ATTACHMENT, STRESS, AND SELF-EFFICACY WHILE PARENTING CHILDREN ON THE AUTISM SPECTRUM

By

Angela Marie Galioto

A Thesis Presented to

The Faculty of Humboldt State University

In Partial Fulfillment of the Requirements for the Degree

Master of Arts in Psychology: Academic Research

Committee Membership

Dr. Tasha R. Howe, Committee Chair

Dr. Hyun-Kyung You, Committee Member

Genevive Macias, Committee Member

Dr. Christopher Walmsley, Committee Member

Dr. Christopher Aberson, Graduate Coordinator

July 2018

Abstract

ATTACHMENT, STRESS, AND SELF-EFFICACY WHILE PARENTING CHILDREN ON THE AUTISM SPECTRUM

Angela Galioto

The current study explored the relationship between parental perceptions of stress, self-efficacy, attachment, and child functioning level. Participants were parents of children with ASD enrolled in The Special Beginnings Program (SBP, n = 44) or receiving treatment as usual (TAU, n = 39). Hypotheses included that parental perceptions of child functioning level will be negatively correlated with stress and positively correlated with self-efficacy and attachment. In addition, that parental perceptions of stress will decrease and perceptions of attachment and self-efficacy would increase after Project ImPACT training and at follow-up more so for the parents in the SBP group compared to the TAU group. Results revealed child functioning level, attachment, and, self-efficacy are correlated and that child functioning level and parenting stress are negatively correlated. For all participants, regardless of group (SBP or TAU), perceptions of attachment and self-efficacy experienced a rebound to previous levels after first experiencing a decline from baseline. These results indicate that perceptions of child functioning level, attachment, and, self-efficacy are related. In addition, regardless of treatment group, participants experienced a reduction in their perceptions of stress. This is evidence that early intervention programs can be successful at addressing parents stress levels. Future

research including a mediation model to explore if attachment or self-efficacy mediates stress is needed to better understand the direction of these variables. This would provide valuable information to early intervention programs as to which intervention services are most needed for parents and children to further child improvement.

Acknowledgements

I would like to express my gratitude to the members of this committee for their contribution to my education and this thesis. Dr. Tasha Howe, thank you for your careful guidance throughout this process and teaching me how to be a writer. You have greatly influenced my perspective on the developmental process. Genevive Macias, thank you for allowing me the opportunity to learn from The Special Beginnings Program. Your commitment to providing the best education for infants and children with ASD is truly incredible. Dr. Hyun-Kyung You, thank you for the prospective you gave me on atypical child development and insight into researching parents of children with ASD. Dr. Christopher Walmsley, thank you for inspiring me to pursue a career in Applied Behavior Analysis and for helping me find a path to become board certified. Together, all of you have influenced my desire to work with at risk children in the community setting and share the knowledge you have given me with parents and children.

I would like to thank the Redwood Coast Regional Center, in particular Dr. Kim Smalley, who was instrumental in mailing the survey packets to participants. In addition, I would like to thank all of the teachers who generously invited me into their classrooms and help facilitate data collection. Without you this project would not have been a success.

Also, to Dr. Christopher Aberson, thank you for teaching me about statistics, and going over and over how to properly analyze my data. And to Ben Chu and Josue

Rodriguez, thank you for tirelessly working on my statistics with me. Your coding ability is incredible and you have taught me so much.

And finally, to my research assistants Joseph Camarena and Ashley Kniola, thank you for all of your hard work preparing survey packets, entering data, formatting, and so much more.

I dedicate this thesis to my husband Max Marquez. Watching your excellence taught me how to be a good student. Your love gave me the freedom and support I need to get through this rigorous process. You believed in me so much that I could not help but to believe in myself. Thank you for building a beautiful life with me. Each new day I have the privilege to share with you I admire you more and more.

And to my darling children Wren and Poppy, you are my greatest loves, my greatest teachers, and my greatest adventures. Your joy and grace are radiant. May you fly and blossom to the highest highs. It is a privilege to guide you, and I am awed in amazement with each new achievement. I will never cease to be inspired by you both my darling loves. Thank you for sharing this journey with me.

Table of Contents

List of Tables

Table 1

Participant Demographic Variables at Time One

Demographic Variables	*n*	%
Gender (Parent)		
Male	11	13.9
Female	68	81.9
Gender (Child)		
Male	63	78.8
Female	17	20.5
Number of Children With ASD		
One	49	59
More than one	10	12
Ethnicity		
European American	41	49.4
Latino/Hispanic	15	17.1
Mixed Ethnicity	12	14.5
Native American	9	10.2
Other	3	3.6
Primary Language Spoken		
English	75	90.4
Spanish	8	7.2

Demographic Variables	*n*	%
Sign Language	1	1.2
Education Level		
Less Than High School	5	6.0
Finished High School	13	15.9
Some College	43	51.8
Finished College	13	15.7
Finished Graduate School	7	8.4
Finished Certificate Program	2	2.4
Employment Status		
Not employed outside the home	35	42.2
Part Time (1-24 hours)	21	25.3
Full Time (35 or more hours)	22	27.5
Student	3	3.6
Marital Status		
Married	53	63.9
Single	14	16.9
Co-habitate with partner	13	15.7
Separated/Divorced	3	3.6

Table 2

Descriptive Statistics for Measures at Time One

	Minimum	Maximum	*M*	*SD*
Attachment (MPCA)	45	109.79	80.73	13.04
Self-Efficacy (EIPSES	57	106	86.00	10.29
Parent Stress (PSISF)	47	142	95.08*	22.28
Child Functioning (AIRS)	14	30	22.79	3.10

*Note.**Indicates clinically significant range.

Table 3

Descriptive Statistics for Measures by Group at Time One

		SBP	TAU
Attachment (MPCA)	*M*	81.6	80.125
	N	44	39
	SD	14.745	11.19
Self-Efficacy (EIPSES)	*M*	86.09	87.285
	N	44	39
	SD	10.1	10.47
Parent Stress (PSISF)	*M*	90.45	99.205
	N	44	39
	SD	20.93	22.005
Child Functioning (AIRS)	*M*	22.765	22.845
	N	44	39
	SD	2.815	3.765

Table 4

Correlation matrix between all Dependent Variables

	Attachment	Self-Efficacy	Stress	Child Functioning
Attachment (MPCA)	(.87)	.11	.31**	.40***
Self-Efficacy (EIPSES)		(.78)	.14	.33**
Stress (PSI-SF)			(.93)	.49***
Child Functioning (AIRS)				(.71)

Note. *p < .05, **p < .01, ***p <.001. Values in parentheses are coefficient alpha reliability.

Introduction

Autism Spectrum Disorder (ASD) is diagnosed in 1 in 68 children, a number that holds steady regardless of race, culture, and socioeconomic status (Centers for Disease Control and Prevention [CDC], 2014). Children on the autism spectrum present with difficulty in social interaction, communication, reciprocity, and nonverbal communication (American Psychological Association [APA], 2013). When a diagnosis of ASD is given, it does not only affect the child, but also the parents. The parent or caretaker is responsible for researching and seeking out necessary treatment and is also responsible for following through with a treatment plan (Green, 2007; Rodrigue, Morgan, & Geffken, 1990). Parental stress is higher among parents with children diagnosed with ASD compared to any other group of parents assessed (Baker-Ericzn, Brookman-Frazee, & Stahmer, 2005; Dabrowska, & Pisula, 2010; Estes, et al., 2009; Stadnick, Stahmer, & Brookman-Frazee, 2015). Furthermore, research supports that when parent stress is high, early intervention programs treating children affected by ASD are less effective (Osborne, McHugh, Saunders, & Reed, 2008; Stadnick, et al., 2015). One of the few studies looking at attachment and parenting stress among parents of children with ASD suggested that if the parents perceive there to be a secure attachment, parental stress is lower (Goodman & Glenwick, 2012).

One way to address parental stress may be through increasing parental self-efficacy. There is evidence that when parents have greater feelings of self-efficacy they report lower levels of stress (Goodman & Glenwick, 2012; Hastings & Brown, 2002).

