

THE RELATIONSHIP BETWEEN PERCEIVED EMPATHY AND  
EMPATHETIC ACTION IN PARENTS OF CHILDREN  
WITH AUTISM SPECTRUM DISORDER

by

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## ABSTRACT

Empathy is linked with positive social outcomes and is important in the healthy functioning of society. Much of what we learn about emotions and appropriate behavior comes from what is exhibited by those closest to us. Parents are vital in facilitating the healthy development of empathy in their children. Children with Autism Spectrum Disorder (ASD) have been found to have deficits in displaying empathy. However, there is limited research on how raising a child with ASD can influence the parent's empathetic behavior. It also remains unclear whether self-report measurements of empathy accurately assess an individual's empathetic behavior. The goal of the current study was to examine the relationship between parent empathy and having a child with ASD and the discrepancies between parent empathy self-report and parent empathetic action during parent-child interaction. The influence of different variables such as parental well-being and the severity of the child's ASD symptoms were examined. Participants included 22 typically developing children and 19 children diagnosed with ASD and their caregivers. Results indicated that parents of children with ASD were more likely to display higher degrees of empathy with their children but were negatively influenced by their level of depressive symptoms as well as their child's deficits related to motivation. Child affect was found to be influential in both the typically developing and ASD cohorts. In general, self-report did not appear to be representative of the parent's empathetic action during the parent-child interaction however, parents of children with ASD who scored higher in personal distress tended to respond with higher degrees of empathy.

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## INTRODUCTION

Empathy is a skill that is vital to the human existence. Research suggests that without empathy, humans would fail to thrive and the social problems that plague our society would be much worse than they are today (Perry & Szalavitz, 2010). Empathy is what gives rise to the core values upon which society runs. Love, trust, charity, and cooperation would not be possible without humanity's ability to engage in empathy (Perry & Szalavitz, 2010). The development of empathy is influenced by both genetic and environmental forces. One important influence in the development of empathy is the quality of the caregiving environment. According to Social Learning Theory, emotional responses can be learned from observing the affective reactions of others (Bandura, 1971). It has been shown that people are more influenced by the affective displays of individuals whom they are close to or depend upon rather than those of strangers (Bandura, 1971). Therefore, parents who model empathetic behavior are instrumental in facilitating their children's empathetic learning process.

Parents raising a child with autism spectrum disorder (ASD) face unique challenges that may impact their ability to engage in empathetic behaviors with their children. This is especially important since it is widely accepted through findings in research that individuals with ASD also show deficits in displaying empathy (Schrandt, Townsend, & Poulson, 2009). The current study aimed to examine the relationship between parenting and empathy in families of children with ASD. More specifically, my goal was to assess whether parents' perceptions of their own empathetic behavior coincided with their empathetic action within the context of the parent-child interaction.

The influence of different variables that could affect this relationship such as parental well-being and the severity of the child's ASD symptoms were also examined.

### **The Development of Empathy**

Empathy is a psychological and behavioral experience that requires a great deal of insight and learning to exhibit. It can be defined as adopting the emotional perspective of another person through the ability to assess and understand the feelings of the other and take on another's point of view (Batanova, & Loukas, 2012; Campbell-Yeo, Latimer & Johnston, 2008). Empathy requires us to draw conclusions based on what we see, what we know, and our memories of similar feelings or experiences (Campbell-Yeo, Latimer & Johnston, 2008). Sharing the feelings of another person requires the capacity to take on the perspective of another individual. Therefore, the common saying, "put yourself in their shoes," is in fact a rather accurate interpretation of what empathy truly means. It requires feeling with the individual not just for them (Perry, & Szalavitz, 2010).

Empathy is often confused with sympathy. The confusion between the two can be explained through an exploration of the two major components of empathy. The cognitive component is referred to as perspective taking. This is the ability to know and understand what emotions an individual is feeling. The affective component is referred to as empathetic concern. This is the ability to adopt and feel the emotions of another individual and to appropriately display compassion and concern towards the person in distress (Batanova, & Loukas, 2012). Sympathy can be defined as the ability to understand what another person is going through (Perry, & Szalavitz, 2010). This coincides with the cognitive component of empathy discussed above. However, sympathy lacks the affective component of empathy that involves not only understanding what

another is feeling but, having the ability to experience those same feelings. Someone who is responding sympathetically may see a person in distress and feel sorry for them because he or she understands how they are feeling. However, someone who is responding empathetically will feel distressed upon seeing another person's suffering and be more likely to offer him or her assistance of some kind.

Humans are born with the biological capacity for empathy to form. In fact, we are neurologically equipped to facilitate the process. Recent research has found evidence of mirror neurons (Perry, & Szalavitz, 2010). These neurons are activated not only when we engage in activity but also when we see another individual engaging in the same activity. Mirror neurons allow us to feel what it is like to experience what others are experiencing. More evidence that the capacity for empathy is present from birth comes from research showing that infants love to imitate and be imitated (Perry, & Szalavitz, 2010). Mimicry is the imitation of another's behavior and it is considered a rudimentary form of empathy. A newborn baby will cry simply because another baby in the nursery is crying and is unable to distinguish the distress of the other baby from its own (Perry, & Szalavitz, 2010). Mimicry is thought to help facilitate the ability to understand the behavior of others as well as develop perspective taking (Hermans, Putman, & van Honk, 2006). This basic and innate tendency that humans have for this copycat behavior lends proof to the idea that we are biologically hardwired for empathy to develop.

Children do not become aware that the feelings of others are different from their own until about 18 months of age (Tong et al., 2012). This is because during their second year of life, children are beginning to form the concept of the self and how the self differs from others (Young, Fox, & Zahn-Waxler, 1999). At this time, children are learning to be



able to channel the distress that they feel from the plight of another into prosocial action. However, it is thought that these prosocial actions, which consist mainly of small physical gestures such as hugs or pats on the back, may still have some underlying egotistical motives for comforting the self as well as the other individual. When a child enters the third year of life, he or she becomes less egotistical and may vocally express their concern or try to understand the nature of the other individual's distress (Zahn-Waxler, 1991). The transition from toddlerhood into early and mid-childhood is marked by the formation of perspective taking abilities and moral reasoning. These attributes are what allow children to decipher more difficult and complex forms of emotional expression (Young, Fox, & Zahn-Waxler, 1999).

Empathy does not develop independently of external influences (Perry & Szalavitz, 2010). The development of empathy is fostered by a combination of internal forces, influences from the environment, and interactions with those around us (Tong et al., 2012). The impact of those closest to us is the most influential during the early stages of empathy development (Perry & Szalavitz, 2010). More specifically, the ability of parents to engage in behaviors that foster empathetic understanding is especially important. Parents can engage in imitation type play with their infants that may seem quite simple, but will actually help strengthen the associations between feeling, understanding, and experiencing, all of which are important to the development of empathy (Perry & Szalavitz, 2010).

