ERC Emotion Reg; DEA = Distinguish Embarrassment From Anger; DAE = Distinguish Anger From Embarrassment; Partial Correlation df = 17.
*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

Moreover, the AS/HFA group reported using negative strategies significantly more frequently when embarrassed than the TD group. In contrast, the AS/HFA group did not differ significantly from the TD group in either the negative or positive strategies they utilized when angry. Finally, the AS/HFA group was significantly less able than the TD group to provide appropriate examples of embarrassing situations.

Regarding the analysis of the parent measures, parents of the AS/HFA group scored their children as having significantly poorer emotion regulation and ToM than the parents of the TD group. For the negative embarrassment and anger strategies, the parents of the AS/HFA group reported that overall, their children utilized these strategies significantly more frequently when embarrassed or angry than did the parents of the TD group. For the positive strategies for embarrassment and anger, the parents of the AS/HFA and TD groups did not significantly differ.

Finally, concerning the correlations of multiple parent and adolescent measures, for both the AS/HFA and TD groups the raw and partial correlations of Negative Strategies for Embarrassment and Negative Strategies for Anger were significant. No other measures were significantly correlated with each other across both groups. Contrary to my prediction, for both the TD and the AS/HFA groups, the Happé Strange Stories (White et al., 2009) and the IRI were not significantly correlated with the DEA in either the raw or the partial correlations. In both the raw and partial correlations, the Negative Embarrassment Strategies and Negative Anger Strategies were significantly negatively correlated with the ERQ Reappraisal.

For the AS/HFA group, the raw and partial correlations for the Happé Strange Stories (White et al., 2009) were significantly negatively correlated with the ERQ Reappraisal subscale. Surprisingly, adolescents who demonstrated higher ToM ability also demonstrated lower Reappraisal ability. The DEA and the DAE were significantly positively correlated in both the raw and partial correlations. Not surprisingly, adolescents who demonstrated stronger ability to distinguish embarrassment from anger also demonstrated strong ability to distinguish anger from embarrassment.

CHAPTER IV

DISCUSSION

In the present study, I examined embarrassment, ToM, and emotion regulation among older children and adolescents who have AS/HFA. To explore these three research foci, I utilized a series of self-conscious emotion, ToM, and emotion regulation measures, comparing the performance of participants with AS/HFA to TD control participants, matched on gender, age, and Composite IQ. In my efforts to match all participants for Composite IQ, I was more successful in matching the boys than the girls.

I had three primary research goals and hypotheses in this study. My first goal was to explore whether ToM deficits had a greater impact on the adolescents with AS/HFA's perception of embarrassment in social faux pas vignettes in comparison with physical vignettes. I hypothesized that adolescents with AS/HFA, in contrast to their TD peers, would perform more poorly on their ratings of the embarrassment/social faux pas vignettes, would perform similarly on their ratings of the embarrassment/physical vignettes, would perform significantly more poorly on their justifications of the embarrassment/social faux pas vignettes, and would perform similarly on their justifications of the embarrassment/ physical vignettes.

My second goal was to examine the ability of adolescents with AS/HFA to discriminate between the self-conscious, or complex, emotion of embarrassment and the non-self-conscious, or basic, emotion of anger. I hypothesized that adolescents with AS/HFA, in comparison to their TD peers, would show poorer understanding of embarrassment vignettes than they would of anger vignettes, irrespective of the social manipulation, i.e., physical, social interaction, or social faux pas vignettes.

My third goal was to examine whether adolescents with AS/HFA were able to identify whether others' reactions to embarrassing or anger-inducing situations were socially appropriate, whether they were able to provide a socially appropriate response indicating what they would do in the same situation, and whether their responses would indicate poor emotion regulation. I hypothesized that adolescents with AS/HFA, compared to their TD peers, would be less able to identify others' reactions to embarrassing and anger inducing situations as socially appropriate or inappropriate, and would be less able to provide a socially appropriate response indicating what they would do in the same situation. Further, I hypothesized that the responses of adolescents with AS/HFA would indicate poor emotion regulation.

This study moves from the current clinical literature that recognizes the general overwhelm of emotion that those with AS/HFA frequently experience (e.g., Attwood, 2007; Myles & Southwick, 2005) to focusing on the specific understanding of embarrassment, a complex emotion that contributes to a sense of emotional flooding in overwhelming social situations. The study further advances our understanding of embarrassment by utilizing a basic comparator emotion, anger, yielding a finer grained assessment of participant understanding of both embarrassment and anger.

Summary of Research Findings

Vignette ratings. Through the use of vignette ratings, I examined the ability of participants with AS/HFA to distinguish between the self-conscious emotion of embarrassment and the control emotion of anger. Of central importance is that, in keeping with my main hypothesis, participants with AS/HFA rated the social faux pas vignettes as significantly less embarrassing than did the TD participants. This is not

surprising, given that social faux pas vignettes are more complex and require ToM to rate them appropriately. Specifically, I found that in comparison with the TD participants, the embarrassment/social faux pas vignettes taxed the ability of the participants with AS/HFA to appropriately rate socially embarrassing scenarios that rely heavily upon ToM. This was supported by the finding that participants with AS/HFA demonstrated significantly poorer ToM ability on the Happé Strange Stories (White et al., 2009) than the TD participants.

I also found that although participants with AS/HFA rated the embarrassment vignettes as more embarrassing than anger inducing, they tended to rate the embarrassment vignettes as less embarrassing than the TD participants. The participants with AS/HFA rated the embarrassment/physical vignettes as significantly more anger inducing than the embarrassment/social faux pas vignettes. This may be because the underdeveloped ToM abilities of participants with AS/HFA make it more challenging for them to understand that peer audiences within the embarrassment/social faux pas vignettes perceive the protagonists as having transgressed established societal rules and expectations. This lack of social understanding, therefore, makes it more difficult for participants with AS/HFA to identify the embarrassment that the protagonists' would sense after having broken social rules. Further, those with AS/HFA may have rated embarrassment/physical vignettes as more anger-inducing than the social faux pas vignettes because the embarrassment/physical vignettes require less ToM, and anger, as a basic emotion, may be more easily understood. In this study, the novel use of advanced embarrassment vignettes, particularly social faux pas vignettes, with anger as a control

emotion, provided an opportunity through which the limited ToM of the participants with AS/HFA could be assessed.

Vignette justifications. Through the use of vignette justifications, I examined the ability of participants with AS/HFA to describe why they would feel embarrassed or angry, to the degree they had reported in their ratings, in the protagonists' situations. I found that the participants with AS/HFA generally had significantly greater difficulty than the TD participants in justifying their ratings across both embarrassment and anger vignettes. Even though the participants with AS/HFA were often able to appropriately rate the vignettes, applying some knowledge of social rules, they appeared to lack a deeper understanding of these emotions. As one participant exclaimed when asked to rate an embarrassing situation, "Wait! Wait! I know! There's a rule for this!" (Anonymous, Personal Communication, July 24, 2012)."

For participants with AS/HFA to be able to explain why they would feel a greater or lesser degree of embarrassment or anger in a protagonist's situation is a difficult question. Understanding social rules is insufficient when it comes to explaining why a situation is embarrassing or anger inducing. Rules can be taught, but the ability to understand why a situation is embarrassing, for example, is far more complex for adolescents with AS/HFA. The inability to justify vignette ratings exposes a major aspect of the disability, the lack of social understanding. This implies that the ability of those with AS/HFA to respond to embarrassing and anger inducing situations significantly developmentally lags behind their TD peers. The few prior studies in the literature that have assessed embarrassment and anger utilizing similar measures have not taken the next vital step of asking participants to explain why they selected a particular rating. In

this study, the inclusion not only of vignette ratings, but also of justifications of ratings, advances our understanding of the difference between rote cognitive knowledge of rules and the application of understanding of situations that involve the complex emotion of embarrassment and anger. Thus, a fuller picture of the emotion understanding of adolescents with AS/HFA can only be assessed through both ratings and justifications.

Vignette related evaluations. Following the vignette ratings and justifications, participants were asked to provide narrative responses regarding how they as participants would act in the protagonists' scenarios. Next, they were presented with protagonists' actual follow-up actions and asked to evaluate the social appropriateness of the actions. Coders then rated participants' justifications and narrative responses for indications of emotion regulation and dysregulation. Of critical importance in the development of adolescents with AS/HFA is their ability to evaluate and regulate their own behaviors in social settings. These three assessments advance our understanding of the ability of participants with AS/HFA to recognize socially appropriate behaviors in others, generate socially appropriate behaviors in themselves, and demonstrate appropriate regulation of expressed emotions, in embarrassing and anger inducing situations.

Participant narrative responses to vignettes. Participants were asked to explain what they would do as the protagonist in each vignette. I found that the AS/HFA participants were significantly less able to provide socially appropriate narrative responses to the embarrassment and anger vignettes than the TD participants. Putting themselves in the positions of vignette protagonists obligated participants to take the perspective of the protagonists, yet again taxing ToM ability, while also requiring evaluation of social behavior. Since both of these tasks may be challenging for those with

AS/HFA, it was significantly more difficult for them to develop socially appropriate narrative responses.

Participant evaluations of protagonists' follow-up actions. When presented with protagonists' follow-up responses, i.e., what a protagonist did in response to the action in the vignette, participants were asked to evaluate whether the action was appropriate or inappropriate. I found that the participants with AS/HFA provided significantly more incorrect evaluations of protagonists' follow-up responses than did the TD participants. This underscores once again the lesser ability of the participants with AS/HFA to recognize and correctly evaluate social behavior (e.g., identifying when social rules have been broken). As a result, they may not recognize inappropriate behavior in themselves, and, therefore, may be less motivated to experience embarrassment or anger.

Emotion regulation. The literature is replete with clinical references (e.g., Attwood, 2007; Myles & Adreon, 2001; Myles & Southwick, 2005) to the challenges those with AS/HFA encounter in regulating their general emotion behaviors. When individuals with AS/HFA find themselves in challenging social contexts, they may be flooded with overwhelming emotions, resulting in diminished capacity to regulate their emotions. In turn, this lessened ability to self-regulate is the visible indicator of profound internal distress, evoked in particular by embarrassing situations (Capps et al., 1992).

In addition to scoring the participants' justifications of their vignette ratings as sufficient or insufficient to explain their ratings, coders also scored the justifications and narrative responses for indications of emotion regulation or dysregulation. I found that participants with AS/HFA demonstrated significantly less emotion dysregulation in their justifications for embarrassment ratings and the embarrassment vignette narrative

responses than did the TD participants. When providing justifications and narrative responses, the participants with AS/HFA had more difficulty regulating their responses to vignette scenarios that caused them embarrassment or anger than did the TD participants. Of particular note, the participants with AS/HFA had significantly more difficulty demonstrating emotion regulation in their embarrassment vignette responses than in their anger vignette responses. This is not surprising, given that the complexity and ToM demands of the embarrassment vignettes may make it more difficult for participants with AS/HFA to know how to respond appropriately, resulting in frustration, which may lead to less emotion regulation. The rules for emotion regulation in anger may not be easy, but they are clearer than the rules for dealing with embarrassment. This lack of regulation in their responses to embarrassing vignettes manifested in participants' declarations that in the protagonists' positions, they would, for example, yell, hit, swear, and intimidate those who embarrassed them.

Supporting independent measures and the Adolescent Survey of Simple and Complex Emotion. Adolescents were asked to complete two supporting measures, the Emotion Regulation Questionnaire Reappraisal subscale (ERQ; Gross & John, 2003) and the Happé Strange Stories, (White et al., 2009). For the ERQ subscale, which assesses adolescents' ability to positively reframe a negative situation, I found that participants with AS/HFA were significantly less likely to regulate their emotions through reappraisal, than the TD participants. As a mechanism for dealing with emotion, participants with AS/HFA were not accustomed to utilizing this positive reframing strategy to move themselves out of their emotional inertia by converting overwhelming situations into ones which are less emotionally intense and, therefore, more easily

managed. Interestingly, however, for the participants with AS/HFA, I found a significant correlation of ERQ Reappraisal subscale with the Happé Strange Stories, (White et al., 2009). Conversely, there was no significant correlation for the TD participants. This leads me to speculate that while the participants with AS/HFA still maintain significant ToM deficits in adolescence, the majority of the participants with AS/HFA in this particular study have benefited considerably from social skills instruction, beginning with early intervention (provided by law from ages birth to five in Oregon), and potentially continuing through public school. This social skills instruction may have included lessons in positive reframing of negative thought patterns and situations.