Goodman and Glenwick (2012) found a significant positive relationship between parental feelings of attachment and self-efficacy. Additionally, parents' perceptions of attachment accounted for a significant amount of the variance in parental stress and self-efficacy. These findings suggest that attachment quality and self-efficacy are possible underlying mechanisms explaining levels of parenting stress (Goodman & Glenwick, 2012). Moreover, Hastings and Brown (2002) found that parental self-efficacy was a mediator between parental anxiety and problematic child behaviors. The current study explored the relationship between parental stress, parental self-efficacy, and parental perceptions of attachment in a sample of parents with children on the autism spectrum who attend an early intervention program.

Early intervention programs may be able to increase parental self-efficacy and feelings of attachment (Sofronoff, & Farbotko, 2002). Sofronoff and Farbotko (2002) found that parents whose children were enrolled in early intervention programs had significantly increased feelings of self-efficacy. *Project ImPACT* (Improving Parents as Communication Teachers), is an early intervention program that has shown promising results in improving social and communication skills in children with ASD (Ingersoll & Wainer, 2013). Project ImPACT has also been shown to reduce parenting stress (Stadnick, et al., 2015). The Special Beginnings Program (SBP) uses the naturalistic behavioral intervention techniques of Project ImPACT to help parents increase their children's social and verbal communication through play and everyday activities. On average, 77% of infants and toddlers in the SBP enter into mainstream kindergarten classrooms by the age of five (Macias, 2015). This is a marked improvement in

comparison to the 47% of children entering mainstream classrooms with the first intensive behavioral early intervention (Lovaas, 1987). Despite these positive gains, there is a paucity of research on effective ways to reduce parental stress while increasing intervention success for children with ASD.

This study investigated parental stress in parents whose children with ASD were enrolled in the SBP. In addition to the SBP group, there was a treatment as usual group (TAU). The specific variables of interest are parental perceptions of stress, attachment, self-efficacy, and child functioning level. This was the third study measuring parental stress in a community based setting using Project ImPACT and the first to include self-efficacy and attachment to further refine our understanding of family variables when children are enrolled early intervention. Further, this was the first examination of parents' whose children were enrolled in The Special Beginnings Program. Since 77% of children in the SBP are mainstreamed by kindergarten, it is evident that the program is effective in improving child outcomes. Thus, the SBP was an ideal program in which to examine perceptions of parental stress, attachment, self-efficacy, and functioning level. The aim of the current study was to examine how the techniques of Project ImPACT used in the SBP are related to parental perceptions of attachment quality, parental stress, and parental self-efficacy, before and after Project ImPACT parent training curriculum.

Review of the Literature

Autism spectrum disorder. Leo Kanner (1943) first described a group of children with social, cognitive, and communication deficits. Because the behaviors were so

different from typically developing children, Kanner conducted case analyses on 11 children with what is now known as ASD. Eight of the children had language that was described as non-functional, such as humming and repetitive rigid speech patterns lacking communicative goals. The other three children were mute. Additional symptoms were extreme resistance to change of scheduling, obsession with spinning or lining up objects, lack of interest in being picked up or held, sensitivity to light and sound, and a perceived desire to play alone (Kanner, 1943). Due to the pervasive difficulties involved with ASD, the American Psychological Association (APA, 2015) states that ASD is the most severe of all developmental disabilities.

Currently, the CDC (2015) confirms Kanner's general description in that the symptoms of ASD include difficulties with communication and social and emotional skills. The specific symptoms include trouble reading others' emotions, lack of interest in physical contact, diversion of eye gaze, difficulty engaging in play with others, echolalia speech, absent verbal communication, sensory sensitivity, and difficulty with flexibility in routine (CDC, 2014).

*Diagnostic increase***.** As mentioned above, one child in 68 is diagnosed with ASD (CDC, 2014). This is a near three-fold increase from 2000, when 1 in 150 children were diagnosed with ASD (CDC, 2014). A recent study reported the current prevalence of ASD to be as high as 1 in 45 children, increasing the base rate of individuals with ASD to 2.24% of the population (Zablotsky, Maenner, Schieve, & Blumberg, 2015). The increase in ASD diagnosis differs by gender with the number of boys with ASD being 1 in 42 and the number of girls with ASD estimated at 1 in 189 (CDC, 2014). Both genders show

diagnostic stability in ASD (Lord et al., 2006). The diagnosis of ASD is stable by the age of two, with the most diagnostic stability at the age of nine years (Lord et al., 2006). This means that if a child is evaluated at the age of nine, the results are the most accurate. Currently, the average age of diagnosis for children with ASD is four years (CDC, 2014).

Clearly, the rate of ASD diagnosis is on the rise; however, the reason for the increase is unknown. Research has not identified one underlying cause for ASD. This is in part due to the complex variation in the genotypes and phenotypes displayed in ASD. There are associations between ASD and parental age at conception, premature birth, and low birth weight (CDC, 2014). Research also supports an eight percent increased risk for an ASD diagnosis for children born by cesarean section (Schieve et al., 2014). Complications during pregnancy, early birth, or medical interventions may all contribute to the increased risk of an ASD diagnosis. There is also evidence that children conceived using assisted reproductive technology are over two times more likely to be affected by ASD (CDC, 2014). This increase in vulnerability is attributed to the increased risk of complications leading to early birth, cesarean delivery, and low birth weight (CDC, 2014). Research using twin populations found higher concordance rate for monozygotic twins (88%) compared to dizygotic twins (31%) in receiving an ASD diagnosis (Rosenberg et al., 2009). This makes a clear case for some level of genetic heritability.

Regardless of the cause, it is clear there has been an increase in the diagnostic rate of ASD. There is a growing body of research dedicated to the early detection of ASD (Lord et al., 2000). Because of this increase in research, pediatricians have become more aware of the risk factors and warning signs of ASD (Johnson & Myers, 2007).

Additionally, the increase in media coverage of the potential risk factors of ASD, such as delayed speech and lack of eye contact, educates the general public about this disorder (Johnson & Myers, 2007).

Johnson and Myers (2007) also found that once parents recognize a risk for ASD, they are likely to address their concerns with a professional, leading to a diagnosis if warranted. Our current assessments are more refined and the professionals conducting the evaluations are better trained to accurately recognize and diagnose ASD than they were in the past (Croen, Grether, Hoogstrate, & Selvin 2002). Due to better screening techniques, many children who now receive an ASD diagnosis would have not been recognized or would have been given other diagnoses such as mental retardation (Croen, et al. 2002). So while there is evidence to support a pronounced increase in the prevalence of ASD, it is important to consider that the diagnostic tools are now more refined and may account for much of the increase in prevalence (Blaxill, Baskin, & Spitzer, 2003).

Given that ASD not only affects the children who are diagnosed but also the parents, there is a need to examine ways to further child functioning level and understand parents' needs as well. Another purpose of this study was to better understand how to improve interventions and thus better address those impacted by ASD. To do so, this study investigated the links between an evidenced-informed early intervention program and perceptions of attachment, parental stress, parental self-efficacy, and child functioning level. These variables were examined with parents whose children were receiving services from the Redwood Coast Regional Center (RCRC). The Children were

either currently enrolled in the SBP or receiving TAU. Understanding the etiology of ASD and the reason for the increase in the diagnosis of ASD does not help us better understand those coping with ASD. There is evidence, however, that attachment is an important variable to consider when investigating the parental experience of raising a child with ASD.

Attachment. With the prevalence of ASD being so high, and the severe social and communication impairments it poses for children, it is important to look at how early developmental processes such as attachment are impacted. John Bowlby (1958) described five attachment behaviors that infants instinctively utilize to evoke care-taking responses. These include sucking, clinging, following, crying, and smiling. Bowlby (1971) hypothesized that early caregiver bonds formed a cognitive template or "working model" by which future relationships would be developed. Further, Bowlby (1958) predicted that if the bond was not securely formed, the child was at risk for later pathology.