### **Parenting and Children's Empathy**

The attachment relationship between an infant and caregiver is one of the most important emotional bonds formed during our lifetime. The attachment relationship is

influential in many aspects of development, including empathy (Panfile, & Laible, 2012). This is because a secure attachment relationship is based on warmth, support, and responsiveness. When an infant signals to their caregiver, the caregiver responds to help make him or her feel better. If the parent is consistent in their responsiveness to the child's distress, the child begins to expect that this responding will continue to occur. This is what creates a sense of security within the relationship (Bowlby, 1988). This sensitive and responsive behavior is the first model of empathetic concern that a newborn experiences (Tong et al., 2012). The parent functions as a secure base for the child to feel comfortable exploring his or her environment. Young children are likely to attempt tasks and situations that they can only succeed in with help from their parent because they believe that the parent will help guide them. This makes the degree of sensitivity present in parental support during these activities acts as a template for empathetic interaction (Tong et al., 2012). The parent needs to be able to recognize when the child is distressed, empathize with him or her, and take the necessary actions to help. Their sensitivity to children's emotional responses helps children learn what kinds of responses are appropriate to use in situations where others seem to be experiencing the same emotions that they felt (Tong et al., 2012). The attachment relationship will become the model from which children will draw upon and generalize to their interactions, including empathetic, with others outside the parent-child dyad (Zahn-Waxler, 1991). In addition, a secure attachment relationship helps foster the development of emotion regulation in children. Children observe their caregivers helping to calm their distress and use this as a template to learn how to self-soothe. Individuals who are adept at emotion regulation are more likely to respond empathetically because they are able to deal with their own

personal distress well enough to focus on the distress of another individual (Panfile, & Laible, 2012). Therefore, children who are secure in their attachment relationship display better emotion regulation and tend to be more empathetic (Panfile, & Laible, 2012). The importance of the attachment relationship demonstrates that parental sensitivity and empathy are vital to the foundation needed for raising empathetic children.

In addition to the security of the attachment relationship, the style of parenting can have an effect on the development of empathy. The most supportive style of parenting, known as authoritative parenting, is characterized in part by parents who provide a high degree of emotional support to their child. Baumrind (1967) found that preschoolers who behaved empathetically with their peers more often had parents who followed an authoritative parenting style rather than authoritarian or permissive (as cited in Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000). The success of authoritative parenting stems from children interpreting parents' behaviors based on the emotional climate that was formed within the context of their relationship. This emotional climate is formed when parents' feelings about their children are expressed openly and they are sensitive in their responses to their children's emotional experiences (Darling, & Steinberg, 1993). It is this validation of children's emotional experiences that leads them to develop healthy emotion regulation and empathetic responses. This allows them to be able to handle highly emotional situations on their own. This autonomy-supporting parenting style is associated with high empathy in children and adolescents (Tong et al., 2012). In the most simple of terms, parents who are empathetic will teach their children the necessary skills to be empathetic as well.

## **Empathy and Children's Outcomes**

The ability to empathize with another person is associated with a variety of positive outcomes. For example, highly empathetic children are less likely to be aggressive (Tong et al., 2012). The results of a study by Pavey, Greitemeyer, and Sparks (2012) suggested that promoting empathetic feelings by encouraging people to focus on the emotional experience of others may be one way to promote autonomously motivated helping behaviors (Pavey, Greitemeyer, & Sparks, 2012). It has also been shown that empathetic children display more advanced moral thinking. It is thought that is due to the fact that empathy provides children with an awareness and understanding of the physical and emotional pain that is felt by a victim. This awareness provides them with immediate feedback that discourages aggressive behavior and instead, promotes pro-social helping behaviors towards others (Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000). This suggests that empathetic children are more likely to maintain friendships and be well liked by their peers. On the other hand, children who have been shown to have low empathy are highly likely to have behavior problems and difficulty with communication in their interpersonal relationships (Perry & Szalavitz, 2010). This is due to aggressive children acting on their negative impulses because they lack the advanced moral reasoning that empathetic children use to inhibit these impulses. Instead, aggressive children act without apparent attention to how their action will affect the well being of others. Low empathy has also been associated with individuals who are anti-social. Children who are anti-social not only lack this concern for the well-being of others but are actually insensitive and uncaring towards those who need help (Hastings, Zahn-

Waxler, Robinson, Usher, & Bridges, 2000). These children are obviously not well liked by their peers and will have more problems when they enter adulthood.

### **Limitations in Measuring Empathetic Behavior**

Despite the undeniable relationship between parental empathy, empathy development, and the positive outcomes associated with empathetic children, little is known about the discrepancies between parental empathy self-report and their empathetic action during interactions with their children. Some studies have suggested that empathy is a skill that declines during adulthood. Since this is the time when most people are having children, parents may not be modeling empathetic actions as well as they might think (Richter, & Kunzmann, 2011). Is a parent's perception of their empathetic behaviors a good predictor of how empathetic they behave with their children? Self-report measures of empathy are very fast, easy to complete, and require little expense or equipment. They can also be more inclusive of many different emotions and therefore more accurately identify a person's emotion. When using observational methods, it can be difficult for the observer to correctly identify exactly what emotion is being felt or displayed by the participant. However, self-report measures assume that the individuals completing them are familiar with the language used to describe emotions. It can be argued that participants may not be able to understand or identify their emotions properly. Furthermore, we cannot assume that all participants will be truthful about how they have felt or acted in the past. Finally, participants may simply lack the objectivity to accurately report upon how they would feel or how they would act in a hypothetical situation (Batson, 1990). One study even found that self-report methods of empathy probably reflect how much individuals consider themselves to be empathetic rather than providing

researchers with an accurate description of how likely they are to react empathetically in real world situations (Richter, & Kunzmann, 2011).