In addition, participants were asked to answer questions regarding ToM vignettes in the Happé Strange Stories (White et al., 2009). I found that participants with AS/HFA demonstrated significantly poorer ToM ability than the TD group. In this study, the ability of the participants with AS/HFA to examine a vignette scenario through the perspective of others is one manifestation of their poorer ToM ability. Specifically, their lesser perspective-taking abilities may be confirmed in both the vignette justifications, which required taking the protagonists' perspectives to explain why they would be more or less embarrassed or angry, and the vignette narrative responses, which required taking the perspectives of the protagonists to say what the protagonists would do next in the vignettes. Although the participants with AS/HFA demonstrated significantly poorer understanding of the Happé Strange Stories, and were reported by their parents as having significantly less perspective taking ability, these two variables, quite surprisingly, did not correlate with embarrassment vignette rating performance. Rather than prematurely inferring from this lack of correlation that ToM is not necessary in understanding

embarrassment, however, the explanation of this lack of correlation may lie in needing more advanced ToM vignettes and/or more in-depth parent report of their children's ToM abilities.

Next, participants were asked to complete the Adolescent Survey of Simple and Complex Emotion (ASSCE). This survey asked adolescents to report on their behaviors when embarrassed or angry. I examined the utilization frequency of positive and negative strategies when participants were embarrassed or angry. While the participants with AS/HFA and TD participants did not significantly differ on the utilization frequency of positive strategies when embarrassed or angry, I found that the participants with AS/HFA reported significantly higher utilization frequency of negative strategies when embarrassed. This finding is consistent with the established clinical profile of Asperger's Syndrome in adolescents, given the proclivity of adolescents with AS/HFA to think negatively and view their lives with a predominantly negative perspective (e.g., Attwood, 2007). This study, however, also represents the first empirical research attempt to identify the negative strategies of adolescents with AS/HFA and TD adolescents, and assess the utilization frequency of the strategies when embarrassed or angry. Adolescents with AS/HFA utilized negative internal, verbal, and physical strategies to deal with embarrassing situations far more frequently than did their TD peers. Based on my previous research (Winter-Messiers, et al., in preparation), the negative strategies subscale in this study included items that inquired about the utilization of self-injurious behaviors, e.g., picking at one's skin until it bleeds, hitting oneself, or pulling one's hair out, when one is embarrassed or angry.

Interestingly, while participants with AS/HFA reported using negative strategies significantly more frequently when embarrassed than the TD participants, both groups' correlations of the negative embarrassment and negative anger strategies were significantly positive. For the participants with AS/HFA, this correlation is expected, because it aligns with their negative strategy utilization, but more importantly because it speaks to their developmental delay in maturation of social communication and emotion regulation, widely recognized as being two to four years behind their TD peers (e.g., Attwood, 2007; Gaus, 2007; Klin, et al., 2000; Myles & Southwick, 2005; Prior, 2003). The explanation for the correlation of the TD participants is unclear, given the significant group difference on the utilization frequency of negative embarrassment strategies. One possible explanation is that while adolescents with AS/HFA in general lag considerably behind their TD peers in social and emotional maturity, the TD adolescents themselves, though emotionally immature, are on schedule developmentally. In other words, we expect TD adolescents to demonstrate some emotional immaturity and lack of filter and impulse control; these typify an expected and appropriate developmental stage for this age group. In this study, the TD participants used negative strategies for anger (NSAT) more frequently than negative strategies for embarrassment (NSET). While they have ToM, positive coping strategies, strong reappraisal skills, and "lived experience" (Denzin, 1985) to assist them in understanding and appropriately dealing with embarrassing situations, their developmentally appropriate but immature neurological supports may preclude their reasonable management of anger and anger-inducing situations.

As expected for the TD participants, but not for the participants with AS/HFA, the NSET and NSAT were significantly negatively correlated with the ERQ Reappraisal subscale. This aligned with the earlier finding that the TD participants were much more able to regulate their emotions through Reappraisal than participants with AS/HFA. These TD participants, relatively strong in reappraisal skills, utilized negative strategies less frequently to manage embarrassing and anger inducing situations. Their less frequent use of negative strategies to deal with these negative situations reaffirms their usage of positive reframing strategies when faced with embarrassing and anger inducing events.

Two variables were created in this study in an attempt to measure participants' abilities to distinguish embarrassment from anger (DEA) and anger from embarrassment (DAE) on ratings of embarrassment and anger vignettes. The DEA and DAE were significantly positively correlated for participants with AS/HFA but not for TD participants. While findings support the fact that the participants with AS/HFA had difficulty distinguishing embarrassment from anger in the embarrassment/social faux pas vignettes, this is more difficult to interpret for the embarrassment/physical, anger/social interaction, or anger/physical vignettes, in which they did not have difficulty making a distinction between embarrassment and anger.

Some correlation results were challenging to interpret. First, the correlations between the Happé Strange Stories (White et al., 2009) and the IRI were not significant for either the participants with AS/HFA or the TD participants, though it could be expected that these should have correlated significantly for both groups. One possible explanation for this outcome could be that the Happé Strange Stories are a direct adolescent measure of ToM, whereas the IRI is one step removed because the measure

asks parents about their children's perspective-taking abilities. Second, the correlations between the ERC Lability and Negativity subscale and the NSET and the NSAT were negatively significant for participants with AS/HFA, but not for TD participants. Here again, there appear to be differences between the adolescents' reported utilization frequency of negative embarrassment and anger strategies, and parents' perceptions of their children's lability, i.e., emotional instability, and negativity, i.e., negative outlook. The NSET and NSAT, both measures carefully developed by the author, nevertheless cannot be seen in their present form, as being as well established as an independent measure such as the ERC. Third, perhaps the most challenging correlation to interpret was that of the DEA and the DAE, which was significant for participants with AS/HFA, but not for TD participants, possibly implying a ceiling effect for the latter. Additional research is needed regarding the development of these variables to clearly distinguish embarrassment from anger and anger from embarrassment and to have confidence in their interpretation.

Finally, participants were given the opportunity to tell two stories of times in the previous two years when they had been embarrassed in front of their peers. Many of the participants with AS/HFA were incapable of providing any stories, whereas only a few TD participants had difficulty doing this. Of the participants who were able to provide stories, the coders found the stories of the participants with AS/HFA to be significantly less embarrassing than the stories told by the TD participants. This finding is not surprising, as it highlights other related findings in this study regarding the significantly lesser ability of participants with AS/HFA to identify, explain and understand embarrassment.

Supporting independent measures and the Parent Survey of Simple and Complex Emotion. Parents were asked to complete two supporting measures, the Emotion Regulation Checklist (ERC; Shields & Cichetti, 1997) and the Interpersonal Reactivity Index (IRI; Davis, 1980). The ERC contains two subscales, Lability and Negativity subscale, for which parents respond to questions regarding their children's mood stability and negative outlook, and the more general Emotion Regulation subscale. On the Lability and Negativity subscale, the parents of the AS/HFA participants reported that their children were significantly more likely to experience what might be termed "emotional incontinence" (Arciniegas & Topkoff, 2000) and high levels of negativity than did the parents of the TD participants. Similarly, for the ERC Emotion Regulation subscale, the parents of the AS/HFA participants reported that their children were significantly less likely to regulate their emotions than did the parents of the TD participants. These results are aligned with clinical reports regarding emotion deficits, loss of emotional control, and tendency toward high negativity in adolescents with AS/HFA. This is the first study, however, in which emotion regulation has been examined in Asperger's Syndrome in adolescents.

For the IRI (Davis, 1980), the parents of the AS/HFA participants rated their children's perspective-taking ability significantly lower than did the parents of the TD participants. This finding supports their children with AS/HFA's significantly lesser ToM abilities as assessed by the Happé Strange Stories (White et al., 2009).

Finally, parents were asked to complete the Parent Survey of Simple and Complex Emotion (PSSCE). In this survey parents were asked to report with what frequency certain situations would cause their children to be embarrassed. I found that

parents of the AS/HFA participants, in contrast with parents of the TD participants, reported that their children would be significantly more frequently embarrassed in certain situations, e.g., when they had misbehaved or when they looked weak in front of peers. Despite the general tendency of the participants with AS/HFA to not be embarrassed, their parents nevertheless observed some situations in which their children did seem to be embarrassed. Further, the survey asked parents to report on the frequency with which their children would feel like acting and would actually act in particular ways when embarrassed or angry. I found that parents of the AS/HFA participants, in contrast with parents of the TD participants, reported that their children would feel like acting in particular ways, e.g., screaming at someone or wanting to hit someone, significantly more frequently when they were embarrassed and angry than the parents of TD participants reported their children feeling.

I also found that parents of the AS/HFA participants, in contrast with parents of the TD participants, reported that their children would actually act in particular maladaptive ways, e.g., screaming at someone, or wanting to hit someone, significantly more frequently when they were embarrassed and angry. These findings are in contrast to the AS/HFA participants themselves, who did not significantly differ from the TD participants, possibly due to a lack of self-awareness. As previously stated, this lack of behavioral self-awareness in adolescents with AS/HFA is well supported in the clinical and anecdotal literature. Typically, parents of participants with AS/HFA, however, tend to be much more aware of the emotional and physical behaviors of their children than are the adolescents themselves. Parents of adolescents with AS/HFA are painfully aware of

the extreme toll these negative emotional and physical behaviors can take on their children, families, and intra-familial relationships.

In addition, this survey asked parents to report on their children's behaviors when their children were embarrassed or angry. I examined parent reports of the utilization frequency of positive and negative strategies when their children were embarrassed or angry. While the parents of the participants with AS/HFA and TD participants did not significantly differ in their reported utilization frequency of positive strategies when their children were embarrassed or angry, the parents of participants with AS/HFA did report that their children utilized negative strategies significantly more frequently than did the parents of the TD participants. This finding is consistent with the anecdotal parent report literature regarding Asperger's Syndrome and other forms of autism in adolescents, which has clearly described the intensity and sustained duration of adolescents' negative strategies and moods (e.g., Fling, 2000; Paradiz, 2002; Parks, 2001). This finding is also consistent with the adolescents' reports of their own utilization frequency of positive and negative strategies. This is the first study to include a measure of adolescent behaviors when embarrassed or angry, and to assess parent observations of the same.

Parents were also asked three questions regarding their children's behaviors in embarrassing situations. I found that parents of participants with AS/HFA reported significantly more often than did the parents of TD participants that their children would not be embarrassed in situations that generally embarrass other children and would be embarrassed in situations that do not embarrass other children. Moreover, parents of participants with AS/HFA reported significantly more often than did the parents of TD participants that they wished their children would show embarrassment in certain

situations when they usually do not. Parents were asked to provide examples in support of their responses. The parents of the participants with AS/HFA observed that their children had difficulty knowing which situations would typically invoke embarrassment and which ones would not. In addition, the parent reports suggested that they themselves feel embarrassed when their children do not demonstrate embarrassment behaviors in situations in which the parents feel that their children should. This is the first study to explore questions with parents about the embarrassment behaviors they observe in their children and to ask how parents feel about those behaviors.

In summary, the majority of my hypotheses were supported by my research. My first hypothesis, that embarrassment/social faux pas vignettes would be significantly more difficult for those with AS/HFA than the embarrassment/physical vignettes, was supported. The social faux pas vignettes taxed the ability of the participants with AS/HFA to appropriately rate socially embarrassing vignettes that relied heavily upon ToM. The participants with AS/HFA also had significantly greater difficulty than the TD participants in justifying their ratings across both the embarrassment and anger vignettes. Therefore, my hypothesis that all participants would perform similarly on their justifications of the embarrassment/physical vignettes was not supported.

