MORAL DEVELOPMENT IN CHILDREN

WITH AUTISM SPECTRUM DISORDERS

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ABSTRACT

This study examined how children with Autism Spectrum Disorders (ASD) judged social actions that involve moral and conventional violations. Past research shows that children with ASD, like their typical peers, judge social actions in the moral domain (e.g., causing harm to another person) to be different from social actions in the conventional domain (e.g., maintaining social order). This is somewhat surprising given their social and/or cognitive impairments, such as, deficits in theory of mind. To determine how robust this effect was the current study asked whether the domain distinction would remain intact when superficial cues were integrated into the context (e.g., crying). Perhaps ASD children with low ToM would be vulnerable to superficial emotional cues and use them to make moral and conventional distinctions; whereas high ToM and TD children were expected to ignore surface level use and focus on the domain of the act itself. Results found that all groups (i.e., TD, Low-ToM, and High-ToM) successfully maintained the domain distinction despite the emotional expressions exhibited by victims. Interestingly, the low-ToM tended to be the most severe in their ratings compared to either the high-ToM or the TD group.

DEDICATION

       This dissertation is dedicated to my family and friends who supported me throughout the entire process. In particular, my husband who supported me even in the most difficult of times, my best friend, Shashi Becker, who I will miss dearly, and to my mother who I could count on to be there for me no matter what. If it wasn't for them I wouldn't have made it through.

LIST OF ABBREVIATIONS AND SYMBOLS

M   Mean: the sum of a set of measurements divided by the number of

            measurements in the set

SD   Standard Deviation

p   Probability

t   Computed value of *t* test

F   Fischer's *F* ratio: A ration of two variances

$\acute{\eta}^2$ Effect Size

<   Less than

=   Equal to

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CHAPTER 1

INTRODUCTION

Overview

Deficits in social awareness are one of the hallmarks of children with Autism Spectrum Disorders (APA, 2013). Children with ASD often have an impaired theory of mind (ToM) (Frith & Happé, 1999; Baron-Cohen et al., 1999) and demonstrate deficiencies in their emotional processing (Wright et al., 2008). Children with ASD have also been shown to struggle in their abilities to disengage and shift their attention. For example, children with ASD tend to get "stuck" on one aspect of a situation and have difficulty shifting their attention to other parts of the overall picture (Klinger, Klinger, & Pohlig, 2006). Moreover, individuals with ASD have been found to have deficits in their executive function or problem solving abilities (Ozonoff & Jensen, 1999) as well as weak central coherence, meaning they tend to focus on small details rather than see pictures as a whole (Happé & Frith, 2006; Lawson, 2003).

Integrating across these social and cognitive impairments might suggest that, when making sense of social situations, individuals with ASD could be distracted by, and consequently overemphasize, non-critical details. For example, children with ASD are able to recognize changes in the emotional facial expressions of others (Begeer, Rieffe, Meerum, & Stockmann, 2006) and may be more likely than typically developing children to overemphasize changes in emotion when interpreting a social situation while under emphasizing factors like intent or motive.

Interestingly, despite these social and cognitive impairments, children with ASD have been shown to process some social situations similarly to how typically developing children process them (Grant, Boucher, Riggs, & Grayson, 2005; Blair, 1996). For example, when judging social actions children with ASD tend to judge moral wrongdoings like hurting someone as being more serious than conventional offenses like yelling in church. Unfortunately, the ASD research in this area is limited and several questions remain about how children with ASD are able to interpret social actions despite deficits in their social processing and whether their social judgments are resistant to changes in factors like emotion.

This paper will specifically look at whether children with high functioning autism (HFA) are more likely to over-emphasize changes in emotion when judging the seriousness of moral and conventional actions and whether theory of mind might affect that likelihood. It is predicted that HFA children who have exhibited a deficient ToM will be more likely to focus on the victim's negative emotion than the domain in which the act occurred and consequently judge the act more negatively regardless of the domain. In contrast, children who have demonstrated competency in their ToM will not focus on the emotion and instead be more likely to focus on the perpetrator and consequently judge the act more negatively based on intent or motive. Furthermore, it is predicted that children with HFA who demonstrate an intact ToM will perform similarly to typical children in their moral reasoning because they will have a better understanding of the intent of the perpetrator whereas children with a deficient ToM will perform more poorly in their moral reasoning.

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Deficits in Autism

Autism is a neurodevelopmental disorder that by definition consists of impairments in social interaction as well as deficits in verbal and nonverbal communication skills (APA, 2013). High-functioning autism (HFA) is a term that has been used to describe individuals with ASD who are considered to be "higher functioning" than others with autism spectrum disorder in certain developmental areas (Frith & Happé, 1999). For example, children with HFA typically demonstrate fewer and less severe language delays and have normal to high intelligence (IQ > 70). In fact the primary deficit of a child with HFA is a lack of social understanding, including a diminished ability to empathize and infer others' mental states (APA, 2013; Frith & Happé, 1999). These individuals also tend to struggle in their ability to interpret emotions, specifically the underlying causes of different emotions (Wright et al., 2008; Ozonoff, Pennington, & Rogers, 1990). In addition, children with HFA tend to interpret language and behaviors more literally than expected (Happé & Frith, 2006). As a result, children with HFA often struggle with understanding and relating to others thoughts and behaviors. There are many different theoretical frameworks, such as an absent ToM, weak central coherence, and/or the inability to shift attention, that attempt to explain these social deficits of autism.

Social Actions and Domain Theory

One area of social development that often relies on the abilities previously mentioned (i.e., ToM, emotional recognition, and emotional understanding) but that has received much less attention in the ASD research community is that of moral judgment and understanding (Grant, Boucher, Riggs, & Grayson, 2005; Takeda, Kasai, & Kato, 2007). A person needs to have basic comprehension of what behaviors are acceptable and what behaviors are not to make sense of a

moral situation (Smetana, 1981). For this reason, there has been some research in the area of moral development that has centered on how children interpret and judge various social transgressions including those from the moral domain and those from the conventional domain (Turiel, 1983; Nucci & Turiel, 1978; Smetana, 1981). Turiel (1983) proposed that a person should be able to distinguish between moral rules and social-conventional rules by partially basing their decision on the nature of the act. Moral transgressions are those that cause harm/destruction or violate one's basic human rights (e.g., killing or stealing from another person) and tend to be universally wrong across cultures. Conventional transgressions are those that are not unethical but do infringe upon widely accepted rules about how one should act (e.g., littering or talking with food in your mouth) and tend to be influenced by one's immediate cultural surroundings.

In studies involving moral and socio-conventional distinctions, decisions are often looked at through an internal lens (e.g., theory of mind) rather than through external cues such as emotional facial recognition (Smetana, 1981; Nucci & Turiel, 1978). Because children on the spectrum are socially impaired and have ToM deficits, it is important to explore how they process and judge these social actions. There has been some research done on ToM and moral judgment making (Moran et al., 2011; Grant, Boucher, Riggs, & Grayson, 2005; Blair, 1996) and more recent studies have specifically manipulated emotion as a variable to see whether or not an individual with ASD's understanding of a moral violation is affected by the presence of external cues such as emotion (Weisberg & Leslie, 2012; Leslie, Mallon, & Dicorcia, 2006); however, there has yet to be a study on how emotional cues affect children with ASD's domain distinction capabilities.

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Several studies on social reasoning have shown that both typically developing children and adults differentiate moral acts involving harm and unfairness from social conventions (Arsenio & Lemerise, 2004; Smetana et al., 1999; Smetana, 1981; Nucci & Turiel, 1978). Smetana (1981) assessed preschool children's ability to distinguish between moral and socio-conventional acts. Smetana examined 44 children (ages 2-9 years) by presenting them with moral-based or socio-conventional based scenarios. The moral conditions used were: 1) a child hitting another child, 2) a child not sharing, 3) a child pushing another child, 4) a child throwing water at another child, and 5) a child stealing another child's apple. The five socio-conventional conditions were: 1) a child not taking part in show and tell 2) a child not sitting on their correct spot, 3) a child not saying their blessing, 4) a child putting a toy in the wrong spot, and 5) a child not putting their things in the correct place. Children were instructed to use a 4-point scale depicting a frowning face to rate the seriousness of the transgression. The frown grew progressively worse from "OK" to "very very bad" as an indication of act severity. Children were asked to respond to a series of questions which included: 1) "Point to the face that tells how bad it [the act] is", 2) "Would it [the act] be ok if there was no rule about it here?", 3) "Would [the act] be OK at home or in another school?", 4) "Should the teacher punish [the transgressor]," and if so, "a little or a lot"? Results found that children consistently evaluated moral transgressions as more serious than socio-conventional transgressions. Likewise, children tended to rate moral transgressions as more deserving of punishment. Smetana also found that children were more likely to rate socio-conventional acts as contingent on the presence of a rule and relevant to the social context compared to moral acts.

Research using the domain paradigm has also found that children typically judge socio-conventional transgressions to be "independent of external authority, punishment, and explicit sanctions" (pg. 2478) (Zelazo, Helwig, & Lau, 1996; Nucci & Turiel, 1978; Smetana, 1981). For example, Smetana (1985) conducted a study in which she investigated TD children's (n=53, ages 38-76 months) ability to distinguish between familiar and unspecified moral and conventional events. She grouped children into either a six story stimulus condition or in a one-word stimulus condition. Smetana labeled the unspecified events with nonsense words and varied them in the consistency of the prohibitions as well as the types of responses that were exhibited for the actions. Like previous studies, Smetana found that the young children rated moral transgressions as more severe and more deserving of punishment than conventional transgressions (Zelazo et al., 1996; Nucci & Turiel, 1978; Smetana, 1981). Additionally, the children were able to differentiate between the unspecified events on the basis of their features. Acts that were represented as universally wrong and having negative consequences for others' welfare were more likely to lead to moral judgments. Acts that were represented as contextually relative and prohibited by adults but did not involve obvious harm or violations of rights were considered more permissible. These results provide evidence that even very young children are able to assess the features of an act separate from children's familiarity of the context when judging whether or not an act is permissible. A follow-up study conducted by Smetana and Braeges (1990) investigated very young children (ages 2 – 4 years) judgments of moral and socio-conventional transgressions. They identified four criteria for which children should make their judgments: permissibility, seriousness, generalizability, and/or authority contingency. Smetana and Braeges found that the youngest sample of children (age 2) did not make judgments based on

any one of the four criteria whereas the older children (age 4) tended to distinguish acts on all the criteria. The middle age group (age 3 years) judged moral transgressions to be worse than social conventional transgressions, however they were unable to differentiate the acts on any of the other three criteria. This study gives evidence to support that how individuals process moral scenarios as well as how they make moral judgments develops and matures overtime.

More recent research conducted by Turiel (2008) sought to compare judgments about hypothetical events with participants' (ages 6 – 13 years) real life experiences. Moreover, Turiel examined the ways in which social interactions in the real life scenarios differed depending on whether it was a socio-conventional experience or a violation of a moral right. As with previous findings, Turiel hypothesized that children would judge actions based on universal principles such as causing harm to be worse than social conventional actions that are contingent upon conventional rules and cultural contexts. He proposed that children would judge actual events similarly to hypothetical events. A total of 108 events were recorded and categorized as moral in nature (33), conventional (38), or a mixture of moral/conventional components (37). Results found that children distinguished between moral and conventional violations both in actual and hypothetical situations suggesting that the type of context presented does not significantly alter a child's perception of an event. Turiel also found that children committed more moral violations in non-classroom settings (e.g., playground, lunchroom) and more conventional transgressions in classroom settings which indicated that social situations affect behavior and subsequently judgment.

Recent studies of moral development have begun to focus on the interrelatedness of ToM and moral reasoning (Killen, Mulvey, Richardson, Jampol, & Woodward, 2011). ToM is relevant

to making moral decisions because it allows a person to consider intentions and motives as well as provide an assertion of blame and punishment (Chandler, Sokol, & Wainryb, 2000). Studies have found that even children as young as three years of age take intent into account when judging a moral or conventional violations (Killen et al., 2011; Vaish, Carpenter, & Tomasello, 2010). Killen and colleagues (2011) investigated children's false belief theory of mind (e.g., location change and false contents task), moral judgment (e.g., pushing someone off a swing), and morally-relevant theory of mind (e.g., throwing away a desired object). Children (ages 3-8 years) were presented with vignettes depicting accidental transgressions, moral transgressions, and false belief scenarios. The false belief tasks were used as a measure of ToM ability by assessing whether or not children were capable of understanding that others' have different beliefs than their own. Using false belief knowledge as a measure of ToM competence, the researchers predicted that participants who failed the false belief task in the morally relevant scenario would be more likely to attribute blame to the accidental transgressor than children who had an intact ToM. Furthermore, they argued that those children who demonstrated a weak ToM would attribute negative feelings for the victim towards the accidental transgressor. A follow up study was also conducted to assess children's judgments of the transgressors. Specifically, the researchers hypothesized that children who demonstrated an intact ToM would be less likely to assign punishment to the accidental transgressor compared to the deficient ToM group. Results confirmed both hypotheses. Children who showed deficits in their ToM were likely to judge accidental transgressions and intended transgressions similarly, as well as assign similar punishments. Children who passed the false belief tasks demonstrating an intact ToM were more likely to judge moral transgressions as worse, and assign punishment for those actors who

intentionally did wrong. Killen and colleagues noted that although both groups of children (i.e., high ToM and low ToM) judged an accidental transgression to be wrong, children with low ToM tended to rate the act as "more wrong" than children with high ToM.

These studies provide support for the argument that typically developing children use specific features of moral transgressions, such as whether or not they cause harm to someone, to drive their moral judgments and information relevant to the context to construct their conventional judgments. Moreover, those children who demonstrate an ability to interpret others actions and evaluate intentions by placing more emphasis on motive and intent when forming their judgments, process situational information differently than those who are unable to understand others intentions and beliefs.

Domain Theory and Autism

Despite limitations in the area of moral development in autism, past research has shown that children with HFA are capable of making some moral judgments – although there is a very limited amount of this research. For example, Blair (1996) sought to examine the responsiveness of children with ASD to the distress of others through the moral and conventional distinction. He used ToM false belief tasks to distinguish between two groups of children with ASD (no ToM group and the intact ToM group). He hypothesized that children with ASD would be able to make a moral distinction to the distress of others regardless of whether or not they had impairments in their ToM as long as they were sensitive (empathetic) to the distress of others. As mentioned previously, the moral/conventional distinction is believed to be an indicator of moral development (Yau & Smetana, 2003; Nucci & Weber, 1995; Turiel, 1983).

