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THE INFLUENCE OF AUTISM SEVERITY ON MATERNAL PERCEPTIONS OF
ATTACHMENT

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By

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ABSTRACT

THE INFLUENCE OF AUTISM SEVERITY ON MATERNAL PERCEPTIONS OF ATTACHMENT

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Master of Arts in Psychology, Clinical Psychology

Autism can be described as a complex developmental disorder that includes impairments in social interaction and communication skills combined with rigid, repetitive behaviors. The disorder, also known as Autism Spectrum Disorder, covers a broad spectrum of symptoms, skills, and levels of disability or impairment. Autism can range in severity from a handicap that somewhat limits an otherwise normal life to a devastating disability. Children with autism often behave in a manner that suggests they do not develop strong relationships or attachment with their mothers or maternal care givers.

The goal of this study was to determine the relationship between the severity of autism spectrum disorder and level of maternal attachment. Through an online self-administered survey, 29 mothers of children diagnosed with autism spectrum disorder responded to questions exploring key variables including the mother's perception of their child's attachment, the severity of their child's autism symptoms, and the level of the mother's maternal stress. In order to allow for quantitative analysis, standardized autism symptom cluster and maternal perception scales were utilized in the survey instrument.

Correlation analyses demonstrated a negative correlation between autism symptom severity and a mother's perception of their child's attachment. As the child's autism symptom severity increased, the less secure attachment was reported by the mothers. Multiple regression analyses confirmed the Sensory-Relating Symptom Severity Cluster as a good predictor of a mother's perception of a less secure attachment with their child with autism.

This study also demonstrated a statistically significant positive correlation between autism symptom severity and a mother's level of stress. Implications for this research in understanding maternal perceptions of attachment to their children with autism spectrum disorder were discussed. Certain limitations in the study also were identified such as a sample size, participant recruitment, and a lack of maternal coping mechanisms.

Section 1: Introduction

As social beings, humans interact with many people and develop multiple relationships over a lifetime. In infants, attachment causes a baby to look for closeness with a familiar caregiver when they are alarmed, with the expectation that they will receive protection and emotional support. Children's social and emotional behaviors are greatly influenced and shaped by the attachment figures they have formed relationships with and their attachment figures experiences since birth. Healthy psychological development according to John Bowlby (1992) begins at infancy where the child and mother both experience a warm, intimate relationship. This relationship is continuous throughout their lives (Bretherton, 1992).

Simply stated, "attachment is an emotional bond between one and another. They are bound together in space and this tie endures over time" (p. 203) (Bowlby, 1977). The most significant of all attachment figures in a child's life is the primary caregiver, most commonly the mother. She provides a safe and secure base allowing for the child to feel confident in exploring their environment. The child knows if something were to go awry, they can retreat to the refuge of their mother (Bretherton, 1992).

The mother-child relationship is thought to have the greatest impact on the child's life and is the foundation for the child's social, emotional, and cognitive behavioral development. Fraiberg (1959) stated, "Personal identity, the core of humanness, is due to the early bond a child develops with a parent, specifically the mother" (p. 81). Infants are completely dependent on their parents for survival, however in this current study mothers will be considered the primary caregivers as they have been predominantly studied in past research. Malekpour (2007) reported "infants are merely present in the context of

the relationship” (p.81). They rely and expect the parent to provide them with food, shelter, and nurturing in order to survive. He further stated that this relationship will facilitate the mother-child attachment as a “powerful predictor of social and emotional outcomes” (p.81) (Malekpour, 2007).

John Bowlby’s theory of attachment suggests a child has a biological, innate need to attach to their primary attachment figure (Bowlby, 1988). Bowlby also believes that through evolution mothers have a built-in need to stay close to their children. “It is important that the care by the primary caregiver be continuous for at least the first two years of the child’s life in order for the child to avoid the consequences of maternal deprivation: delinquency, increased aggression, a lower level of intelligence, and depression” (Bowlby, 1988). The long-term relationship with the primary caregiver enables the child to develop an internal working model where the child becomes aware of their attachment behaviors. The child will draw upon their memories of events of attachment with their mother and apply them to their daily interactions. This model gives the child a mental imprint of the world and their environment that will provide direction throughout life in decision making, future relationships, and survival (Bretherton & Munholland, 1999).

To understand maternal-child attachment, it is important to first recognize the behaviors associated with attachment, how attachment is developed, and how they impact the relationship. As Bowlby claimed, children have a biological need for attachment; Bowlby also stressed attachment behaviors are instinctive and goal driven. There is not a single motivation but rather multiple driving factors that is implied in all proximity-seeking behaviors. These behaviors are triggered or activated by any condition that may

prevent or take away proximity or contact to the mother, such as separation. The behavior may either bring the child close to the mother or the mother close to the child. Bowlby (1969) noted that a natural mechanism for survival is the fear of strangers. Specifically, he stated the behaviors (social releasers or signaling behaviors) that infants and toddlers express in order to keep close proximity to the mother are crying, smiling, and crawling. Young children also may express active proximity and contact-seeking behaviors, such as approaching, following or clinging. Each behavior set has predictable outcomes and functions to protect the child from danger (Ainsworth & Bell, 1970).

It is not necessary for the mother-infant interaction to be in close physical contact, only close enough to the set-goal. There is a balance between proximity-seeking behavior and its outcomes. As the child grows, he becomes more inquisitive about their environment and begins to explore beyond the perimeter of their mother. The child's mother also has their own needs and responsibilities to attend to such as housekeeping, other children, and outside activities. However, if the child should wander too far or be distracted by the environment, the mother would bring her child back to her location (retrieval behavior) or the child may choose to return to her on their own.