My second hypothesis, that those with AS/HFA would have more difficulty distinguishing between embarrassment and anger vignettes, was also supported. The participants with AS/HFA, in contrast to the TD participants, demonstrated significantly poorer perception of embarrassment vignettes than anger vignettes.

My third hypothesis, that those with AS/HFA would demonstrate significantly less emotion regulation than the TD participants, was supported. The participants with

AS/HFA demonstrated significantly less emotion regulation than the TD participants in regard to their responses for embarrassing and anger-inducing vignettes. Further, the participants with AS/HFA had significantly more difficulty demonstrating emotion regulation in regard to their responses for embarrassing vignettes than anger-inducing vignettes.

Implications

The findings of this study suggest several implications for professionals working with adolescents with AS/HFA in schools and clinics. First, for the last fifteen years special education teachers and related service providers, such as therapists and psychologists, have focused on teaching children with AS/HFA to recognize and form facial expressions, and to develop appropriate emotion regulation mechanisms related to the non-self conscious or basic emotions of anger, happiness, and sadness. Social skills curricula are readily available for teaching about basic emotions to K-12 students with AS/HFA (e.g., Attwood, 2004; Baker, 2003; Baker, 2006; Buron, 2007; Buron & Curtis, 2004). For instruction in self-conscious emotions such as embarrassment; however, no such curricula exist. For example, research based social skills curricula could include the use of the targeted positive strategies that TD students use to manage their feelings when they are embarrassed (e.g., changing the subject, taking appropriate responsibility, and seeking physical comfort, i.e., curling up in a blanket). Such curricula could also address alternative methods for coping with intense negative emotions, such as embarrassment, that adolescents with AS/HFA reported as sometimes leading to negative internalizing and self-injurious behaviors. In addition, the curricula could include strategies to address the tendency of these adolescents to hold negative experiences, such as embarrassment, in

mind for a much longer time than their TD peers (Attwood, 2007). As one participant with AS/HFA commented, “That [embarrassing] memory went into the hard drive that is my brain and will never be deleted!” (Anonymous, Personal Communication, July 7, 2012).

Further, since adolescents with AS/HFA frequently experience alexithymia, the inability to put words to feelings, when in intense emotional situations (Fitzgerald & Bellgrove, 2006; Hill, Berthoz, & Frith, 2004), they need ongoing structured support in learning to express their thoughts and feelings. As one participant with AS/HFA, heavily discouraged by his inability to describe his feelings, confided, “What I want more than anything else in the world is to be able to describe what I feel in my stomach” (Anonymous, Personal Communication, April 17, 2012). Furthermore, given the predisposition of adolescents with AS/HFA for depression and anxiety (e.g., Attwood, 2007; Gaus, 2007; Klin, et al., 2000), it is imperative that they be taught how to identify, appropriately express, and manage negative emotions such as embarrassment and thus diminish their internal, verbal, and physical self-injurious behaviors, as well their destructive interpersonal behaviors, e.g., falsely accusing, yelling or swearing at, or hitting others.

It is important to note that the majority of participants with AS/HFA in the present study had several years of early intervention services as preschoolers and/or many years of social skills instruction in school. This may explain in part, for example, why participants with AS/HFA rated their vignettes mostly on par with the TD participants. They have been taught cognitive social rules throughout their childhoods and, therefore, can generally rate the level of embarrassment or anger of a vignette protagonist with

success. Measures that required emotional understanding of embarrassment or anger, however, such as justifications and utilization of strategies, were more taxing for them. This implies that not only do they need instruction in managing intense negative emotion, e.g., embarrassment, but they also need ongoing support in understanding those emotions: identifying emotionally triggering social contexts, identifying feelings, and recognizing physiological sensations associated with intense negative emotion. By extension, special education teachers, mental health service providers, and related service providers require specific training in teaching and working with adolescents with AS/HFA and other forms of autism (National Research Council, 2001) in both cognitive and emotional understanding of embarrassment and anger.

While ToM deficits are in evidence in this study in the significantly poorer performance of participants with AS/HFA in rating the embarrassment/social faux pas vignettes, their global lack of understanding of embarrassment cannot be ascribed to a ToM deficit alone. To understand the emotion of embarrassment, one needs to address both the cognitive acquisition of knowledge, i.e., social rules, and the emotional dimension. The former by no means guarantees the latter. As Kanner (1943) observed, children with autism "have come into the world with an innate inability to form the usual, biologically provided affective contact with people" (p. 250). The emotional dimension—the "affective contact with people"--entails learning about one's feelings and attendant physiological sensations, but it also entails personal "lived experience", which expressly requires interactions with others (Denzin, 1985). Similarly, in referring also to children with autism, Hobson (1993) observed that "something essential is lacking in the child's own experience of other people" (p. 2). In contrast to those who espouse ToM as the

primary deficit of individuals with autism, Hobson argued that the primary identifying characteristic of individuals with autism is their "deficient capacity for and experience of personal relatedness" (p. 2). It is well established that children with autism have difficulty perceiving and responding to the meanings inherent in the emotional expressions of others; they are deeply challenged in their experience of "personal relatedness" (Hobson, p. 194). It is in seemingly ignoring this critical aspect of emotion understanding that ToM has been criticized for reducing social interactions to a purely cognitive skill (Leudar & Costall, 2009).

In describing a patient with Asperger's Syndrome, Hobson (1986) reported that to a large degree, the patient seemed to "stand outside and observe" (p. 6), due perhaps in part, as Hobson asserted, to the failure of children with autism to understand others' emotional states. It is precisely because of the tendency of adolescents with AS/HFA to "stand and observe" when it comes to emotional interactions, that I included justifications and narrative responses to vignette scenarios among my embarrassment and anger vignette measures. I found that although the participants with AS/HFA were generally able to accurately rate the embarrassment and anger vignettes on par with their TD peers, notably, they were significantly less able to accurately justify their ratings of embarrassment and anger vignettes. These assessments provide a microcosm of the deficit which Hobson (1993) and Denzin (1985) have identified: learning about emotion, e.g., embarrassment, only through cognitive means such as social rules, does not impute a full understanding of embarrassment. It is only as children and adolescents with AS/HFA have a "lived experience" of embarrassment, that they may come to understand embarrassment emotionally, physiologically, and in their own social experiences. Perhaps

then they can come to understand, at least to some degree, what it truly means to feel embarrassed.

Limitations

In comparison to most research studies in the autism literature, I had a relatively large sample size of participants with AS/HFA. In addition, there was near equal representation of both genders between both the AS/HFA and TD groups, also rare in the autism literature. Nevertheless, a larger sample size would have provided the statistical power needed to explore the impact of gender on the variables of interest. In addition, most of my participants fell within the mid-adolescent years. A more even distribution of participants between 12 and 19 years of age would have elicited additional valuable information regarding early and late adolescence. Moreover, while my sample included some children of ethnic minority, the sample was largely homogenous, consisting primarily of Caucasians. In addition, my findings would have been strengthened by broader ethnic and socio-economic diversity, particularly because of the paucity of research conducted with children and youth with AS/HFA who belong to underrepresented ethnicities.

In considering my study vignettes, while there was a significant difference between the AS/HFA participants and the participants with TD in their ability to rate the embarrassment/social faux pas vignettes, a greater range of social faux pas vignettes may shed more light on this complex construct. The two that I used, Donald (who walks in the girls' bathroom in error) and Monique (who passes gas in the library), though effective for finding significant difference, may be insufficient to enable broader generalizations concerning participant understanding of social faux pas. Additionally, the scenarios may

be regarded as representing two differing levels of social faux pas, i.e., while Donald's walking into the girls' bathroom represents a major social faux pas, especially among adolescents, it is a relatively simple rule to learn and is stable across contexts. In contrast, Monique's passing gas in the school library is a social faux pas the gravity of which may never be forgotten among peers, but the rules for which are complex and unstable across contexts. For students who are allowed to pass gas at home in front of others without apologizing, for example, learning that this will not be tolerated by the students' peers but may, with an apology, be tolerated by teachers, may create confusion.

I constructed the original set of vignettes with a balanced number of male and female protagonists. Achieving sufficiently high Sona scores to meet the criteria for eight vignette emotions, however, as well as meeting criteria for vignettes to be labeled as embarrassment/social faux pas, embarrassment/physical, anger/social interaction, and anger/physical, while still retaining gender balance across all vignettes, proved to be too complex for this study. I chose to retain vignettes which Sona participants consistently rated as being appropriately high or low in a given emotion of construct and to remove the vignettes that did not comply, thus losing the gender balance in the process. Across the final eight vignettes, this resulted in two male protagonists and six female protagonists. This disparity in gender representation, noted by several participants, could potentially be an unanalyzed source of variation between the participants with AS/HFA and the TD participants.

Regarding the ASSCE and the PSSCE, although it resulted in findings of significant difference between the participants with AS/HFA and the TD participants and their parents, the length of the measure may have placed too much cognitive load on

some participants, particularly those with AS/HFA. Although extensive team effort was invested in developing this measure, wholly based on my previous research and participant generated responses, some items may be redundant or unclear to certain participants or parents and should be reconsidered.

It should also be noted that participants' emotion regulation abilities were not directly observed, but assessed through indications identified by coders in participant transcripts, e.g., justifications, narrative responses, negative embarrassment and anger strategies, and adolescent and parent self-report measures. Similarly, participants' real time responses in embarrassing situations were not observed, but were identified in transcripts, e.g., justifications, narrative responses, and embarrassing personal stories.

Further, I only administered one ToM measure to participants and one perspective-taking subscale to their parents. The Happé Strange Stories, (White et al., 2009), while often used to assess the ToM abilities of children, were not specifically designed to measure the more complex strengths and deficits of ToM in adolescents. In addition, the Happé Strange Stories were administered during Session One, on average 22 months prior to Session Two. During this intervening period, some natural development in ToM, expected for the TD participants, may have been missing when the Happé Strange Stories were correlated with other measures.

A measure of self-perception might have been an informative addition to the adolescent battery, particularly to examine how participants' self-perception might have correlated with their utilization frequency for negative strategies. In addition, using more than one control emotion may yield other important findings. Our test sessions, however, lasted between two and three hours. Even with frequent breaks and snacks, at the end of

the sessions most participants displayed signs of cognitive and physical fatigue. Extending session length in order to administer additional measures, however beneficial, would no doubt have impacted the quality of data collection and might possibly have contributed to participant attrition. The quest for maximum data collection must be balanced with participant emotional and physical well being, and thoughtful care must be taken with vulnerable clinical populations, such as AS/HFA, who may also lose focus and become overstimulated.

In this study, parents provided an invaluable source of data in their measures. They may, however, present another unanalyzed source of variation. While parents worked assiduously on the measures given to them, it is possible that parents of TD individuals may have wished to present their children in the best possible light to the researchers, thereby potentiating a social desirability bias in their survey responses. In contrast, parents of participants with AS/HFA may have sought to clearly convey their children's deficits and challenges to further the research, but also may have shared them out of their need to confide in someone--even a researcher--the hardships that their children experience and, by extension, the difficulties they experience as parents (Boyd, 2002; Koegel, et al., 1992).

Future Directions

In the present study I developed novel measures that further our understanding of the self-conscious emotion of embarrassment and emotion regulation in adolescents with AS/HFA. The design of the study, however, necessitates caution in drawing causal inferences. Nonetheless, several suggestions for exploratory future research directions emerge from this study.

First, while research has been conducted on embarrassment in typically developing toddlers and young children, the developmental trajectory of embarrassment in children and adolescents with AS/HFA has not been explored. The present study has demonstrated support for critical differences in the understanding of embarrassment between adolescents with AS/HFA and their TD peers, but many unanswered questions remain regarding the development of self-conscious emotion, e.g., embarrassment, not only in adolescents but also in pre-school and early and middle childhood. A vast field of unexplored developmental questions in AS/HFA and embarrassment awaits researchers' attention.