### **Autism Spectrum Disorder and Empathy**

The impact of parent empathetic behaviors may be especially important for children diagnosed with ASD. ASD is a pervasive developmental disorder that presents with deficits in social functioning and communication abilities and often limited interests or repetitive behaviors (Schwenck et al., 2012). As previously stated, ASD has been linked with empathy deficits. Clinical observations of individuals with ASD suggest they have difficulties empathizing with other people (Yirmiya, Sigman, Kasari, & Mundy, 1992). The Empathy Imbalance Theory seeks to explain these difficulties by suggesting that ASD children have deficits in the cognitive component of empathy but not the affective component (Tong et al., 2012; Smith 2006, 2009). This means that it is not necessarily the individual's inability to feel with another person, but rather it is their inability to respond appropriately that causes problems. One explanation for these deficits in the cognitive component of empathy may stem from the limitations that ASD individuals experience in their communication abilities which makes it difficult for them to verbalize their feelings. This prevents them from being able to appropriately share their emotional state with others and also prevents them from understanding how to appropriately respond to the affective displays of other individuals. Research has also shown that typically developing children perform better on tasks where they are required to label the emotions of others when compared to children with ASD. This also applies to tasks requiring perspective taking and empathetic responding (Yirmiya, Sigman, Kasari, & Mundy, 1992).

According to Social Learning Theory, much of human behavior is learned either deliberately or inadvertently through modeling (Bandura, 1971). Research suggests that modeling and reinforcement may be helpful agents for teaching social skills to individuals with ASD. One study found that children with ASD as young as four years old could be taught empathy skills using these same techniques (Schrandt, Townsend, & Poulson, 2009). These findings imply that parents are extremely important in helping to teach their children with ASD empathy by modeling empathetic behavior for them. However, the strong connection between parenting and the development of empathy may help or hinder children under these circumstances. Parents of children with ASD experience high levels of stress, anxiety, and depression as a result of the difficult behaviors that their children tend to exhibit (Sharpley, Bitsika, & Efremidis, 1997). Parents experiencing heightened levels of stress may not respond empathetically to their child. Since modeling empathy is one of the best ways that parents can encourage healthy empathy development in their children, it is surprising that little is known about how having a child with ASD can affect a parent's empathy within the parent-child relationship. This begs the question: do these factors lead parents to miss important opportunities for modeling emotion sharing and empathy with their children? While there is a multitude of research about the many factors that can affect empathy in children, there is far less research concerning the factors that can affect how parents display empathy with their children. Some research has suggested that parental empathy can be affected by factors including self-confidence, stress, and depression (Walker & Cheng, 2007). Because a few of the implicated factors can arise from having a child with ASD, the relationship deserves more attention than is currently being allotted. The current study

aims to address this gap in the literature and examine the relationship between parental empathy and ASD children more closely.

### **Research Questions and Hypotheses**

As previously discussed, there is a relationship between parental empathy and the development of empathy in children (Yirmiya, Sigman, Kasari, & Mundy, 1992).

However, it is unclear if the empathetic responding of parents of children with ASD is somehow affected. The current study examined the following research questions:

1. Are there differences in empathetic responding between parents of children with ASD and parents of typically developing children? I hypothesized that parents of children with ASD would score lower than parents of typically developing children during the parent-child interaction due to previous findings suggesting that there is a relationship between having a child with ASD and displaying high levels of anxiety and depression. These heightened levels of anxiety and depression may prevent parents from interacting in an empathetic manner.
2. Within the group of parents of children with ASD, does the severity of their child's ASD symptoms and their mental health (e.g., depression) impact their empathetic responses? I hypothesized that parents of children with more severe ASD symptoms would present with more deficits in their empathetic action when compared to the parents of children with less severe ASD symptoms. This is because we would expect children with more severe symptoms to cause more difficulties for the parents to face, increasing the likelihood that these parents spend less time modeling empathetic behavior and more time dealing with the difficulties that these severe behavioral symptoms can cause.



3. Do the empathetic behaviors of all parents when observed with their children correspond to the levels of empathetic behavior they self-report? I hypothesized that parents would provide perceptions of their empathy via self-report that were higher than their observed level of empathy when interacting with their children. This hypothesis stems from the previous findings that self-report measurements lack the objectivity needed to accurately describe real world action.
4. Finally, does the level of empathetic responding displayed by the parent during the parent-child interaction depend on the child's affective response and does the child's status as typically developing or ASD influence this relationship? I hypothesized that a stronger affective display, such as a display of sadness or anger as compared to a display of frustration or anxiety, would evoke a stronger level of empathetic responding from the parent. This hypothesis is grounded in the idea that stronger displays of emotion are not only more easily recognizable but also may cause the parent a higher level of personal distress which may in turn increase the likelihood that they will respond empathetically to the child.

## METHOD

### **Participants**

The participants in this study were children (30 male, 11 female) ages 3-5 years (*M age in months* = 52.02, *SD* = 9.8) and their primary caregiver (1 father, 1 grandmother, and 39 mothers). The majority of the primary caregivers were married or living with a partner (92.7%) and only a small percentage described themselves as single (7.3%). The caregiver sample was primarily White/Caucasian (92.7%), middle class (80.5% with an annual income > \$50,000), and had at least a 4-year college degree (39%) or an

advanced/professional degree (41.5%). About half of the caregivers had a full-time job (46.3%) or a part-time job (14.6%) and about a quarter were unemployed (22%). The child sample was 90.2% White/Caucasian, 4.9 % Black/African American, 2.4 % Asian, and 2.4% other. One group of children had a diagnosis of ASD (17 male, 2 female) and a second group did not have any medical or psychological impairments (13 male, 9 female). Exclusionary criteria included presentation with genetic or metabolic disorders (e.g., Down Syndrome) and any other medical conditions that may affect development (e.g., Cerebral Palsy). Any children with vision or hearing impairments that would not allow them to complete the activities of the study were also excluded.

### **Procedure**

Before participating in the laboratory study, parents received a packet in the mail containing questionnaires and an overview of the study. Parents were instructed to bring the completed questionnaires with them to the scheduled laboratory visit. Upon their arrival, parents completed an informed consent and children provided assent. The current study is part of a larger study that includes several other tasks. The laboratory visit was conducted in a room containing a colorful ABC's mat, a small wooden table with two chairs, and child appropriate posters on the walls. The room was equipped with four cameras placed in different corners of the room and a two-way mirror through which the experimenters and camera operators could view the participants during the interaction. Following completion of the study, the children were given a small prize and parents were provided a gift card as compensation for their time and travel.

The current study used data from a series of puzzle tasks that the parent and child participated in together. Each dyad was assigned a set of three puzzles based on their age

at the time of their laboratory visit. The puzzles were presented one at a time by the experimenter who instructed the child to complete the puzzle (e.g., “Use these pieces to make a lion.”) and then instructed the parent to allow the child to work on the puzzle on their own but provide any help the parent thinks the child needs. The experimenter then exited the room. The first puzzle they received was designated the “easy” puzzle because the child was able to complete it with little assistance from their parent. The child was given two minutes to complete the “easy” puzzle. The dyads were then given the “medium difficulty” puzzle that is slightly more difficult and may require more assistance from the parent. The child was given three minutes to complete this puzzle. Finally, the dyads were presented with a “hard” puzzle designed to be impossible for the child to finish without the assistance of their parent. The child was given five minutes to complete this puzzle. All children were given the opportunity to complete an unfinished puzzle before moving on to the next puzzle.