Mary Ainsworth defined the quality of attachment children have with their primary caretakers (Ainsworth 1978). Securely attached children tended to have sensitive and responsive caretakers; children with avoidant or ambivalent attachment styles tended to have inconsistent caretakers appearing less sensitive and responsive to their children (Ainsworth 1978).

Ainsworth and colleagues (1978) found that attachment behaviors are triggered during periods of separation. Moreover, Ainsworth (1979) found that not only is attachment quality based on the caretaker's sensitivity and responsiveness but also the temperament of the child. Thus, there is a reciprocal relationship between the caretaker

and child in which both are active participants in the development of attachment qualities. This is the case for typically developing children; however, the same result, in regard to parental sensitivity, was not found among children with ASD. In free play observations between caretakers and children with ASD, caretaker sensitivity and responsiveness were demonstrated but children were less interested in the caretakers' bids for play relationships, showing the lack of a dyadic attachment relationship (Van IJzendoorn et al., 2007). Children with ASD may display characteristics that resemble disorganized attachment patterns, with inconsistencies in the reunion phase, regardless of the sensitivity and responsiveness of the caretaker (Van IJzendoorn et al., 2007).

However, there is evidence that children with ASD are capable of developing secure attachments with their primary caregivers but the processes by which attachment develops for those with ASD may differ, such as the bonds forming later than infancy (Rutgers, Bakermanas-Kranenburg, Van IJzendoorn, & Berckelaer-Onnes, 2004). This implies that children with ASD may challenge traditional attachment models (Rogers, Ozonoff, & Maslin-cole, 1991; Van IJzendoorn et al., 2007).

Rogers (1991) and colleagues modified the strange situation to increase the paradigm's sensitivity to identifying secure attachments. Instead of defining attachments as secure or insecure, behaviors were scored dimensionally from 1) *clear signs of insecurity* to 5) *clear signs of security*. By changing how the attachment was scored, the sensitivity of the assessment increased. This enabled the results to reflect more subtle attachment behaviors in comparison to the results of the strange situation without modification (Rogers et al., 1991). Rogers et al. (1991) found that developmental level

was correlated with attachment security among children with ASD. Children with ASD displayed a similar distribution of secure attachment as their typically developing peers, but it was not displayed until 47 months, supporting the idea that the attachment bond forms later than the 18-24 month timeline typically used in attachment research.

Previous findings suggest that one reason children with ASD may not fit the typical patterns of attachment is because of the social communication and cognitive challenges ASD brings. Rogers et al. (1991) suggested that the working model by which typically developing children form a secure base to freely explore their environment is delayed until the child has the complex cognitive and social abilities to aid in developing such a template. These differences warrant further investigation into the attachment bond between children with ASD and their parents. The current study investigated parents' perceptions of attachment quality. The children were receiving early intervention designed to develop the social and cognitive skills. Rogers et al. (1991) and Van IJzendoorn et al. (2007) found that social and cognitive skills are related to attachment among children with ASD. The current study was the first to examine the links between early intervention and attachment quality in families coping with ASD.

Early intervention. Children with ASD are capable of making dramatic improvements in social skills and cognitive abilities with effective intervention techniques. Initially, intervention techniques focused on reducing self-injurious behaviors that sometimes were so severe children were confined in restraints (Lovaas & Simmons, 1969). Lovaas and colleagues found that if no response was given to the child when they were injuring themselves (extinction), or if the child was given an electric shock

(punishment), the child would stop injuring him or herself (Lovaas & Simmons, 1969). These early studies suggested that children with autism could gain the ability to live a more fulfilling life, participating in social outings, as well as reducing the anxiety and distress of their caregivers. Lovaas' work developed into behavior modification techniques based on operant learning. Lovaas (1987) found that children with ASD who had severe cognitive impairment but received intensive behavioral treatment for 25-40 hours per week advanced to the average IQ range and were able to complete first grade in mainstream public schools.

However, today children with ASD are being diagnosed as early as infancy and traditional behavioral interventions are not necessarily developmentally appropriate because of their highly structured nature and their concentrated time demands (Schreibman et al., 2015). Naturalistic Developmental Behavior Intervention (NDBI) combines behavioral interventions with developmental science (Schreibman et al., 2015). The techniques of NDBI use child led play and day-to-day typical activities as learning and teaching opportunities, as opposed to structured teacher led activities (Schreibman et al., 2015). An example presented by Schreibman et al. (2015) explained that when a toddler is drawn to a specific toy and makes a verbal approximation of the name of the toy, the child is immediately given the desired toy paired with the correct word. Once the toddler has mastered a one-word description of the toy, these are embellished by adults who add more detail of the toy or object. This strategy scaffolds the child's current developmental ability and expands their language repertoire. This is in contrast to traditional behavioral interventions where the teacher or therapist would choose the

language skill to work on and give a desired reinforcement such as candy or one minute of free play (Schreibman et al., 2015).

Much of the literature thus far has focused on how early intervention can improve the functional abilities of children with ASD. However, now that there is evidence that early interventions such as Project ImPACT are effective and because parents are responsible for the implementation of early intervention programs, it is time to expand the scope of research to include the parent's perspective.

The benefits of working with younger children during toddlerhood and even infancy include the fact that the child will not have developed maladaptive coping strategies such as aggression and self harm (Higgins, Bailey, & Pearce, 2005; Schreibman et al., 2015). Such problematic behaviors have been associated with an increase in parental stress, anxiety, and depression (Schreibman et al., 2015).

Project ImPACT is an intervention that is developmentally appropriate for infants and children ages 18 months to eight years (Ingersoll & Dvortcsak, 2006). Additionally, Project ImPACT is an effective tool for increasing children's play skills, social skills, verbal communication, and non-verbal communication, as well as reducing parental stress (Ingersoll & Dvortcsak, 2006). By including the parent's perspective while their child is receiving a specific intervention over time, the current study illuminated the possible parenting variables most affected during intervention between the parents involved in the SBP in comparison to parents involved in TAU. Additionally, the current study included a parent report of perceived child functioning level. Because Project ImPACT targets children's play skills, social skills, verbal communication, and non-

verbal communication, which are associated with lower levels of parental stress, and given that the SBP uses Project ImPACT, it was hypothesized that parental perceptions of stress would be a key variable of change over time.

Parental stress. Parenting stress can be described as the negative emotions parents feel in response to the parenting experience (Deater-Deckard, 1998). Self-injurious and disruptive behavior in children with ASD increase parental stress (Higgins, et. al., 2005). Due to the presence of distressing behavior, in particular aggression and self-injurious behaviors, families of children with ASD will oftentimes avoid participating in community activities (Johnson & Myers, 2007). This can result in the family avoiding social outings and adhering to a rigid life in an attempt to minimize triggering the child (Higgins, et. al., 2005; Rodrigue, et al., 1990). The use of parental stress measures during early intervention planning would provide useful information on how to tailor the intervention in a way that would better support the parents, such as involving counseling and respite care services (Osborne, et al., 2008). Additionally, parental stress assessment prior to and following an intervention could be a key indicator of program success.

Parents report higher stress when they feel their child has not bonded to them in a way they anticipated (Hoppes & Harris, 1990). Parents despair over their inability to reach their child (Busch, 2009). Mothers view their attachment relationship with their child differently than do parents of children with other developmental disabilities (Hoppes & Harris, 1990). Parents of children with ASD feel their children do not make bids for interactions, and for the most part, only periodically demonstrate bids for physical affection; also, never hearing words such as “I love you” leaves parents

unsatisfied with their parenting experience, leading to diminished feelings of attachment (Hoppes & Harris, 1990).