Next, while the present study did an initial exploration of the responses of adolescents with AS/HFA to embarrassment/social faux pas vignettes, more research is needed into this specific type of embarrassment. The study focused on two types of embarrassment/social faux pas scenarios, one based on a clearly established and well known social rule (boys may not enter girls' bathrooms and vice versa), and the other based on a less stable social rule (people should not pass gas in front of others). Although the first scenario is based on a rule that never changes in schools, the second is based on a rule that may change depending on the context: who is passing gas in front of whom, and in what location? This hints at the nuances inherent in potentially numerous types of social faux pas scenarios in real life. Further exploration into these different types would help increase our understanding of social faux pas and embarrassment in general, and how adolescents with AS/HFA respond to them in particular.

In addition, researchers should explore the possibility that the lessened awareness of embarrassment in adolescents with AS/HFA may serve as a protective factor. Since

embarrassment is often perceived as a negative part of adolescence, perhaps it may be positive that those with AS/HFA seem to experience less embarrassment than their TD peers. Specifically, the possibility of a developmental trajectory in embarrassment protective factors should be examined. Perhaps the protective benefits to those with AS/HFA are realized in childhood, but may cease in adolescence, when TD peers become more aware that adolescents with AS/HFA are not embarrassed when the TD peers feel they should be. This lack of awareness in adolescents with AS/HFA may result in social exclusion and bullying of the AS/HFA peers by some of their TD peers.

Moreover, there is critical need for in-depth research on self-injurious behaviors in children and adolescents with AS/HFA. These harmful behaviors, both verbal and physical, are a common element of daily life for many adolescents with AS/HFA, and parents, teachers, and mental health providers are disturbed by the behaviors and often confounded by how to provide appropriate help. Research is needed to increase our understanding of why those with AS/HFA engage in self-injurious behaviors and interventions that may reduce this harmful practice.

Since the findings of the present study provide evidence of the high utilization frequency of negative strategies in adolescents with AS/HFA, the crucial next step is to develop research-based, effective interventions to teach adolescents with AS/HFA how to understand and self-regulate their emotions when they are embarrassed. The goal of such interventions would be to (a) reduce the use of adolescents' dangerous thought patterns and self-injurious behaviors, (b) increase their use of positive thought patterns and behaviors, (c) help adolescents to understand and manage the physiological responses that may accompany feelings of embarrassment, and (d) teach adolescents how to

manage their intense emotions when they are embarrassed, thereby increasing their confidence, and diminish the common feeling of one participant, who lamented, "Socially, I get things wrong" (Anonymous, Personal Communication, July 1, 2012).

Additionally, in examining embarrassment in adolescents with AS/HFA, the fundamental question arises as to whether they really understand what it means to feel embarrassed. For example, the questions have been asked, "How do we know that another person is angry? ...Do we ever know?" (Austin, Urmson, & Warnock, 1979, p. 79). Similarly, we could well ask how we know that another person is embarrassed, and if it is ever possible to know. It has been observed that the common answer, i.e., while we can never be certain, we may infer an emotion in others with greater or lesser accuracy, may be too simplistic (Leudar & Costall, 2009). In considering whether adolescents with AS/HFA actually feel embarrassed in the same way that most TD adolescents might, we add another complex layer to the question of whether we can ever know. Ryle (1949) noted that we can only "take direct cognisance [sic] of the states and processes" (p. 13) of our own minds, for the career of the mind is private and unobservable by others. Nevertheless, future research is needed to attempt to open the door to comprehending a little more of what adolescents with AS/HFA may be feeling when they say, "That's SO EMBARRASSING!" (Anonymous, Personal Communication, July 12, 2012).

Certainly a major related challenge in embarrassment research, particularly in the adolescent AS/HFA population, is the question of how to design studies that allow for exploration of the "lived experience". One way to approach the lived experience could be to explore physiological indices of embarrassment in adolescents with AS/HFA, e.g., heart rate, stress levels, respirations per minute, body temperature, and perspiration

secretion on the skin. Since adolescents with AS/HFA in general tend to be less aware than TD adolescents of their physiological responses, this data could also be used to teach the adolescents with AS/HFA to become more aware of their own bodies and use physiological indicators to assist them in discerning when they are reacting to embarrassment and other intense emotions.

Finally, with the growing attention given to appropriately identifying and diagnosing girls with AS/HFA, there is urgent need for research that addresses the many questions that have emerged, unique to this population. In regard to the findings of this study, further research is needed to examine the utilization frequency of the negative strategies used by girls with AS/HFA, as distinct from boys with AS/HFA. In order to detect these critical effects, a larger sample is needed to increase the statistical power required for valid gender generalization. Specific mental health concerns for preteen and adolescent girls, in conjunction with pubertal and other physical developmental issues, should be examined with regard to girls' utilization of negative strategies.

Conclusion

The findings of the present study help to advance our understanding of the relations among embarrassment, ToM, and emotion regulation in adolescents with AS/HFA. Specifically, the findings clarify the need to explore critical developmental pathways in self-conscious emotion and emotion regulation in this population. Notably, as this study brings to light, knowing how to accurately interpret embarrassment due to social faux pas transgressions, respond in appropriate and healthy ways, and move forward, leaving behind the embarrassing event, are central challenges for adolescents with AS/HFA. Perhaps most importantly, this study reveals that for adolescents with

AS/HFA, embarrassment is more than a passing social event. Rather, it represents a complex set of cognitive, emotional, verbal, physical, experiential, and social challenges that adolescents with AS/HFA are often unable to successfully negotiate. It is imperative that parents, teachers, and mental health service providers recognize that the state of being embarrassed, widely viewed as a passing and relatively inconsequential adolescent experience, can have extremely harmful consequences for adolescents with AS/HFA who are already prone to negative self-perceptions, depression, anxiety, and self-injurious behaviors. These adolescents must be taught the skills necessary to recognize, understand, and manage embarrassing personal interactions, and be empowered to move forward, applying the healthy positive strategies of their TD peers. This study establishes a strong empirical basis from which to advance research understanding of the critical issues concerning embarrassment and emotion regulation in adolescents with AS/HFA.

APPENDIX A

SCREENING TYPICALLY DEVELOPING ADOLESCENTS FOR MEDICAL HISTORY

Does your child have one or more of the following? Please answer yes or no after each option:

- an Autism Spectrum Disorder
- attention deficit and hyperactivity disorder?
- an anxiety disorder?
- recurrent major depression?
- a conduct disorder?
- serious emotional disturbance?
- obsessive compulsive disorder?
- learning disability (e.g., dyslexia)?
- a seizure disorder?
- schizophrenia?
- a bipolar disorder?
- Tourette's syndrome?
- drug dependency?
- speech delays?
- mental retardation?
- habitual involuntary movement or twitching of the face, arms, or legs?
- a significant visual impairment (strabismus, visual disability)?
- color blindness?

APPENDIX B

SAMPLE EMOTION VIGNETTE DELIVERY FOR FOUR CONDITIONS

WITH PROTAGONIST RESPONSES AND FOLLOW-UP QUESTIONS

Condition 1: Embarrassment/Social Faux Pas Vignette
Donald is hurrying to find the boys' bathroom amongst his classmates during break at his new school. He rushes into the bathroom, almost bumping into a girl, and ends up in a bathroom full of girls.
Question 1a:
In Donald's position, how *embarrassed* would you be?
0 = Not at all embarrassed
1
2
3 = Very embarrassed
Question 1b (narrative response):
Could you tell me *why* you chose [0, 1, 2, or 3]?
Question 2a:
In Donald's position, how *angry* would you be?
0 = Not at all angry
1
2
3 = Very angry
Question 2b (narrative response):
Because…?
We all *want* to react a certain way; even though we know what we *should* do, we often react differently. So…
Question 4 (narrative response):
In Donald's position, what would YOU *actually* do?
Protagonist's Response:
Donald leaves the bathroom quickly without saying anything.
Question 5:
Is this response socially appropriate or inappropriate?
1 = Inappropriate
2 = Appropriate

Condition 2: Embarrassment/Physical Vignette
Janelle is getting on the bus with her schoolmates for a field trip. When she walks up the stairs of the bus, she trips and knocks the girl in front of her into the aisle.
Question 1a:
In Janelle's position, how *embarrassed* would you be?
0 = Not at all embarrassed
1
2

3 = Very embarrassed
Question 1b (narrative response):
Could you tell me *why* you chose [0, 1, 2, or 3]?
Question 2a:
In Janelle's position, how *angry* would you be?
0 = Not at all angry
1
2
3 = Very angry
Question 2b (narrative response):
Because…?
We all *want* to react a certain way; even though we know what we *should* do, we often react differently. So…
Question 4 (narrative response):
In Janelle's position, what would YOU *actually* do?
Protagonist's Response:
Janelle quietly moves toward her seat on the bus.
Question 5:
Is this response socially appropriate or inappropriate?
1 = Inappropriate
2 = Appropriate

Condition 3: Anger/Physical Vignette
Tiffany is cheering with her teammates after their dodge ball victory at school. A girl from the losing team grabs a ball and throws it at Tiffany's team, and it hits Tiffany hard in the back.
Question 1a:
In Tiffany's position, how *embarrassed* would you be?
0 = Not at all embarrassed
1
2
3 = Very embarrassed
Question 1b (narrative response):
Could you tell me *why* you chose [0, 1, 2, or 3]?
Question 2a:
In Tiffany's position, how *angry* would you be?
0 = Not at all angry
1
2
3 = Very angry
Question 2b (narrative response):
Because…?
We all *want* to react a certain way; even though we know what we *should* do, we often react differently. So…
Question 4 (narrative response):
In Tiffany's position, what would YOU *actually* do?

Protagonist's Response:
Tiffany walks off the field without doing anything.
Question 5:
Is this response socially appropriate or inappropriate?
1 = Inappropriate
2 = Appropriate

Condition 4: Anger/Social Interaction vignette
Victoria is working in the gym after school, planning for the dance with the student committee. A girl who agreed to help Victoria plan dance activities for the dance says she is leaving early without finishing her part.
Question 1a:
In Victoria's position, how *embarrassed* would you be?
0 = Not at all embarrassed
1
2
3 = Very embarrassed
Question 1b (narrative response):
Could you tell me *why* you chose [0, 1, 2, or 3]?
Question 2a:
In Victoria's position, how *angry* would you be?
0 = Not at all angry
1
2
3 = Very angry
Question 2b (narrative response):
Because…?
We all *want* to react a certain way; even though we know what we *should* do, we often react differently. So…
Question 4 (narrative response):
In Victoria's position, what would YOU *actually* do?
Protagonist's Response:
Victoria doesn't do anything, acting as if nothing happened.
Question 5:
Is this response socially appropriate or inappropriate?
1 = Inappropriate
2 = Appropriate

APPENDIX C

VIGNETTE DESIGN FORMULA

Sentence (1)
Protagonist + present tense 3rd person verb + protagonist's location + purpose in being there.

Sentence (2)
Action driven by, happening to, or involving protagonist. Includes implied unidentified audience (excluding authorities, e.g., teachers, or family or friends).

Sentence (3)
Protagonist responds to the action.

Total Words: 34-36

APPENDIX D

VIGNETTE PROTAGONIST RESPONSES

One of the following four responses were counterbalanced within each of the 4 vignette conditions and presented to participants after they gave narrative responses regarding how they would respond in the protagonists' positions.

A. Doesn't do anything, acting as if nothing happened.

B. Quietly walks away from what just happened.

C. Gives explanation for what happened.

D. Does something related to the action in the vignette.

APPENDIX E

VIGNETTE PROTAGONIST RESPONSE COUNTERBALANCING SCHEME

Each of the 4 vignette conditions were counterbalanced for the appropriate/inappropriate nature of the response.

Embarrassment-Social Faux Pas Condition
1. Inapp/Blames the Other/Female & Male
2. Inapp/Quietly Continues On/Male & Female

Embarrassment-Physical Condition
1. App/Quietly Continues On/2 Females
4. Inapp/Makes a Demand/Female & Male

Anger-Social Interaction Condition
1. App/Gives Explanation/2 Females
2. Inapp/Doesn't Do Anything/2 Females

Anger-Physical Condition
2. App/Doesn't Do Anything/2 Females
3. App/Quietly Continues On/2 Males

APPENDIX F

EMOTION REGULATION QUESTIONNAIRE

NOTE: Participants respond to the following items with a 7-point Likert scale, ranging from one (strongly disagree) to seven (strongly agree).