### **Measures**

**Parent Depression.** The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) is typically used in community studies of depression and is used to assess four different affective components: depressed affect, positive affect, somatic complaints/psychomotor retardation, and interpersonal relation. It has been found to have a high degree of validity when compared with other scales measuring depression (Shean & Baldwin, 2012). The CES-D consists of twenty questions that aim to identify the level of any depressive symptoms that the individual has experienced within the last week. The questions are rated on a scale from 0 to 3 (0 =Rarely or None of the Time to 3 = Most or All of the Time.) The highest total that can be scored from this questionnaire is 60.

Higher scores reflect the presence of greater depression symptoms and a score of 16 or greater is the cut off for being at risk for clinical depression (Radloff, 1977).

**Child Symptom Severity.** The Social Responsiveness Scale (SRS; Constantino, 2002) was completed by parents to measure the severity of their child's social impairments. The questionnaire is aimed at identifying the child's behavior within the last 6 months. The SRS contains 65 total questions that address the child's communication behaviors and repetitive behaviors as well as other features related either exclusively or not exclusively related to ASD (Bishop et al., 2013). Some statements on the questionnaire include "Expressions on his or her face do not match what he or she is saying" and "Is able to communicate his or her feelings to others." The statements are rated on a four-point scale ranging from "Not True" to "Almost Always True."

**Child Affect.** A rating system was created for the current study to classify child affect. This rating system was developed based on research from previous studies (Coan & Gottman, 2007; Young, Fox, & Zahn-Waxler, 1999; Chaplin, Cole, & Zahn-Waxler 2005; Cole, Zahn-Waxler, and Smith, 1994). The current study assessed three components of negative affect: Anxiety/Frustration, Anger/Aggression, and Sadness. Each category was given specific facial, verbal, and physical action cues that were identified as indicators of that specific affective display (e.g., asking for help, appearing confused, or shaking head for Anxiety/Frustration). Research assistants were trained extensively using the coding system through Noldus, an event logging software, and were tested over a month-long period to ensure reliability before data collection was permitted to commence. Observers were instructed to identify instances in which the child was

displaying one of the above forms of negative affect for every ten-second interval in each video segment. Any positive affect displayed by the child (smiles, laughter, joyous outbursts, excited motions, etc.) or neutral affect (relaxed voice, neutral facial expressions, etc.) were coded under the description of No Negative Affect.

**Observed Parent Empathy.** The parent's level of empathetic response during the parent-child interaction was assessed using a coding system created for the current study based on previous studies (Jolliffe & Farrington, 2006; Coan & Gottman, 2007; Chaplin, Cole, & Zahn-Waxler, 2005; Radke-Yarrow, Wagner, & Zahn-Waxler, 1992; Decety & Jackson, 2004). Parent empathy response coding was applied only during previously identified episodes of child negative affect (see description above). This coding system identified a four-point range under which the parents' empathetic responses can fall. The four points are "No Empathetic Behavior Observed," "Some Empathetic Behavior Observed," "Moderate Empathetic Behavior Observed," and "Strong Empathetic Behavior Observed." The coding system details the parameters for each of these distinctions in detail and identifies three difference facets of empathy for each rating. The three facets are empathetic concern, prosocial behavior, and physical arousal (see Table 1 for brief descriptions). Research assistants who were trained for the child affect rating system were also trained to use the parental empathy coding system. The observers were trained over a month-long period to ensure reliability before coding was permitted to commence. The same observer completed both the child affect and the parental empathy coding for an individual dyad. A dyad was assigned to all the observers on a weekly basis to ensure that the observers remained reliable throughout the coding process.

**Parent Self-Report Empathy.** The degree to which the parents' rated their empathetic behavior was determined using the Interpersonal Reactivity Index (IRI; Davis, 1980). The IRI is a self-report questionnaire that consists of 28 questions that are divided into four subscales with seven questions pertaining to each subscale. Each subscale is structured to assess a different aspect of empathy. The Perspective Taking (PT) subscale is designed to assess an individual's ability to take on people's points of view in their daily life. A question pertaining to the PT subscale would resemble, "I try to look at everybody's side of a disagreement before I make a decision." The Fantasy (FS) subscale is intended to determine how likely an individual is to transplant oneself into the emotions and feelings of characters in works of fiction such as film or book characters. Questions pertaining to the FS subscale would resemble, "After seeing a play or movie, I have felt as though I were one of the characters." The Empathic Concern (EC) scale aims to determine how regularly an individual engages in feelings of concern, compassion, and warmth for others. A question related to the PT scale would resemble, "I am often quite touched by things that I see happen." The final subscale is Personal Distress (PD) and it is designed to measure an individual's emotional reactivity. Its focus is more on the individual's personal feelings of distress in regards to the emotional reactions of others and not on how concerned they are in reaction to the distress of others. A typical question pertaining to the PD scale would resemble, "I tend to lose control during emergencies." All of the questions are scored on a five-point scale (0-4) ranging from "Does Not Describe Me Well" to "Describes Me Very Well." Some of the questions are scored in a reverse fashion. All scales of the IRI have been tested for reliability and have been found

to present with competent test-retest reliability. However, it has been found that females tend to score higher on all of the scales than men (Davis, 1983).

Table 1  
Brief Definitions of Parent Empathetic Action Codes

<i>Parental Empathy Code</i>	<i>Definition</i>
No Empathetic Behavior Observed	Parent is not displaying any signs of facial, gestural, or vocal empathetic concern. Parent does not engage in prosocial behavior with their child and displays no change in physical arousal in response to their child's distress.
Some Empathetic Behavior Observed	Parent displays a few signs of facial, gestural or vocal empathetic concern. Parent engages in a slight amount of prosocial behavior (e.g. attempt may be half-hearted, short lived, or ineffective) and there is some sobering of attention to the child.
Moderate Empathetic Behavior Observed	Parent displays facial, gestural, or vocal concern with a moderate degree of enthusiasm and sincerity, may be at least once instance of facial matching or hypothesis testing aimed at identifying the child's distress. Moderate effort at prosocial behavior that may result in a positive reaction from the child and moderate physical arousal (e.g. may briefly touch the child).
Strong Empathetic Behavior Observed	Parent displays strong facial, gestural, or vocal concern and parent is able to correctly identify the child's emotion through hypothesis testing, Strong, genuine attempt at prosocial behavior (e.g. multiple attempts or prolonged attempt) and there is a high level of physical arousal (e.g. parent will pat, hug, kiss, or hold the child's hand).
Dismissive/ Discouraging Behavior Observed	Parent displays a lack of concern for the child's emotional displays and/or provides comfort but does not validate the concerns of the child (e.g. chastising the child for his or her emotional display, parent appears detached or indifferent, will tell the child he or she is "being silly" or may laugh at the child's distress).