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Participants in Blair's (1996) study included 20 children (ages 6 to 17 years) diagnosed with ASD who were divided into two groups based on the results they achieved on two false belief tasks (the Sally-Anne task of Baron-Cohen, Leslie, & Frith, 1985 and the Smarties task of Perner, Frith, Leslie, & Leekam, 1989). Blair also included typically developing children and children with learning disabilities that were used as controls for the no-ToM group. Eight stories were used to assess moral/conventional distinction (four moral and four conventional) taken from Smetana (1985). In addition the examiner acted out the stories using dolls. Children were randomly presented with either a moral transgression or a conventional transgression and then asked questions about whether or not the act was okay/not okay in an effort to assess children's understanding of permissibility of an act, seriousness of an act, and finally their understanding of authority jurisdiction. Results confirmed Blair's hypothesis, children with ASD were capable of making moral distinctions regardless of ToM ability; however, children with a low ToM showed a weaker distinction which may cause them to be more vulnerable to changes in the setting.

Because perspective taking is central for being able to discriminate between moral and conventional transgressions in terms of understanding an aggressor's intent, it is surprising that the children with ASD were able to make the distinction. Blair's conclusion was that the children's sense of morality ultimately derived from a so-called "Violence Inhibition Mechanism" (VIM) activated by distress cues. This reaction produced an increased arousal to which children were averse and could be what provided the basis for securing reactions that were specific to the moral transgressions. Blair argued that for both children with TD and children with ASD this response becomes generalized to situations that lacked victim-distress cues and delivered a base for the development of moral understanding. Blair proposed that even children

with ASD make this distinction because moral transgressions involve harm to a victim, and even children with ASD are capable of having a fundamental emotional response to the suffering of a victim.

A study conducted by Leslie, Mallon, and Dicorcia (2006) furthered Blair's study by investigating how children with ASD make basic moral judgments and whether or not they are simply making "knee jerk" reactions to moral transgressions. Leslie and colleagues described "knee jerk" reactions as being automatic sympathetic responses to the distress of others rather than actual moral judgments. They noted that not all suffering comes as the response to another's actions. For example, illness can also evoke a sympathetic response from others. Therefore, if one's judgment is based on the reaction of the victim, and may not involve any moral reasoning at all. Leslie and colleagues sought to investigate whether or not the "knee jerk" response plays a role in the moral distinctions that children with ASD make.

Participants in this study consisted of 17 children with ASD (mean age = 12.5 years) and 15 typically developing children (mean age = 4.8 years). Leslie and colleagues hypothesized that children with ASD would make the moral versus conventional distinction; however they would judge acts where there was distress of another person as more bad, regardless of whether or not this distress was warranted. The researchers tested their assumption by including a "cry baby" story in their domain distinction tasks. The "cry baby" story consists of two children who each have cookies. One of the children has an extra cookie. The child with the extra cookie does not give it to the child with less but rather eats the cookie themself. The child with only one cookie then bursts into tears, thus labeled the "cry baby". Participants were asked whether the action of not giving one's cookie to the other child was bad or not. If children were simply basing their

domain distinctions on the distress of others, than they should judge the child who did not give up his own cookie as "bad" because it caused suffering in another person. Results found that children with ASD were able to make the moral and conventional distinction. Furthermore, children with ASD were able to distinguish between moral transgressions and "cry baby" scenarios indicating that children with ASD have some awareness of act significance rather than just outcome response. Additionally, children with ASD are not just making "knee jerk" responses to the suffering of others. The findings from this study are important because they provide further evidence that children with ASD are capable of distinguishing between moral and conventional acts, and furthermore, children with ASD are in some way using moral reasoning to come to their conclusions.

Unfortunately, much like Blair's findings, this study does not include information about how children with ASD are making the domain distinctions. Additionally, by using a "cry baby" scenario, the Leslie and colleagues were able to show that children with ASD are not automatically responding to the suffering of others, however, they used the "cry baby" scenario to assess this reaction. What is not assessed is the response from children with ASD when there is an actual rule violation, such as littering, and having an emotional response from an individual. It would be valuable to assess the judgment of children with ASD when there is an actual transgression taking place and having a "victim" present, even when that transgressions does not overtly affect the "victim".

A follow-up to Leslie, Mallon, and Dicorcia (2006) was conducted by Weisberg and Leslie (2012). This study examined the role external cues make on individuals with ASD's domain distinctions. These researchers specifically looked at the role negative emotions play on

moral judgments. Participants in this study consisted of 12 children with ASD (mean age = 10.7 years). Children with ASD were given the Peabody Picture Vocabulary Test in order to establish verbal mental age. All participants were expected to have a verbal mental age of 4+ years. Participants were also given the Sally-Ann False Belief Task in order to establish ToM ability. Children were divided into two groups based on ToM performance. In total, five children passed the false belief task and were considered to have an intact ToM and six failed and were thus considered to have a defective ToM (one child was omitted from the task).

Researchers used four stories for two different conditions: the Moral Condition and the None Condition. In the Moral Condition, researchers showed participants a moral transgression such as one child hitting another child or one child pulling the hair of another child. In the None condition, researchers showed participants either one child eating one's own cookie or one child saying "hi" to a friend. There were two versions for each of the four stories: one in which the victim of the action cried (Crying Present) and one in which the victim did not react (Crying Absent). The experimenter read the stories to each child and then asked questions about the scenario. Children were asked about the story: "What did [actor] do?" as well as the emotional state of the victim: "How does [victim] feel? Does s/he feel happy or sad or just OK?" Participants were then asked two test questions: "Was that a bad thing to do?" If the child answered "yes," a follow-up question was asked to determine the severity of the action: "Was it a little bad or really bad?" A second question was the OK question: "Was that an OK thing to do?" in order to allow the researchers to gain a measure or the consistency of the child's judgment.

Results found that children with ASD judged the moral actions with crying present to be worse than the moral actions with crying absent. In addition, children with ASD were able to distinguish between the moral transgression and the neutral transgression regardless of emotion present. The researchers added that ToM did not appear to make a difference in distinction ability. These results suggest that although children with ASD are capable of making the domain distinction, they are relying on external cues to assess the degree of severity with which an action is bad. This indicates that children with ASD do have the ability to understand that a moral transgression is bad; however, they are less clear on the degree to which an action is bad. Furthermore, this study did not assess conventional rule violations and thus leaves it unclear as to how severe a child with ASD judges a conventional violation and whether or not emotional cues would affect that judgment.

In a similar study, Grant, Boucher, Riggs and Grayson (2005) investigated the moral versus conventional distinction with children with ASD by assessing harm to people in relation to harm to property. Participants in Grant's study included 19 children with ASD, 17 children with moderate learning disabilities (MLD), and typically developing children. The ASD group and the MLD group were matched on chronological age and verbal mental age using the British Picture Vocabulary Scale (BPVS). The researchers used 6 pairs of stories chosen from Elkind and Dabek's (1977) study on moral development. The researchers established three test conditions. In the first condition, known as the Same Outcome, Different Motives Condition, the outcome of the protagonists' behavior was the same, while in one story setting the protagonist's motive was good and in the other story the protagonist's motive was bad. In the second condition, known as Same Motives, Different Outcomes Condition, the protagonists' motives

were either both good or both bad in both stories but the outcome of the behavior differed. In one

story the outcome involved damage to a person and in the other story the outcome resulted in

damage to property. Finally, in the third condition, known as Different Outcomes, Different

Motives Condition, both the protagonists' motives and the outcomes of their actions varied. The

researchers used comic strips to illustrate each story and used three pictures per story. Captions

telling the story were printed under each picture. The children either read the story themselves or

had the story read to them by the examiner. Once they finished reading the story, the examiner

asked a series of comprehension questions such as, "What happened when John hit the ball?" and

"Did this make John happy or sad?" Once the child completed the comprehension questions,

they were asked "Which one of these two children is the naughtier?", then "Why? Why do you

think that X is the naughtier?"

Grant and colleagues (2005) also wanted to assess whether or not children with ASD

were able to justify their decisions. A pre-established criterion was used to code justifications. A

child was assigned to the first category if he or she noted that damage to a person would hurt

them making the act more serious than to damage property. The second category involved

reversibility, meaning that property can be replaced, but damage to another person cannot be

undone. The third category involved intent versus accident. The fourth category was used for

those children that were unable to answer the questions or just retold the story. The final

category was reserved for children who gave appropriate justifications but whose answers did

not fit into any of the other categories.

Overall, results found that children with ASD judged personal harm as worse than

property damage. Moreover, they found that children with ASD were able to base their moral

judgments on motives. Though all the children showed an understanding of both motive and distress and were able to use intentions to make their judgments; the children with ASD were unable to provide appropriate justifications for their decisions. Grant and colleagues (2005) noted that a small number of children with ASD were able to use motive/intent in their justification; however, the majority of ASD responses were not able to be scored and were simply re-iterations of the story. These studies provide evidence that children with ASD and typically developing children perform similarly on basic moral and socio-conventional distinction tasks; however, it is still unclear how children who are socially impaired in terms of their emotional understanding and perspective taking can accurately distinguish between the two.

Theory of Mind

Premack and Woodruff (1978) define ToM as the capacity to attribute mental states to self and to others. Wimmer and Perner (1983) investigated the emergence of 'theory of mind' by evaluating whether or not children could pass a false belief test. Their study tested 36 children (ages 3 and 9-years-old) by telling them a story about a child named Maxi. One day his mother buys some chocolate to make a cake. At home Maxi watches his mother put the chocolate into a blue cupboard and then leaves to go play. While Maxi is outside his mother uses the chocolate to make the cake. She then places the leftover chocolate back into the green cupboard. Later, Maxi decides he wants to eat some chocolate. The children in the experiment are then asked which cupboard Maxi will look in. This is considered a false belief task because it is designed to evaluate whether or not a person like Maxi is able to possess a false belief. Wimmer and Perner found children ages 3 to 4-years were more likely than older ages to fail the test by pointing to the actual position of the chocolate rather than where Maxi thought it was. These children

assumed that because they knew where the chocolate was, Maxi would also. Results showed that once children reached 4 to 5-years-old they were much more likely to point to the cupboard where Maxi thought the chocolate was, rather than where they knew it actually was. By 6-years-old, the children consistently picked the correct cupboard. They seemed to understand that other people can have different thoughts than their own and these beliefs can be false. Additional studies have found similar results (Leekam, Perner, Healey, & Sewell, 2008; Bowler, Briskman, Gurvidi, & Fornells-Ambrojo, 2005; Slaughter. 1998).

Many characteristics of ASD such as lack of attention, affective sharing as well as an inability to make and sustain eye contact have been associated with a deficient ToM (Baron-Cohen, 2002; Frith & Happé, 1999; Leslie, 1987). Simon Baron-Cohen (1997) describes the inability of individuals with ASD to infer what other people are thinking as "mindblindness" implying that children with ASD are "blind" to the thoughts, beliefs, knowledge, desires, and intentions of others, which in a typically developing population, has been argued to be an important skill in understanding the behavior of others. For example, when using the standard Wimmer and Perner (1983) false belief task, results showed that children with ASD were much more likely than their mental-age matched peers to have a significant deficit in making accurate predictions (Leslie, 1987). Though some might consider children with ASD perceptually confused or emotionally distant; others argue that it may be that these children struggle in their ability to experience emotions like children with TD because they are unable to anticipate the thoughts and behaviors of others and do not understand that others have their own beliefs, intentions, and/or points of view (Baron-Cohen, 2002).

To effectively communicate and build relationships with others, one must have some awareness of not only the mental state of oneself but also the mental state of others (Grant et al., 2005). Researchers have argued that children with ASD have an impaired understanding of the mental state of others (Perner et al., 1989) which can lead them to struggle with understanding of the thoughts, emotions, and behaviors of others (Grant et al., 2005; Baron-Cohen, 2002). Because of the degree to which children with ASD vary in their symptomology research has remained inconclusive about the true range of these difficulties. For example, research has found that some adults with HFA are able to pass ToM tasks (Frith, Morton, & Leslie, 1991) which may suggest that through development, these individuals obtain further compensatory reasoning skills that facilitate them to succeed on explicit measures of ToM (Bowler, 1992).

Happé (1995) found that children with HFA were able to pass a false belief task; however, they required a much higher verbal mental age (e.g., 9.0 years). In her study, children were presented with the Smarties Task and the Sallie Ann Task. Participants were also assessed using the British Picture Vocabulary Scale in order to acquire a mental verbal age. Results found that some of the children with HFA were able to pass the two tasks; however those children had a much higher verbal mental age than the children with HFA who did not pass the task. Grant, Grayson, and Boucher (2001) attempted to assess the reliability and consistency of ASD individuals' performance on false belief tasks. The researchers assessed 22 children and adolescents (ages 7-17) using four basic false belief tasks; 1) the Sally-Anne task (Baron-Cohen et.al., 1985), 2) a Deception Box task (Perner et.al., 1989) (e.g., a playmobile box containing a fluffy spider), 3) 2nd Deception Box task (e.g., a toothpaste box containing a pencil), and 4) the Three Box task (Leslie & Frith, 1988). Grant and colleagues found that five of the participants

failed all four of the tasks. They found that four of the participants passed just one task (the Sally–Anne task) and twelve of the participants passed all four tasks (one participant passed 3 tasks). Thus results found a high rate of consistency in the participant's performances across all four of the false belief tasks, meaning that 77% of the group either passed or failed consistently. Of the consistent performers, nearly 55 percent passed all four tasks and had an average verbal mental age (VMA) of 8.5 years. None of the children who consistently failed all four tasks had VMAs above 8.2 years.

Happé (1995) suggested that children with HFA may have deficits in their ability to read others' "minds" but noted that these children are able to compensate for this difficulty using more advanced cognitive strategies, in this case verbal reasoning. For this reason, researchers have begun to ask whether children with ASD may be able to use their limited mental state comprehension to make some basic inferences in certain social situations (Grant et al., 2005).

Emotional Recognition

Facial expressions are often considered triggers for emotional recognition, which in turn provide a basis for understanding the perspective of others (Begeer et al., 2006; Yirmiya, Sigman, Kasari & Mundy, 1992). Research in the areas of facial recognition, emotional understanding, and perspective taking in the ASD population have resulted in contradictory evidence (Baron-Cohen, 2002; Celani, Battacchi, & Arcidiacono, 1999; Ozonoff et al., 1990) thus clouding the root cause of social impairments for this particular population of children and leaving the scope of these deficits still undetermined.

Additionally, there is some debate amongst scholars as to whether emotion is a component of moral judgments. Turiel (2008) argues that emotional experience has a direct

impact on the development of thought and, reciprocally, thinking has a direct impact on the growth of one's emotions. A study conducted by Zelazo, Helwig, and Yau (2006) examined children's reactions to the suffering of animals. They studied how children (ages 3-5 years) reacted to hypothetical animals who exhibited non-canonical responses to a character's actions. There were four conditions presented. In Condition 1: children watch Tommy (who is nice) pet an animal and make it either smile or cry; Condition 2: Anne (who is mean) pets an animal and makes it either smile or cry; Condition 3: Sally (who is nice) hits an animal and makes it either smile or cry; and Condition 4: Peter (who is mean) hits an animal and makes it either smile or cry. Children were asked about the acceptability of each of the actions as well as whether children judged each of the characters as good or bad. Results found that very young children tended to focus on the outcome (i.e., either the crying or the smiling) as the basis for their judgments. The older children tended to focus more on the intention of the actor. These results suggest that at least very young children may use presentational cues (e.g., crying) as the basis for their judgments regardless of the intent of the actor.