Development of Attachment

Attachment is developed, according to Bowlby, over four phases. In the first phase, the pre-attachment phase (newborn to 6 weeks), an infant responds to anyone they encounter. Babies track with their eyes, grasp, smile, reach, and cry or stop crying with anyone they hear or see. The infant pays close attention to human faces and follows them when they move. At this age, babies also react to inanimate moving objects like a mobile. Through perceptual learning, infants are able to differentiate the familiar from the

unfamiliar and are attentive to the familiar (Ainsworth, 1969). They begin to withdraw from those they do not recognize (Ainsworth, 1969).

In the second phase, the formation of attachment, (6 weeks to about 6-8 months), the infant is able to differentiate between their mother and others. The infant engages most of their attention and proximity-seeking towards the mother. Their responses are different when reacting to the sound of their mother's voice compared to another individual (Ainsworth, 1969). Even if the child responds to someone else before their mother, their reaction will still be different due to the formed attachment.

In the third phase, the attachment phase (6-8 months to 18-24 months), the child, by means of simple cognition stays close to its mother. The child may show signs of separation anxiety. The child becomes alarmed and may cry or act restless if the mother is out of sight. Once the mother returns, or the child hears her voice, the child becomes calmer.

In the fourth phase, creating internal working models of relationships, (18-24 months and through the life-span) the child now understands the mother's goal and can expect the mother's reaction, even when separated. The child behaves in a manner that alters the mother's behavior to be more like the child's by means of persuasion. The child also becomes more independent and forms many attachments. Children are eager to take chances of separating from their mothers to explore their environment. At this stage, the child takes their learnings of attachment with them throughout their adult life.

Styles of Attachment

Studies conducted by Mary Ainsworth helped to refine Bowlby's theory of attachment by looking at infant attachment behaviors and mothers' responsiveness. Her

work formulated three styles of attachment: secure, anxious-ambivalent, and avoidant. All of these styles were based on results from the Strange Situation test. Each style described the child's general state of being and the mother's responsiveness to the child's behaviors during a series of separation and reunion episodes between mothers, their 12- to 18-month-old child, and a stranger in a laboratory playroom setting. Initially, the mother left the room while the stranger played with the child, and then returned after a short period of time. A second separation occurred when the child was left alone. After another short period of time, the stranger reappears right before the mother enters the room to be reunited with the child. In 1986, Mary Main and Judith Solomon formulated a fourth style, disorganized. For purposes of this study, only Ainsworth's styles of attachment are utilized: securely attached, anxious-resistant attached, and avoidant. Due to the low frequency of disorganized children, we will not look at these.

Ainsworth found that securely attached children see their primary attachment figure, the mother, as their protector. Her results indicated these children had a positive expression of contentment and closeness once the mother returned and were able to resume play. They feel comfortable to explore their environment and are comforted by the attachment figure in times of need and suffering (Main & Cassidy, 1988). The child has a general feeling of security and is basically happy. Mothers who provide a strong sense of security are more precise in reading their infants' cues of suffering. The mother's response is usually quick, sensitive, and consistent with the child's attachment behaviors.

The Strange Situation also revealed two styles of insecure attachments: anxious-resistant attachment and an avoidant attachment. Ainsworth found in an anxious-resistant

attachment, the child was distressed in the presence of the stranger, even while the mother was in the room. Their exploratory behavior is limited and demonstrates an increase in distress when separated. Upon reunion, the child's proximity and contact-seeking behavior is reduced; they are more distressed, angered, and show resistance to physical contact or interaction (Vaughn, Egeland, Sroufe, and Waters, 1979). Finally, Ainsworth noted that children who experienced an avoidant attachment with their mothers ignored them, had flat affect, and participated in behaviors to keep them from focusing on their distress.

Attachment in Children with Autism

The majority of research has found children with autism are securely attached to their mothers despite their impairment in reciprocal social interaction. Studies have found evidence that these children exhibit behaviors of distress when searching for their mothers while separated. They also indicated a preference for the mother over a stranger when they reappeared (Bernabei, Camaioni, & Levi, 1998, Patone & Rutgers, 1984, Sigman & Ungerer, 1984, and Spencer, 1993). Sigman and Ungerer (1984) studied the social behaviors of 14 children with autism and 14 children of comparable mental age. All children were observed during free play and while separated from and reunited with their mothers and a stranger. As a whole, the children with autism showed evidence of attachment to their mothers.

Rutgers' and colleagues (2004) found that an average of 53% of mother-infant dyads were securely attached in their meta-analysis of 26 studies of children with autism utilizing the Strange Situation Test. They found that children with autism were not as securely attached to their parents when compared to children without autism. However,

this difference in attachment diminished in samples with children with higher mental development and in samples in which autism consisted of less severe symptoms of autism spectrum disorders. Unique to Rutgers' work was their finding that severity of autism correlated inversely with the degree of secure attachment.

Maternal Perception of Attachment in Children with Autism

There have been few research studies of maternal perceptions of attachment in children with autism. To date, most of the research focused on Bowlby's, Ainsworth's, and their colleagues' work on maternal-child attachment, indicating children with autism are able to form secure attachments. However, mothers still perceive their children to be insecurely attached to them. Two separate studies were conducted with mothers and children to assess the mother's perception of their child's attachment. Hoppes and Harris (1990) studied mothers of children with autism and mothers of children with Down's Syndrome (Trisomy 21). Vanmeter (1995) studied mothers of children with autism and mothers of children who had an intellectual disability. Both studies discovered that the mothers of children with autism perceived their children to have less attachment behaviors than the mother groups with intellectual disability or Trisomy 21. Sakaguchi and Beppu (2007) also studied maternal perceptions of attachment. They looked at mothers and their pre-school aged children with autism and mothers with children of the same age with other disabilities. Their findings also indicated that the mothers of children with autism perceived their children to lack attachment behaviors compared to those with other disabilities.