## RESULTS

### **Descriptive Statistics**

Table 2 shows the means and standard deviations for all of the descriptive variables included in the current study. These variables include child affect, parent empathy, parent depression, and child ASD symptom severity (*See Table 2*).

Table 2  
*Descriptive Statistics of Study Sample*

Variable	Typically Developing Children ( <i>n</i> = 22)		Children with Autism Spectrum Disorder ( <i>n</i> = 19)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Child Affect</b>				
1. Anger/Aggression	.0079	.02127	.0123	.03404
2. Sadness	.0029	.00829	.0323	.09039
3. Anxiety/Frustration	.1909	.08107	.1808	.13865
<b>Parent Empathy</b>				
4. None	.0948	.06397	.0732	.06042
5. Some	.0787	.05073	.0961	.08630
6. Moderate	.0274	.04187	.0332	.05653
7. Strong	.0006	.00296	.0089	.02087
8. Dismissive	.0065	.01534	.0081	.00532
6. Parent Depression	7.8095	5.49199	18.2632	14.76047
<b>Parent Self-Report</b>				
7. Perspective Taking	21.3810	3.57038	18.1053	5.00993
8. Fantasy Scale	16.7619	4.76345	18.0526	5.77806
9. Empathetic Concern	22.4762	3.72316	21.1579	5.28376
10. Personal Distress	8.9524	3.99345	13.8947	6.16347
<b>Child ASD Severity</b>				
14. Awareness	5.76	2.45	14.53	3.24
15. Cognition	5.29	2.87	20.19	4.89
16. Communication	8.52	4.57	35.58	9.40
17. Motivation	5.38	3.68	15.74	4.95
18. Mannerisms	2.81	2.62	21.62	6.17

### **Preliminary Analyses**

Our preliminary analyses were aimed at identifying any statistically significant correlations between the data we incurred and the variables we were examining (see Tables 3 and 4 for correlations between study variables). For typically developing (TD) children, displaying anxiety/frustration was correlated with parent's engaging in none or some empathetic responding ( $r = .88, p < .01$ ) whereas moderate and strong empathetic responses were correlated with the child displaying sadness ( $r = .44, p < .01$ ). For children with ASD, displaying anger and aggression was correlated with parents' displaying no empathetic behavior ( $r = .63, p < .01$ ), moderate empathetic behavior ( $r = .52, p < .05$ ), and strong empathetic responses ( $r = .70, p < .01$ ). As shown in Table 3, sadness was also correlated with moderate and strong empathetic responses within this group (Mod:  $r = .81, p < .01$ ; Strong:  $r = .90, p < .01$ ). Moderate and strong responses grouped together were correlated with anger/aggression and sadness child affective displays (Anger:  $r = .58, p < .01$ ; Sadness:  $r = .85, p < .01$ ). None and some responses grouped together were correlated with the child displaying predominantly anxiety/frustration ( $r = .79, p < .01$ ).

Table 3  
*Bivariate Correlations Among Study Variables for Typically Developing Children*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Child Affect</b>																			
1. Anger/Aggression	—																		
2. Sadness	.51*	—																	
3. Anxiety/Frustration	.15	.29	—																
<b>Parent Empathy</b>																			
4. No Empathetic	.28	.20	.67**	—															
5. Some Empathetic	.16	.23	.71**	.21	—														
6. Moderate Empathetic	.27	.44*	.19	-.28	-.00	—													
7. Strong Empathetic	-.08	-.08	-.18	-.19	-.10	-.07	—												
<b>Parent Depression</b>																			
8. CESD	.27	.35	-.14	-.11	.056	-.00	.34	—											
<b>Parent Self-Report</b>																			
9. Perspective Taking	.23	.45*	.07	.15	-.03	.10	.04	.22	—										
10. Fantasy Scale	.10	.11	.27	.08	.32	.03	.16	.08	.18	—									
11. Empathetic Concern	.26	.27	.11	.20	-.07	.12	-.03	-.05	.49*	.55*	—								
12. Personal Distress	.02	.20	-.05	-.36	.34	.05	.29	.53*	-.09	.07	-.28	—							
<b>Child ASD Symptom Severity</b>																			
13. Awareness	-.06	.09	-.09	-.15	.22	-.17	.02	.18	.33	.15	.20	.06	—						
14. Cognition	.19	.08	.09	.00	.21	.03	.14	.53*	-.23	.05	-.27	.18	.17	—					
15. Communication	.31	.36	-.01	-.14	.05	.34	-.03	.55**	.09	.06	-.05	.02	.42	.59**	—				
16. Motivation	.24	.44*	.06	-.17	.28	.22	.16	.38	.44*	-.06	.03	.38	.64**	-.06	.30	—			
17. Mannerisms	.35	.34	.074	-.02	.07	.30	.10	.54*	-.04	-.14	-.07	.15	-.01	.68**	.59**	.11	—		
<b>Parent Empathy Groups</b>																			
18. None/Some	.29	.27	.88**	.83**	.72**	-.20	-.19	-.05	.09	.24	.10	-.06	.01	.12	-.07	.04	.02	—	
19. Mod/Strong	.26	.44**	.18	-.30	-.01	.99**	-.00	.02	.10	.04	.12	.07	-.17	.04	.34	.24	.31	-.22	—

\*Correlation is significant at the .05 level (2-tailed); \*\*Correlation is significant at the .01 level (2-tailed)