Reappraisal Factor

1. I control my emotions by changing the way I think about the situation I'm in.

2. When I want to feel less negative emotion, I change the way I'm thinking about the situation.

3. When I want to feel more positive emotion, I change the way I'm thinking about the situation.

4. When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.

5. When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.

6. When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.

Suppression Factor

7. I control my emotions by not expressing them.

8. When I am feeling negative emotions, I make sure not to express them.

9. I keep my emotions to myself.

10. When I am feeling positive emotions, I am careful not to express them.

APPENDIX G

ADOLESCENT SURVEY OF SIMPLE AND COMPLEX EMOTION

ASSCE ID # _____

When you are in a situation that makes you *embarrassed,* how often do you do, say, or feel the following things? (please put a check mark to indicate your answer)

PART A: General Information	EMBARRASSED			
	Never	Sometimes	Often	Always
1) I remove myself from the situation by quietly leaving or hiding, for example, not talking to anyone as I exit the room.				
2) I make a disturbance as I remove myself from the situation, for example, angrily storming out of the room.				
3) I change the subject, for example, through cracking a joke or bringing up a different topic.				
4) I verbally hurt other people, for example, through yelling or harsh language.				
5) I take responsibility for my actions or words in the situation, for example, apologizing when appropriate.				
6) I blame others for the situation, even though it is not their fault.				
7) I seek to physically comfort myself, for example, through curling up in a blanket.				
8) I physically hurt myself, for example, hit myself, or pick at my skin.				
9) I seek physical comfort from others, for example, accepting a hug from someone.				
10) I physically hurt other people, for example, hitting someone or throwing an object at someone.				
11) I don't direct my negative feelings about the situation toward objects, for example, even though I might want to, I do not kick, throw things, or slam doors.				
12) I DO direct my negative feelings about the situation toward objects, for example, kick, throw things, or slam doors.				

	EMBARRASSED			
	Never	Sometimes	Often	Always
13) I distract myself with a positive activity to keep myself from thinking about the situation, for example, play a video game or read a book.				
14) I keep thinking about the situation, for example, focus my attention on it or keep talking about it.				
15) I don't let it get to me, for example, I laugh it off or tell myself that later, no one will remember that this situation even happened.				
16) I feel really bad about myself because of the situation, for example, I feel "stupid" or like a "loser".				
17) I get over the feeling quickly, for example, in a few minutes or hours.				
18) I take a long time to get over the feeling, for example, days, weeks, or longer, or the situation remains permanently in my memory.				

PART B: Specific Information	EMBARRASSED			
	Never	Sometimes	Often	Always
1) I stop talking				
2) I tell someone else how I feel about what happened				
3) I say negative things to myself				
4) I make a joke				
5) I feel out of control				
6) I apologize				
7) I have less energy				
8) I feel physically sick				
9) I cry				
10) I tell myself there is no problem				

	EMBARRASSED			
	Never	Sometimes	Often	Always
11) I tell others to leave the room				
12) I accuse other people				
13) I argue with people				
14) I say negative things about myself to others				
15) I want to be alone				
16) I become sarcastic				
17) I change the subject				
18) I swear or use strong language				
19) I become talkative out of nervousness				
20) I yell or scream at other people				
21) I tell myself no one will remember this incident				
22) I get upset / angry / mad				
23) I blush / turn red				
24) I hide my face briefly				
25) I hide my face for a long time				
26) I laugh/giggle				
27) I smile				
28) I pull my hair				
29) I leave the room				
30) I hide somewhere				
31) I pick at or bite my skin				
32) I chew my lips				
33) I become aggressive or violent				

	EMBARRASSED			
	Never	Sometimes	Often	Always
34) I tear at my nails				
35) I feel like kicking or hitting someone				
36) I avoid people				
37) I feel overwhelmed				
38) I pick at my skin until it bleeds				
39) I get depressed				
40) I get defensive				
41) I feel sad				
42) I can't stop thinking about what happened				
43) I am disgusted with myself				
44) I feel bad				
45) I feel stupid				
46) I feel like a loser				
47) I feel alone				
48) I feel like I have no friends				
49) I feel silly				
50) I become shy				
51) I hit other people				
52) I don't know what to do				
53) I hit myself				
54) I feel hopeless				
55) I throw objects				
56) I want to hit other people				

	EMBARRASSED			
	Never	Sometimes	Often	Always
57) I scratch myself				
58) I hit objects				
59) I become discouraged				
60) I get anxious / worried				
61) I look away				
62) I throw objects				
63) I feel helpless				
64) I want someone to tell me it's going to be OK				
65) I do not want to be touched				

Part C: How often do these types of situations tend to embarrass you (please put a check mark to indicate your answer)?

	EMBARRASSED			
	Never	Sometimes	Often	Always
1. I have tripped, fallen, or dropped something, etc.				
2. I have said the wrong thing, used a wrong word, etc.				
3. I have done something socially unacceptable, such as making a negative comment about a person's appearance to that person.				
4. I have felt that I looked weak in front of others my age.				
5. I have misbehaved.				
6. I have failed at something that was important to me.				

Part D: How often do MOST PEOPLE FEEL this way during or immediately after an embarrassing event (please put a check mark to indicate your answer)? Most people:

	EMBARRASSED			
	Never	Sometimes	Often	Always
1. Want to scream at someone				
2. Cry				
3. Become angry				
4. Don't want to be touched				
5. Want to throw something				
6. Become anxious				
7. Want a hug				
8. Become frustrated				
9. Want to hit someone				

Part E: How often do MOST PEOPLE ACT this way during or immediately after an embarrassing event (please put a check mark to indicate your answer)? Most people:

	EMBARRASSED			
	Never	Sometimes	Often	Always
1. Tell a joke				
2. Explain what happened				

	EMBARRASSED			
	Never	Sometimes	Often	Always
3. Blame someone else for what happened				
4. Change the subject				
5. Yell or use strong language				
6. Apologize for what happened				
7. Argue with other people				
8. Stop talking completely				
9. Hit someone else				
10. Turn red/blush				
11. Throw something				
12. Laugh, tell a joke				
13. Tell themselves that no one will remember this later on				
14. Pick at their skin, pull on their hair, and/or hit themselves				
15. Quietly leave the room				
16. Act like everything is OK				

Part F: How often do YOU FEEL this way during or immediately after an embarrassing event (please put a check mark to indicate your answer). I:

	EMBARRASSED			
	Never	Sometimes	Often	Always
1. Want to scream at someone				
2. Cry				
3. Become angry				
4. Don't want to be touched				
5. Want to throw something				
6. Become anxious				
7. Want a hug				
8. Become frustrated				
9. Want to hit someone				

Part G: How often do YOU ACT this way during or immediately after an embarrassing event (please put a check mark to indicate your answer)? I:

	EMBARRASSED			
	Never	Sometimes	Often	Always
1. Tell a joke				
2. Explain what happened				

	EMBARRASSED			
	Never	Sometimes	Often	Always
3. Blame someone else for what happened				
4. Change the subject				
5. Yell or use strong language				
6. Apologize for what happened				
7. Argue with other people				
8. Stop talking completely				
9. Hit someone else				
10. Turn red/blush				
11. Throw something				
12. Laugh, tell a joke				
13. Tell myself that no one will remember this later on				
14. Pick at my skin, pull on my hair, and/or hit myself				
15. Quietly leave the room				
16. Act like everything is OK				

Part H: 1. Could you describe an embarrassing experience that happened to you at school or somewhere else in the last two years around other kids your age?

2. Could you describe a second embarrassing experience that happened to you at school or somewhere else in the last two years around other kids your age?

Part I: Are there other things that you do, say, or feel when you are embarrassed?

Part J: What else can you tell us about embarrassement?

When you are in a situation that makes you *angry,* how often do you do, say, or feel the following things (please check mark your answers)?

PART K : General Information	ANGRY Never	Sometimes	Often	Always
1) I remove myself from the situation by quietly leaving or hiding, for example, not talking to anyone as I exit the room.				
2) I make a disturbance as I remove myself from the situation, for example, angrily storming out of the room.				
3) I change the subject, for example, through cracking a joke or bringing up a different topic.				
4) I verbally hurt other people, for example, through yelling or harsh language.				
5) I take responsibility for my actions or words in the situation, for example, apologizing when appropriate.				
6) I blame others for the situation, even though it is not their fault.				
7) I seek to physically comfort myself, for example, through curling up in a blanket.				
8) I physically hurt myself, for example, hit myself, or pick at my skin.				
9) I seek physical comfort from others, for example, accepting a hug from someone.				
10) I physically hurt other people, for example, hitting someone or throwing an object at someone.				
11) I don't direct my negative feelings about the situation toward objects, for example, even though I might want to, I do not kick, throw things, or slam doors.				

	ANGRY			
	Never	Sometimes	Often	Always
12) I DO direct my negative feelings about the situation toward objects, for example, kick, throw things, or slam doors.				
13) I distract myself with a positive activity to keep myself from thinking about the situation, for example, play a video game or read a book.				
14) I keep thinking about the situation, for example, focus my attention on it or keep talking about it.				
15) I don't let it get to me, for example, I laugh it off or tell myself that later, no one will remember that this situation even happened.				
16) I feel really bad about myself because of the situation, for example, I feel "stupid" or like a "loser".				
17) I get over the feeling quickly, for example, in a few minutes or hours.				
18) I take a long time to get over the feeling, for example, days, weeks, or longer, or the situation remains permanently in my memory.				

PART L: Specific Information	ANGRY			
	Never	Sometimes	Often	Always
1) I stop talking				
2) I tell someone else how I feel about what happened				
3) I say negative things to myself				
4) I make a joke				
5) I feel out of control				
6) I apologize				
7) I have less energy				

	ANGRY			
	Never	Sometimes	Often	Always
8) I feel physically sick				
9) I cry				
10) I tell myself there is no problem				
11) I tell others to leave the room				
12) I accuse other people				
13) I argue with people				
14) I say negative things about myself to others				
15) I want to be alone				
16) I become sarcastic				
17) I change the subject				
18) I swear or use strong language				
19) I become talkative out of nervousness				
20) I yell or scream at other people				
21) I tell myself no one will remember this incident				
22) I get embarrassed				
23) I blush / turn red				
24) I hide my face briefly				
25) I hide my face for a long time				
26) I laugh/giggle				
27) I smile				
28) I pull my hair				
29) I leave the room				

	ANGRY			
	Never	Sometimes	Often	Always
30) I hide somewhere				
31) I pick at or bite my skin				
32) I chew my lips				
33) I become aggressive or violent				
34) I tear at my nails				
35) I feel like kicking or hitting someone				
36) I avoid people				
37) I feel overwhelmed				
38) I pick at my skin until it bleeds				
39) I get depressed				
40) I get defensive				
41) I feel sad				
42) I can't stop thinking about what happened				
43) I am disgusted with myself				
44) I feel bad				
45) I feel stupid				
46) I feel like a loser				
47) I feel alone				
48) I feel like I have no friends				
49) I feel silly				
50) I become shy				
51) I hit other people				
52) I don't know what to do				

	ANGRY			
	Never	Sometimes	Often	Always
53) I hit myself				
54) I feel hopeless				
55) I throw objects				
56) I want to hit other people				
57) I scratch myself				
58) I hit objects				
59) I become discouraged				
60) I get anxious / worried				
61) I look away				
62) I throw objects				
63) I feel helpless				
64) I want someone to tell me it's going to be OK				
65) I do not want to be touched				

Part M: How often do these types of situations tend to anger you (please put a check mark to indicate your answer)?

	ANGRY			
	Never	Sometimes	Often	Always
1. I have tripped, fallen, or dropped something, etc.				
2. I have said the wrong thing, used a wrong word, etc.				
3. I have done something socially unacceptable, such as making a negative comment about a person's appearance to that person.				
	ANGRY			

	Never	Sometimes	Often	Always
4. I have felt that I looked weak in front of others my age.				
5. I have misbehaved.				
6. I have failed at something that was important to me.				