Goodman and Glenwick (2012) examined the relationship between a parent's perceptions of their child's attachment to them, to parenting stress, parent-rated child

severity of autism, and parenting competence. They found that maternal perception of the child's level of attachment was “related to the mothers’ perceptions of their child's functional impairment, but not to their sense of parenting competence” (Goodman & Glenwick, 2012).

Hoppes and Harris (1990) utilized the maternal perception of child attachment measure (MPCA) to assess maternal perception of childhood attachment because of its validity and reliability. The study reported data that supported the construct validity for the MPCA. They found significant differences between the Trisomy 21 group and the autism group on the measures of maternal perception of child attachment. Mothers of children with autism reported less perceived attachment than the mothers with Trisomy 21 (Hoppes & Harris, 1990).

Maternal Stress

The demands of parenting can be stressful to all parents. However, parents of children with disabilities reported higher levels of stress than parents of children with normal growth and development (e.g., Baker-Ericzen et al. 2005; Bouma and Schweitzer, 1990, Kuhn and Carter, 2006; Tomanik et al. 2004). For mothers of children with autism, stress seems to be more intensified than with other caregivers because mothers are the primary caregivers who deal with constant demands on a daily basis. (Patzold, Richdale, & Tonge, 1998; Wolf, Noh, Fisman, & Speechley, 1989). It is for this reason that mothers were chosen for this study as they appear to be the caregiver most affected by their child’s disability.

Research revealed that certain symptoms and behaviors in children with autism have been found to be related to their parents level of stress (i.e. language and

communication impairments, cognitive difficulties, reactivity to frustration, and self-stimulatory behaviors) (Huang et al., 2013). However, there is a limited amount of research on severity of autism and maternal stress as measured by criteria in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). Studies conducted by Tobing and Glenwick, (2002) and Huang et al. (2013) explored the relationship of severity of autism to parenting stress utilizing the Childhood Autism Rating Scale-Parent version (CARS-P). Huang et al. found that parents of children with autism with mild to moderate autism symptoms perceived lower parenting stress than did those of children with severe symptoms. Symptoms of autism as categorized by the DSM-5 in social communication and repetitive behaviors are similar to those described in the Childhood Autism Rating Scale (CARS). The only difference is in the DSM-5 severity in these two categories are separately categorized. For example, a child with mild social communication problems can have severe repetitive behavior problems.

Tobing and Glenwick used a scale that was a modified version of the Childhood Autism Rating Scale (CARS). It included 14 items that were self-administered to parents. Items were written in an understandable way for the readers, such as “Unusual ways of relating to objects” (e.g., spinning cups) and “Appropriateness of emotions” (e.g., giggling, crying, etc.) (Tobing & Glenwick, 2002). Parents rated each symptom on a four point scale to determine the degree of severity. Tobing and Glenwick found that the severity of autism was positively correlated to the level of stress reported by parents. Parental ratings of severely impaired language (verbal communication), cognitive functioning (intellectual impairments), and social relationships (relating to others) received the highest stress ratings. Another study conducted by Freeman et al. (1991) also

found a relationship between severity of autism and parental stress. However, he found this relationship to be stronger with regard to the mother than with the father.

The Parenting Stress Index (PSI) is a 101-item, self-reported instrument developed as a screening and diagnostic assessment tool to identify parent and child relationships which are under stress, and which abnormal development of the child is likely to come about, or where dysfunctional parenting is likely to occur. The PSI instrument focuses on three key domains: 1) stresses related to child characteristics; 2) parental characteristics; and 3) situation and demographic factors. The PSI yields a total score, three domain scores, and 15 subscales. The procedures used to develop the PSI and to document its validity, reliability, and normative properties are documented in the PSI Manual (Abidin, 1983).

Although the PSI is considered to have strong properties, the PSI is long and the time to complete the instrument may be prohibitive and exaggerated when being completed as part of a series of other psychological tests. In response to this challenge, Abidin (1983) developed a 36-item complement to the instrument, the short form (PSI-SF) based on factor analyses of the PSI that identified a three-factor solution with the three dimensions labeled as: 1) Difficult Child; 2) Parent-Child Dysfunctional Interface; and 3) Parent-Child Dysfunctional Interaction. Abidin (1983) validated the PSI-SF using two samples of mostly White, primarily married mothers of young children (mean age under 4 years). The correlation between the total scores on the long and short form was reported as high ($r = .87$). Subsequent studies have been completed to test the validity of the PSI-SF due to its increased use and the important decisions being made based on its findings (Haskett, Ahern, Ward, & Allaire, 2006).

In 2006, Haskett, Ahern, Ward, and Allaire published the Factor Structure and Validity of the Parenting Stress Index-Short Form study. At the time of the study, the authors believed, given the important clinical management decisions being made using the PSI-SF, further validity testing was warranted. The Haskett, Ahern, Ward, and Allaire study enrolled 204 parents and children (185 parents) to study the impact of social adjustment on young children. The objectives of the study were to: “a) examine the influence of socialization factors and children’s social information processing operations on social competence of abused and non-abused children and b) to investigate interactions of emotional and social cognitive functioning in the prediction of parenting competence.” (p.303) (Haskett, Ahern, Ward, & Allaire, 2006). The results of the study, through factor analysis, revealed a significant relationship between parental distress and dysfunctional parent-child interactions. The authors reported both scales to be internally consistent, and the scales were correlated with parent psychopathology, parental perceptions of child adjustment, and observed parent and child behavior. The PSI-SF scores were found to be related to reported responses by parents one year later, and the Childrearing Stress subscale was determined to be a significant predictor of parental history of abuse (Haskett, Ahern, Ward, & Allaire, 2006).