As mentioned previously, emotions can be used to correctly interpret social situations (Yirmiya, et. al., 1992). Thus, children who are unable to attend to the emotional expressions of others could lose information that may be important for understanding others' desires and beliefs and arguably will obstruct their perception of other's behaviors and actions (Begeer et al., 2006; Celani et al., 1999). Yirmiya, and colleagues *(*1992) found that children with ASD (n=18; 9-16 years of age) performed well on an empathy-related measure, though not as well as the typically developing controls. The empathy measure, known as the Feshbach and Powell (1982) Audiovisual Test for Empathy consists of 10 videotaped segments displaying stories about

children experiencing different events and emotions. The five emotions were happiness, pride, anger, sadness, and fear. Results found that children with ASD were able to give examples of feeling states from their own experience and label the emotions of others. Furthermore, children with ASD were able to take the perspective of others as well as respond empathetically to the feelings of others. The researchers also found a close association between higher intelligence and emotion recognition in the group of children with ASD compared to the control group. Though these results suggest that children with ASD have some basic awareness of the emotions of others they still performed significantly worse than the typically developing children on labeling emotions, empathy, and cognitive mediation. These findings suggest that although children with ASD have some basic emotional awareness, they continue to exhibit deficits in the ways they interpret emotional cues and comprehend social situations (Ozonoff et al., 1990).

Research has found that children with ASD have difficulty understanding the emotions of others (Wright et al., 2008); however, understanding emotion and recognizing the external cues of emotions are separate abilities. For example, a study conducted by Begeer and colleagues (2006) sought to increase children with ASD's attention to the facial expressions of others by manipulating social factors relevant to the situation. They compared children with ASD (n=28) to typically developing children (mean age 9 years) by presenting them with black and white photographs of characters displaying a variety of emotional facial expressions. There were two conditions used: a neutral condition in which no information was provided and a primed condition in which the examiner related the characters to real life situations. The children were asked to sort the pictures into two categories. Results found that children with ASD were more likely to attend to the facial expressions (i.e., sort the pictures based on facial expressions) in the

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primed conditions than in the neutral condition. These results support previous findings that children with ASD have some ability to recognize the differences in facial expressions of others (Robel et al., 2004; Capps, Losh, & Thurber, 2000). In addition, the results from this study support the idea that children with ASD are able to increase their attention to facial expressions when there is socially relevant information available.

Present Study

The purpose of the current study was to investigate how children with ASD compare with typically developing children when interpreting social actions. This study investigated the ability of children with ASD to make a sufficient assessment of moral wrongdoings in comparison to less serious conventional offenses. It is the case that children with ASD have some awareness of basic emotions (Begeer et al., 2006; Robel et al., 2004; Capps et al., 2000) and thus should be able to identify a change in emotional expression. This paper specifically looked at whether children with ASD were more likely to over-emphasize changes in emotion when judging the seriousness of moral and conventional actions. It also assessed whether theory of mind played a role in that decision making process. Children with ASD have shown some basic awareness of emotional expressions (Begeer et al., 2006; Yirmiya et al., 1992) however, it was unknown whether or not they would over-emphasize emotional cues especially in scenarios where perspective taking would be needed in order to appropriately decipher a situation.

This study predicted that children with ASD who showed a deficit in their ToM would be more likely to focus on the victim of the act and would be more likely to use an expression of negative emotion as a cue that the act was more serious. Additionally, it was predicted that typically developing children and children with ASD who exhibited an intact ToM would be less

likely swayed by emotion and would instead focus on the perpetrator of the act and take motive into account when making their decisions. Furthermore, children with ASD that demonstrated an intact ToM were predicted to perform similarly to typically developing children in their moral reasoning compared to children with impairments in their ToM due to the fact that they would have more awareness of the intentions of the perpetrator. Children with ASD who exhibited a low-ToM were predicted to base their moral reasoning on superficial cues (i.e., emotion) and not on the actual intent of the perpetrator.

CHAPTER 2

METHOD

Participants

Participants were 51 children from the Huntsville and lower Tennessee area, with 24 of

these children having an existing diagnosis of ASD and 27 children having typical social and

academic development. Children ranged in age from 6 to 13 years. Criteria of participation for

all subjects included English as a first language, no known brain lesions, no significant motor or

sensory handicaps and no high dosages of psychotropic medications. Participants in the ASD

group were required to have a professional diagnosis of ASD according to DSM-IV criteria

(APA, 2013). The Childhood Autism Rating Scale, Second Edition (CARS-2) was used to

confirm diagnosis in the ASD population (Schopler, Van Bourgondien Wellman, & Love, 2010).

In addition, the Social Responsiveness Scale (SRS) was used to identify the current presence and

extent of social impairment in both the ASD and typical development groups (Constantino &

Gruber, 2005). Informed consent for these children was obtained from the parents, as well as a

verbal or behavioral assent from the children themselves. This research project was approved by

the Internal Review Board of the University of Alabama and participants were treated in

accordance with the "Ethical Principles of Psychologist and Code of Conduct" (American

Psychological Association, 1992). See Appendix B and C.

Using an alpha of .05, a power analysis indicated that 26 participants would be needed in

each group to detect a large effect size (i.e., 0.8), 64 to detect a medium effect size (i.e., 0.5), and

394 to detect a small effect size (i.e., 0.2). In past studies looking at social domain reasoning in children with ASD, significant results have been found with sample sizes between10 and 20 participants (Blair, 1996; Grant et.al., 2005). Based on this analysis, the current study aimed to include 60 participants, 30 in each group.

Apparatus

A demographic questionnaire was used to obtain developmental, medical, and psychological information about the child from the parents. For both samples, this included the age of diagnosis, age of initial speech, lists of specific deficits and information on past and present interventions. Excerpts from the Diagnostic Checklist Form E-2 of the Autism Research Institute was used to acquire this information (See Appendix A).

The primary researcher conducted a direct observation for each of the children with ASD and completed the Childhood Autism Rating Scale, Second Edition (CARS-2). The CARS-2 consists of two 15-item rating scales and is used to assess verbally fluent children (6 years or older) who have an average or above average intellectual ability (IQ $\geq$ 80) (Schopler, et.al., 2010). Areas of assessment include the child's ability to relate to people, social-emotional understanding, emotional response and regulation, body use, object use, adaptation to change, visual response, listening response, taste, smell and touch response, fear or anxiety, verbal communication, nonverbal communication, activity level, thinking/cognitive integration skills, consistency of intellectual response, and overall general autism impressions. Scores on the CARS-2 are derived from a professional's direct observation and parent and teacher interviews as well as prior assessments of cognitive functioning and adaptive behavior. Rating values for all items are summed to produce a Total Raw Score and then a Standard Score or percentile rank.

The CARS 2 has been found to have a high degree of internal consistency and good interrater reliability. Validity information has found an overall discrimination index value of .93, with sensitivity and specificity values of .81 and .87 (Vaughan, 2011). The CARS-2 requires approximately 10 minutes to complete. This assessment was selected to allow the examiner to confirm ASD diagnosis (scores above 28) (Schopler, et.al., 2010).

Parents from both groups were also administered the Social Responsiveness Scale (Constantino & Gruber, 2005). The SRS is a quantitative scale designed to measure the severity and type of social impairments that are characteristic of autistic spectrum disorders in children and adolescents. The age range of this test is inclusive of ages 4-18. The basis of all 65 test items is to provide a clear picture of a child's social impairments, assessment of social awareness, social information processing, capacity for reciprocal social communication, social anxiety/avoidance, and autistic preoccupations and traits. A higher score on the SRS indicates more significant social impairments. The SRS requires approximately 15 to 20 minutes to be administered. The SRS has been found to be a valid quantitative measure of autistic traits, reasonable for use in clinical settings as well as large-scale research studies of children with autism spectrum disorders (Constantino et. al., 2003). This test was selected to provide a quantitative score for ASD social impairment that allows comparisons across settings and against norms established by different raters.

Both groups were administered the Kaufman Brief Intelligence Test – Second Edition (Kaufman & Kaufman, 2004). The Kaufman Brief Intelligence Test, Second Edition (KBIT-2), is a brief, individually administered measure of both verbal and non-verbal intelligence. The KBIT-2 measures two distinct cognitive abilities through two scales: Crystallized and Fluid.

Crystallized (Verbal) Scale contains two item types: Verbal Knowledge and Riddles whereas the

Fluid (Nonverbal) Scale is a Matrices subtest. For two subtests (Verbal Knowledge and

Matrices) of the instrument, the participant was shown pictures on a tabletop easel and asked

questions about them. The respondent was asked to point to the correct answer on the easel. For

the third subtest (Riddles) the participant was asked questions and expected to provide

spontaneous verbal responses. The age range of this test is inclusive of ages 4-17, adults and

older adults and takes approximately 15 to 20 minutes to administer. The KBIT-2 was

standardized using a sample of 2,120 individuals across several race/ethnicity categories,

geographic regions, and educational level (Kaufman & Kaufman, 2004). The KBIT-2

demonstrates high internal consistency, with average reliability coefficients of .88 (verbal), .85

(nonverbal), and .91 (IQ Composite) for children ages 5-10. Validity for the KBIT-2 has also

been well established (Bain & Jaspers, 2010). IQ Composite scores on the KBIT-2 and Wechsler

scale scores are highly correlated, .76 (WISC-III), and .77 (WISC-IV) (Kaufman & Kaufman,

2004). The KBIT-2 was selected to allow the examiner to obtain an overall level of intelligence

as well as to compare the ASD sample to the typically developing population on verbal mental

age.

A false belief task is one of the most frequently used instruments in theory of mind

research involving children with ASD and its purpose is to test the child's comprehension of

another's false belief (Muris et al., 1999; Happé, 1995). For this study, two commonly used false

belief tasks that were used in the Blair (1996) study, were used to assess the perspective taking

ability of the subjects; the Smarties task of Perner, Frith, Leslie, and Leekam (1989) and the

Sally-Anne task of Baron-Cohen, et.al. (1985). In the Smarties task the child is presented with a

Smarties tube. When the child opens the tube, he or she discovers that the tube actually contains a pen top. The child is then asked whether another child who had not yet seen the contents of the tube will know that the box contains the pen top rather than candy. For the Sally-Anne task, the child will be presented with a set of three boxes varying in size. A penny will be hidden beneath one of the boxes. In accordance with Blair's 1996 study, Playmobile characters were used to represent Sally and Anne. The order of the false belief tasks was randomized across subjects and took approximately 5-10 minutes to complete. The examiner judged the child to have an impaired theory of mind if he or she failed either of the false belief tasks (Blair, 1996; Muris et al., 1999; Symons, 2004). If a child successfully completed the false belief tasks, he or she was considered to have an intact ToM (Muris et al., 1999; Symons, 2004).

To test children's ability to differentiate between moral and conventional distinctions, eight pairs of stories adapted from Thoma, Scofield, Casterline, and Hartin (2011) were used (see Appendix A). In Condition A, the story involved a perpetrator violating a conventional rule (e.g., cutting in line) while a bystander's emotional response to the act was neutral. This was the Conventional/Neutral Condition (i.e., CN). In Condition B the perpetrator's behavior violated a conventional rule (e.g., littering) while the bystander's emotional response was exaggerated. This was the Conventional/Emotion Condition (i.e., CE). In Condition C, the perpetrator's behavior violated a moral rule (e.g., hitting another child) and the victim's response was neutral (i.e., MN). This was the Moral/Neutral Condition. In Condition D, the perpetrator's behavior violated a moral rule (e.g., stomping on another child's foot) and the victim's response was emotionally exaggerated. This was the Moral/Emotion Condition (i.e., ME).

Each story was portrayed on a computer screen, using two pictures per story, with the story being narrated by the experimenter. The first picture set up the scene and the narrator introduced the two characters. The second picture displayed the moral or conventional violation and the narrator designated the action as well as described the victim's emotion. The experimenter proceeded to ask the child a series of questions (see Appendix B). Each child was shown two stories per condition (e.g., 2 Moral/Emotion, 2 Moral/Neutral, 2 Conventional/Emotion, 2 Conventional/Neutral) with a total of eight stories. The same set of questions was asked to the participants. The domain task was randomized across trials and took approximately 15-20 minutes to complete.

Setting

The ideal environment for this experiment would have been an observation room with a two way mirror so that the parents could watch the procedure. This room would have had a table with two chairs, would be filled with interactive toys and would contain many bold colors to achieve visual stimulation. Maintaining this exact environment was not possible because of the use of clinical population such as autism. It was necessary to travel outside the Huntsville area to attain subjects that fit the experimental criteria. Therefore, some children were tested in their homes while others were tested in a school setting. The experimental stimuli were brought into rooms that most closely resemble a laboratory setting. The setting was a quiet room with only the researcher and the child present.

Presentation of Stimuli

The initial session began by obtaining informed consent from the parent, as well as verbal assent from the child. The demographic diagnostic criteria and SRS rating scale were then

completed by the parents while the KBIT-2 was administered to the child. Then the child was asked to participate in the false belief tasks. Subjects were tested in a quiet room. Story props were spread out on a table in front of the subjects. The procedures described by Blair's 1996 study and adapted from Perner, Frith, Leslie, and Leekam (1989) for the Smarties task and the Sally-Anne task of Baron-Cohen et al. (1985) were followed. The presentation of the false belief tasks took no longer than 5 minutes. If the subject failed either of the tasks (i.e., score 0 or 1), he/she was considered a member of the no-ToM group. If the subject passed the tasks (i.e., score of 2) he/she was considered a member of the intact ToM group. The experimenter then presented the domain task. Children were asked to make the 5 judgments listed previously. Responses to the seriousness and punish-worthiness judgments were coded on a three-point scale with 2 being "a lot bad", 1 being "a little bad", and 0 being "not bad". Finally, children were asked to give their reasoning for their decisions. Justifications were coded by two independent raters using a coding system based on Smetana (1985). Coding included six categories: 0) Not bad; 1) Other's welfare is affected including, physical harm, injury, loss or other negative affect; 2) Unjust act; 3) Prohibited by rule/authority; 4) Act causes a disruption in the social order; 5) Don't know, where the subject is unable to justify their response; 6) Harm to self, where the procrastinator is deemed to cause harm to themselves; 7) Undifferentiated, answer does not fall into any of the established categories. The entire study took approximately 45 minutes to 1 hour to complete.