Part N: How often do MOST PEOPLE FEEL this way during or immediately after an event that makes them angry (please put a check mark to indicate your answer)? Most people:

	ANGRY			
	Never	Sometimes	Often	Always
1. Want to scream at someone				
2. Cry				
3. Become embarrassed				
4. Don't want to be touched				
5. Want to throw something				
6. Become anxious				
7. Want a hug				
8. Become frustrated				
9. Want to hit someone				

Part O: How often do MOST PEOPLE ACT this way during or immediately after an event that makes them angry (please put a check mark to indicate your answer)? Most people:				
	ANGRY			
	Never	Sometimes	Often	Always
1. Tell a joke				
2. Explain what happened				
3. Blame someone else for what happened				
4. Change the subject				
5. Yell or use strong language				
6. Apologize for what happened				
7. Argue with other people				
8. Stop talking completely				
9. Hit someone else				
10. Turn red/blush				
11. Throw something				
12. Laugh, tell a joke				
13. Tell themselves that no one will remember this later on				
14. Pick at their skin, pull on their hair, and/or hit themselves				
15. Quietly leave the room				
16. Act like everything is OK				

Part P: How often do YOU FEEL this way during or immediately after an event that makes you angry (please put a check mark to indicate your answer)? I:

	ANGRY			
	Never	Sometimes	Often	Always
1. Want to scream at someone				
2. Cry				
3. Become embarrassed				
4. Don't want to be touched				
5. Want to throw something				
6. Become anxious				
7. Want a hug				
8. Become frustrated				
9. Want to hit someone				

Part Q: How often do YOU ACT this way during or immediately after an event that makes you angry (please put a check mark to indicate your answer)? I:

	ANGRY			
	Never	Sometimes	Often	Always
1. Tell a joke				
2. Explain what happened				
3. Blame someone else for what happened				

	ANGRY			
	Never	Sometimes	Often	Always
4. Change the subject				
5. Yell or use strong language				
6. Apologize for what happened				
7. Argue with other people				
8. Stop talking completely				
9. Hit someone else				
10. Turn red/blush				
11. Throw something				
12. Laugh, tell a joke				
13. Tell themselves that no one will remember this later on				
14. Pick at my skin, pull on my hair, and/or hit myself				
15. Quietly leave the room				
16. Act like everything is OK				

Part R:
Are there other things that you do, say, or feel when you are angry?

Part S:
Is there anything else you want us to know about you?

APPENDIX H

HAPPÉ STRANGE STORIES

Sample story:

Late one night old Mrs. Peabody is walking home. She doesn't like walking home alone in the dark because she is always afraid that someone will attack her and rob her. She really is a very nervous person! Suddenly, out of the shadows comes a man. He wants to ask Mrs. Peabody what time it is, so he walks toward her. When Mrs. Peabody sees the man coming toward her, she starts to tremble and says, ''Take my purse, just don't hurt me, please!''

Test Question:

Why did she say that?

APPENDIX I

CONFIRMATION OF AUTISM SPECTRUM DISORDER DIAGNOSIS AND

INTERVENTION SURVEY

Date: _____

(Please place a check by correct answer)

My child is *currently*…

____ not diagnosed with an Autism Spectrum Diagnosis
____ diagnosed with Asperger's Syndrome (AS)
_____diagnosed with High Functioning Autism (HFA)
____ diagnosed with *another* Autism Spectrum Diagnosis (for example, PDDNOS)
(please specify)_____

How is your child currently schooled?
_____ Traditional school
_____ Montessori school
_____Other private school
_____ Home School
_____ Other, please list _____

Has your child **ever** been diagnosed with any mental or neurological disorders (for example, ADHD, learning disability, obsessive compulsive disorder, anxiety, depression, Tourette's
If so, please list. Please add in any medications or treatments ***CURRENTLY*** used for the disorders.

Disorder	**Medication/Treatment Currently Being Taken**	**Purpose of Medication**	**Approximate date began Medication/Treatment**

At approximately what **age** was your child identified as having an Autism Spectrum Disorder?

Over the course of your child's life, please tell us the professional(s) who identified/ confirmed that your child has autism (please circle **ALL** options that apply):

- autism specialist/consultant
- behavioral pediatrician
- early interventionist
- general physician
- neurologist
- pediatrician
- psychiatrist
- psychologist
- school psychologist
- special educator
- speech/language pathologist
- therapist
- other, please list _____

Over the course of your child's life, has he or she participated in any intervention programs for autism at home, school, or with a private agency or professional? If so, please check all that apply. This list is by no means exhaustive; if you used an intervention that you do not see on the list, please write it in.

Behavioral Interventions	**Age of Child When Intervention Began**	**Duration of Intervention**
ABA (Applied Behavior Analysis)		
PRT (Pivotal Response Training)		
Functional Routines		
Positive Behavior Supports		
Floor time – child directed play		
Other (Please Describe)		

Social Interventions	**Age of Child When Intervention Began**	**Duration of Intervention**
Social Skills Groups		
Social Skills Training		
Friendship Groups		
Social Stories		
RDI—Relationship Development Intervention		
Other (Please Describe)		

Communication Interventions	**Age of Child When Intervention Began**	**Duration of Intervention**
Assistive or Adaptive communication		
Speech/Language Therapy		
PECS—Picture Exchange System		
Visual Schedules		
Visual Organizers		
American Sign Language		
Other (Please Describe)		

Emotional Support Interventions	**Age of Child When**	**Duration of**

	Intervention Began	**Intervention**
Individual Counseling		
Individual Psychotherapy ("talk" therapy)		
Cognitive Behavior Therapy		
Family Counseling or Therapy		
Journaling (computer or handwritten)		
Other (Please Describe)		

School Support Interventions	**Age of Child When Intervention Began**	**Duration of Intervention**
IEP		
504 Plan		
One-on-one Aide		
Alpha Smart, Laptop, or Other Writing Technology		
Keyboarding Instruction		
Notetakers in Class		
Voice Recorders in Class		
Other (Please Describe)		

Sensory Integration Interventions	**Age of Child When Intervention**	**Duration of Intervention**

	Began	
Professional sensory therapy		
Fidgets		
Deep Pressure		
Swings		
Weighted blankets or other weighted items		
Chewing gum or other oral stimulation items		
Special pens or pencils, or pen/pencil grips		
Other (Please Describe)		

Medication and Related Interventions	**Age of Child When Intervention Began**	**Duration of Intervention**
Prescribed medications		
Vitamins		
Herbs		
Supplements		
Other (Please Describe)		

Spiritual/Religious Interventions	**Age of Child When Intervention Began**	**Duration of Intervention**
Prayer		
Requesting prayer from others		
Special services or ceremonies		
Fasting		
Pilgrimmages		
Other (Please Describe)		

Alternative Therapies Interventions	**Age of Child when Intervention Began**	**Duration of Intervention**
Gluten-Free--Casein Free Diet		
Other Elimination Diets		
Other Diet (Please Describe)		
Chelation Therapy		
Music Therapy		
Art Therapy		
Massage		
Neurofeedback		
Craniosacral Therapy		
Hyberbaric oxygen chamber		

Animal-assisted Therapy (horses, dogs, dolphins, etc.)		
Other (Please Describe)		

Any Additional Intervention Category You Wish to Add:

_____

At approximately what age did your child begin his or her first intervention?

_____

APPENDIX J

AUTISM SPECTRUM QUOTIENT--ADOLESCENT VERSION

Response Options:
"Agree"
"Slightly Agree"
"Slightly Disagree"
"Definitely Disagree"

1. S/he prefers to do things with others rather than on her/his own.
2. S/he prefers to do things the same way over and over again.
3. If s/he tries to imagine something, s/he finds it very easy to create a picture in her/his mind.
4. S/he frequently gets so strongly absorbed in one thing that s/he loses sight of other things.
5. S/he often notices small sounds when others do not.
6. S/he usually notices car number plates or similar strings of information.
7. Other people frequently tell her/him that what s/he has said is impolite, even though s/he thinks it is polite.
8. When s/he is reading a story, s/he can easily imagine what the characters might look like.
9. S/he is fascinated by dates.
10. In a social group, s/he can easily keep track of several different people's conversations.
11. S/he finds social situations easy.
12. S/he tends to notice details that others do not.
13. S/he would rather go to a library than a party.
14. S/he finds making up stories easy.
15. S/he finds her/himself drawn more strongly to people than to things.
16. S/he tends to have very strong interests, which s/he gets upset about if s/he can't pursue.
17. S/he enjoys social chit-chat.
18. When s/he talks, it isn't always easy for others to get a word in edgeways.
19. S/he is fascinated by numbers.
20. When s/he is reading a story, s/he finds it difficult to work out the characters' intentions.
21. S/he doesn't particularly enjoy reading fiction.
22. S/he finds it hard to make new friends.
23. S/he notices patterns in things all the time.
24. S/he would rather go to the theatre than a museum.
25. It does not upset him/her if his/her daily routine is disturbed.
26. S/he frequently finds that s/he doesn't know how to keep a conversation going.
27. S/he finds it easy to ''read between the lines'' when someone is talking to her/him.
28. S/he usually concentrates more on the whole picture, rather than the small details.
29. S/he is not very good at remembering phone numbers.

30. S/he doesn't usually notice small changes in a situation, or a person's appearance.
31. S/he knows how to tell if someone listening to him/her is getting bored.
32. S/he finds it easy to do more than one thing at once.
33. When s/he talks on the phone, s/he is not sure when it's her/his turn to speak.
34. S/he enjoys doing things spontaneously.
35. S/he is often the last to understand the point of a joke.
36. S/he finds it easy to work out what someone is thinking or feeling just by looking at their face.
37. If there is an interruption, s/he can switch back to what s/he was doing very quickly.
38. S/he is good at social chit-chat.
39. People often tell her/him that s/he keeps going on and on about the same thing.
40. When s/he was younger, s/he used to enjoy playing games involving pretending with other children.
41. S/he likes to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant, etc.).
42. S/he finds it difficult to imagine what it would be like to be someone else.
43. S/he likes to plan any activities s/he participates in carefully.
44. S/he enjoys social occasions.
45. S/he finds it difficult to work out people's intentions.
46. New situations make him/her anxious.
47. S/he enjoys meeting new people.
48. S/he is a good diplomat.
49. S/he is not very good at remembering people's dates of birth.
50. S/he finds it very to easy to play games with children that involve pretending.