Severity of Autism Spectrum Disorder

“Autism Spectrum Disorder is characterized by impairments in reciprocal social communication and social interaction, and restrictive, repetitive patterns of behavior, interests, or activities” (American Psychiatric Association, 2013). Symptoms present themselves from early childhood and make every-day functioning difficult. Impairments

vary and become visible at different stages depending on the individuals attributes and their environment.

Severity for autism spectrum disorder is categorized into three levels of required support by the DSM-5 (American Psychiatric Association, 2013). The levels of support range from the least severe “required support” (Level 1), “substantial support” (Level 2), to the extreme “very substantial support” (Level 3) (American Psychiatric Association, 2013). The DSM-5 specifies the severity for the two main areas of concern for individuals with autism spectrum disorder: social communication and restricted, repetitive behaviors. It acknowledges that severity may vary by situation and over time.

Children with autism spectrum disorder who are classified as Level 3, “require very substantial support” in social communication and show severe impairments in functioning due to major deficits in their verbal and nonverbal social communication skills. These children are very limited in initiation of social interactions, and express minimal response to social approaches from others (e.g., only responded by using very few words or to initiated interactions that would meet their needs). Children classified as Level 3, under the category of restricted/repetitive behaviors, displayed extreme rigid behaviors — extreme difficulty coping with change — or displayed other restricted/repetitive behaviors that greatly interfered with daily functioning. They also have remarkable distress and difficulty changing focus or action (American Psychiatric Association, 2013).

Children who “required substantial support” in social communication have poor verbal and nonverbal social communication skills and have limited initiation of social interactions, show inappropriate social behaviors even with support, and a lack of or

abnormal response to social interactions with others. They speak in short simple terms, show little interest in social activities, and display odd non-verbal communication. (American Psychiatric Association, 2013). Children categorized as having Level 2 impairments in restricted/repetitive behaviors category display rigid behaviors, difficulty coping with change, distress and/or difficulty changing focus or action, or other restricted/repetitive behaviors that are noticeable by others and interfere with the child's functioning in a range of circumstances.

Children who were categorized as “requiring support” in social communication had insufficiencies in social communication that caused noticeable social deficiencies if no support was in place. They had a lack of interest in social interactions — initiating social interactions was difficult — and they responded atypically to others. A child with Level 2 Communication impairment may be able to speak in full sentences and communicate with others, but most conversations failed and friendly relationships were odd and rarely successful (American Psychiatric Association, 2013). Children classified as “requiring support” in the restricted/repetitive behaviors category, had rigid behaviors that interfered with functioning in daily activities, such as switching between activities organizing and planning. These interferences made it more difficult to become independent (American Psychiatric Association, 2013).

Volkmar, Cicchetti, Dykens, Sparrow, Leckman & Cohen (1988) studied the scoring of the Autism Behavior Checklist (ABC). Children who presented with overall scores of equal to or greater than 68 were categorized as having autism. Scores between 54 and 67 points were considered to have a moderate probability of autism, and scores between 47 and 53 points were considered inconclusive. Scores below 47 indicated that

there was an unlikely probability of the child having autism. In 2005, Marteleto and Pedromonico completed a study to assess the validity and scoring of the Autism Behavior Checklist (ABC) in its ability to compare children previously diagnosed with autism and language disorders, and children who had no verbal or behavioral complaints. The mean total score was significantly higher in the group with autism than in other groups. Children that were correctly identified as having autism utilizing the ABC demonstrated mean ABC scores of 81.6%. A cutoff score of 49 and a 92.1% sensitivity (the ability of the test to correctly identify those with autism) level was identified. This was higher than the sensitivity level when a cutoff score of 68 was used. However, the specificity remained to be about the same (Marteleto & Pedromonico, 2005).

Krug et al. (1993) found the Autism Behavior Checklist to be both reliable and valid. Krug et al. (1993) ran the following analysis that revealed the following alpha coefficients: Sensory ($\alpha=.59$); Relating ($\alpha =.75$); Body and Object Use ($\alpha =.76$); Language ($\alpha =.60$); Social and Self Help ($\alpha =.57$) (Marteleto & Pedromonico, 2005). These alpha coefficients revealed high internal consistency within each of the clusters. The two highest were Relating and Body and Object Use, which is why relating was used to predict maternal perception of attachment. The total score had an alpha coefficient of .89. In 2005, Marteleto and Pedromonico published a study completed to examine the concurrent and criterion validity of the Autism Behavior Checklist. The ABC was administered by a psychologist to three study groups: 1) mothers with children diagnosed with autism (ADG); 2) mothers with children diagnosed with language disorders (LDG); and 3) mothers with children without a diagnosis of autism or language disorder. The initial statistical analysis focused on the initial criterion for the test of positivity

established by the authors of the instrument. Using this methodology, the ADG group had significantly higher total ABC scores than the other two groups (above 68). The scores exceeded the original total score of 68 cutoff for a diagnosis of autism identified by the instrument's authors. Marteleto and Pedromonico later built a Receiver Operating Characteristic (ROC) curve with the aim of identifying a cutoff point for the diagnosis of children with autism. Two validity indices were identified for the purposes of quantifying the sensitivity and specificity of the ABC instrument: 1) total score of 67/68 and 2) 48/49. Marteleto and Pedromonico's study validated the concurrent validity through their results which demonstrated the ADG group had significantly higher total ABC scores than the other two groups. The ROC curve sensitivity and specificity analyses demonstrated the total 48/49 ABC score provided a significantly higher level of sensitivity compared to the 67/68 index (92.11% versus 57.89%) and a similar level of specificity (92.63% versus 92.11%). These studies support a high level of confidence in the ABC's ability to accurately diagnose autism (Marteleto & Pedromonico, 2005).