Data Analysis and Hypotheses

Confirming Diagnosis. To begin, each participant's demographic questionnaire was reviewed to ensure that the participant met criteria for participation (i.e., English as a first language, no known brain lesions, no significant motor or sensory handicaps, no high dosages of

psychotropic medications, and a professional diagnosis of autism). Participants in both the ASD and TD groups completed the SRS, yielding the presence and severity of social impairments (Constantino & Gruber, 2005). T-scores on the SRS range from <59T (normal), 60T-75T (mild), to >76T (severe) with a higher score on the SRS indicating more significant social impairments. In addition, an independent samples t-test was used to compare the mean SRS score for the ASD group to the mean SRS score for the TD group. The TD group is expected to have significantly lower scores. In addition, the CARS-2 was completed by the examiner in order to provide an overall ASD impression (Schopler, et.al., 2010). The CARS-2 was used to confirm diagnosis with participants having a score of 28 or higher meeting moderate to severe symptoms of ASD (Schopler, et.al., 2010).

Matching Samples. Participants in both the ASD and TD groups completed the KBIT-2 yielding an IQ composite score (i.e., a combination of verbal and non-verbal intelligence) (Kaufman & Kaufman, 2004). The standardized mean on the KBIT-2 is 100. An independent samples t-test was used to compare the mean IQ score for the ASD group to the mean IQ score for the TD group. Levene's Test of Homogeneity of Variances (Levene, 1960) was used to compare the range of scores between the two groups. The groups showed a significant difference in terms of the means and range of IQ scores.

Theory of Mind. Participants in both the ASD and TD groups completed two false belief tasks as a measure of ToM (i.e., Smarties Task and Sally-Anne Task) (Perner et al., 1989; Baron-Cohen et al., 1985). Performance on each task was judged pass/fail. To pass each task, children needed to correctly identify that a child who had not been exposed to the scenario would incorrectly assume that the Smarties tube contained Smarties and those children would believe

that the penny was located in its original placement. To fail each task, children would need to incorrectly assume that a child would believe that a pen is located in the Smarties tube and that the child would choose the correct location of the penny. Children were given an overall ToM score based on a composite of their performance across the two tasks. Children who passed both tasks earned a 2. Children who passed one task and failed one task earned a 1. Children who failed both tasks earned a 0. Children in each group were then divided into two groups, a high-ToM group and a low-ToM group. The high-ToM group consisted of children who passed both false belief tasks (i.e., earned a score of 2) whereas the low-ToM group consisted of children who failed one or both false belief tasks (i.e., earned a score of 1 or 0). There were expected to be significant numbers of children with ASD in each group. All children with TD were expected to be in the high-ToM group.

Domain Task. Participants in both the ASD and TD groups completed eight trials (i.e., two in each condition including: ME, MN, CE, CN). For each trial children were asked to make several judgments about the story including the seriousness of the act, the punish-worthiness of the act, and about the disposition of the perpetrator.

For both the seriousness and punish-worthiness of the act, participant responses were scored on a three-point scale with 2 being "a lot bad", 1 being "a little bad", and 0 being "not bad". For each act judgment there were two such scores per condition (i.e., one for Story 1 and one for Story 2). These two scores were summed to create a single value for the participant response to that judgment. To see whether diagnosis affected participants' judgments differently across the four conditions, a 2 (diagnosis: ASD, TD) X 2 (condition: ME, MN, CE, CN) X 2 (emotion, no emotion) mixed factorial ANOVA with condition and emotion always being the

within subjects factors. To see whether ToM affected participants' responses differently across the four conditions, a 3 (ToM: low-ASD, high-ASD, TD) X 2 (condition: ME, MN, CE, CN) X 2 (emotion, no emotion) also with condition and emotion as the within subjects factor was used. For actors there was one such judgment per condition instead of two. To see whether diagnosis and/or ToM affected participants' actor responses differently across the four conditions mixed factorial ANOVA was used.

There were also questions about the generalizability of the act and whether or not a judgment about the act was contingent on the presence of either a rule or an authority figure. For these judgments, participant responses were either "yes" or "no" and group by condition differences were compared using a Chi-square non-parametric analyses to examine how responses in a particular condition (e.g., CE) differed across the between subjects factor (i.e., diagnosis and/or ToM).

Participants were asked to provide a verbal justification for some of their responses (as detailed in the method section). Justifications were coded by an independent rater using a coding system based on Smetana, 1985. Coding included seven categories: 0) Not bad; 1) Other's welfare is affected including, physical harm, injury, loss or other negative affect; 2) Unjust act; 3) Prohibited by rule/authority; 4) Act causes a disruption in the social order; 5) Don't know, where the subject is unable to justify their response; 6) Harm to self, where the procrastinator is deemed to cause harm to themselves; 7) Undifferentiated, answer does not fall into any of the established categories. The codings were then collapsed together to produce a three-point scale with 2 (codes 1 and 2 added together) being "moral", 1 (with codes 3 and 4 being added together) being "conventional", and 0 (all other codes) being "uncategorized". An interrater

reliability analysis using the Kappa statistic was performed to determine consistency among raters. Because participant responses were categorical, group by condition differences were compared using a Chi-square non-parametric analyses.

In general, this study predicted that children with ASD, given their basic awareness of emotional recognition and their deficiencies in deciphering deeper meaning and intent, would over-emphasize the victim's emotional response and use that to make their judgment for an action's severity.

CHAPTER 3

RESULTS

Based on previous research, it was thought that, although children with ASD would make domain distinctions, they would be less consistent in their ratings on judgments in all areas (i.e., act judgment, generalizability, punishment, rule and authority contingency) than TD children; thus, ME and MN conditions should generate more severe ratings than the CE and CN conditions. Moreover, it was predicted that ME conditions should be judged as worse than MN conditions and CE conditions should be judged as worse than CN conditions. It was predicted that children with ASD who passed both false belief tasks (i.e., high-ToM) would be much more consistent on their ratings than children with ASD who did not pass the false belief tasks (i.e., low-ToM). Children with low-ToM were thought to be more likely to over emphasize emotional cues and under emphasize the domain of the actions whereas high-ToM children were expected to focus on the domain of the act rather than on the emotionally exaggerated expressions exhibited by the victims.

Demographics

Fifty-one children participated in the current study. Twenty-four of the children were in the ASD group (22 males and 2 females). Twenty-seven children were in the TD group (25 males and 2 females). The groups were matched on chronological age with ASD children (*M*= 9.11, *SD*=1.99) not differing in age from the TD children (*M*=9.27, *SD*=1.70), $t(49) = .319$, *p*>.05. As a consequence of matching on chronological age, there

were groups differences on IQ, verbal mental age, and social responsiveness (see Table 1 for demographic information). For IQ, the TD group had a higher mean score ($M = 114.85$, $SD = 14.11$) than the ASD group ($M = 92.75$, $SD = 15.47$), $t(49) = 5.34$, $p<.05$. In addition, the mean VMA of the TD group was higher ($M = 11.27$, $SD = 3.57$) than the mean VMA for the ASD group ($M = 8.51$, $SD = 3.10$), $t(49) = 2.93$, $p>.05$. Children with ASD ($M = 76.13$, $SD = 9.63$) scored significantly higher on the SRS than the TD group ($M = 43.16$, $SD = 5.40$), $t(49) = 14.69$, $p<.05$, indicating that children with ASD were significantly more impaired in their social functioning than typically developing children. See Table 1 for Demographic Information.

Table 1: Demographic Data for Diagnostic Groups

Variables	TD Group (N=27)	HFA Group (N=24)
Gender		
Male: Female Ratio	25: 2	22: 2
Chronological Age (in Years)		
Mean (SD)	9.27 (1.70)	9.12 (1.99)
Range	6.0 - 12.11	6.11 – 13.0
Childhood Autism Rating Scale (CARS-2)		
Total Raw Score Mean (SD)	N/A	32.73 (3.79)
Total Raw Score Range	N/A	27.5 – 41.0
Social Responsiveness Scale (SRS)		
Mean (SD)	43.33 (5.37)	76.13 (9.63)
Range	34-54	50 - 132
Kaufman Brief Intelligence Test (KBIT-2)		
Mean (SD)	114.85 (14.11)	92.75 (15.47)
Range	88 – 141	63 – 125
Verbal Mental Age (in Years)		
Mean (SD)	11.27 (3.57)	8.51 (3.10)
Range	6.6 – 18.6	4.4 - 17.0
Theory of Mind (ToM) (Out of 2)		
Mean (SD)	1.93 (.27)	1.21 (.88)
Range	1 - 2	0 – 2

Moral and Conventional Judgments

Children from both groups were shown scenes featuring 4 different conditions in which they saw a moral transgression or a conventional transgression crossed with an emotional or neutral reaction from the victim. Children were then asked to separately judge different aspects of the transgressions. All of these judgments are analyzed below. Each of the analyses used 2x2x2 mixed factorial ANOVA with group always being the between subjects factor and domain (moral versus conventional) and emotion (emotion versus no emotion) being the within subjects factors. Particularly important were of act evaluation judgments, act response judgments, and the overall actor judgments. A power analysis for each of the ANOVAs conducted in the upcoming results section yielded a range of power values between .481 and .105.

Act Evaluation

The act evaluation judgment (i.e., bad or not bad) and the corresponding severity judgment (i.e., "a little bad" or "a lot bad") were combined to form a 3-point scale with 2 being "a lot bad", 1 being "a little bad", and 0 being "not bad". Across the two trials the total score could range from 0-4 for each child. The ANOVA was used to assess whether diagnosis affected participants' judgments differently across the four conditions.

The analysis revealed a main effect for domain, $F(1, 49)=29.77$, $p<.05$, $\acute{\eta}^2 =. 378$ and a main effect for group, $F(1, 49)=5.41$, $p<.05$, $\acute{\eta}^2 =.099$. There was no main effect for emotion. The group effect showed that the ASD group ($M=3.35$) judged the acts as worse (i.e., more bad) than the TD group ($M=2.93$). The domain effect showed the moral acts ($M=3.43$) were judged as worse than the conventional acts ($M=2.85$). See Table 2. The

analysis also revealed a group by emotion interaction, $F(1, 49)=4.79$, $p<.05$, $\dot{\eta}^2 =.094$ and a domain by emotion interaction, $F(1, 49)=8.30$, $p<.05$, $\dot{\eta}^2 =.064$. The group by emotion interaction indicated that the ASD group did not differentiate between the emotion trials ($M=3.43$) and neutral trials ($M=3.27$) whereas the TD group did (Ms=2.74, 3.11 respectively). This effect seemed to be most pronounced for TD children judging the emotion trials as less "bad" than the neutral trials. The domain by emotion interaction indicated that the moral emotion trials ($M=3.50$) were not judged differently from the moral neutral trials ($M=3.36$) but that the conventional emotion trials ($M=2.68$) were judged differently from the conventional neutral trials ($M=3.03$) which, surprisingly, were judged to be more "bad". This latter finding appeared to be carried by the TD group's judgments of the conventional emotion trials ($M=2.19$).

Finally, when the groups were analyzed separately, the ASD group judged the moral violations ($M=3.56$) as worse than conventional violations ($M=3.15$), $F(1,23)=5.69$, $p<.05$. Similarly, the TD group judged moral violations ($M=3.30$) as worse than conventional violations ($M=2.56$), $F(1,26)=34.44$, $p<.05$. This information is provided in Table 2.1.

There was a significant negative relationship between VMA and ME acts, $r(51)= -.345$, $p<.05$, MN acts, $r(51)= -.353$, $p<.05$, and CE acts, $r(51)= -.549$, $p<.05$, but no relationship between VMA and CN acts. There was a significant negative relationship between IQ and CE acts, $r(51)= -.499$, $p< .05$; however, there was not a significant relationship between IQ and ME, MN or CN acts. Finally, there was a significant positive relationship between SRS and CE acts, $r(51)= .492$, $p<.05$, but not for SRS and ME, MN, or CN acts.

Table 2.1: Mean Act Judgment & Severity for Diagnostic Groups

Variables	TD Group (N=27)	ASD Group (N=24)
ME	3.30	3.71
MN	3.30	3.42
CE	2.19	3.17
CN	2.93	3.13

Overall, the results suggest that the ASD group is making the traditional domain distinction when evaluating the act but that emotion is not affecting that distinction in a meaningful way. In addition, it appears, at least for the TD group, that emotions deflate judgments of conventional violations. Finally, the ASD group seems to evaluate any transgression, moral or conventional, as more severe or extreme than the TD group.

Act Response

The act response judgment (i.e., punish-worthiness) and the corresponding severity judgment (i.e., "a little" or "a lot") were combined to form a 3-point scale with 2 being "a lot bad", 1 being "a little bad", and 0 being "not bad". Across the two trials the total score could range from 0-4 for each child. The ANOVA was used to assess whether diagnosis affected participants' judgments differently across the four conditions. The analysis revealed a main effect for domain, $F(1, 49)=61.54$, $p<.05$, $\acute{\eta}^2 =. 553$ and a main effect for group, $F(1, 49)=1.16$, $p<.05$, $\acute{\eta}^2 =. 158$. There was no main effect for emotion. The domain effect showed the moral acts ($M=2.99$) were judged as worse than the conventional acts ($M=1.89$). The group effect showed that the ASD group ($M=2.88$)

judged the acts as more punish-worthy than the TD group (M=2.01). No interactions were significant.

Finally, when the groups were analyzed separately, the ASD group judged the moral violations (M=3.38) as more punish-worthy than conventional violations (M=2.38), F(1,23)=18.40, p<.05. Similarly, the TD group judged moral violations (M=2.61) as more punish-worthy than conventional violations (M=1.41), F(1,26)=53.17, p<.05. See Table 2.2.

There was a significant negative relationship between VMA and ME acts, r(51)= -.290, p<.05, MN acts, r(51)= -.543, p<.05, CE acts, r(51)= -.520, p<.05, and CN acts, r(51)= -.422, p<.05. There was a significant negative relationship between IQ and MN acts, r(51)= -.459, p<.05, and CE acts, r(51)= -.390, p< .05; however, there was not a significant relationship between IQ and ME or CN acts. Finally, there was a significant positive relationship between SRS and MN acts, r(51)= .338, p<.05, but not for SRS and ME, CE, or CN acts.

Table 2.2: Mean Act Response & Severity for Diagnostic Groups

Variables	TD Group (N=27)	ASD Group (N=24)
ME	2.74	3.50
MN	2.48	3.25
CE	1.48	2.38
CN	1.33	2.38

Overall, the results suggest that the ASD group is making the traditional domain distinction when judging the punish-worthiness of the act but that emotion is not affecting that distinction in a meaningful way. Finally, the ASD group seems to judge any transgression, moral or conventional, as deserving of more punishment than the TD group.

Act Generalization, Rule Contingency, and Authority Contingency

For act generalization, the analysis revealed a main effect for domain, $F(1, 49)=3.71$, $p<.05$, and a main effect for group, $F(1, 49)=4.51$, $p<.05$. There was no main effect for emotion. The domain effect showed the moral acts ($M=.03$) were judged as less acceptable across settings than the conventional acts ($M=.21$). The group effect showed that the ASD group ($M=.16$) judged the acts as more acceptable across settings than the TD group ($M=.08$). No interactions were significant. Finally, when the groups were analyzed separately, the ASD group judged the moral violations ($M=.05$) as less acceptable across settings than conventional violations ($M=.27$), $F(1,23)=2.49$, $p<.05$. Similarly, the TD group judged moral violations ($M=.01$) as less acceptable across settings than conventional violations ($M=.14$), $F(1,26)=1.07$, $p<.05$.