APPENDIX K

ASPERGER'S SYNDROME DIAGNOSTIC SURVEY

Instructions:

Read each statement and circle 1 if you have observed the behavior that is described in the statement. If you have not observed the behavior described in the statement, circle 0. Please remember to rate every behavior based upon your observations.
My Child…
1. Speaks like an adult in an academic or "bookish" manner and/or overly uses correct grammar
2. Talks excessively about favorite topics that hold limited interest for others
3. Uses words or phrases repetitively
4. Does not understand subtle jokes (e.g., sarcasm)
5. Interprets conversations literally (i.e., has difficult understanding metaphors, idioms)
6. Has peculiar voice characteristics (i.e., sing-song, monotone)
7. Acts as though he or she understands more than he or she does
8. Frequently asks inappropriate questions
9. Experiences difficulty in beginning and continuing a conversation
10. Uses few gestures
11. Avoids or limits eye contact
12. Has difficulty in relating to others that cannot be explained by shyness, attention, or lack of experience
13. Exhibits few or inappropriate facial expressions
14. Shows little or no interest in other children
15. Prefers to be in the company of adults more than peers
16. Has few or no friends in spite of a desire to have them

17. Has little or no ability to make or keep friends
18. Does not respect others' personal space
19. Displays limited interest in what other people say or what others find interesting
20. Has difficulty understanding the feelings of others

Participant ID # _____ ; Questionnaire C

My Child…
21. Does not understand or use rules governing social behavior
22. Has difficulty understanding social cues (i.e., turn-taking in conversation, politeness)
23. Does not change behavior to match the environment (i.e., uses loud outside voice in the library)
24. Engages in inappropriate behavior related to obsessive or favorite interest
25. Displays antisocial behavior
26. Exhibits a strong reaction to a change in his or her routine
27. Frequently becomes anxious or panics when unscheduled events occur
28. Appears depressed or has suicidal tendencies
29. Engages in repeated, obsessive, and/or ritualistic behavior
30. Displays behaviors that are immature and similar to those of a much younger child
31. Frequently loses temper or has tantrums
32. Frequently feels overwhelmed or bewildered, especially in crowds or demanding situations
33. Attempts to impose narrow interests, routines, or structures on others
34. Displays superior ability in restricted area of interest, while having average to above average skills in other areas
35. Displays an extreme or obsessive interest in a narrow subject

36. Functions best when engaged in familiar and repeated tasks
37. Has excellent rote memory
38. Learns best when pictures or written words are present
39. Has average to above average intelligence
40. Appears to be aware that he or she is different from others
41. Is oversensitive to criticism
42. Lacks organizational skills

Participant ID # _____ ; Questionnaire C

My Child…
43. Lacks common sense
44. Displays an unusual reaction to loud, unpredictable noise (e.g., screams, has tantrums, or withdraws)
45. Frequently stiffens, flinches, or pulls away when hugged
46. Overreacts to smells that are hardly recognizable to those around him or her
47. Prefers to wear clothes made of only certain fabrics
48. Has restricted diet consisting of the same foods cooked and presented in the same way
49. Exhibits difficulties with handwriting or other tasks (i.e., buttoning, typing) that require fine motor skills
50. Appears clumsy or uncoordinated

APPENDIX L

KRUG ASPERGER'S DISORDER INVENTORY

INSTRUCTIONS: Carefully read each statement. If the statement accurately describes your child, circle Y for "Yes", otherwise circle N for "No".

1. Fixates (obsesses) on ideas or activities
Y
N
2. Conversationally, talks about single subject excessively
Y
N
3. Doesn't adjust language to needs of different listeners
Y
N
4. Imitates others quite a lot
Y
N
5 Makes naïve remarks (unaware of reaction produced in others)
Y
N
6 Interprets language literally (uses concrete meaning of words)
Y
N
7 Says things that may embarrass others
Y
N
8 Does things others regard as unconventional
Y
N
9 Is surprisingly poor at some things
Y
N
10 Is bullied by others
Y
N
11 Has limited intellectual interests (e.g., cartoon characters)
Y
N
12 Expresses opinions to strangers inappropriately
Y
N
13 Acts out or discusses fantasies in unusual ways
Y

N
14 Gives impression that he or she is smarter than others
Y
N
15 Thinks it important that people accept his or her ideas
Y
N
16 Easily becomes impatient with others
Y
N
17 Has very high standards for self and others
Y
N
18 Persists with certain pieces of work for too long (obsessively so)
Y
N
"Special ability(ies)" seems to rule out mental retardation
(In other words, "does your child have extremely intense interests that 19 *preoccupy his or her mind and attention most of the time?" If you answer*
NO, this does NOT mean that your child has mental retardation. Therefore, please answer NO if your child does not have these extremely intense interests.)
Y
N
Good or excellent rote memory
20 *(This means memorization that occurs through repetition of such things as movie scripts, song lyrics, or lines from books,* ***without*** *understanding the meaning of the words)*
Y
N
21 Is surprisingly good at some things
Y
N
22 Can cooperate in team games
Y
N
23 Not dependent on others for their help and advice
Y
N
24 Verbally fluent, with normal vocabulary before age 5 years
Y
N
25 Uses pronouns correctly (*you, we, they,*etc.)
Y
N
26 Is regarded as an eccentric (odd, peculiar) person by others
Y

N
27 Seems too serious
Y
N
28 Is doing, or seems possible might someday attend college
Y
N
29 Is doing, or seems possible might someday hold job independently
Y
N
30 Is doing, or seems possible might someday live by self, independently
Y
N
31 Is doing, or seems possible might someday manage own money
Y
N
32 Is doing, or seems possible might someday drive car
Y
N

APPENDIX M

EMOTION REGULATION CHECKLIST

Instructions: Please read each statement carefully and circle the response that best describes your child, based upon your observations.

		Rarely/ Never	Some-times	Often	Almost Always
1	Is a cheerful child.	**1**	**2**	**3**	**4**
2	Exhibits wide mood swings (child's emotional state is difficult to anticipate because s/he moves quickly from a positive to a negative mood).	**1**	**2**	**3**	**4**
3	Responds positively to neutral or friendly overtures by adults.	**1**	**2**	**3**	**4**
4	Transitions well from one activity to another--does not become angry, anxious, distressed, or overly excited when moving from one activity to another.	**1**	**2**	**3**	**4**
5	Can recover quickly from an upset or distress (for example, doesn't pout or remain sullen, anxious, or sad after emotionally distressing events).	**1**	**2**	**3**	**4**
6	Is easily frustrated.	**1**	**2**	**3**	**4**

7	Responds positively to neutral or friendly overtures by peers.	**1**	**2**	**3**	**4**
8	Is prone to angry outbursts/ tantrums easily.	**1**	**2**	**3**	**4**

		Rarely/ Never	**Some-times**	**Often**	**Almost Always**
9	Is able to delay gratification.	**1**	**2**	**3**	**4**
10	Takes pleasure in the distress of others (for example, laughs when another person gets hurt or punished; seems to enjoy teasing others).	**1**	**2**	**3**	**4**
11	Can modulate excitement (for example, doesn't get "carried away" in high energy play situations or overly excited in inappropriate contexts).	**1**	**2**	**3**	**4**
12	Is whiney or clingy with adults.	**1**	**2**	**3**	**4**
13	Is prone to disruptive outbursts of energy or exuberance.	**1**	**2**	**3**	**4**
14	Responds angrily to limit-setting by adults.	**1**	**2**	**3**	**4**

15	Can say when s/he is feeling sad, angry or mad, fearful or afraid.	**1**	**2**	**3**	**4**
16	Seems sad or listless.	**1**	**2**	**3**	**4**
17	Is overly exuberant when attempting to engage others in play.	**1**	**2**	**3**	**4**
		Rarely/ Never	**Some-times**	**Often**	**Almost Always**
18	Displays flat affect (expression is vacant or inexpressive; child seems emotionally absent).	**1**	**2**	**3**	**4**
19	Responds negatively to neutral or friendly overtures by peers (for example, may speak in an angry tone of voice or respond fearfully.	**1**	**2**	**3**	**4**
20	Is impulsive.	**1**	**2**	**3**	**4**
21	Is empathic toward others; shows concern when others are upset or distressed.	**1**	**2**	**3**	**4**
22	Displays exuberance that others find intrusive or disruptive.	**1**	**2**	**3**	**4**

23	Displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive, or intrusive acts by peers.	**1**	**2**	**3**	**4**
24	Displays negative emotions when attempting to engage others in play.	**1**	**2**	**3**	**4**

APPENDIX N

INTERPERSONAL REACTIVITY INDEX

PARENT REPORT VERSION

The following statements inquire about your child's thoughts and feelings in a variety of situations. For each item, indicate how well it describes your child by choosing the appropriate letter on the scale at the top of the page: A, B, C, D, or E. When you have decided on your answer, fill in the letter on the answer sheet next to the item number.

PLEASE READ EACH ITEM CAREFULLY BEFORE RESPONDING. Answer as honestly as you can. Thank you.

ANSWER SCALE:

A	B	C	D	E
DOES NOT DESCRIBE MY CHILD WELL				DESCRIBES MY CHILD VERY WELL

1. S/he daydreams and fantasizes, with some regularity, about things that might happen to her/him. (FS)

2. S/he often hs tender, concerned feelings for people less fortunate than her. (EC)

3. S/he sometimes find it difficult to see things from the "other guy's" point of view. (PT) (-)

4. Sometimes s/he doesn't feel very sorry for other people when they are having problems. (EC) (-)

5. S/he really gets involved with the feelings of the characters in a novel. (FS)

6. In emergency situations, s/he feels apprehensive and ill-at-ease. (PD)

7. S/he is usually objective when s/he watches a movie or play, and s/he doesn't often get completely caught up in it. (FS) (-)

8. S/he tries to look at everybody's side of a disagreement before s/he makes a decision. (PT)

9. When s/he sees someone being taken advantage of, s/he feels kind of protective towards them. (EC)

10. S/he sometimes feels helpless when s/he is in the middle of a very emotional situation. (PD)

11. S/he sometimes tries to understand her/his friends better by imagining how things look from their perspective. (PT)

12. Becoming extremely involved in a good book or movie is somewhat rare for her/him. (FS)(-)

13. When s/he sees someone get hurt, she/he tends to remain calm. (PD) (-)

14. Other people's misfortunes do not usually disturb her/him a great deal. (EC) (-)

15. If s/he is sure s/he is right about something, s/he doesn't waste much time listening to other people's arguments. (PT) (-)

16. After seeing a play or movie, s/he has felt as though s/he were one of the characters. (FS)

17. Being in a tense emotional situation scares her/him. (PD)

18. When s/he sees someone being treated unfairly, s/he sometimes don't feel very much pity for them. (EC) (-)

19. S/he is usually pretty effective in dealing with emergencies. (PD) (-)

20. S/he is often quite touched by things that s/he sees happen. (EC)

21. S/he believes that there are two sides to every question and tries to look at them both. (PT)

22. S/he would describe herself as a pretty soft-hearted person. (EC)

23. When s/he watches a good movie, s/he can very easily put herself in the place of a leading character. (FS)

24. S/he tends to lose control during emergencies. (PD)

25. When s/he is upset at someone, s/he usually tries to "put her/himself in her/his shoes" for a while. (PT)

26. When s/he is reading an interesting story or novel, s/he imagines how s/he would feel if the events in the story were happening to her/him. (FS)

27. When s/he sees someone who badly needs help in an emergency, s/he goes to pieces. (PD)

28. Before criticizing somebody, s/he tries to imagine how s/he would feel if s/he were in her/his place. (PT)

NOTE: (-) denotes item to be scored in reverse fashion

PT = perspective-taking scale
FS = fantasy scale
EC = empathic concern scale
PD = personal distress scale

A = 0
B = 1
C = 2
D = 3
E = 4

Except for reversed-scored items, which are scored:

A = 4
B = 3
C = 2
D = 1
E = 0

APPENDIX O

PARENT SURVEY OF SIMPLE AND COMPLEX EMOTION

PSSCE **ID # _____**

When your child is in a situation that makes her/him *embarrassed,* how often does s/he do, say, or feel the following things (please check mark your answers)?

PART A: General Information	Never	Sometimes	Often	Always
		EMBARRASSED		
1) S/he removes her / himself from the situation by quietly leaving or hiding, for example, not talking to anyone as s/he exits the room.				
2) S/he makes a disturbance as s/he removes her/ himself from the situation, for example, angrily storming out of the room.				
3) S/he changes the subject, for example, through cracking a joke or bringing up a different topic.				
4) S/he verbally hurts other people, for example, through yelling or harsh language.				
5) S/he takes responsibility for her/ his actions or words in the situation, for example, apologizing when appropriate.				
6) S/he blames others for the situation, even though it is not their fault.				
7) S/he seeks to physically comfort her / himself, for example, through curling up in a blanket.				
8) S/he physically hurts her / himself, for example, hits her/ himself, or picks at her / his skin.				
9) S/he seeks physical comfort from others, for example, accepting a hug from someone.				
10) S/he physically hurts other people, for example, hitting someone or throwing an object at someone.				
11) S/he doesn't direct her / his negative feelings about the situation toward objects, for example, even though s/he might want to, s/he does not kick or throw things, or slam doors.				
12) S/he DOES direct her / his negative feelings about the situation toward objects, for example, s/he kicks, throws things, or slams doors.				