The purpose of this study was to clarify which characteristics, as measured on the Autism Behavior Checklist (Volkmar, Cicchetti, Dykens, Sparrow, Leckman, & Cohen, 1988) were most significantly related to maternal stress utilizing the Parenting Stress Index. It also investigated the degree to which autism severity impacted maternal ratings of children's attachments. The following hypotheses were investigated in this study.

- There will be a positive correlation between the severity of symptoms and maternal perception of child attachment.
- Sensory and relating impairments in the child are the best predictors of insecure attachment according to the mother.

- There is a positive correlation between autism severity and maternal stress.

Section 2: Methods

Participants

Participants in this study were 29 (n=29) mothers of children with autism between the ages of 6 and 12. Of the 29 participants, 28 were residents of the United States of America and one was a resident Australia (determined through email addresses). Study participants were recruited through invitation letters sent to mothers of children with autism identified through databases maintained by autism and special needs organizations. In addition, health care providers and advocacy groups were contacted, and they provided referrals of potential study participants. Upon completion of the study, participants received an honorarium gift card of \$20.00.

Three (10%) mothers were 45 years of age or older; 17 (59%) were between 35 and 44; and 9 (31%) were 34 or younger. Participant ethnicity included 10 (34%) Caucasians, 2 (7%) African Americans, 6 (21%) Latinos, 3 (10%) Asians, and 8 (28%) other.

Maternal social economic status was recorded as annual income. There was a total of 14 income categories. However, participants only reported income across six different categories. Nine mothers either did not provide a response. Table 1 provides a breakdown of the annual reported income categories of the mothers who responded to the survey.

Table 1

Summary of Maternal Social Economic Status – Annual Income Responses

	<i>Percent</i>	<i>N</i>
Less than \$11,988	7.00	2
\$12,000 to \$29,989	21.00	6
\$30,000 to \$59,989	24.00	7
\$60,000 to \$95,989	14.00	4
\$96,000 and Above	3.00	1

The children's mean age was 7.97 years ($SD = 1.92$). Twenty-four (82%) were boys and five (18%) were girls. Sixty-five percent of mothers reported that their child had comorbid disorders: attention deficit hyperactivity disorder (31%), anxiety disorders (24%), oppositional defiance disorder (14%), learning disability (17%), obsessive compulsive disorder (10%), depression (7%), reactive attachment disorder (3%), eating, sleeping or elimination problems (21%), intellectually disabled (7%), and other (28%).

Procedure

A consent form and confidentiality agreement (Appendix A) was sent to participants by email. The documents provided a description of the study and included a link to the online survey instrument. Participants were informed the goal of this study was to determine the relationship between the severity of autism spectrum disorder and the associated impact on the level of maternal attachment.

Participant consent was verified through their selection of the link to the online survey within the emailed consent form and confidentiality agreement. Each participant was assigned a unique identification number by the online survey program. The survey instrument was organized into two sections. Section one included three key assessment measures: 1) autism severity; 2) perceived dependence; and 3) maternal stress. Section two incorporated demographic questions to facilitate a complete analysis of dependent variable relationships. Study participants were instructed to complete both parts of the survey as completely as possible; however, participants were advised that they could leave any items blank that they did not feel comfortable answering. They also were informed that they had an option to withdraw from the study at any time.

Measures

Maternal Perception of Child Attachment (MPCA)

The Maternal Perception of Child Attachment (MPCA) scale (Goodman & Glenwick, 2012) was used to measure how mothers perceived their child's attachment to them. The items assessed the degree to which a mother viewed her child as initiating various types of interactions (either verbal or physical), the degree to which she believed that her child identified with and mimicked her, the degree to which the child was sensitive to the mother's feelings, and the degree to which the child was able to engage in shared intimacy. The scale consisted of 23 items rated on a 5-point scale with higher scores reflecting the mother's perception of a stronger child attachment (Hoppes & Harris 1990). The scale included items such as: "When my child is hurt or in pain, s(he) comes to me for comfort and help;" "My child seems to seek my attention mostly when s(he) wants me to give him/her something;" and "When my child and I are reunited after having been apart for a few hours, my child will demonstrate a lot of pleasure in seeing me again (greeting me with a warm smile, moving close to me, touching me, etc.)" (Goodman & Glenwick, 2012).

Autism Behavior Checklist

The Autism Behavior Checklist (ABC) was used to measure autism severity (Volkmar, Cicchetti, Dykens, Sparrow, Leckman, & Cohen, 1988). The ABC was completed by the mother and consisted of 57 questions. Questions included two key areas of focus: 1) current behavioral functioning: and 2) historical information. These questions were clustered into six symptom categories: sensory, relating, body/object use, language, social, and self-help. Participants checked items based on the existence or nonexistence

of a specific characteristic in their child. Items were not weighted equally as some symptoms are more reflective of autism attributes. For example, “whirled self for long periods of time” received four points, while “did not follow simple commands” received only one point. Higher scores reflected a greater degree of impairment. Based on results from the Marteleto and Pedromonico 2005 study, a cutoff score of 49 was used in this study to qualify the child as having autism.

Parenting Stress Index/Short Form (PSI/SF)

The Parenting Stress Index/Short Form (PSI/SF) was used to measure maternal stress. The PSI/SF consisted of 36 items separated into three subscales. Each subscale consisted of 12 items each. The Parental Distress subscale produced a score that indicated levels of stress resulting from individual factors such as depression or conflict and from the demands of child-rearing. The Parent-Child Dysfunctional Interaction subscale provided an indication of the mothers’ frustration level with their children and the degree to which mothers found their children intolerable. The Difficult Child subscale measured mothers’ perceptions of their children’s ability to manage their behaviors. It also included seven items from the Parental Distress Scale that indicated how much the mother attempted to deny or minimize problems. All 36 items were rated on a 5-point Likert-type scale indicating the degree to which mothers agreed with each statement. Higher scores indicated greater levels of parental stress. The current study used a total stress score as an overall assessment level of maternal stress.