For rule contingency, the analysis revealed only a main effect for domain, $F(1, 49)=14.72$, $p<.05$. There was no main effect for group or emotion. The domain effect showed the moral acts ($M=.06$) were judged as less acceptable in the absence of a rule than the conventional acts ($M=.19$). No interactions were significant. Finally, when the groups were analyzed separately, the ASD group judged the moral violations ($M=.04$) as less acceptable in the absence of a rule than conventional violations ($M=.17$), $F(1,23)=9.86$, $p<.05$. Similarly, the TD group judged moral violations ($M=.01$) as less acceptable in the absence of a rule than conventional violations ($M=.14$), $F(1,26)=1.07$, $p<.05$.

For authority contingency, the analysis revealed a main effect for domain, $F(1, 49)=12.65$, p<,05, and a main effect for group, $F(1, 49)=5.14$, $p<.05$. There was no main effect for emotion. The domain effect showed the moral acts ($M=.05$) were judged as less acceptable in the absence of an authority than the conventional acts ($M=.17$). The group effect showed that the ASD group ($M=.17$) judged the acts as less acceptable in the absence of an authority than the TD group ($M=.05$). The analysis also revealed a group by emotion interaction, $F(1, 49)=4.61$, $p<. 05$, and a domain by emotion by group interaction, $F(1, 49)=6.33$, $p<.05$. The group by emotion interaction indicated that the ASD group did not differentiate between the emotion trials ($M=.15$) and neutral trials ($M=.19$) whereas the TD group did (Ms=.09, .02 respectively). This effect seemed to be most pronounced for TD children judging the neutral trials as less acceptable in the absence of an authority than the emotion trials. In fact, the TD group showed this effect by judging the two moral trials similarly but the two conventional trials differently with conventional neutral trials ($M=.04$) surprisingly being judged as less acceptable in the absence of an authority than the conventional emotion trials ($M=.17$). Finally, when the groups were analyzed separately, the ASD group judged the moral violations ($M=.10$) as less acceptable in the absence of an authority than conventional violations ($M=.23$), $F(1,23)=4.31$, $p<.05$. Similarly, the TD group judged moral violations ($M=.00$) as less acceptable in the absence of a rule than conventional violations ($M=.10$), $F(1,26)=1.07$, $p<.05$.

Overall, the results suggest that the ASD group is making the traditional domain distinction when judging the generalization, rule contingency, and authority contingency of the act but that emotion is not affecting that distinction in a meaningful way. Finally, the ASD group continues to judge any transgression, moral or conventional, more severely than the TD group.

Actor Judgments

The analysis revealed a main effect for domain $F(1, 49)=27.42$, $p<.05$, $\dot{\eta}^2 =. 346$ and a main effect for group, $F(1, 49)=16.76$, $p<.05$, $\dot{\eta}^2 =. 201$. There was no main effect for emotion. The domain effect showed the actors committing moral acts ($M=.73$) were judged as worse (i.e., "more bad") than the actors committing conventional acts ($M=.46$). The group effect showed that the ASD group ($M=.76$) judged the actors as worse (i.e., "more bad") than the TD group ($M=.42$). No interactions were significant. Finally, when the groups were analyzed separately, the ASD group judged the moral violators ($M=.90$) as worse than conventional violators ($M=.63$), $F(1,23)=12.03$, $p<.05$. Similarly, the TD group judged moral violators ($M=.56$) as worse than conventional violators ($M=.29$), $F(1,26)=15.62$, $p<.05$. See Table 2.3.

For actor judgments, there was a significant negative relationship between VMA and MN actors, $r(51)= -.299$, $p<.05$, CE actors, $r(51)= -.388$, $p<.05$, and CN actors, $r(51)= -.445$, $p<.05$, but no relationship between VMA and ME actor assessments. There was a significant negative relationship between IQ and ME actors, $r(51)= -.296$, $p< .05$, MN actors, $r(51)= -.315$, $p<.05$, and CE actors, $r(51)= -.284$, $p<.05$; however, there was not a significant relationship between IQ and CN actor assessments. Finally, there was a significant positive relationship between SRS and ME actors, $r(51)= .362$, $p< .05$, MN actors, $r(51)= .417$, $p<.05$, and CE actors, $r(51)= .340$, $p<.05$; however, there was not a significant relationship between SRS and CN actor assessments.

Table 2.3: Mean Actor Judgments for Diagnostic Groups

Variables	TD Group (N=27)	ASD Group (N=24)
ME	.56	.90
MN	.56	.90
CE	.31	.67
CN	.26	.58

Overall, the results suggest that the ASD group extends the domain distinction to judgments about the actor but that emotion still does not affect the distinction in a meaningful way. Finally, the ASD group seems to judge the actor, regardless of the type of transgression, as being worse than the TD group.

Theory of Mind

Children were given an overall ToM score based on a composite of their performance across the two tasks. Children who passed both tasks earned a 2 and were categorized as high-ToM. Children who passed one or both tasks earned a 1 or 0 and were categorized as low-ToM. There were equal number of children with ASD in each group (n=12). For IQ, the high-ToM group had a higher mean score ($M = 95.33$, $SD = 19.37$) than the ASD group ($M = 90.17$, $SD = 10.53$), $t(22) = 7.082$, $p<.05$. In addition, the mean VMA of the high-ToM group was higher ($M = 10.30$, $SD = 3.32$) than the mean VMA for the ASD group ($M = 6.72$, $SD = 1.46$), $t(22) = 6.561$, $p<.05$. The high-ToM group ($M = 78.17$, $SD = 10.81$) and the low-ToM group ($M = 74.08$, $SD = 8.25$), did not significantly differ on SRS ratings, $t(22) = .025$, $p>.05$.

Because there was such little variance in the TD group, they were kept as their own group. Two children with TD were excluded because, unlike the other 25 children, they failed 1 of the ToM tasks. All of the ToM analyses were 3x2x2 mixed factorial ANOVA with group (TD, high-ToM, & low-ToM) always being the between subjects factor and condition and emotion always being the within subjects factor.

Act Evaluation

The analysis revealed a main effect for domain, $F(1, 46)=22.39$, $p<.05$, $\dot{\eta}^2 =.327$ and a main effect for group, $F(1, 46)=5.52$, $p<.05$, $\dot{\eta}^2=.193$. There was no main effect for emotion. The group effect showed that the low-ToM group ($M=3.63$) judged the acts as worse (i.e., more bad) than the high-ToM and TD groups ($Ms=3.13$ & 2.89). The domain effect showed the moral acts ($M=3.48$) were judged as worse than the conventional acts ($M=2.94$). This information is provided in Table 3.1.

Table 3.1: Mean Act Evaluation & Severity for Groups

Variables	TD Group (N=25)	High-ToM (N=12)	Low-ToM (N=12)
ME	3.32	3.67	3.75
MN	3.24	3.10	3.75
CE	2.2	2.67	3.67
CN	2.92	2.83	3.42

Overall, the results suggest that even the low-ToM group is making the traditional domain distinction when evaluating the act and it appears that emotion is not affecting that distinction in a meaningful way. In addition, the low-ToM group seems to evaluate

any transgression, moral or conventional, as more severe or extreme than either the high-ToM and TD groups.

Act Response

The analysis revealed a main effect for domain, $F(1, 46)=51.08$, $p<.05$, $\dot{\eta}^2=.526$, and a main effect for group, $F(1, 46)=8.91$, $p<.05$, $\dot{\eta}^2=.279$. There was no main effect for emotion. The domain effect showed the moral acts ($M=3.13$) were judged as worse than the conventional acts ($M=2.06$). The group effect showed that the low-ToM group ($M=3.40$) judged the acts as more punish-worthy than either the high-ToM ($M=2.35$) and the TD ($M=2.04$) groups. See Table 3.2. The high-ToM and the TD groups did not differ from each other. No interactions were significant.

Table 3.2: Mean Act Response & Severity for Groups

Variables	TD Group (N=25)	High-ToM (N=12)	Low-ToM (N=12)
ME	2.80	3.25	3.75
MN	2.48	2.83	3.67
CE	1.48	1.58	3.17
CN	1.40	1.75	3.00

Overall, the results suggest that even the low-ToM group is making the traditional domain distinction when judging the punish-worthiness of the act and emotion is not affecting that distinction in a meaningful way. Finally, the low-ToM group seems to judge any transgression, moral or conventional, as deserving of more punishment than the high-ToM and

the TD groups. The high-ToM group appears to be rating the transgressions similarly to the TD group.

Act Generalization, Rule Contingency, and Authority Contingency

For act generalization, the analysis revealed a main effect for domain, $F(1, 46)=36.69$, $p<.05$, a main effect for group, $F(1, 46)=3.47$, $p<.05$, as well as a domain by group interaction, $F(1, 46)=5.64$, $p<.05$. There was no main effect for emotion. The domain effect showed the moral acts ($M=.04$) were judged as less acceptable across settings than the conventional acts ($M=.21$). The group effect showed that the low-ToM and the high-ToM groups (Ms=.17 & .16) judged the acts as more acceptable across settings than the TD group ($M=.06$). The domain by group interaction indicated that the high-ToM group makes a broader distinction than either the low-ToM or the TD groups.

For rule contingency, the analysis revealed only a main effect for domain, $F(1, 46)=11.69$, $p<.05$. There was no main effect for group or emotion. The domain effect showed the moral acts ($M=.06$) were judged as less acceptable in the absence of a rule than the conventional acts ($M=.17$). No interactions were significant.

For authority contingency, the analysis revealed a main effect for domain, $F(1, 46)=11.33$, $p<.05$ and a main effect for group, $F(1, 46)=4.55$, p<.05. There was no main effect for emotion. The domain effect showed the moral acts ($M=.07$) were judged as less acceptable in the absence of an authority than the conventional acts ($M=.19$). The group effect showed that the low-ToM group ($M=.24$) judged the acts as less acceptable in the absence of an authority than the high-ToM and TD groups (Ms= .10 &.05).

Overall, the results suggest that even the low-ToM and high-ToM groups are making the traditional domain distinction when judging the generalization, rule contingency, and authority contingency of the act but that emotion is not affecting that distinction in a meaningful way.

Actor Judgments

The analysis revealed a main effect for domain $F(1, 46)=24.55$, $p<.05$, and a main effect for group, $F(1, 46)=9.36$, $p<.05$. There was no main effect for emotion. The domain effect showed the actors committing moral acts ($M=.78$) were judged as worse (i.e., "more bad") than the actors committing conventional acts ($M=.52$). The group effect showed that the low-ToM group ($M=.92$) judged the actors as worse (i.e., "more bad") than the high-ToM and TD groups (Ms=.60 & .43). No interactions were significant.

Overall, the results suggest that the low-ToM and high-ToM groups extend the domain distinction to judgments about the actor but that emotion still does not affect the distinction in a meaningful way. The low-ToM group seems to judge the actor, regardless of the type of transgression, as being worse than the high-ToM and TD group judges the actor. Finally, the high-ToM group does not appear to judge the actors differently than the TD group.

Act and Actor Justifications

Justifications were coded by two independent raters using a coding system based on Smetana, 1985. Coding included seven categories: 0) Not bad; 1) Other's welfare is affected including, physical harm, injury, loss or other negative affect; 2) Unjust act; 3) Prohibited by rule/authority; 4) Act causes a disruption in the social order; 5) Don't know, where the subject is unable to justify their response; 6) Harm to self, where the procrastinator is deemed to cause harm to themselves; 7) Undifferentiated, answer does not fall into any of the established

categories. The codings were then collapsed together to produce a three-point scale with 2 (codes 1 and 2 added together) being "moral", 1 (with codes 3 and 4 being added together) being "conventional", and 0 (all other codes) being "uncategorized". An interrater reliability analysis using the Kappa statistic was performed to determine consistency among raters. The interrater reliability for the raters was found to be Kappa = 0.63 ($p <.0.001$), 95% CI (0.504, 0.848). A chi-square analysis was performed to assess group performance on act and actor justifications.

For ME acts, a chi-square indicated that the pattern of justifications given by children with ASD differed from the pattern of justifications given by the TD children, (χ^2 (2, n=102) = 17.06, $p< .05$). Children with ASD (29 out of 48, 60%) less frequently used moral justifications for ME acts compared to TD children (50 out of 54, 93%) and more frequently used uncategorized justifications (14 out of 48, 29%) for ME acts compared to TD children (1 out of 54, 2%). Children in both the group with ASD and the group with TD reported that both acts were "bad".

For MN acts, a chi-square indicated that the pattern of justifications given by children with ASD differed from the pattern of justifications given by the TD children, (χ^2 (2, n=101) = 24.74, $p <.05$). Children with ASD (24 out of 47, 51%) less frequently used moral justifications for MN acts compared to TD children (51 out of 54, 94%) and more frequently used uncategorized justifications (15 out of 47, 32%) for MN acts compared to TD children (2 out of 54, 4%). One response from a child in the group with ASD was left out of the analysis for saying the act was "not bad". All children in the TD group responded "bad" on both trials.

For CE acts, a chi-square indicated that the pattern of justifications given by children with ASD differed from the pattern of justifications given by the TD children, (χ^2 (2, n=87) = 6.07, p <.05). Considering that the children with ASD (11 out of 42, 26%) and the TD children (11 out of 45, 24%) used conventional justifications the same number of times, the difference appears to be that children with ASD more frequently used uncategorized justifications (23 out of 42, 55%) for CE acts compared to TD children (15 out of 45, 33%) and TD children (19 out of 45, 42%) used moral justifications more frequently than the children with ASD (8 out of 42, 19%) for CE acts. Six responses from children in the group with ASD and nine responses from children in the TD group were left out of the analysis for saying the act was "not bad".

For CN acts, a chi-square indicated that the pattern of justifications given by children with ASD did not differ from the pattern of justifications given by the TD children, (χ^2 (2, n=95) = 3.27, p>.05). For CN acts, children with ASD (16 out of 44, 36%) and TD children (11 out of 51, 22%) used conventional justifications with similar frequency. Children with ASD (19 out of 44, 43%) used uncategorized justifications as frequently as TD children (23 out of 51, 45%) for CN acts. Four responses from children in the group with ASD and three responses from children in the TD group were left out of the analysis for saying the act was "not bad".

For ME actor assessments, a chi-square indicated that the pattern of justifications given by ASD children differed from the pattern of justifications given by the TD children, (χ^2 (2, n=75) = 31.92, p<.05). ASD children (9 out of 41, 22%) less frequently used moral justifications for ME actor assessments compared to TD children (28 out of 34, 82%) and more frequently used uncategorized justifications (28 out of 41, 68%) for ME actor assessments compared to TD children (2 out of 34, 5%). Seven responses from children in the group with ASD and twenty

responses from children in the TD group were left out of the analysis for saying the actor was "not bad".