Perceptions of attachment quality and parental stress are related. For example, Van IJzendoorn and colleagues (2007) found that attachment quality was related to the development of social and cognitive abilities in a sample of children with ASD, intellectual delays, language delays, and typically developing children. They used the strange situation with 55 toddlers at 28 months of age and followed them longitudinally. Initially, the children did not have a diagnosis of ASD. Due to their age the children were identified as at risk for developmental disabilities at 14-15 months of age and received firm diagnosis by the age of four. The strange situation was not modified as Rogers and colleagues (1991) suggested. Because of this, Van IJzendoorn et al. (2007) were only able to classify attachments dichotomously as either secure or insecure. The study found that children who were later diagnosed with ASD and had more social skill deficits and were more likely to display an insecure attachment style. Furthermore, research supports that the diminished social interaction skills among children with ASD are significantly related to an increase in parental stress (Baker-Ericzen, et al. 2005), implying that attachment quality is a necessary variable to consider when examining parental stress.

Stadnik and colleagues (2015) found that parents of children participating in Project ImPACT had a greater reduction in parental stress than a comparison group. In addition, the results of the Stadnik et al. study supported the findings of Osborn and colleagues (2008) who found that the higher parental stress, the less effective interventions were. However, neither Stadnik et al. (2015) nor Osborn et al. (2008) included attachment or

parental self-efficacy as links to parental stress. Additionally, the sample for the study conducted by Stadnik et al. (2015) came primarily from well-educated and high socioeconomic backgrounds. The current study included a more generalizable community sample with a pre, post, and follow up design, and examined attachment and stress in parents with children in the SBP in comparison to parents involved in TAU who had not received Project ImPACT curricula. In addition to evaluating attachment and parental stress, previous research suggests that it is important to consider parental self-efficacy as an important factor when investigating parental outcomes (Hastings & Brown, 2002).

Parental self-efficacy. Self-efficacy is the belief that one's behaviors in a specific domain will result in a desired outcome (Bandura, 1977). Bandura (1977) found when an individual lacks self-efficacy for a specific task, they are less likely to initiate behaviors that could improve an outcome. Because of this, a lack of self-efficacy results in a decrease in coping behaviors and strategies, leading to maladaptive coping, such as avoidance. Individuals with adequate self-efficacy for a specific task will persist in activities that seem threatening, thus gaining expertise and increasing their self-efficacy (Bandura, 1977, 1986, 1994). Further, those with sufficient self-efficacy are likely to cope better in stressful situations (Bandura, 1977). Treatments used to increase one's performance in a specific task are likely to result in an enhanced self-efficacy by promoting feelings that one's behaviors influence a given task (Bandura, 1977).

Parental perception of self-efficacy is derived from experience and expectations (Bandura, 1986). A parent's perceived success or failure could influence their self-efficacy. A study of parents of children with ASD found that lower levels of perceived

self-efficacy were related to increased feelings of anxiety for mothers and fathers as well as increased feelings of depression for mothers (Hastings & Brown, 2002). Additionally, Hastings and Brown (2002) found that when parents of children with ASD feel they are well supported by their child's early intervention team, their perceptions of self-efficacy increase.

An additional study of 107 parents of children with developmental delays found that child social competence was related to increased parental feelings of self-efficacy (Guimond, Wilcox, & Lamorey, 2008). Additionally, Guimond, et al. (2008) found that higher levels of receptive language were related to an increase in feelings of self-efficacy. Project ImPACT is effective at giving parents the tools necessary to improve children's play skills, social skills, verbal communication, and non-verbal communication (Ingersoll & Dvortcsak, 2010), thereby potentially increasing parental self-efficacy.

The Special Beginnings Program gives teachers and behavior interventionists the freedom to teach Project ImPACT techniques in a group or in an individual format. This allows for SBP staff to serve the families as they are most comfortable. In the group format, there is a one hour long parent training session per week and there is an additional hour for parents to discuss how the intervention is working, what helped, what did not help, and they can share real life experiences and provide encouragement to other parents. This group delivery provides a therapeutic environment and a social support network for parents who are experiencing similar situations. Additionally, the group environment may allow parents to encourage self-efficacy in each other. The current

study is the first to research parental self-efficacy among parents receiving Project ImPACT curriculum.

In addition to providing a group delivery of Project ImPACT training, the SBP utilizes an individual training format to meet the needs of families unable to attend the group sessions. In the individual sessions, the interventionist meets with the parents at their home to provide instruction at a convenient time. This allows for other family members to participate in the training in the environment in which parents interact with their child the most. Self-efficacy, in addition to attachment and parental stress may be key variables that change in addition to child functioning level in early intervention.

The Current Study

The current study may contribute to the small body of research investigating parental stress, self-efficacy, and attachment in families coping with ASD. This study was the first to investigate the relationship between the evidence-informed curriculum Project ImPACT and parents' perceptions of attachment, parental stress, parental self-efficacy, and child improvement. Past work indicates that parental stress decreases and parent self-efficacy increases when parents of special needs children receive training on how to improve their child's outcomes (Pisterman, et al., 1992). Also, parent stress is higher in parents whose children have more severe atypical behavior (Goodman & Glenwick, 2012). Additionally, previous findings suggest that as feelings of attachment and parental self-efficacy increase, parental stress decreases (Goodman & Glenwick, 2012). However, the same researchers are unclear about the nature of the relationship

between attachment and parental stress and how interventions impact these analyses. Because of this, more research was needed to investigate the relationship between perceptions of attachment, early intervention, parental stress, parental self-efficacy, and child functioning level.

Based on the literature reviewed, the following hypotheses were generated:

a) Parental perceptions of child functioning level will be negatively correlated with parental stress.
b) Parental perceptions of child functioning level will be positively correlated with parental self-efficacy.
c) Parental perceptions of child functioning level will be positively correlated with parental feelings of attachment.
d) Parental perceptions of attachment and self-efficacy will increase after Project ImPACT training and at the 12-week follow-up for the parents in the SBP group when compared to those in the TAU group.
e) Parental perceptions of stress will decrease after Project ImPACT training and at the 12-week follow-up for the parents in the SBP group when compared to the TAU group.

Methods

Participants

Participants (n = 83) were parents of children at risk for developing ASD (n = 7) or who have received an ASD diagnosis (n = 69). Participants consisted of two groups: SBP group (n = 44) and the TAU group (n = 39). The SBP group was composed of parents whose children were between the ages of 18 months – five years of age. For this group of parents, it was their first experience receiving an intervention for their child and their first time receiving the Project ImPACT training curriculum. The TAU were parents in similar rural communities that did not have access to or chose not to participate in the SBP and Project ImPACT parent training curriculum. The TAU group treatment included speech and language, occupational therapy, and behavioral interventions. This group had a mix of children who were at risk of developing ASD and who were diagnosed with ASD.

Parents reported comorbid diagnoses for their children which included: ADHD (n = 4), language delay (n = 3), intellectual disabilities (n = 2), neurofibromitosis (n = 1), epilepsy (n = 1), sensory processing delay (n = 1), Asthma (n = 1), and cleft palate (n = 1). Household income varied greatly, with the minimum reported as $0 dollars and the maximum reported as $520,000 annually ($M$ = $47,166, SD = $67,666.64). When looking at the mean stress levels for all parents at time one, 25% reported their stress was in the

high to clinically significant range as indicated by the PSI-SF. See Table 1 for additional demographic information.

Program Description

The Special Beginnings Program (SBP). The SBP is an early intervention program provided in a developmentally appropriate nursery setting. The program includes 14 classes given at seven different sites throughout Humboldt County. There are two groups: 18-36 months of age and 3-5 years of age. The cost for both programs is $ 36,000 dollars per year per child. The cost for the program is less than the national average cost of intensive ASD treatment, which currently ranges from $40,000-60,000 dollars per year per child (CDC, 2014).

Each child enters the program with a full developmental assessment given by a school psychologist in coordination with the Redwood Coast Regional Center or the Humboldt County Office of Education to determine need for the SBP. In addition to separating the children into groups by age, the children are further separated into groups of developmentally similar peers to create an environment where children and teachers can encourage scaffolding between peers. To comply with Part C of the Individuals with Disabilities Education Act (IDEA, 1990), children are placed in the least restrictive environment, and a rationale is written for each child as to why SBP is the appropriate treatment program. One of the intervention techniques used by the SBP is the Project ImPACT curriculum.