Section 3: Results

Results indicated that mothers who reported more symptoms of autism severity perceived their child to be more insecurely attached to them. They also reported that sensory/related symptoms predicted maternal perception of child attachment. Mothers who reported more symptoms of autism severity also reported more maternal feelings of stress.

Correlational Analysis

Correlational analyses were conducted to see if there were bivariate relationships between the severity of autism and maternal perception of child attachment, groups of symptoms and maternal perception of child attachment, and severity of autism and maternal feelings of stress.

The means and standard deviations for the independent variables (i.e., sensory, relating, stereotypes, language, self-help, and severity total) of the children with autism and the dependent variables (i.e., attachment and stress) experienced by the mothers included in this study are presented in Table 2. All analyses were conducted using SPSS for Windows.

Table 2

Descriptive Statistics for the Independent and Dependent Variables

	<i>M</i>	<i>SD</i>
Attachment	74.66	10.40
Stress	103.48	18.82
Age of Child	7.97	1.92
Age of Mother	38.93	6.45
Sensory	12.14	6.02
Relating	22.31	8.37
Stereotypies	18.28	7.73
Language	14.59	7.21
Self-Help	17.62	4.73
Severity Total	85.28	25.35

In the study, the mean age of the children was 8 years old and the mean age of the mothers was 39. The mean score for the MPCA attachment measure ($M=74.66$), indicated the mothers perceived their child to be insecurely attached to them. The severity of autism measure, as reported by the mothers ($M=85.28$), was moderate to severe (85.28). Mothers also reported to be highly stressed ($M=103.48$).

Autism severity was found to be negatively correlated with maternal perception of child attachment, $r = -0.388$, $n = 29$, $p = .038$. Mothers who reported more symptoms of autism severity in the child perceived their child to be more insecurely (less secure) attached to them. Table 3 presents the zero-order correlational analysis of the variables investigated in this study.

Table 3

Summary of Zero-Order Correlational Analysis on Severity of Autism, Maternal Feelings of Stress, and Maternal Perception of Child Attachment

	Relating	Stereotypies	Language	Self Help	Total	PSI	Attachment
Sensory	.69**	.34	.52**	.35	.80**	.40*	-.55**
Relating		.33	.42*	.44*	.82**	.48**	-.48**
Stereotypies			.34	.48**	.67**	.29	.003
Language				.30	.70**	-.06	-.22
Self Help					.66**	.29	-.07
Total						.38*	-.39

* $p < .05$; ** $p < .01$

There also was a negative correlation between the sensory symptom cluster and the relating symptom severity cluster to maternal feelings of attachment. The sensory symptom severity cluster consisted of the following indicators: poor use of visual discrimination when learning (i.e., fixation on parts of objects such as size, color or position), little to no “startle response” to a loud noise, little to no blinking when a bright light was directed toward the child’s eyes, and sensitivity to sounds resulting in the child covering his or her ears (Krug, Arick, & Almond 1978). The relating symptom severity cluster consisted of the following items: not responding to social and environmental cues, not responding to other people’s facial expressions or feelings, and maintaining a flaccid body posture when held in arms. The sensory symptom severity cluster and the relating symptom severity cluster were also positively correlated to one another, $r = .69$, $n = 29$, $p < .001$.

Consequently, the two clusters were combined and another correlation was run to validate the relationship between sensory/relating symptom severity cluster and maternal

perception of attachment. Results showed that there was a negative correlation between the sensory/relating symptom severity cluster and maternal perception of attachment.

The Pearson correlation coefficient for the sensory symptom severity cluster was $r = -.55$, $n = 29$, $p < .01$ indicating a negative correlation between a mother's perception of child attachment and sensory severity. Mothers who reported more sensory severity symptoms also reported being more insecurely (not securely) attached to their child. The Pearson correlation coefficient for relating symptom severity cluster of the child and mother's perception of child attachment was $r = -.48$, $n = 29$, $p < .01$, indicating a negative correlation between mother's perception of child attachment and relating severity. Mothers who reported more relating severity symptoms also reported to be less securely attached to their child. The Pearson correlation coefficient for maternal stress and maternal perception of child attachment was $r = .38$, $n = 29$, $p < .05$. The more autism symptoms that were reported by the mother indicated more feelings of stress.

Table 4

Summary of Zero-Order Correlational Analysis on Severity of Autism and Perception of Maternal Child Attachment

	Self Help	Language	Stereotypies	Attachment
Sensory/Relating	.43	.50	.36	-.55**
Self Help		.30	.49	-.07
Language			.34	-.22
Stereotypies				.00

** $p < .01$

Multiple Regression Analysis

A multiple regression analysis was used to determine which group of severity symptoms (i.e. sensory/related, stereotype behaviors, language or self-help) predicted mother's perceptions of their children's attachment.

As hypothesized, the sensory/relating symptom severity cluster significantly predicted maternal perception of attachment scores, $F(4,24) = 3.45$, $p < .05$. The multiple correlation coefficient was .60, indicating that approximately 36.5% of the variance of sensory/related symptom severity cluster explained maternal perception of attachment scores, $\beta = .69$, $t(28) = -3.42$, $p < .05$. The more sensory/related symptoms the mother reported, the more the mother perceived the child to be less securely attached to her. Stereotype, language, and self-help severity symptom clusters did not predict maternal perception of attachment.