For MN actor assessments, a chi-square indicated that the pattern of justifications given by ASD children differed from the pattern of justifications given by the TD children, (χ^2 (2, n=73) = 17.64, *p*<.05). ASD children (13 out of 41, 32%) less frequently used moral justifications for MN actor assessments compared to TD children (23 out of 32, 72%) and more frequently used uncategorized justifications (25 out of 41, 61%) for MN actor assessments compared to TD children (4 out of 32, 13%). Seven responses from children in the group with ASD and thirteen responses from children in the TD group were left out of the analysis for saying the actor was "not bad".

For CE actor assessments, a chi-square indicated that the pattern of justifications given by ASD children did not differ from the pattern of justifications given by the TD children, (χ^2 (2, n=47) = .02, p>.05). For CE actor assessments, ASD children (7 out of 27, 26%) and TD children (5 out of 20, 25%) used conventional justifications with similar frequency. Additionally, ASD children (15 out of 27, 56%) used uncategorized justifications as frequently as TD children (11 out of 20, 55%) for CE actor assessments. Twenty-eight responses from children in the group with ASD and thirty four responses from children in the TD group were left out of the analysis for saying the actor was "not bad".

For CN actor assessments, a chi-square indicated that the pattern of justifications given by ASD children differed from the pattern of justifications given by the TD children, (χ^2 (2, n=41) = 7.06, p<.05). ASD children (5 out of 25, 20%) less frequently

used conventional justifications for CN actor assessments compared to TD children (8 out of 16, 50%) and more frequently used uncategorized justifications (15 out of 25, 60%) for CN actor assessments compared to TD children (3 out of 16, 19%). Twenty-three responses from children in the group with ASD and thirty-eight responses from children in the TD group were left out of the analysis for saying the actor was "not bad". While there looks like there is a different pattern between groups for the CN conditions, it is not clear that the pattern is significant because many of the ASD responses are in the "uncategorized" category. In addition, many children with TD did not rate actors who committed conventional violations as "bad" and were thus left out of the analysis. When ASD and TD are combined, moral evaluations receive moral justifications and the conventional evaluations are justified by no observable pattern.

CHAPTER 4

DISCUSSION

In this study, children with autism spectrum disorders (ASD) and typically

developing (TD) children judged social actions (either moral or conventional) and the

actors who performed them. For some actions, the victim reacted with a negative emotion

while for others the victim reacted with no emotion. Because previous studies had found

that children with ASD, like children with TD, were able to distinguish actions within the

moral domain from actions within the conventional domain (Weisberg & Leslie, 2012;

Grant, et.al., 2005; Blair, 1996), this study made the same prediction. However, this study

also predicted that children with ASD, unlike their TD peers, would over-emphasize the

victim's emotional response thereby affecting their judgments for an action's severity and

punish-worthiness – especially when displaying a theory of mind (ToM) deficit.

Act Judgments

As expected, both children with TD and children with ASD judged moral

transgressions and conventional transgressions differently across the various judgments.

When evaluating the act, both groups judged moral violations to be worse than

conventional violations. In fact, the only noteworthy difference between groups was that

children with ASD tended to evaluate the actions more severely than the children with

TD. When determining the appropriate response to the violation, both groups judged

moral violations to be more punish-worthy than conventional violations. In fact, the main

difference between groups was again that children with ASD tended to punish the actions

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more severely than the children with TD. This general pattern continued across the remaining judgments as well with both groups distinguishing moral violations from conventional violations according to their generalizability and contingency on the presence of rules or an authority figure. Further, children with ASD continued to judge the acts more severely than the children with TD on these dimensions too.

One discussion point that first needs to be considered is that there was a significant difference in overall IQ and VMA between the two groups. Though the children with ASD had a significantly lower overall IQ, it is not surprising given the fact that many children with ASD exhibit significant language deficits (APA, 2013). It was therefore not surprising that a lower verbal score on the KBIT-2 would lower the overall IQ score for the children with ASD. Given that the mean IQ score for the children with ASD was in the average range (e.g., 92), and knowing that lower VMA this is a common characteristic for children with ASD, the lower mean IQ was not considered to be a threat to the overall results of this study. In addition, a low VMA was shown to have a negative relationship with act evaluation, which again is not surprising because the low-ToM group consistently rated acts more severely and children with low-ToM demonstrated lower VMAs in general.

In the end, there was little difference of domain distinctions between the two groups meaning that both children with ASD and the children with TD distinguished between moral and conventional transgressions similarly. Overall, children with ASD were just as likely as children with TD to be consistent across each of the judgments (i.e., they distinguished the domains on 5 out of 5 judgments). This was somewhat surprising since it was thought that children with ASD might be less consistent than their TD peers when distinguishing domains on a least some of the

judgments. However, these findings support previous studies demonstrating that children with ASD make appropriate domain distinctions despite social cognitive deficits that might potentially affect performance (Blair, 1996; Grant, et. al., 2005; Leslie, et. al., 2006; Weisberg & Leslie, 2012).

One such study (Blair, 1996) proposed that children with ASD were capable of making the domain distinction in part because of an ability to respond to the distress of a victim. Blair identified the "Violence Inhibition Mechanism" (VIM) that is activated by distress cues and suggested that this type of response is present even in children with ASD. The VIM is produced when children are exposed to scenarios they find aversive. He claimed that this could be the basis for decisions made about moral transgressions. In order to support the VIM theory, children with ASD should consider any action involving a "victim" as bad. Results from this study did not support the VIM theory. Children with ASD were able to maintain the distinction despite the introduction of a "victim" in the conventional transgressions. The introduction of an emotion should have been more likely to trigger a VIM response; however, emotion trials were judged to be no worse than no-emotion trials. These results suggest that children with ASD have some awareness that actions causing harm to a person are worse than actions that do not directly affect another individual.

In another study, Leslie and colleagues (2006) investigated the VIM in children with ASD by providing them with scenarios involving a "cry-baby" (i.e., a child crying when they were not given another child's cookie). Leslie and colleagues reasoned that, according to VIM, children with ASD should consider any scenario involving a "victim"

as bad, even if the response was not warranted. Results from Leslie et al. did not provide support for the VIM theory because they found that children with ASD were still able to distinguish between moral transgressions and scenarios where distress is not warranted. These results are similar to the results found in this current study. Much like the "victim" in the unwarranted situation, this study placed a victim in a conventional transgression. In both cases, children with ASD were still able to maintain that actions committed against another person are "more bad" than actions that do not cause harm.

One of the more interesting findings from the current study was that children with ASD tended to evaluate moral transgressions and conventional transgressions as more severe and more punish-worthy than typically developing children. Thus children with ASD tended to view both moral and conventional transgressions as "a lot bad" and deserving of "a lot" of punishment. This may be in part due to their more context-bound cognitive processing (Shulman, Guberman, Shiling, & Bauminger, 2012; Geurts et al., 2009). Whereas children with TD are able to process moral and conventional transgressions in more abstract terms, individuals with ASD may be less flexible in their thinking and thus, regardless of context, may be less accepting of rule violations (Shulman et.al., 2012). Additionally, children with ASD may be more accepting of rule violations if they consider their own rule violations. For example, if a child with ASD were able to imagine themselves committing a violation such as not washing their hands before leaving the restroom, they may take a different perspective when allotting severity and punishment for the action. It would be interesting to conduct a study using pictures of participants or their family members as antagonists in the current study and assessing act severity and act response for various conventional violations.

Following along that line of thought, another reason children with TD may have been less severe in their ratings than children with ASD is that children with TD may be able to take into consideration violations outside the immediate context. For example, children with TD may be comparing the violation being presented (i.e., hitting) to a range of violations, some less severe and some more severe, rather than evaluating the violation in isolation. Though research has shown that children with ASD have weak central coherence (Happé & Frith, 2006; Lawson, 2003) and difficulty taking the perspectives of others (Frith & Happé, 1999; Baron-Cohen et al., 1999), research directly studying how children with ASD process hypothetical scenarios is limited. Because of this limitation, it is unknown whether children with ASD are processing outside the immediate context and thus may consider the present violation as very bad because they are not taking into consideration another violation that could be worse.

Perhaps most surprising outcome from the current study was that the overall pattern of distinguishing domains was not affected by the emotional state of the victim. Based on research indicating that children with ASD have deficits in their executive function (Ozonoff & Jensen, 1999) and weak central coherence (Happé & Frith, 2006; Lawson, 2003), it was predicted that children with ASD could be distracted by, and consequently overemphasize, non-critical details of a scenario. In particular, it was predicted that children with ASD would recognize changes in the emotional facial expressions of others and would be more likely than typically developing children to overemphasize changes in emotion when interpreting a social situation while underemphasizing factors like intent or motive. However, results found that children with

ASD were not swayed by the changes in emotional expressions. For example, children with ASD judged both neutral and emotional moral situations as worse than both neutral and emotional conventional transgressions. Moreover there was not a significant difference between neutral moral transgressions and emotional moral transgressions. This contradicts findings by Weisburg and Leslie (2012) who found that children with ASD judged moral actions that involved an emotionally exaggerated victim as worse than moral transgressions that showed a neutral expression on the victim. A small sample size was used in the Weisberg and Leslie study with only five children in the high-ToM group and six children in the low-ToM which could have led to their findings. Additionally, it is unclear how exaggerated the emotion of the victims in the Weisburg and Leslie study were demonstrated. It may be that the current study did not utilize all facets to express emotions. For example, rather than just have the victim frown, it may have been beneficial to exaggerate body posturing, such as throwing hands up in the air or putting hands on hips. Additionally, the current study could have exaggerated emotion by adding an auditory component such as having the victim cry. Moreover, differences for moral distinction may have been more pronounced had the experimenter read a script that highlighted how the victim was feeling, such as saying "Look, John is crying because Jane hit him". Because it is unknown how emotion was portrayed in the Weisberg and Leslie article, it is unclear whether the current studies' portrayal of emotion was too vague to elicit exaggerated responses on the emotion trials from children with ASD. Future studies should focus on elevating emotional extremes and consider using real-life characters to portray violations. It is unknown how a child with ASD would react to watching a real-life character commit moral versus conventional violations. It

could be that emotional responses that include actual tears, crying aloud, and body gestures trigger different reactions from children with ASD.

Actor Judgments for ASD and TD

One area that has yet to be explored in research involving individuals with ASD is how they view moral and conventional rule violators. To date only one other study has explored judgments of violators (i.e., Thoma et al., 2011) and those studies focused specifically on TD children and adults. Thoma and colleagues showed children pictures of the same character engaged in multiple acts, either prosocial acts or transgressions. They then asked the participants domain specific questions about the acts, such as "Was it good or bad for (actor) to do ____?" and "Should (actor) be punished or rewarded?". Children were then asked specifically about the violator (i.e., "Was (actor) good or bad?"). Researchers found that children were able to make judgments of the actors derived exactly from judgments about the acts the actor committed. Therefore, if children witnessed the same character committing multiple transgressions, they inferred that he or she was "bad". Additionally, if a child witnessed the same person committing prosocial acts, they were able to infer that he or she was "good". Domain distinctions also persisted to actor judgments with moral violators judged as "more bad" than conventional violators. So whereas most research on both TD and ASD populations has focused on judgments of the social acts (Blair, 1996; Grant, et.al., 2005; Leslie, et.al., 2006; Weisberg & Leslie, 2012), the current study followed Thoma et al. and presented children with the opportunity to also judge the perpetrators of those acts.

The ability to evaluate a person's character is an important skill in learning how to interact in this world. Social knowledge is the ability to effectively assess and understand complex social relationships and environments (Goleman, 2006). Most research regarding how children with ASD judge other human beings focuses on external triggers such as emotional expressions or tone of voice (Ashwin, Ashwin, Howell, & Baron-Cohen, 2009) and does not give insight into how children with ASD actually judge the character of another individual; however, some current research is beginning to investigate more in-depth social knowledge that individuals with ASD may possess. White and colleagues (2006) investigated how adults with high-functioning autism judged pictorial stimuli in regard to certain social stereotypes. Participants were presented with sets of faces and bodies and asked to rate each in terms of trustworthiness, attractiveness, social status, and age. Results found that individuals with ASD rated the pictures similarly to matched controls in all the categories except attractiveness. This occurred despite the group with ASD having a lower score on facial recognition and mentalizing ability. The researchers suggested that social knowledge is intact in individuals with ASD and that social stereotypes and group membership can be understood despite having impairments in their understanding of social relationships.

In the present study, children with ASD were given the opportunity to take an actor's violation and use that information to make inferences about the actor by labeling them as either "bad" or "not bad". Though children with ASD tended to rate the characters that committed moral violations as "bad" more often than actors that committed conventional violations, the children with ASD did label conventional rule violators bad more often than the children with TD. Whereas children with TD were more likely to give leniency to conventional rule violators,

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children with ASD were more likely to assume an actor was "bad" if they committed a violation of any type. One noteworthy addition was that children with TD often gave actors a "pass" because they claimed a one-time violation did not constitute a bad person. Children with ASD did not make this same consideration but rather used an actor's one-time violation to make an overall assumption that the actor must be a bad person. This lack of consideration for violators may make it more difficult for children with ASD to form relationships because they may make quick assumptions about the character of an individual based on a one-time mistake. For example, if a peer in class speaks out without raising his or her hand, a child with ASD may consider them a bad person rather than take into consideration other factors such as excitement for the topic or an unawareness of the established rule. Because they lack consideration of other factors, the child with ASD may be unwilling to make attempts to establish a friendly relationship because they now consider the peer "bad".

Social knowledge is important because it impacts the ability to live productive and happy lives. Social understanding is needed in order for individuals to regulate and communicate with others and is often a necessary component in maintaining healthy relationships (Goleman, 2006). If individuals with ASD are consistently shown to be deficient in their social knowledge, how then are they capable of making accurate assessments of wrong and right? Moreover, how are they able to assess the character of another person? It may be that morality is an innate ability that is separate from social knowledge. Even in the absence of perspective taking individuals, with ASD are still

capable of knowing that harm to another person is wrong even when they are unaware of how that person is feeling.

ToM and Emotion in Act and Actor Judgments

One goal of this study was to evaluate how children with low ToM differed from children with high ToM on assessing domain distinctions when there was a superficial cue (i.e., emotion) present. As with similar studies (Leslie, et.al., 2006; Grant, et.al., 2005; Blair, 1996), children with ASD do have the ability to distinguish between moral transgressions and conventional transgressions but theory of mind does not seem to factor in to children's ability to make this distinction. Thus children with low ToM were just as capable of judging moral violations as worse than conventional transgressions as children with high ToM and TD children; however, children with low ToM were more robust in their evaluations and tended to be much more severe in their ratings than either of the two groups of children.