Table 4  
*Bivariate Correlations Among Study Variables for Children with ASD*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>Child Affect</b>																			
1. Anger/Aggression	—																		
2. Sadness	.81**	—																	
3. Anxiety/Frustration	-.08	-.05	—																
<b>Parent Empathy</b>																			
4. No Empathetic	.63**	.42	.46*	—															
5. Some Empathetic	.18	.26	.87**	.57*	—														
6. Moderate Empathetic	.52*	.81**	.30	.29	.52*	—													
7. Strong Empathetic	.70**	.90**	.22	.47*	.41	.92**	—												
<b>Parent Depression</b>																			
8. CESD	-.08	-.32	-.18	-.11	-.14	-.32	-.36	—											
<b>Parent Self-Report</b>																			
9. Perspective Taking	.22	.32	-.27	.07	-.14	.15	.18	-.17	—										
10. Fantasy Scale	.12	.26	-.00	.15	.02	.22	.30	-.20	.35	—									
11. Empathetic Concern	-.01	.37	-.16	-.04	-.11	.32	.42	-.03	.26	.33	—								
12. Personal Distress	.20	.34	.00	.24	.18	.42	.47*	.12	.15	.26	.38	—							
<b>Child ASD Symptom Severity</b>																			
13. Awareness	.55*	.40	-.12	.47*	.14	.21	.27	.09	.13	.09	-.24	.41	—						
14. Cognition	.02	-.21	.05	.37	.15	-.15	-.14	.24	.01	-.04	-.17	.15	.33	—					
15. Communication	.33	.11	-.04	.51*	.18	-.04	.01	.10	.43	.35	-.29	.26	.67**	.58**	—				
16. Motivation	.30	.15	.10	.45	.35	.11	.05	.27	.29	.19	-.22	.14	.51*	.55*	.67**	—			
17. Mannerisms	-.03	-.05	-.02	.34	.07	-.10	-.08	.27	.15	.02	.29	.16	.25	.745**	.41	.49*	—		
<b>Parent Empathy Groups</b>																			
18. None/Some	.41	.36	.79**	.84**	.93**	.48*	.49*	-.13	-.06	.09	-.09	.23	.31	.27	.35	.44	.20	—	
19. Mod/Strong	.58**	.85**	.29	.35	.50*	.99**	.96**	-.33	.16	.25	.36	.44	.23	-.15	-.03	.10	-.10	.48*	—

\*Correlation is significant at the .05 level (2-tailed); \*\*Correlation is significant at the .01 level (2-tailed)

### **Child Status and Parental Empathetic Responding**

In the first analysis, the parent empathy responses were combined to form two groups, No Parent Empathy combined with Some Parent Empathy group (None/Some) and the Moderate Parent Empathy combined with Strong Parent Empathy group (Mod/Strong). In regards to our first research question examining whether parent empathetic responses differed as a function of the child's status (ASD or TD), analysis of the data revealed that there was no statistically significant differences between the groups as determined by a one-way ANOVA (None/Some:  $F(1,39) = .55, p = .91$ ; Mod/Strong:  $F(1,39) = .01, p = .46$ ). When each of the parent empathy responses were evaluated separately, there also appeared to be no statistically significant difference for three of the response levels (None:  $F(1,39) = 1.22, p = .28$ ; Some:  $F(1,39) = .64, p = .43$ ; Moderate:  $F(1,39) = .14, p = .71$ ; Dismissive:  $F(1,39) = 1.67, p = .20$ ). However, the difference in responding between parents of children with ASD and parents of typically developing children was closest to statistical significance in the case of parents' displaying a strong empathetic response (Strong:  $F(1,39) = 3.35, p = .07$ ). This implies that parents raising a child with ASD may be more likely to strongly respond to their child's distress.

### **Child ASD Symptom Severity and Parental Empathetic Responding**

Severity of child ASD symptoms was examined to determine whether there was an effect on the parents' level of empathetic responding. Within the group of parents of children with ASD, a linear regression found no significant relationships; however, deficits in symptoms related to motivation were most closely related to parents of children with ASD responding with None/Some empathetic behaviors ( $R^2 = .19, B = .01, p = .06$ ). This could imply a relationship between children with ASD who experience

greater deficits in motivation and the level of empathy their parents display during interactions with them.

### **Parent Depression and Empathetic Responding**

Next, I examined whether parents' depressive symptomatology predicted their level of empathetic responding during the parent-child interaction. A linear regression analysis of the data found no statistically significant associations. The strongest relationship reported was a negative association within the parents of children with ASD between depressive symptoms and Moderate/Strong empathetic responding ( $R^2 = .11$ ,  $B = -.00$ ,  $p = .17$ ). This implies that lower levels of depressive symptoms are associated with higher displays of moderate/strong empathetic responses during the parent child interactions.

### **Parent Self-Report and Empathetic Responding**

Analysis of the data relating to whether parents' empathetic behavior during the parent-child interaction corresponded to their self-reported empathetic behavior revealed a significant relationship. For parents of children with ASD, higher self-reports of Personal Distress on the IRI predicted greater Moderate to Strong empathetic responses during the parent-child interaction ( $R^2 = .19$ ,  $B = .01$ ,  $p = .06$ ). There were no significant associations for parents of TD children.

### **Child Affect and Parental Empathetic Responding**

Finally, we conducted an analysis of the relationship between the most predominant type of affect that the child displayed during the parent-child interaction and the type of empathetic response that the parent engaged in most frequently. The results of a linear regression showed several relationships of statistical significance. Within the

group of parents of children with ASD, there was a statistically significant, positive relationship between a child being predominantly angry or aggressive and the parent displaying moderate or strong empathetic behavior ( $R^2 = .33$ ,  $B = 1.29$ ,  $p = .01$ ). In both the TD and ASD groups, moderate or strong empathetic responding by the parent was correlated to the child displaying predominantly sadness during the parent-child interaction (TD:  $R^2 = .19$ ,  $B = 2.19$ ,  $p < .05$ ; ASD:  $R^2 = .72$ ,  $B = .72$ ,  $p < .001$ ). In regards to the parents displaying either none or some empathetic behavior, a relationship was found to be statistically significant with the child displaying predominantly anxiety or frustration during the parent-child interaction for both the TD and the ASD groups (TD:  $R^2 = .78$ ,  $B = .98$ ,  $p < .001$ ; ASD:  $R^2 = .27$ ,  $B = .74$ ,  $p < .001$ ). These results showed that there is a relationship between the type of affect that the child displays and the level of empathetic response that it spurs from the parent.

### DISCUSSION

Research has shown us that individuals with ASD not only experience deficits in empathetic behavior but that modeling and reinforcement techniques have been successful at addressing these deficits (Yirmiya, Sigman, Kasari, & Mundy, 1992; Schrandt, Townsend, & Poulson, 2009). Since the affective displays of those closest to us are the most influential, it can be expected that children with ASD will respond best to modeling efforts that are engaged in by their parents rather than clinicians or treatment specialists (Bandura, 1971). Despite these findings, it has remained unclear whether the empathetic behavior of parents of children with ASD is negatively affected by their child's ASD symptoms or by the effects that parenting an ASD child can have on their mental well-being. In addition, previous research has implied that assessing empathy

using self-report methods may be an unsuitable technique for determining how empathetic parents actually behave with their children within the context of parent-child interactions (Batson, 1990; Richter, & Kunzmann, 2011). The current study attended to the limited research on the relationship between parenting a child with ASD and parental empathetic behavior. The questionable validity of the self-report method in regards to measuring empathetic behavior was also addressed.