Table 5

Summary of Multiple Regression Analysis on Maternal Perceptions of Child Attachment and Sensory/Relating Severity

Predictor Variables	B	SE	β
Sensory/Related	-.54	.16	-.69**
Stereotypies	.24	.26	.18
Language	.04	.28	.03
Self Help	.31	.43	.14

Multiple R = .60

$R^2 = .365$

Adjusted $R^2 = .26$

**F-Value = 3.45

Notes: b= unstandardized betas; β = standardized betas

Discussion

The purpose of this study was to first determine if there was a relationship between autism severity and maternal perception of child attachment, and, if so, which group of symptoms were predictors of mothers' perceptions of child attachment. The study also explores the question of whether there was a relationship between autism severity and maternal feelings of stress.

The results of this study indicated that mothers who reported children with more severe symptoms related to autism perceived their children to be more insecurely attached to them. This indicated that the more severe the symptoms of autism a child has, the more difficulty they had in showing affection to their mothers. The results also demonstrated mothers who reported more sensory and related symptoms perceived their children to be insecurely attached to them.

Based on these findings, one may conclude, mothers who observed an avoidance or a lack of reaction by their children may experience a lack of attachment security. According to Bowlby, mothers must initiate a response from the child such as, calling or reaching; however, a child with a severe case of autism may be overstimulated with other sensory stimuli that may inhibit an appropriate attachment response, such as hugging. These findings indicate that a mother may perceive this reaction as rejection; whereas, it may be an overstimulation of sensory input. The child is reacting to the sensory stimuli not the mother's initial response. However, this thesis study is correlational and causal inferences are limited.

Lastly, mothers who reported more symptoms of autism severity also reported more maternal feelings of stress. These research findings are consistent with previous

studies that have indicated the more severe the child's symptoms of autism are, the higher level of stress is reported by mothers. This is most likely further exaggerated by the negative correlation between severity of autism symptoms and the mother's perception of attachment. As a result, there is most likely an increased level of maternal stress due to a perception of increased distance between the child with autism and the mother as the severity of symptoms worsens.

Limitations

This thesis contributes to the understanding of autism severity and maternal perceptions of attachment; however, there were several limitations to the study. The first limitation was the small sample size. Gathering data was difficult as mothers expressed their lack of time to participate due to their commitment to child care and other responsibilities. The second limitation was low autism scores on the ABC scale; this may be due to prior intervention the child had received through applied behavioral analysis (ABA) services and other interventions. The third limitation was the lack of an equal distribution of autism severity levels. As a result of these limitations, it was difficult to generalize results across this population.

Another limitation to the study was that children who were reported as having autism symptomology may have differed widely in cognitive development. Children diagnosed with autism spectrum disorder have different cognitive levels. For example, children who are six-years old may be cognitively functioning at a three-year old level. In more high functioning levels of autism, it is hard for a parent to distinguish the signs of a normal developing child from a child with high functioning autism. Their communication skills might be more advanced than a child with a more severe form of autism. Therefore,

it is difficult to tell if the mother's perception of attachment was due more to the level of cognitive deficit than to the severity of autism.

An additional limitation of this study may be a lack of controlling for family support. For example, a single mother without a stable family support system (financially and emotionally), may experience more severe stress. This could influence the mother's perception of attachment and may not be due to the severity of their children's autism symptoms.

Coping mechanisms was not controlled for in this study. A mother that has stronger coping mechanisms may perceive their child as more attached than they actually are. The child may show many signs of detachment to their mother, but because the mother has such high coping mechanisms she may overlook these signs.

Finally, the data was collected using self-report questionnaires that only assess mothers' perceptions of autism severity and attachment at one point in time. A longitudinal study may provide an expanded understanding of how a mother's perception of their child's attachment may change with increasing age and physical development of their child.

Implications

These findings are important because they provide professionals (e.g., psychologists) with a more informed understanding of the continuum of autism symptoms that may affect maternal perceptions of the mother-child attachment relationship. It also enables behavior interventionists to target their efforts in a manner that will result in an improved relationship between a mother and their child with autism. Parent education classes can be tailored to focus on instructing mothers in the use of

stress reduction strategies allowing them to improve their perceptions of their child's attachment. For example, if a child does not like being touched, behavior interventionists can teach the mother to touch the child in ways that are less stressful to the child.

Conclusion

This study examined the relationship between autism severity and maternal perception of attachment. The study focused on which group of symptoms predicted maternal perception of child attachment, and at the relationship between autism severity and maternal feelings of stress. Results indicated that mothers who have a child with a more severe form of autism perceive their child to be less securely attached to them. They also report that these perceptions are due to the child's sensory and related severity impairments. Lastly, mothers who have a child with a more severe diagnosis of autism are likely to be more stressed than a parent with a child who has less severe symptoms. These findings are important in the development of parent-education groups and for teaching mothers of children with autism stress decreasing strategies in the attachment relationship to the child.

Future research should compare the different severity levels of autism with maternal perception of child attachment. They also should examine which cluster of symptoms according to the DSM-5 affect the maternal perception of child attachment for each level of severity of autism. This will assist professionals in providing an intervention to improve the maternal child relationship. Future studies also should use a larger sample size and control for the confounding variables, such as maternal coping mechanisms.

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Appendix A

California State University, Northridge

CONSENT TO ACT AS A HUMAN RESEARCH PARTICIPANT

Empowering Parents and Parental Involvement

You are being asked to participate in a research study. Participation in this study is completely voluntary. Please read the information below and ask questions about anything that you do not understand before deciding if you want to participate

Dear Mothers/Maternal Primary Caregiver,

Thank you for your interest in participating in our study. You are being asked to participate in a research study conducted by Gabrielle Ponaman, B.A., supervised by Dr. Dee Shepherd-Look from California State University, Northridge (CSUN), Department of Psychology. You are being contacted to provide the chance for us researchers with the opportunity to investigate the different factors that are helpful to you and your child's success. The knowledge gained from this study may help us improve parent support classes which can benefit parents who have a child diagnosed with autism spectrum disorder. The study findings will be laying the groundwork for future studies to pursue needed intervention programs. Your participation in this research study is voluntary and you are free to stop your participation at any time. Any information that is obtained from this study will remain confidential and all participants will be identified with a unique code number, not by name.