A recurrent finding in this study was that children with ASD rated all transgressions (both moral and conventional) as worse than either the children with high-ToM or children with TD. This finding contradicts Blair's (1996) VIM theory that moral judgment is a physiological response to distress and instead indicates that theory of mind is an important factor in making moral judgments. It appears that children who lack a theory of mind are less capable of making distinctions between different violations within the same domain. Though they know that a moral violation is worse than a conventional violation, they tend to make an overall assumption that any and all violations are very bad. In fact, the differences observed previously between ASD and TD is more often explained by the low ToM group alone than by the ASD group overall. On many judgments like act evaluation severity and punishment severity, the children with ASD in

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the high-ToM group paralleled the TD group and not the children with ASD in the low-ToM group. It may be that whereas TD children have an understanding that there are worse violations (i.e., murder), children with low ToM may be less likely to think outside the present situation. It could be that children with ASD may not have the same range of moral awareness, meaning that they rate all moral violations to the same degree whereas TD children may have the ability to rate one moral violation as worse than another moral violation. For example, TD children may be more likely to rate physical harm (e.g., kicking) as worse than emotional harm (e.g., calling someone a name). Though research has shown that children with ASD are capable of rating moral violations to a person as worse than moral violations involving destruction to property (Grant, et. al., 2005), it remains unclear how children with ASD would evaluate moral transgressions involving physical harm compared to moral violations involving emotional harm. Therefore, a study designed to allow researchers to examine the ability of children with ASD to appropriately analyze scenarios that are less black-and-white or have children rate similar violations of varying degrees of similarity (e.g. a scenario where a child is pushed by another child vs. a scenario where a child is punched by an adult).

The purpose of the emotion component was to determine whether or not children with ASD were assessing the seriousness of an act or if they were more likely to attend to the emotional response of the victim. Because they show deficits in the ability to take the perspective of others, children with low ToM were predicted to be more prone to fixating on the emotional expression of the victim as a clue when making their judgment of act severity; however, results found that for the majority of the scenarios presented, the

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victim's emotional reaction did not appear to play a role in children's domain decisions regardless of ToM ability.

Perhaps one reason children with ASD may not be affected by the emotional cues of the victim because they are more focused on rule violations than the actual suffering of another person. It would be interesting to see how children with ASD would respond when evaluating intentional versus accidental harm to another person, especially when the victim exhibits emotional distress to the act. For example, how would a child with ASD respond to an intentional violation (hitting) that resulted in victim's distress versus an intentional violation that resulted in a neutral response. Would children with ASD be as accurate in these scenarios since they are more ambiguous?

Justifications

Justifications were coded using a system based on Smetana (1985) and included seven categories. Results found that children with ASD struggled to make justifications for their response. Most answers were coded as "uncategorized", meaning that they did not fall into any of the identified categories, because they often were reiterations of the act or "I don't know" responses rather than meaningful justifications for their decision. When ASD and TD children were combined, the pattern of justifications for moral transgressions were given moral explanations such as "It hurt him". Conventional transgressions did not have an observable pattern for responses.

In regards to actor justifications, moral transgressions tended to generate an observable pattern by TD children providing moral justifications and children with ASD providing uncategorized justifications. It was also the case that TD children tended to not rate the

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perpetrators as "bad" when they committed a conventional transgression. Responses from TD children often acknowledged that because there was only one observable offense, it was unclear whether that was a "bad" person or not, thus TD children tended to not rate conventional transgressors as "bad". Children with ASD, specifically those with low-ToM, did not demonstrate this same leniency for conventional transgressors and rated them as "bad"; however, they were rarely ever able to give appropriate justifications for their responses. As the low-ToM group exhibited a lower verbal mental age than the TD group or the high-ToM group, their lack of appropriate justifications may be due more to a language delay rather than an actual inability to understand why an actor was bad.

It may also be the case that because low-ToM children are unable to take the perspective of others, they are likewise unable to provide justifications that relate to how another person may feel. For example, although they were able to determine that insulting someone is wrong, they were unable to explain that it is wrong because it could hurt the victim's feelings. Because TD and high-ToM children are able to take the perspective of others, this may benefit them when trying to justify how a moral violation affects a victim.

Conclusions

In conclusion, domain distinctions appear to be maintained in children with ASD and unaffected by superficial emotional cues. Overall, children with ASD, both high and low ToM, were able to distinguish between moral and conventional violations. Children performed similarly on all the tasks with the exception that the low ToM group were much more severe in their overall ratings. These results support the argument that the

more basic elements of moral judgment (i.e., domain distinction) are intact in individuals with ASD. Though children with ASD may respond to the distress of an individual, they appear to have some awareness of the action itself. Children with ASD who exhibited deficits in their ToM were less tolerant of rule violators; however, they continued to rate moral violations as much worse than conventional violations. Like previous studies, these results indicate that children with ASD with ToM deficits are capable of understanding that some violations are worse than others. For example they know that conventional violations are bad but they assess them as much more severe and punish-worthy than TD children and children with ASD that exhibit an intact ToM, suggesting that they may not understand why they are bad.

Moral development is an important component of social development and can therefore be an avenue for which to teach socially impaired children rules that govern social behavior. One of the central deficits of children with ASD is there impaired social awareness (APA, 2002); however, they are still capable of maintaining one of the crucial elements of moral development which is understanding the difference between different types of social actions. Therefore, educators can expand their role of teaching children from right and wrong and can extend their focus on helping children with ASD to understand why (i.e. "justify") some violations are worse than others. For example, rather than simply teaching children with ASD that insulting another person is bad, they can provide reasons why insults can hurt another person. This advanced level of moral processing may help children with ASD learn how to initiate and maintain friendships more easily than previously thought and in turn, help them to establish themselves as contributing and productive members of society.

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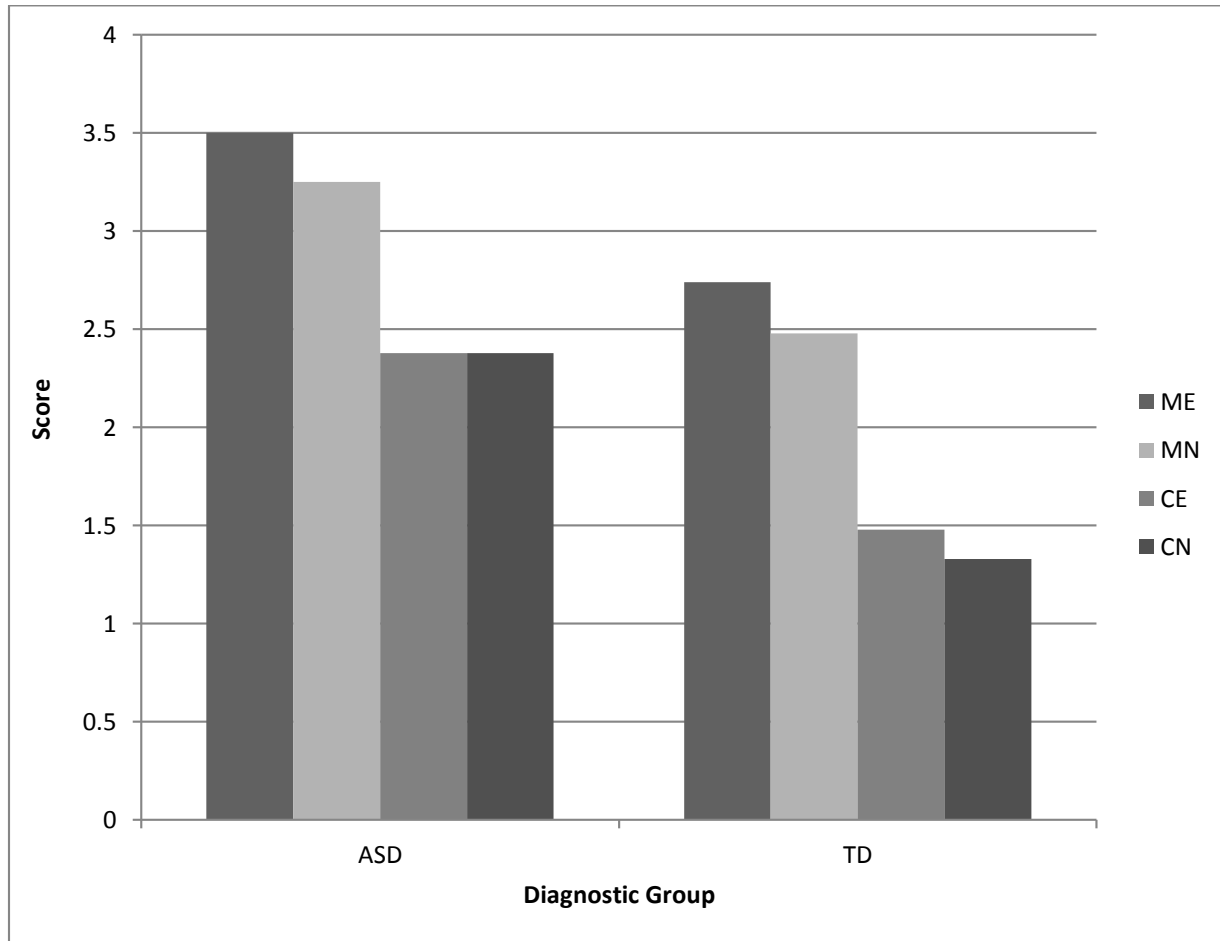
Figure 2.1: Act Judgment & Severity for Diagnostic Groups
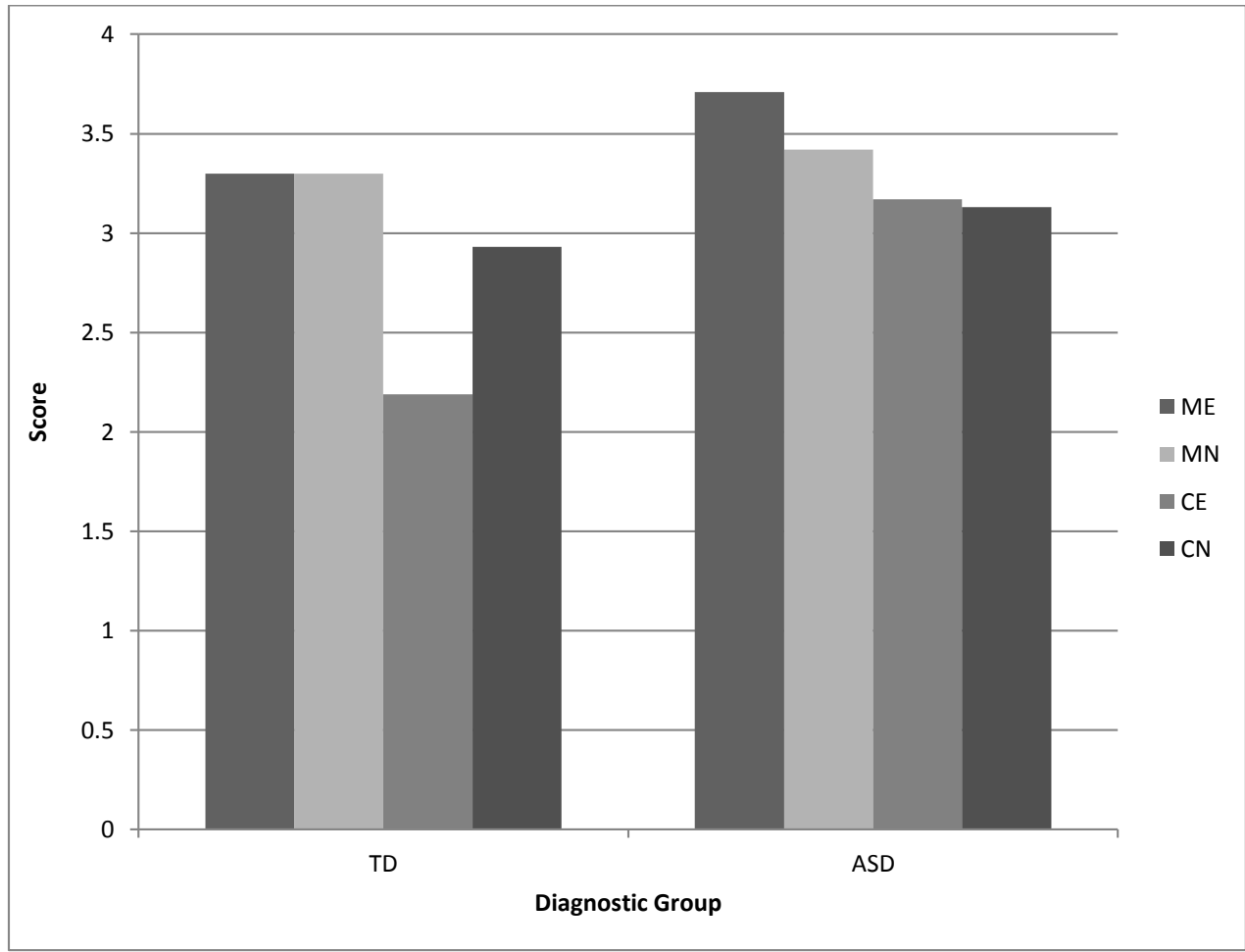
**Group Effect: The ASD group judged each domain as worse than TD group
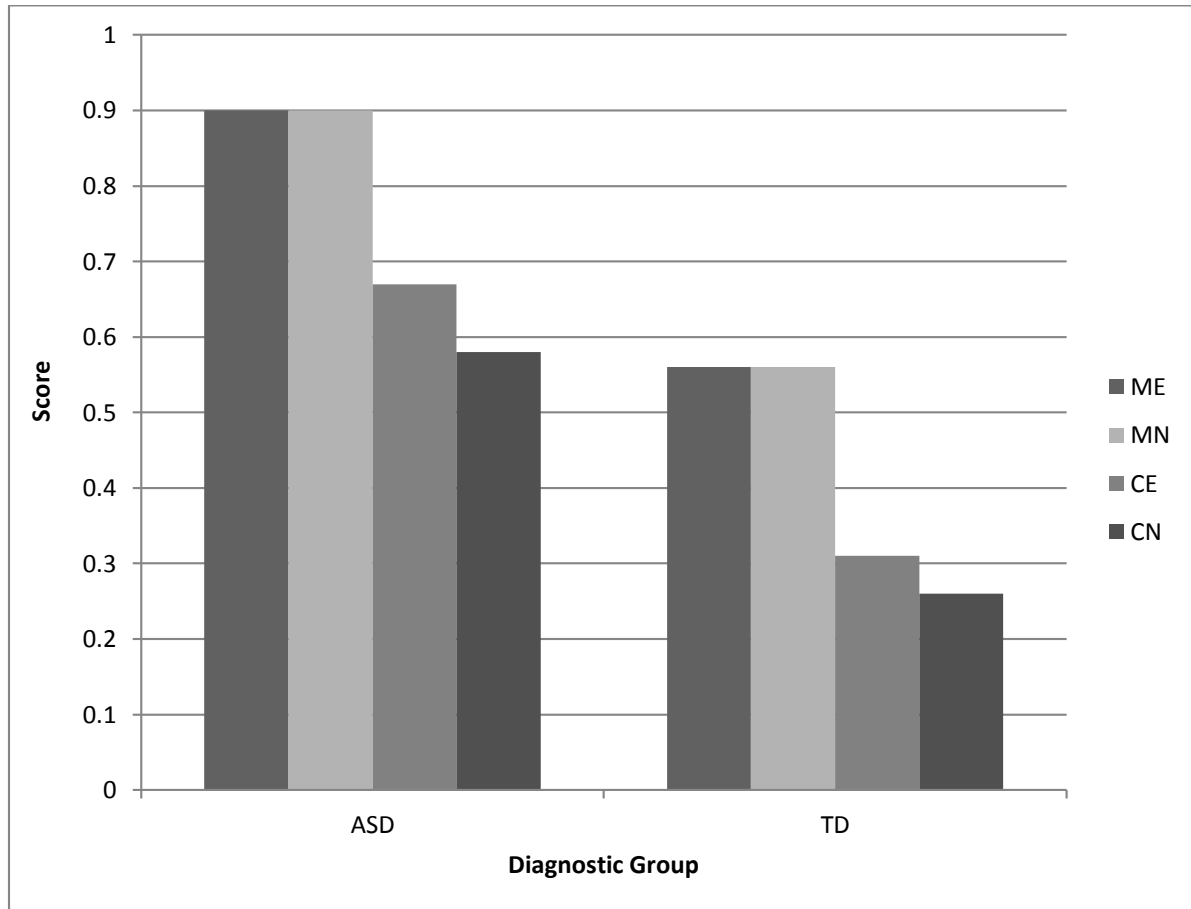**Main Effect: Both groups judged moral violations as worse than conventional violations.