Project ImPACT. Project ImPACT is an evidence-informed parent training curriculum designed for parents whose children are at risk for or have an ASD diagnosis. Project ImPACT teaches parents the necessary tools to facilitate growth in play skills, social skills, verbal communication, and non-verbal communication. The curriculum includes 18 lesson plans that are laid out in the manual *Teaching Social Communication to Children with Autism* (Ingersoll & Dvortcsak, 2010). Topics can take place over eight to twelve weeks. Project ImPACT is intended for a community setting and to be taught by special education teachers and early interventionists (Ingersoll & Dvortcsak, 2006; Ingersoll & Wainer, 2013).

One of the goals of creating Project ImPACT was to create an effective evidence-based training model that could be easily integrated into any existing early intervention program or nursery setting without the need for a large-scale university program (Ingersoll & Dvortcsak, 2006). The program can be taught either in a one-on-one or a group format (Ingersoll & Dvortcsak, 2006). The initial Project ImPACT training is broken up into eight to twelve consecutive sessions. Each parent training sessions is two hours, in which the teachers lead a group or one-on-one discussion about how the implementation of the last session went, instruction on the new topic for the week, then each training ends with homework for the upcoming week.

The SBP uses the Project ImPACT curriculum for parent education when the child first enters the program. Additional parent training is given throughout the year, giving parents an opportunity to refresh their Project ImPACT training and to teach

parents new skills such as how to be successful during holiday breaks. Project ImPACT training is offered during times in which children are attending the nursery program.

Each classroom has a lead teacher with a bachelor's degree in addition to a special education credential. Each classroom includes a lead teacher and has two to three assistant teachers who receive training from the Humboldt County Office of Education. Each classroom has on average a two-child to one teacher ratio. There is also additional support by a behavior analyst, speech pathologist, and occupational therapists, who rotate as needed between classrooms. The nursery rooms have developmentally appropriate toys and activities available.

Measures

The Maternal Perception of Child Attachment (MPCA). The Maternal Perception of Attachment measure was developed by Hoppes & Harris (1990). The measure consists of 23 items using a 5-point Likert Scale. Responses range from 1 (never) to 5 (frequently). The questions assess the frequency with which the child seeks joint attention and proximity to their parent. For example, "When my child is frightened or upset by something, s(he) usually comes to me for reassurance/comfort" 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.).

Additionally, several questions address how the parent perceives their child's attachment to them. For example, "My child treats me more like an object to be used to

obtain the things s(he) wants and needs rather than a person who is very important to him/her." The measure was initially developed to assess maternal attachment perceptions; however, it has been used in research to also assess fathers' feelings of attachment (Goodman & Glenwick, 2012). Higher scores indicate the parent perceives a more secure child attachment. Psychometric properties of this measure have not been assessed; however, Goodman and Glenwick (2012) found in their sample of parents with typically developing children, children with ASD, and those with Down Syndrome, adequate internal consistency with $\alpha = .86$. The current sample ($n = 83$) had adequate internal consistency, $\alpha = .87$. See Appendix B for this measure.

The Early Intervention Parenting Self-Efficacy Scale (EIPSES). The Early Intervention Parenting Self-Efficacy Scale was developed by Guimond, Wilcox, and Lamorey (2008). The 16 item questionnaire uses a 7-point Likert Scale ranging from 1 (strongly disagree) to 7 (strongly agree). The questions are related to the parents' beliefs that their actions can have a positive impact on their child's outcome. For example, "When my child shows improvement, it is because I am able to make a difference in my child's development" and " Most days, I can handle most of the ups and downs of being a parent." Psychometric properties of this measure were assessed by Guimond, et al. (2008) among caregivers ages 16 to 52 years with children ages 3 months to 34 months affected by developmental, physical, and medical disabilities. Higher scores indicate the parents have higher self-efficacy. Construct validity was established by correlations with the Infant-Toddler Social and Emotional Assessment (ITSEA). The ITSEA subscales were used to establish convergent validity, including Internalizing ($r = -.30$, $p < .01$),

Externalizing (r = -.29, p < .01), and Dysregulation (r = -.31, p < .01). The ITSEA sub scale used to establish divergent validity was Social Competence (r = .16, p < .05). The measure had good internal consistency with α = .80. The current sample (n = 83) had adequate internal consistency, α = .78. See Appendix C for the measure.

The Parent Stress Inventory/Short Form (PSI-SF). The PSI-SF (Abidin, 2013) is widely used. The 36 item questionnaire uses a 5-point Likert Scale ranging from 1 (strongly disagree) to 5 (strongly agree). The PSI-SF has questions measuring parental distress (PD), parent-child dysfunctional interaction (PCDI), and difficult child (DC). For example, "I feel that my child is very moody and easily upset," and "My child rarely does things for me that make me feel good." Higher scores indicate higher stress. The norming sample included 1,056 nationally representative parents (534 mothers, 522 fathers) of children who were one to 12 years of age.

Parents of typically developing children were used for norming this measure; however, it is widely used throughout the literature for parents of children with developmental disabilities. The PSI-SF demonstrated strong criterion validity with a correlation with the full length PSI of .98. Test-retest reliability for the PSI-SF was .84 at a six-month retest interval. Internal consistency of the PSI-SF was high with an alpha level of .90 on a sample of parents of typically developing children in a laboratory setting. The current sample (n = 83) had high internal consistency α = .93. See Appendix D for the measure.

Autism Intervention Responsiveness Scale-SBP Modification (AIRS-M). The AIRS-M (Thompson, 2011) is a measure that was modified from a larger scale to fit the

needs of the Special Beginnings Program. The lead teacher in each SBP classroom uses The AIRS-M through out the school year to assess child improvement. The information obtained is used to tailor the educational program to best address areas in which a child is not making sufficient improvements. The measure contains 10 items. Each item is specific to a developmental domain of behavior or joint attention. Participants are to make a selection that best describes their child. Higher scores indicate child's functioning. The AIRS-M is part of a curriculum used to determine the best placement for children with ASD given their individual skill set. There is no published reliability or validity information for this measure; however, the AIRS-M is currently used in the SBP and the measure provided parent perspectives on child improvement. The current sample (n = 83) had adequate internal consistency, $\alpha = .71$. See appendix E for the measure.

Procedure

The primary researcher attended the first Project ImPACT parent training session for the SBP group. The questionnaire took about 30 minutes to complete with the exception of the eight parents for whom English is a second language (ESL), who took about 60 minutes to complete the questionnaire. An interpreter was provided for the ESL parents who read items aloud in order provide equal access to all parents who wanted to participate. Informed consent clearly stated participation was entirely voluntary. Each questionnaire packet included the measures described above. Initially, participants were to fill out a questionnaire pre-intervention, in order to establish a baseline. However, the SBP started Project ImPACT Training two weeks prior to data collection. This resulted in

the SBP group participants completing the questionnaire on week two of Project ImPACT training. Ten weeks later and at the 12 week follow-up, SBP teachers distributed the questionnaire to the SBP group.

A representative of The Redwood Coast Regional Center mailed the same measures to parents of children in the TAU group. The survey was mailed the week prior to the participants complete the questionnaire in the SBP group. This allowed both groups to complete questionnaires at approximately the same time intervals.

The informed consent was collected and stored separately from the questionnaire to ensure confidentiality. As an incentive, participants were eligible to enter a raffle for an I-Pad. Each participant received a raffle ticket each time they filled out a set of measures, so if the participant completed a pre, post, and follow-up measure, they received three entries into the raffle. The raffle tickets were stored separately from the completed questionnaires to protect participant confidentiality. The raffle ticket drawing was held at the end of the 12-week follow-up.

Data Analysis

There was a high rate of attrition (76%) after pre-test/time one data collection. Because of this, only seven of the original participants completed all three data collection points. Overall, there were different participants completing each data collection point. For example, some participants completed only the first, second, or third round of data collection rather than all three-time points. The result of this was an even number of participants for each time of data collection; however, each data collection point

contained a different set of participants. To analyze the data clearly for the correlational analysis necessary, only data collected the first time each participant completed the questionnaire was used rather than employing the intended longitudinal design. A secondary set of data analyses using pre, post, and follow up data were employed; however, because the majority of the data were missing the method of multiple imputation was used to impute missing data and estimate the longitudinal results.