PURPOSE OF THE STUDY

There are many important reasons for service providers and professionals to understand what factors contribute to parental well-being and involvement when raising a child with special needs. Given the exceptional challenges involved in raising a child with autism, parents may find it especially challenging to stay actively involved in their child's daily learning opportunities and feel overwhelmingly distressed. This study aims to explore the impact among parents of children with autism cognitive perceptions and psychological well-being on their levels of involvement in the role of parenting and the quality of their relationship with their child. We intend to examine factors that contribute to the quality of the parent child relationship and levels of involvement by collecting data on parental stress and coping, parent-child relationship and attachment, as well as child behaviors.

SUBJECTS

Inclusion Requirements

You are eligible to participate in this study if you are the mother or maternal primary caregiver of a child diagnosed with autism spectrum disorder between the ages of 6-12

Time Commitment:

This study will involve approximately 15 – 20 minutes of your time

PROCEDURES

If you agree to be in this study, the responses you offer on current questionnaires will be used for research purposes. All MOTHERS or MATERNAL PRIMARY CAREGIVERS in the study will be asked to do the following activities.

1. Complete the Demographic Questionnaire to describe background information (e.g. age, ethnicity) about Child.

2. Complete the Parental Stress Index to assess parental stress.
3. Complete the Autism Behavior Assessment Checklist to assess autism severity.
4. Complete the Maternal Perception of Child Attachment Scale to assess mother's perceived attachment with child.

POTENTIAL RISKS AND DISCOMFORTS

The risks of participating in this study are minimal. However, assessment interviewers may ask you about issues that you would rather not discuss, that might make you feel uncomfortable or you may simply grow tired of answering. These are all minimal risks and are *not* greater than what would ordinarily be encountered during a routine interview. In the event that you may experience any discomfort you can stop the completing the survey or choose not to disclose. If you feel the need to talk to a counselor you will be referred to counseling, noting that the cost of counseling will be your responsibility. PCIC staff will be there to try to make every parent feel comfortable and accepted.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR SOCIETY

Your participation in this research study is voluntary and you are free to stop your participation at any time. Your decision to provide or not provide consent will not affect any services that you and your child receive at the North Los Angeles Regional Center. We cannot guarantee that you will benefit from participating in this study, but if you do join this study, you provide the chance for us researchers with the opportunity to investigate the different factors that are helpful to you and your child's success your child's treatment. The knowledge gained from this study may help us improve parent training classes which can benefit children on the Autism spectrum who have difficulties engaging in social relationships due to social deficits, developmental delays or unfortunate life circumstances. Furthermore, our findings will help to

assess factors that contribute to parental involvement in their child's therapy and what factors hinder involvement. Parent training session can be designed to address factors that are related to decreased levels of parental involvement; thereby increasing the likelihood that parents will feel empowered and effectively meet the needs of their child. This study has the potential to reveal valuable information about factors that may influence your child's intervention outcome and efficacy.

COMPENSATION, COSTS AND REIMBURSEMENT

Compensation for Participation

You will receive a 20 dollar gift card to Target after completing this survey. An email link will be sent directly to you, which will provide you the opportunity to redeem your gift card at Target or use the code to purchase items online from Target.

CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you and your child will remain confidential and will be disclosed only with your permission or as required by law. Data collection will be conducted by Gabrielle Ponaman, B.A., graduate student, directly supervised by Dr. Shepherd-Look. Data will be stored on USB drives inside locked file cabinets in Dr. Shepherd-Look's locked offices at Monterey Hall or Sierra Hall. All participants will be identified with a unique code number, not by name. Only the principal investigators of the study collecting, coding or inputting the data will have access to data and to the codes identifying participants who have given written consent and assent for the research study. Data with participant identifiers will only be released in cases mandated by law (e.g., suspected child abuse).

We will not identify you or your child by name on any of the research documents or to anyone outside the research staff without your prior written permission. We will use a number instead of a name. This is the way we keep track of the information you have given us. We will keep the files containing research information in locked cabinets.

All data will be destroyed after 2 years of completion of the study. All information will be deleted from our USB drive.

PARTICIPATION AND WITHDRAWAL

Participation in this study is completely voluntary. If you volunteer to be in this study, you have the right to withdraw at any time. You may also refuse to answer any questions you don't want to answer and still remain in the study.

IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact the principal investigator:

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RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. You will also be offered a copy of “Experimental Subjects Bill of Rights” which is a list of the rights of every person asked to be in a research study. If you have any questions regarding your rights as a research participant, contact the CSUN office of Research and Sponsored Projects, University Hall 265, 18111 Nordhoff Street, Northridge, CA. 91330-8232, Phone: [\(818\) 677-2138](tel:8186772138).

IN CASE OF RESEARCH-RELATED INJURY

In the event of a research related injury, you may contact Dr. Shepherd-Look, Psychology Department, 18111 Nordhoff Street, Northridge, CA 91330-8255, Phone: [\(818\) 677-3429](tel:8186773429).

STATEMENT OF INFORMED CONSENT

I have read (or someone has read to me) the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. By clicking on the unique survey link below, I am providing my consent to participate. If you feel more comfortable in signing the confidentially agreement and sending it to me you can do so at gabrielle.ponaman.16@gmail.com.

By clicking on this link, I agree to participate in the study.

https://csunsubs.qualtrics.com/SE/?SID=SV_514BWh9K1ezcRZH

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