The primary goal of this study was to identify whether parents of children with ASD responded in an empathetic manner to their children. Results indicated that parents of children with ASD were more likely to respond with higher degrees of empathy in response to their child's negative affective displays. Therefore, there may be factors related to parenting an ASD child that lead parents to display these more intense empathetic behaviors. Previous studies have found that mothers of children with ASD scored higher in positive parenting behavior, which encompasses displaying positive affect as well as a high degree of sensitivity (Maljaars et al., 2014). They were also more likely to adapt the environment to their children's needs (Maljaars et al., 2014). These research findings, in conjunction with the results of the current study, imply that parents of children with ASD may be more positive, understanding, and sensitive during instances when their children are displaying negative affect, which is why they appear to respond with higher degrees of empathy during the parent-child interaction. Another finding of the current study supports this deduction. Parents of children with ASD responded with higher degrees of empathy when their children were either predominantly angry or sad as compared to when their children were predominantly frustrated or stressed. Parents may simply be more understanding about the negative affective displays



of their children because it is common for children with ASD to have difficulties in externalizing behavior. This could be because they can more easily excuse difficult behavior or they may be more practiced at managing it.

Previous research has shown that parent behavior can be influenced by their child's ASD symptoms (Walker & Cheng, 2007). The results of this study expanded this previous research to show that parents of children with ASD responded with lower levels of empathy when their children presented with greater deficits in their motivational skills. This relationship could be explained by speculating that children who are not highly motivated may in turn lead their parents to be less motivated to respond with high degrees of empathy. In addition, lower levels of depressive symptoms were related to a higher level of empathetic responding in parents of children with ASD. As previously stated, parents of children with ASD have been found to show higher levels of depression due to the challenges they face (Sharpley, Bitsika, & Efremidis, 1997). This finding coupled with the findings of this study indicate that parents of children with ASD who are more depressed may be negatively affected by their child's ASD symptoms and this leads them to respond less empathetically with their children. Future studies should examine whether depression mediates the association between child behaviors and parent empathetic responses.

Another goal of this study was to determine whether parents' self-reports of their empathy matched their actual behaviors. I found that parents who scored themselves higher in the personal distress (PD) subscale on the IRI were higher in their degree of empathy when responding to their children's distress. This finding is curious given that Davis (1983) found that individuals scoring high on the PD subscale were more likely to

experience anxiety surrounding another individual's distress. This was thought to impair their ability to empathize with the other person because their personal feelings of distress were so overwhelming. It may be the case that parents of children with ASD experience these heightened levels of anxiety, only they are more adept at regulating their own emotions and focusing on the needs of their child. Even more interesting is the relationship found between high PD scorers and being more shy, socially anxious, and less extraverted. These characteristics are similar to those experienced by individuals with ASD (Davis, 1983). Family members of children with ASD may exhibit subclinical symptoms of ASD that is referred to as the *broad autism phenotype* (Piven, Palmer, Jacobi, & Childress, 1997). Therefore, it is possible that the parents in this study may be exhibiting some of these characteristics. Unfortunately, I did not measure the broad autism phenotype in this study.

### **Limitations and Future Directions**

There were several limitations in this study that must be addressed. First, the sample was relatively small and predominantly middle class Caucasian. It is possible that the lack of significant results is due to the small sample size. The children were predominantly male and the caregiver sample was made up predominantly of mothers. This makes the results of the study limited in their ability to be generalized to the larger population. Future research should aim to address these issues and use a more inclusive and larger sample. However, this does lead to some noteworthy questions for further research. It would be interesting to know if mothers are more empathetic in their behavior during the parent-child interaction than fathers. Furthermore, the findings of this study regarding parents of ASD children and their scores on the PD subscale of the IRI provoke

some intriguing questions about the relationship of parent empathy in parents of children with ASD and the presence of the *broad autism phenotype* in these parents. As this relationship was not examined in the current study, it would be worth examining in the future. In addition, it would be important to know whether the gender of the child has an effect on the degree of empathy with which the parent responds to him or her. Another limitation of the current study is that the observational measurements for both child affect and parent empathy were developed specifically for this study and therefore the reliability of the coding schemes have not been tested in other studies. Future research could test these measurement systems against other observational methods for assessing empathy to determine their validity and reliability.

### **Clinical Implications**

Understanding the relationship between empathy and parenting a child with ASD has important implications for the development of interventions and could be beneficial to clinicians and treatment specialists who aim to address empathy deficits in children with ASD. Knowing the factors that can influence parental empathy with regards to parents of children with ASD will allow these professionals to target parents who may be struggling with responding empathetically to their children. This, in turn, will allow them to provide parents with the resources they need to address these factors and also offer them education on how to model empathy with their children. Previous research has placed its focus on the deficits of the child but it is important to understand how the parents are affected to be able to provide the most effective and comprehensive interventions possible. As the findings of the current study suggest, there are many factors that can influence the degree of a parent's empathetic responding. However, if

clinicians are unable to determine effectively whether or not there are deficits in a parent's empathetic behavior, they will not be able to determine if intervention is necessary. That is why it is concerning that the findings related to the self-report of empathetic behavior suggest that it does not represent actual empathetic action within the parent-child relationship. This implies that self-report may not be a good way to determine if parents are in need of an intervention to aid them in their empathetic modeling skills in order to help them facilitate healthy empathetic development with their children. Empathy remains difficult to quantify and assess observationally. Nonetheless, observational methods may be more beneficial to unearthing these deficits in parental empathetic action.

### **Conclusions**

In conclusion, it was hypothesized that parents of children with ASD would respond less empathetically with their children than parents of TD children due to the added difficulties that come with parenting a child with ASD. However, the findings of this study indicate that this is only the case if the child experiences high deficits in his or her motivation skills and if the parent experiences a higher level of depressive symptoms. In contrast, parents were more likely to display higher levels of empathetic behavior when their children were displaying more intense affective displays. Since this is common of children with ASD, it follows that this may be the reason parents of children with ASD were found to respond with higher levels of empathy in the parent child interaction. Finally, the self-report measurement used to assess empathy in this study was not found to be representative of the assessment of the parent's empathy in the parent-child interaction as measured by the observational coding system. This tentatively implies

that self-report may not be a reliable assessment of parent's empathetic actions within the context of the parent-child interaction.