To address this issue of missing data, the predictive mean matching method was used through the R package MICE (Buuren, 2017). Predictive mean matching (PMM) provides predictive power by using a regression model (Rubin, 1986). PMM is likely to produce values that closely simulate the values a participant would have selected if they had answered the scale item. Specifically, the imputed values are modeled after the data collected by participants who completed all items of the measures; therefore, the imputed values are based on real data (Little, 1988). PMM works by estimating a linear regression and drawing from a multivariate normal distribution. An imputed value is then generated for every observation including missing and present data. Then for each missing item in the scale, another predicted value is generated that then predicts all missing data items; this is known as iteration. Typical cases include around five imputations with five iterations. The original dataset was missing exactly 51.95% of the data across all three time points. Due to the large amount of missing data, a series of 10 imputations with 50 iterations was utilized to fill in the missing data, in order to estimate the longitudinal pre, post, and follow-up results.

Results

Descriptive Analyses

All correlational and descriptive analysis were conducted using data collected the first time each participant completed the measure and did not contain the imputed data set. A series of one-way ANOVAs was used to determine if scores for ESL participants who utilized an interpreter differed in any significant way from participants who did not use an interpreter. There were no significant differences in the perceptions of attachment, stress, self-efficacy, and child functioning level reported by parents in the ESL/interpreter versus no-interpreter groups. Therefore, analyses examine the entire sample together.

Examining all participants' first data collection point, all correlational hypotheses were supported. Statistically significant results were found between perceptions of child functioning level and parental stress ($r = -.49$, $p < .001$), between perceptions of child functioning level and parental self-efficacy ($r = .36$, $p < .001$), and between perceptions of child functioning level and parental feelings of attachment ($r = .47$, $p < .001$). See Table 2 for descriptive statistics on each measure. Table 3 shows descriptive statistics for each measure broken down by intervention group.

Mixed Model ANOVA

Attachment. The secondary analysis used the imputed data set. A mixed model ANOVA was employed, with Group (SBP vs. TAU) and Time (pre-test, post-test, and

follow-up) as independent variables and perceptions of attachment security as the dependent variable. There was no significant main effect for Group, $F(1, 79) = 0.13$, $p = .72$, $\eta^2 = .007$, and no Group x Time interaction, $F(2, 158) = .37$, $p = .69$, $\eta^2 = .002$. However, there was a significant main effect for Time with a small effect size, $F(2, 154) = 3.00$, $p = .05$, $\eta^2 = .010$. A post hoc analysis using a mixed model ANOVA revealed there was no significant difference between time one and time three $F(1, 79) = 1.47$, $p = .23$, $\eta^2 = .016$. Therefore, the effect for time was accounted for by a decrease from time one ($M = 3.51$, $SD = 0.50$) at time two ($M = 3.41$, $SD = 0.38$), which then rebounded to time one levels at time three ($M = 3.57$, $SD = 0.34$). This illustrates that both SBP and TAU experienced a rebound effect in their feelings of attachment security over time, regardless of treatments received.

Stress. Using the imputed data set a mixed model ANOVA was employed, with Group (SBP and TAU) and Time (pre-test, post-test, and follow-up) as independent variables and perceptions of stress as the dependent variable. There was no significant main effect for Group, $F(1, 79) = .30$, $p = .58$, $\eta^2 = .001$, and no Group x Time interaction, $F(2, 158) = 6.72$, $p = .002$, $\eta^2 = .01$. However, there was a significant main effect for Time with a small effect size, $F(2, 154) = 7.48$, $p < .001$, $\eta^2 = .046$. Perceptions of stress were highest at time one ($M = 3.44$, $SD = 0.36$), followed by a decreased at post-test ($M = 3.30$, $SD = 0.42$), and a further decrease at follow-up ($M = 3.25$, $SD = 0.35$). This illustrates that for both the SBP and TAU groups had a decrease in their perceptions of stress over time, regardless of treatments received.

Self-efficacy. Using the imputed data set a mixed model ANOVA was employed, with Group (SBP and TAU) and Time (pre-test, post-test, and follow-up) as independent variables and perceptions of self-efficacy as the dependent variable. There was no significant main effect for Group, $F(1, 79) = 2.45$, $p = .12$, $\eta^2 = .016$, and no Group x Time interaction, $F(2, 158) = 5.85$, $p = .004$, $\eta^2 = .03$. However, there was a significant main effect for Time with a small effect size, $F(2, 154) = 3.58$, $p = .03$, $\eta^2 = .019$. A post hoc analysis using a mixed model ANOVA revealed there was no significant difference between time one and time three $F(1, 79) = .21$, $p = .64$. $\eta^2 = .046$ Therefore, the effect for time was accounted for by a decrease from time one ($M = 4.02$, $SD = 0.46$), at time two ($M = 3.84$, $SD = 0.46$), which then rebounded to time one levels at time three ($M = 3.99$, $SD = 0.39$). This result indicates a rebound effect for both SBP and TAU for self-efficacy regardless of treatments received.

Discussion

The current study investigated the relationship between parental perceptions of attachment, self-efficacy, stress, and child functioning level over time in families coping with ASD. This study was the first to investigate the relationship between the evidence-informed curriculum Project ImPACT and parents' perceptions of these variables in the same study. In addition, participants in this study were separated into different groups: those who were currently receiving Project ImPACT training (SBP group), in an attempt to evaluate changes over time, in relation to a TAU group. Finally, this was the first study to look at the SBP, which provides early intervention for children with ASD using Project ImPACT curriculum.

Attachment, Stress, Self-Efficacy, and Child Functioning Level

As predicted, parental perceptions of stress and child functioning level were significantly negatively correlated, with a medium effect size. This result supports the work of Lecavalier, Leone, & Wiltz (2006), who found that parents' perceptions of stress were higher when parents reported a decrease in child functioning level and an increase in problematic behaviors among 293 parents of adolescents affected by ASD, also with a medium effect size.

Secondly, parental perceptions of self-efficacy and child functioning level were significantly correlated, with a small effect size. This result supports the work of Solish and Perry (2008) who found similar results in a group of 47 caregivers with children

affected by ASD, also with a small effect.

Finally, parental perceptions of child functioning level and parental feelings of attachment were significantly correlated with a medium effect size. This finding supports the work of Goodman & Glenwick (2012) who found a similar effect size between perceptions of attachment and child functioning impairment among a sample of 76 mothers with children ages 2-10 years affected by ASD.

These three results for the correlational analyses suggest that child functioning level is related parental perceptions of stress, self-efficacy, and attachment. However, due to the correlational nature of the results, the direction of the relationship cannot be determined. Previous research has indicated that increased levels of stress negatively impact child functioning level (Osborne, et al., 2008; Stadnick, et al., 2015). Future research will need to untangle the direction of these relationships, perhaps with a randomized controlled study, which was not possible in the current study. Nevertheless, the current findings suggest that self-efficacy and attachment are important when examining parent perceptions of child functioning.

Attachment and The SBP

The prediction that attachment would increase more for the SBP group after Project ImPACT at the three month follow up when compared to the TAU group was not supported. There was, however, a rebound in perceptions of attachment quality for all participants at the 12- week follow-up. This effect was seen with a dip in perceptions of attachment at time two and an increase to previous levels at time three. This study was

the first to examine perceptions of attachment quality with a pre, post and follow-up design, while parents participated in intervention using Project ImPACT.