Figure 2.2: Act Response & Severity for Diagnostic Groups

**Group Effect: The ASD group judged violations as "more punish-worthy" than the TD group.
**Domain Effect: Both groups judged moral violations as "more punish-worthy" than conventional violations.
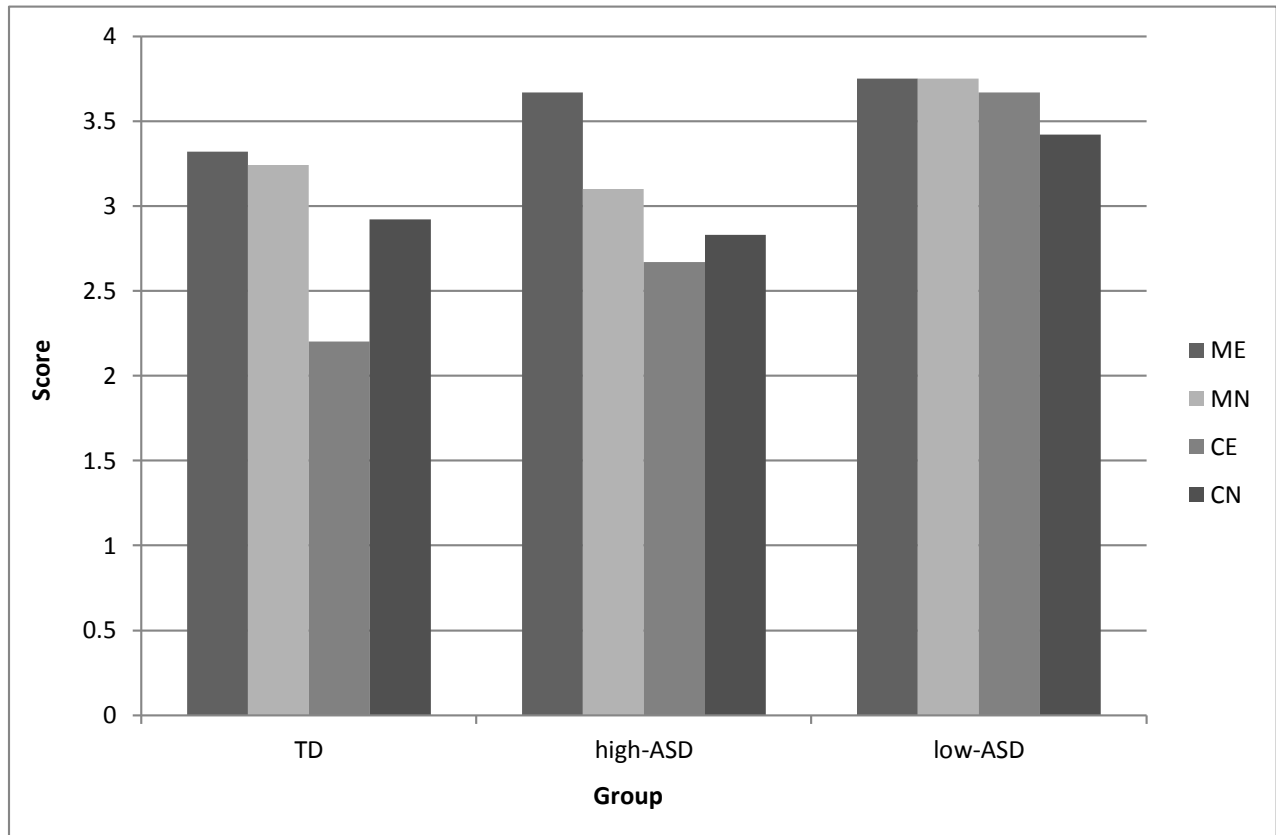
Figure 2.3: Actor Judgment & Severity for Diagnostic Groups

**Group Effect: The ASD group judged actors as worse than the TD group.
**Domain Effect: Both groups judged moral violators as worse than conventional violators.
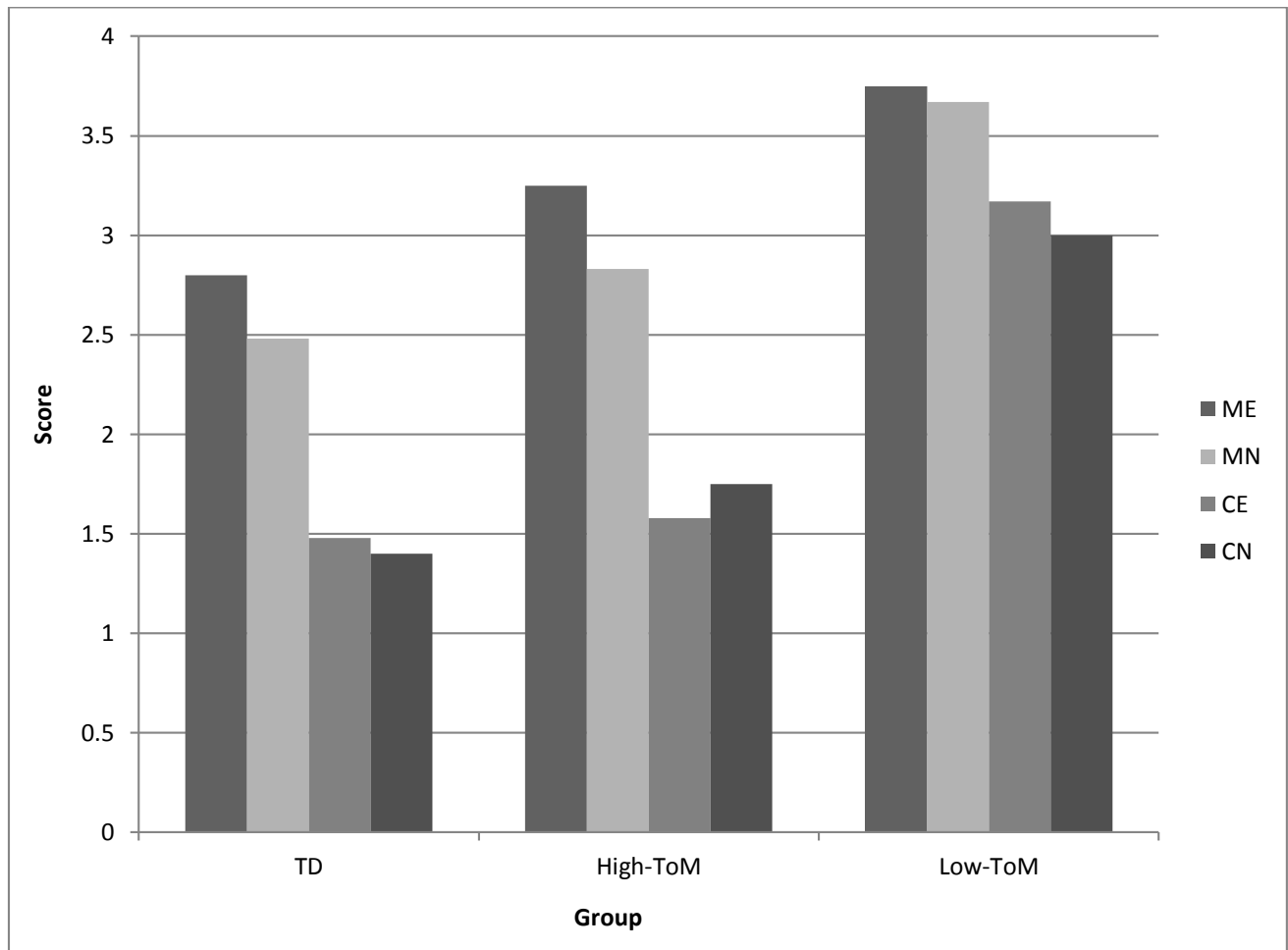
Figure 3.1: Act Evaluation & Severity for Groups

**Group Effect: The Low-ToM rated all domains as worse than the ASD & TD group. There was no significant difference between the ASD & TD groups.
**Domain Effect: All groups rated moral violations as worse than conventional violations.

Figure 3.2: Act Response & Severity for Groups

Group (x-axis), **Score** (y-axis)

Legend: ME, MN, CE, CN

**Group Effect: The Low-ToM rated all domains as worse "more punish-worthy" than the ASD & TD group. There was no significant difference between the ASD & TD groups.
**Domain Effect: All groups rated moral violations as "more punish-worthy" than conventional violations.

APPENDIX A

Demographic Information

Child's Name: _____ **Name of Person Completing Form**: _____

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1. Present age of child: _____   2. Indicate child's sex: Male   Female

3. Does the child have a diagnosis of Autism Spectrum Disorder: Yes   No

     a. If yes, at what age was the diagnosis given: _____

4. Does the child have any co-occuring diagnosis at this time?: Yes   No

     a. If yes, what is the diagnosis: _____   Age of 2nd diagnosis: _____

5. Indicate child's birth order and number of mother's other children:

a. Child is an only child
b. Child is first born of _____ children
c. Child is last born of _____ children
d. Child is middle born; _____ children are older and _____ are younger than this child.
e. Foster child, or don't know

6. Was the birth premature (birth weight under 5 lbs)?

a. Yes (about _____weeks early; _____ lbs)   b. No   c. Don't know

7. Unusual conditions of birth and infancy (check only one number in left-hand column):

a. Unusual conditions: Indicate which: blindness___ cerebral palsy___ birth injury___
seizures___ blue baby___ very high fever___ jaundice___ other___
b. Twin birth (identical _____ fraternal _____)
c. Both a and b
d. Normal, or don't know

8. Has the child been given an electroencephalogram (EEG)?

a. Yes, it was considered normal   b. Yes, it was considered borderline
c. Yes, it was considered abnormal   d. No, or don't know, or don't know results

9. Does the child look up at people (meet their eyes) when they are talking to him?
         a. Never, or rarely   b. Only with parents

10. At what age did the child say his first words (even if later stopped talking)?

         a. Yes Age when stopped: _____   b. No

12. Can the child understand what you say to him, judging from his ability to follow instructions or answer you?

         a. Yes, understands very well   c. Understands a little, if you repeat and repeat
         b. Yes, understands fairly well   d. Very little or no understanding

13. If the child talks, do you feel he understands what he is saying?

a. Doesn't talk enough to tell
b. No, he is just repeating what he has heard with hardly any understanding
c. Not just repeating--he understands what he is saying, but not well
d. No doubt that he understands what he is saying

Children were shown a scenario (e.g., one child stomping on another child's foot)

To assess Actor Evaluation, children were asked: "Was it bad for <u>ACTOR'S NAME</u> to do <u>ACT</u>?"

If children responded "Not bad" they were moved to Act Generalizability. If children responded "Bad", they were ask: "A little BAD or a lot BAD?". Once they responded, children were asked about Act Generalizability.

To assess Act Generalizability, children were asked: "Would it be OK for <u>ACTOR'S NAME</u> to do <u>ACT</u> at the PARK/HOME/SCHOOL?" Children were required to respond either "yes" or "no". Once they provided an answer they were asked about Act Response.

To assess Act Response, children were asked: "Should ACTOR'S NAME be PUNISHED for doing ACT?"

If children responded "No" they were moved to Rule Contingency. If children responded "Yes", they were ask: "A little PUNISHED or a lot PUNISHED?". Once they responded, children were asked about Rule Contingency.

To assess Rule Contingency, children were asked "If <u>ACTOR'S NAME</u><u>TEACHER/MOM</u> never said that <u>ACT</u> was BAD, would it be OK for <u>ACTOR'S NAME</u> to do <u>ACT</u>?" Children were required to respond "yes" or "no". Once the child provided their answer they were asked about Authority Contingency.

To assess Authority Contingency, children were asked "If ACTOR'S NAMETEACHER/MOM doesn't see ACTOR'S NAME do ACT, would it be OK for ACTOR'S NAME to do ACT?" Children were required to respond "yes" or "no". Once the child provided their answer they were asked to provide a justification for why they thought the act was bad. If a child had responded that the act was "not bad" they were asked why they thought the act was not bad. Once they provided their justification, children were asked about Actor Judgment.

To assess Actor Judgment, children were asked "Was ACTOR'S NAME Bad/Not Bad?" Once they responded, they were asked to justify their answer "Why was ACTOR Bad/Not Bad?"

APPENDIX C

May 25, 2012

Office for Research

Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

Jamie Cummings
Educational Psychology
College of Education
Box 870160

Re: IRB # 12-OR-194: "Moral Development in Children with ASD"

Dear Ms. Cummings,

The University of Alabama Institutional Review Board has granted approval for
your proposed research.

Your application has been given expedited approval according to 45 CFR part 46.
Approval has been given under expedited review category 7 as outlined below:

*(7) Research on individual or group characteristics or behavior (including, but
not limited to, research on perception, cognition, motivation, identity, language,
communication, cultural beliefs or practices, and social behavior) or research
employing survey, interview, oral history, focus group, program evaluation,
human factors evaluation, or quality assurance methodologies.*

Your application will expire on May 24, 2013. If the study continues beyond that
date, you must complete the IRB Renewal Application. If you modify the
application, please complete the Modification of an Approved Protocol form.
Changes in this study cannot be initiated without IRB approval, except when
necessary to eliminate apparent immediate hazards to participants. When the
study closes, please complete the Request for Study Closure (Investigator) form.

Please use reproductions of the IRB-stamped consent and assent forms.

Should you need to submit any further correspondence regarding this application,
please include the assigned IRB application number.

Good luck with your research.

358 Rose Administration Building
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Tuscaloosa, Alabama 35487-0127
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