## REFERENCES

- Bandura, A. (1971). *Social learning theory*. New York: General Learning Press.
- Batanova, M. D., & Loukas, A. (2012). What are the unique and interacting contributions of school and family factors to early adolescents' empathic concern and perspective taking? *Journal of Youth and Adolescence, 41*(10), 1382-1391.  
doi:10.1007/s10964-012-9768-5
- Batson, C. D. (1990). 16 Self-report ratings of empathic emotion. *Empathy and its Development, 356-369*.
- Bowlby, J. (1988). Lecture 7: The role of attachment in personality development. In A secure base: *Parent-child attachment and healthy human development* (pp. 119–136). New York: Basic Books.
- Campbell-Yeo, M., Latimer, M., & Johnston, C. (2008). The empathetic response in nurses who treat pain: concept analysis. *Journal of Advanced Nursing, 61*(6), 711-719.
- Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005). Parental Socialization of Emotion Expression: Gender Differences and Relations to Child Adjustment. *Emotion, 5*(1), 80-88. doi:10.1037/1528-3542.5.1.80
- Coan, J. A., & Gottman, J. M. (2007). The Specific Affect (SPAFF) coding system. In J. A. Coan and J. J. B. Allen (Eds.) *Handbook of Emotion Elicitation and Assessment* (pp. 106-123), New York, NY: Oxford University Press.
- Constantino, J. N. (2002). *The Social Responsiveness Scale*. Los Angeles: Western Psychological Services

- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin, 113*(3), 487-496. doi:10.1037/0033-2909.113.3.487
- Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *JSAS Catalog of Selected Documents in Psychology, 10*, 85.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*(1), 113-126. doi:10.1037/0022-3514.44.1.113
- Decety, J., & Jackson, P. L. (2004). The Functional Architecture of Human Empathy. *Behavioral and Cognitive Neuroscience Reviews, 3*(2), 406-412.  
doi:10.1177/1534582304267187
- Elliott, T, Shewchuk, R, & Richards, J.S. (2001). Family caregiver problem solving abilities and adjustment during the initial year of the caregiving role. *Journal of Counseling Psychology, 48*, 223-232.
- Hastings, P. D., Zahn-Waxler, C., Robinson, J., Usher, B., & Bridges, D. (2000). The development of concern for others in children with behavior problems. *Developmental Psychology, 36*(5), 531.
- Hermans, E., Putman, P., & van Honk, J. (2006). Testosterone administration reduces empathetic behavior: A facial mimicry study. *Psychoneuroendocrinology, 31*(7), 859-866. doi:10.1016/j.psyneuen.2006.04.002
- Hus, V., Bishop, S., Gotham, K., Huerta, M., & Lord, C. (2013). Factors influencing scores on the Social Responsiveness Scale. *Journal of Child Psychology and Psychiatry, 54*(2), 216-224. doi:10.1111/j.1469-7610.2012.02589.x

- Jolliffe, D., & Farrington, D. P. (2006). Development and validation of the Basic Empathy Scale. *Journal of Adolescence, 29*(4), 589-611.  
doi:10.1016/j.adolescence.2005.08.010
- Panfile, T. M., & Laible, D. J. (2012). Attachment security and child's empathy: The mediating role of emotion regulation. *Merrill-Palmer Quarterly: Journal of Developmental Psychology, 58*(1), 1-21. doi:10.1353/mpq.2012.0003
- Pavey, L., Greitemeyer, T., & Sparks, P. (2012). "I help because I want to, not because you tell me to": Empathy increases autonomously motivated helping. *Personality and Social Psychology Bulletin, 38*(5), 681-689. doi:10.1177/0146167211435940
- Perry, B. D., & Szalavitz, M. (2010). *Born for love: Why empathy is essential--and endangered*. HarperCollins.
- Piven, J., Palmer, P., Jacobi, D., & Childress, D. (1997). Broader autism phenotype: Evidence from a family history study of multiple-incidence autism families. *The American Journal of Psychiatry, 154*(2), 185-190.
- Radloff, L. S. (1977). The CES-D scale: A self report depression scale for research in the general population. *Applied Psychological Measurements, 1*, 385-401. doi: 10.1177/014662167700100306
- Richter, D., & Kunzmann, U. (2011). Age differences in three facets of empathy: Performance-based evidence. *Psychology and Aging, 26*(1), 60-70.  
doi:10.1037/a0021138
- Schrandt, J. A., Townsend, D. B., & Poulson, C. L. (2009). Physical activity in homes 13 teaching empathy skills to children with autism. *Journal of Applied Behavior Analysis, 42*(1), 17-32.



- Schwenck, C., Mergenthaler, J., Keller, K., Zech, J., Salehi, S., Taurines, R., ... & Freitag, C. M. (2012). Empathy in children with autism and conduct disorder: Group- specific profiles and developmental aspects. *Journal of Child Psychology and Psychiatry*, 53(6), 651-659.
- Sharpley, C. F., Bitsika, V., & Efremidis, B. (1997). Influence of gender, parental health, and perceived expertise of assistance upon stress, anxiety, and depression among parents of children with autism. *Journal of Intellectual and Developmental Disability*, 22(1), 19-28. doi:10.1080/13668259700033261
- Shean, G. D., & Baldwin, G. (2012). The latent structure of the Center for Epidemiological Studies-Depression scale. *Journal of Psychopathology and Behavioral Assessment*, 34(4), 502-509. doi:10.1007/s10862-012-9296-3
- Tong, L., Shinohara, R., Sugisawa, Y., Tanaka, E., Yato, Y., Yamakawa, N., & ... Japan Children's Study, G. (2012). Early development of empathy in toddlers: Effects of daily parent-child interaction and home-rearing environment. *Journal of Applied Social Psychology*, 42(10), 2457-2478. doi:10.1111/j.1559-1816.2012.00949.x
- Yirmiya, N., Sigman, M. D., Kasari, C., & Mundy, P. (1992). Empathy and cognition in high-functioning children with autism. *Child Development*, 63(1), 150-160. doi:10.2307/1130909
- Young, S. K., Fox, N. A., & Zahn-Waxler, C. (1999). The relations between temperament and empathy in 2-year-olds. *Developmental Psychology*, 35(5), 1189-1197. doi:10.1037/0012-1649.35.5.1189
- Zahn-Waxler, C. (1991). The case for empathy: A developmental perspective. *Psychological Inquiry*, 2(2), 155-158. doi:10.1207/s15327965pli0202\_16

Zahn-Waxler, C., Radke-Yarrow, M., Wagner, E., & Chapman, M. (1992). Development of concern for others. *Developmental Psychology*, *28*(1), 126-136.

doi:10.1037/0012-1649.28.1.126