There are several possibilities for why attachment experienced a rebound in both groups at the 12-week follow-up. One explanation for this could be due to the high rate of attrition and required multiple imputations. Because of this, the data were not capturing the same participants each time; therefore, it was not a true longitudinal study. Another possibility could be inadequate power among the groups to detect change. Finally, as stated earlier, Rogers et al. (1991) found that although children with ASD displayed attachment patterns similar to their typically developing peers, it was not evident until around 47 months of age. The mean age for the children of the parents sampled here was 36 months. Given that Rogers et al. (1991) suggested the attachment bond forms later for children affected by ASD, it may have been difficult for parents to perceive a change in their child's attachment bond before their child was 47 months. Future research should look at attachment quality in a larger community based sample over time. Finally, it may be that applying the new skills learned led parents to feel more challenged in there bond with there children initially, leading to the decline in attachment perceptions. Then, after they became more comfortable with there skills perceptions of attachment rebounded.

Stress and the SBP

The prediction that stress would decrease more for the SBP group after Project ImPACT and at the three month follow up compared TAU group was not supported. There was, however, a decrease in perceptions of stress for all participants at the post

analysis and at the 12-week follow-up. This finding supports the work of Ingersoll and Wainer (2013) who found that parental perceptions of stress decreased after Project ImPACT training among a sample of 17 parents with children with ASD. However, that study did not include a comparison group as the current study examined. In addition, this was the first study attempting to look at these variables using a pre, post, and follow up design.

There are several possibilities for the results found regarding parental perceptions of stress. Because the results of this study indicate there is no difference between SBP and TAU for the reduction of parental stress, it is possible that any evidence informed intervention is capable of reducing parental stress. It is also possible that the fact that the children were receiving early intervention services, parents were seeing an increase in their child's functioning level, thus, reducing there perceptions of stress. Finally, it is possible that there was actually a difference between the groups; however, because time one data collection occurred after Project IMPACT started, changes before time one data collection were not detected.

Self-efficacy and The SBP

The prediction that self-efficacy would increase more fore SBP group after Project ImPACT and at the three month follow up when compared the TAU group was not supported. There was, however, a rebound in perceptions of self-efficacy for all participants at the 12- week follow-up. This effect was seen with a dip in perceptions of self-efficacy at time two and an increase to previous levels at time three. This was the

first study to investigate Project ImPACT and perceptions of self-efficacy.

There are several possibilities for why self-efficacy experienced a rebound. First, as experienced with attachment there was a high rate of attrition and required multiple imputations. In addition, there is a possibility of inadequate power among the groups to detect change. Finally, previous research has shown that parents report difficulty adjusting to the demands that interventions entail (Green, 2007; Rodrigue et al., 1990). It is possible that the initial drop in self-efficacy found at the post analysis might be a representation of the increased demand on the parents while adjusting to their child's intervention schedule and new information. The rebound at follow-up may be representation of the parents adjusting to the new information and behavior patterns.

Implications and Recommendations

The current studies results support that perceptions of attachment, stress, self-efficacy, and child functioning level are related in all families with children on the autism spectrum. In addition, the finding that perceptions of stress fell after early intervention is evidence that early intervention programs can be successful at addressing parents stress levels, which previous literature has shown is a key component of treatment effectiveness (Osborne, et al., 2008; Stadnick, et al., 2015). Infact, 25 % of parents in this study reported extremely high to clinically significant stress levels as indexed by the norms of the PSI-SF (Abidin, 2013) thus, there is a need for intervention targeted at reducing parental stress. As stated previously, there is a negative relationship between child functioning level and parental stress (Osborne et al., 2008; Stadnick, et al., 2015).

Parental stress assessment prior to and throughout early intervention programs could be another indicator of program success. In addition, the use of parental stress measures such as the PSI-SF (Abidin, 2013) during early intervention planning would provide useful information on how to tailor the intervention in a way that would better support the parents, such as involving counseling and respite care services (Osborne, et al., 2008).

The current study, in addition to previous research, supports the need for early intervention programs to address the stress of parents with children affected by ASD (Osborne et al., 2008; Stadnick, et al., 2015). Additional research highlights the need to consider the mental health of parents within early intervention programs as an ideal

approach (Lushin, O'Brien, 2016). In particular, the inclusion of cognitive behavioral therapy (CBT) has been shown to reduce the levels of stress among parents with children affected by ASD (Feinberg, et al., 2014). In their study, 29% of parents reported extremely high or clinically significant stress levels before CBT as compared to only 3% of parents reporting extremely high or clinically significant stress levels after CBT.

Strengths, Limitations, and Future Research

This study has several strengths. First, the sample size was relatively large when compared to other studies investigating the same variables. In addition, the participants represented a rural community sample not yet investigated. Finally, this study included the evidence-informed teaching of Project ImPACT with the variables of attachment, stress, self-efficacy, and child functioning level included in the analysis.

The most obvious limitation of this study would be the inconsistent participants at each data collection point. Because of this, the majority of the data were missing, requiring over 50% of the data to be imputed for the intended longitudinal analyses. This resulted in a data set that more closely represented a correlational design rather than a pre, post, and follow up design. Another limitation is the correlational nature of the results; thus, the direction of the relationship between variables cannot be determined.

Finally, the lack of systematic implementation of the Project ImPACT curriculum contributed several limitations to the study. There was inconsistency in the method by which teachers chose to implement Project ImPACT. For example, some teachers taught Project ImPACT in the classroom with a group while others taught parents one on one at

the parent's home. Also, the teachers started Project ImPACT classes before the researcher was notified that it was time to collect baseline data. This resulted in a lack of a true baseline data point, which could explain the rebound effect found for attachment and self-efficacy as some of the changes in these variables may have already occurred. Additionally, the vast majority of SBP group participants, about two thirds, came from three teachers out of the nine teachers distributing the measures.

Conclusion

Future research is needed to better understand the parental experience of raising a child affected by ASD. This knowledge may increase the effectiveness of early intervention programs for parents and children in early intervention programs. Another study using a pre, post, and follow-up design with more control over the implementation of Project ImPACT would be an ideal replication. Additionally, the inclusion of a CBT group in comparison Project ImPACT training using the same variables would further solidify the evidence-base for Project ImPACT's effectiveness. Lastly, research including a mediation model to explore if attachment or self-efficacy mediates stress is needed to better understand the direction of these variables. This would provide valuable information to early intervention programs such as the SBP on which intervention services are most needed for parents and children to further child improvement.

Autism is a pervasive social and communicative developmental disability which impacts up to one in 68 children (CDC, 2014). In addition to children being affected by ASD, parents are under high amounts of stress due to the increased parenting demand and lack of social and emotional reciprocity from their children (Green, 2007; Rodrigue et al., 1990). Increased levels of parenting stress have been found to reduce the effectiveness of early intervention programs that serve children with ASD (Osborne et al., 2008). The current study explored the links between parental perceptions of attachment, stress self-efficacy, and child functioning level. The sample consisted of parents with children affected by ASD receiving Project ImPACT intervention in the SBP in comparison to

those who were receiving TAU. Results reveled that child functioning level, attachment, and, self-efficacy have a significant positively correlated and that child functioning level and stress are significantly negatively correlated. In addition, for all parents, regardless of treatment group (SBP or TAU), perceptions of attachment and self-efficacy rebounded to original levels, and stress decreased over time. These preliminary exploratory findings provide excellent food for thought for future autism research and early intervention program design.

References

American Psychiatric Association. (2013). Neurodevelopmental disorders. In *Diagnostic and statistical manual of mental disorders (5th ed.)*, (pp. 31-59). Washington, D.C: American Psychiatric Association. doi:10.1176/appi.books.9780890425596.dsm01

Ainsworth, M. S. (1979). Infant–mother attachment. *American Psychologist, 34*, 932-937. http://dx.doi.org/10.1037/0003-066X.34.10.932

Ainsworth, M. D. (1978). *Patterns of attachment: A psychological study of the strange situation*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215. doi:10.1037/0033-295x.84.2.191

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New Jersey: Prentice-Hall.

Bandura, A. (1994). *Self-efficacy*: *In R. J. Corsini (Ed.), Encyclopedia of psychology* (2nd ed., Vol. 3, pp. 368-369). New York: Wiley.