	EMBARRASSED			
	Never	Sometimes	Often	Always
13) S/he distracts her / himself with a positive activity to keep her / himself from thinking about the situation, for example, plays a video game or reads a book.				
14) S/he keeps thinking about the situation, for example, focuses her / his attention on it or keeps talking about it.				
15) S/he doesn't let it get to her / him, for example, s/he laughs it off or s/he tells her / himself that later, no one will remember that this situation even happened.				
16) S/he feels really bad about her / himself because of the situation, for example, s/he feels "stupid" or like a "loser".				
17) S/he gets over the feeling quickly, for example, in a few minutes or hours.				
18) S/he takes a long time to get over the feeling, for example, days, weeks, or longer, or the situation remains permanently in her / his memory.				

PART B: Specific Information	EMBARRASSED			
	Never	Sometimes	Often	Always
1) S/he stops talking				
2) S/he tells someone else how s/he feels about what happened				
3) S/he says negative things to her or himself				
4) S/he makes a joke				
5) S/he feels out of control				
6) S/he apologizes				
7) S/he has less energy				
8) S/he feels physically sick				
	EMBARRASSED			

	Never	Sometimes	Often	Always
9) S/he cries				
10) S/he tells her / himself that there is no problem				
11) S/he tells others to leave the room				
12) S/he accuses other people				
13) S/he argues with people				
14) S/he says negative things about her / himself to others				
15) S/he wants to be alone				
16) S/he becomes sarcastic				
17) S/he changes the subject				
18) S/he swears or uses strong language				
19) S/he becomes talkative out of nervousness				
20) S/he yells or screams at other people				
21) S/he tells her / himself that no one will remember this incident				
22) S/he gets upset / angry / mad				
23) S/he blushes / turns red				
24) S/he hides her face briefly				
25) S/he hides her face for a long time				
26) S/he laughs /giggles				
27) S/he smiles				
28) S/he pulls her / his hair				
29) S/he leaves the room				

	EMBARRASSED			
	Never	Sometimes	Often	Always
30) S/he hides somewhere				
31) S/he picks at or bites her / his skin				
32) S/he chews her / his lips				
33) S/he becomes aggressive or violent				
34) S/he tears at her / his nails				
35) S/he feels like kicking or hitting someone				
36) S/he avoids people				
37) S/he feels overwhelmed				
38) S/he picks at her / his skin until it bleeds				
39) S/he gets depressed				
40) S/he gets defensive				
41) S/he feels sad				
42) S/he can't stop thinking about what happened				
43) S/he is disgusted with her/ himself				
44) S/he feels bad				
45) S/he feels stupid				
46) S/he feels like a loser				
47) S/he feels alone				
48) S/he feels that s/he has no friends				
49) S/he feels silly				
50) S/he becomes shy				
51) S/he hits other people				
52) S/he doesn't know what to do				

	EMBARRASSED			
	Never	Sometimes	Often	Always
53) S/he hits her / himself				
54) S/he feels hopeless				
55) S/he throws objects				
56) S/he wants to hit other people				
57) S/he scratches him or herself				
58) S/he hits objects				
59) S/he becomes discouraged				
60) S/he gets anxious / worried				
61) S/he looks away				
62) S/he throws objects				
63) S/he feels helpless				
64) S/he wants someone to tell her/him it's going to be OK				
65) S/he does not want to be touched				

Part C: How often do these types of situations tend to embarrass **your** child (please put a check mark to indicate your answer)?

	EMBARRASSED			
	Never	Sometimes	Often	Always
1. S/he has tripped, fallen, or dropped something, etc.				
2. S/he has said the wrong thing, used a wrong word, etc.				
3. S/he has done something socially unacceptable, such as making a negative comment about a person's appearance to that person.				

	EMBARRASSED			
	Never	Sometimes	Often	Always
4. S/he has felt that s/he looked weak in front of others my age.				
5. S/he misbehaved.				
6. S/he failed at something that was important to her/him.				

Part D: How often does your child FEEL this way during or immediately after an embarassing event (please put a check mark to indicate your answer)? **He or she:**

	EMBARASSED			
	Never	Sometimes	Often	Always
1. Wants to scream at someone				
2. Cries				
3. Becomes angry				
4. Does not want to be touched				
5. Wants to throw something				
6. Becomes anxious				
7. Wants a hug				
8. Becomes frustrated				
9. Wants to hit someone				

Part E: How often does your child **ACT** this way during or immediately after an embarassing event (please put a check mark to indicate your answer)? **He or she:**

	EMBARASSED			
	Never	Sometimes	Often	Always
1. Tells a joke				
2. Explains what happened				
3. Blames someone else for what happened				
4. Changes the subject				
5. Yells or uses strong language				
6. Apologizes for what happened				
7. Argues with other people				
8. Stops talking completely				
9. Hits someone else				
10. Turns red/blushes				
11. Throws something				
12. Laughs, tells a joke				
13. Tells her/himself that no one will remember this later on				
14. Picks at her/his skin, pull on her/his hair, and/or hits her/himself				
15. Quietly leaves the room				

	EMBARASSED			
	Never	Sometimes	Often	Always
16. Acts like everything is OK				

Part F: Please answer these questions and include examples when possible.		
	YES	**NO**
1. (a) In situations that **generally embarrass** other children your child's age, **would your child** also be embarassed?		
(b) If yes, **please describe** one or more situations in which this has happened.		
2. (a) In situations which other children your child's age **DO NOT generally find embarassing,** would your child be embarassed?		
(b) If yes, please describe one or more situations in which this has happened.		

3. (a) Do you ever wish that your child **WOULD show embarassment** in certain situations when he or she usually does not?		
(b) If yes, please describe one or more situations when your child has **NOT** shown embarassment, but you thought it would have been appropriate if he or she **HAD** shown embarassment?		

Part G:
Please tell us something else about how your child **THINKS** about embarassment.

Part H:
Please tell us something else about how your child **EXPERIENCES** embarassment.

When your child is in a situation that makes her/him *angry,* how often does s/he do, say, or feel the following things? (please check mark your answers)

	ANGRY			
PART I: General Information	Never	Sometimes	Often	Always
1) S/he removes her / himself from the situation by quietly leaving or hiding, for example, not talking to anyone as s/he exits the room.				
2) S/he makes a disturbance as s/he removes her/ himself from the situation, for example, angrily storming out of the room.				
3) S/he changes the subject, for example, through cracking a joke or bringing up a different topic.				
4) S/he verbally hurts other people, for example, through yelling or harsh language.				
5) S/he takes responsibility for her/ his actions or words in the situation, for example, apologizing when appropriate.				
6) S/he blames others for the situation, even though it is not their fault.				
7) S/he seeks to physically comfort her / himself, for example, through curling up in a blanket.				
8) S/he physically hurts her / himself, for example, hits her/ himself, or picks at her / his skin.				
9) S/he seeks physical comfort from others, for example, accepting a hug from someone.				
10) S/he physically hurts other people, for example, hitting someone or throwing an object at someone.				
11) S/he doesn't direct her / his negative feelings about the situation toward objects, for example, even though s/he might want to, s/he does not kick or throw things, or slam doors.				
12) S/he DOES direct her / his negative feelings about the situation toward objects, for example, s/he kicks, throws things, or slams doors.				

	ANGRY			
	Never	Sometimes	Often	Always
13) S/he distracts her / himself with a positive activity to keep her / himself from thinking about the situation, for example, plays a video game or reads a book.				
14) S/he keeps thinking about the situation, for example, focuses her / his attention on it or keeps talking about it.				
15) S/he doesn't let it get to her / him, for example, s/he laughs it off or s/he tells her / himself that later, no one will remember that this situation even happened.				
16) S/he feels really bad about her / himself because of the situation, for example, s/he feels "stupid" or like a "loser".				
17) S/he gets over the feeling quickly, for example, in a few minutes or hours.				
18) S/he takes a long time to get over the feeling, for example, days, weeks, or longer, or the situation remains permanently in her / his memory.				

PART J: Specific Information	ANGRY			
	Never	Sometimes	Often	Always
1) S/he stops talking				
2) S/he tells someone else how s/he feels about what happened				
3) S/he says negative things to her or himself				
4) S/he makes a joke				
5) S/he feels out of control				
6) S/he apologizes				
7) S/he has less energy				
8) S/he feels physically sick				

	ANGRY			
	Never	Sometimes	Often	Always
9) S/he cries				
10) S/he tells her / himself that there is no problem				
11) S/he tells others to leave the room				
12) S/he accuses other people				
13) S/he argues with people				
14) S/he says negative things about her / himself to others				
15) S/he wants to be alone				
16) S/he becomes sarcastic				
17) S/he changes the subject				
18) S/he swears or uses strong language				
19) S/he becomes talkative out of nervousness				
20) S/he yells or screams at other people				
21) S/he tells her / himself that no one will remember this incident				
22) S/he gets embarrassed				
23) S/he blushes / turns red				
24) S/he hides her face briefly				
25) S/he hides her face for a long time				
26) S/he laughs /giggles				
27) S/he smiles				
28) S/he pulls her / his hair				
29) S/he leaves the room				
30) S/he hides somewhere				

	ANGRY			
	Never	Sometimes	Often	Always
31) S/he picks at or bites her / his skin				
32) S/he chews her / his lips				
33) S/he becomes aggressive or violent				
34) S/he tears at her / his nails				
35) S/he feels like kicking or hitting someone				
36) S/he avoids people				
37) S/he feels overwhelmed				
38) S/he picks at her / his skin until it bleeds				
39) S/he gets depressed				
40) S/he gets defensive				
41) S/he feels sad				
42) S/he can't stop thinking about what happened				
43) S/he is disgusted with her/ himself				
44) S/he feels bad				
45) S/he feels stupid				
46) S/he feels like a loser				
47) S/he feels alone				
48) S/he feels that s/he has no friends				
49) S/he feels silly				
50) S/he becomes shy				
51) S/he hits other people				
52) S/he doesn't know what to do				
53) S/he hits her / himself				

	ANGRY			
	Never	Sometimes	Often	Always
54) S/he feels hopeless				
55) S/he throws objects				
56) S/he wants to hit other people				
57) S/he scratches her / his skin				
58) S/he hits objects				
59) S/he becomes discouraged				
60) S/he gets anxious / worried				
61) S/he looks away				
62) S/he throws objects				
63) S/he feels helpless				
64) S/he wants someone to tell her/him it's going to be OK				
65) S/he does not want to be touched				

Part K: How often do these types of situations tend to anger your child? (please put a check mark to indicate your answer)

	ANGRY			
	Never	Sometimes	Often	Always
1. S/he has tripped, fallen, or dropped something, etc.				
2. S/he has said the wrong thing, used a wrong word, etc.				
3. S/he has done something socially unacceptable, such as making a negative comment about a person's appearance to that person.				

	ANGRY			
	Never	Sometimes	Often	Always
4. S/he has felt that s/he looked weak in front of others her/his age.				
5. S/he has misbehaved.				
6. S/he has failed at something that was important to her /him.				

Part L: How often does your child **FEEL** this way during or immediately after an event that makes him or her angry? (please put a check mark to indicate your answer). **He or she:**

	ANGRY			
	Never	Sometimes	Often	Always
1. Wants to scream at someone				
2. Cries				
3. Becomes embarrassed				
4. Does not want to be touched				
5. Wants to throw something				
6. Becomes anxious				
7. Wants a hug				
8. Becomes frustrated				
9. Wants to hit someone				

Part M: How often does your child **ACT** this way during or immediately after an event that makes him or her **angry**? (please put a check mark to indicate your answer). **He or she:**

	ANGRY			
	Never	Sometimes	Often	Always
1. Tells a joke				
2. Explains what happened				
3. Blames someone else for what happened				
4. Changes the subject				
5. Yells or uses strong language				
6. Apologizes for what happened				
7. Argues with other people				
8. Stops talking completely				
9. Hits someone else				
10. Turns red/blushes				
11. Throws something				
12. Laughs, tells a joke				
13. Tells her/himself that no one will remember this later on				
14. Picks at her/his skin, pulls on her/his hair, and/or hits her/himself				
15. Quietly leaves the room				
16. Acts like everything is OK				

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