Baker-Ericzn, M. J., Brookman-Frazee, L., & Stahmer, A. (2005). Stress levels and adaptability in parents of toddlers with and without autism spectrum disorders. *Research and Practice for Persons with Severe Disabilities, 30*, 194-204. doi:10.2511/rpsd.30.4.194

Buuren, S. V., & Groothuis-Oudshoorn, K. (2011). Multivariate imputation by chained equations in R. *Journal of Statistical Software, 45*, 1-67. Retrieved September 29, 2017, from http://www.jstatsoft.org/v45/i03/.

Blaxill, M. F., Baskin, D. S., & Spitzer, W. O. (2003). Commentary: The changing prevalence of autism in California. *Journal of Autism and Developmental Disorders, 33*, 223-226. doi:10.1023/A1022912115365

Bowlby, J. (1958). The nature of the child's tie to his mother. *The International Journal of Psycho-analysis, 39*, 350-373.

Bowlby, J. (1971). Attachment and behavior. In *Attachment and loss: Vol. I* (pp. 221 - 311). New York, NY: Basic Books.

Busch, E. C. (2009). *Using acceptance and commitment therapy with parents of children with autism: The application of a theory* (Unpublished doctoral dissertation) The Chicago School of Professional Psychology, Chicago, IL.

Centers for Disease Control and Prevention. (2014). *CDC estimates 1 in 68 school-aged children have autism; no change from previous estimate*. Retrieved from http://www.cdc.gov/media/releases/2014/p0327-autism-spectrum-disorder.html

Croen, L. A., Grether, J. K., Hoogstrate, J., & Selvin, S. (2002). The changing prevalence of autism in California. *Journal of Autism and Developmental Disorders*, 32, 207-215. doi:10.1023/A:1015453830880

Dabrowska, A., & Pisula, E. (2010). Parenting stress and coping styles in mothers and fathers of pre-school children with autism and Down syndrome. *Journal of Intellectual Disability Research, 54*, 266-280. doi:10.1111/j.1365-2788.2010.01258.x

Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice, 5*, 314-332. doi:10.1111/j.1468-2850.1998.tb00152.x

Estes, A., Munson, J., Dawson, G., Koehler, E., Zhou, X. H., & Abbott, R. (2009). Parenting stress and psychological functioning among mothers of preschool children with autism and developmental delay. *Autism, 13*, 375-387. doi:10.1177/1362361309105658

Feinberg, E., Augustyn, M., Fitzgerald, E., Sandler, J., Suarez, Z. F., Chen, N., . . . Silverstein, M. (2014). Improving maternal mental health after a child's diagnosis of autism spectrum disorder. *JAMA Pediatrics, 68*, 40. doi:10.1001/jamapediatrics.2013.3445

Goodman, S. J., & Glenwick, D. S. (2012). Correlates of attachment perceptions in parents of children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 42*, 2056-2066. doi:10.1007/s10803-012-1453-8

Green, V. A. (2007). Parental experience with treatments for autism. *Journal of Developmental and Physical Disabilities, 19*, 91-101. doi:10.1007/s10882-007-9035-y

Hastings, R. P., & Brown, T. (2002). Behavior problems of children with autism, parental self-efficacy, and mental health. *American Journal on Mental Retardation, 107*, 222-232. doi:10. 1.1.329.2421

Higgins, D. J., Bailey, S. R., & Pearce, J. C. (2005). Factors associated with functioning style and coping strategies of families with a child with an autism spectrum disorder. *Autism, 9*, 125-137. doi:10.1177/1362361305051403

Hoppes, K., & Harris, S. L. (1990). Perceptions of child attachment and maternal gratification in mothers of children with autism and Down syndrome. *Journal of Clinical Child Psychology, 19*, 365-370. doi:10.1207/s15374424jccp1904_8

Ingersoll, B., & Dvortcsak, A. (2006). Including parent training in the early childhood special education curriculum for children with autism spectrum disorders. *Journal of Positive Behavior Interventions, 8*, 79-87. doi:10.1177/10983007060080020601

Ingersoll, B. R., & Wainer, A. L. (2013). Pilot study of a school-based parent training program for preschoolers with ASD. *Autism, 17*, 434-448. doi:10.1177/1362361311427155

Ingersoll, B. R., & Wainer, A. L. (2013). Initial efficacy of Project ImPACT: A parent-mediated social communication intervention for young children with ASD. *Journal of Autism and Developmental Disorders, 43*, 2943-2952. doi:10.1007/s10803-013-1840-9

Johnson, C. P., & Myers, S. M. (2007). Identification and evaluation of children with autism spectrum disorders. *Pediatrics, 120*, 1183-1215. doi:10.1542/peds.2007-2361

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, 2, 217-250. Retrieved from http://neurodiversity.com/library_kanner_1943.pdf

Landerman, L. R., Land, K. C., & Pieper, C. F. (1997). An Empirical evaluation of the predictive mean matching method for imputing missing values. *Sociological Methods & Research, 26*, 3-33. doi:10.1177/0049124197026001001

Little, R. J. (1988). Missing-data adjustments in large surveys. *Journal of Business & Economic Statistics, 6*, 287-296. doi: 10.1080/07350015.1988.10509663

Lord, C., Risi, S., DiLavore, P. S., Shulman, C., Thurm, A., & Pickles, A. (2006). Autism from 2 to 9 years of age. *Archives of general Psychiatry*, *63*, 694-701. doi:10.1001/archpsyc.63.6.694

Lord, C., Risi, S., Lambrecht, L., Cook Jr, E. H., Leventhal, B. L., DiLavore, P. C., ... & Rutter, M. (2000). The Autism Diagnostic Observation Schedule—Generic: A standard measure of social and communication deficits associated with the spectrum of autism. *Journal of Autism and Developmental Disorders, 30*, 205-223. doi:10.1023/A:1005592401947

Lovaas, O. I., & Simmons, J. Q. (1969). Manipulation of self-destruction in three retarded children. *Journal of Applied Behavior Analysis*, *2*, 143–157. http://doi.org/10.1901/jaba.1969.2-143

Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology, 55,* 3-9. doi:10.1037/0022-006X.55.1.3

Lushin, V., & O'Brien, K. H. (2016). Parental mental health: Addressing the unmet needs of caregivers for children with autism spectrum disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 55,* 1013-1015.

Macias, G. (2015, April 24). Personal interview.

Osborne, L. A., McHugh, L., Saunders, J., & Reed, P. (2008). Parenting stress reduces the effectiveness of early teaching interventions for autistic spectrum disorders. *Journal of Autism and Developmental Disorders, 38,* 1092-1103. doi:10.1007/s10803-007-0497-7

Pisterman, S., Firestone, P., McGrath, P., Goodman, J. T., Webster, I., Mallory, R., & Coffin, B. (1992). The effects of parent training on parenting stress and sense of competence. *Canadian Journal of Behavioural Science, 24,* 41-58. doi.org/10.1037/h0078699

Rodrigue, J. R., Morgan, S. B., & Geffken, G. (1990). Families of autistic children: Psychological functioning of mothers. *Journal of Clinical Child Psychology, 19,* 371-379. doi:10.1207/s15374424jccp1904_9

Rogers, S. J., Ozonoff, S., & Maslin-Cole, C. (1991). A comparative study of attachment behavior in young children with autism or other psychiatric disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 30,* 483-488. doi:10.1097/00004583-199105000-00021

Rutgers, A. H., Bakermans Kranenburg, M. J., van Ijzendoorn, M. H., & van Berckelaer Onnes, I. A. (2004). Autism and attachment: a meta analytic review. *Journal of Child Psychology and Psychiatry*, *45*, 1123-1134. doi:10.1111/j.1469-7610.2004.t01-1-00305.x

Rosenberg, R. E., Law, J. K., Yenokyan, G., McGready, J., Kaufmann, W. E., & Law, P. A. (2009). Characteristics and concordance of autism spectrum disorders among 277 twin pairs. *Archives of Pediatrics & Adolescent Medicine*, *163*, 907-914. doi:10.1001/archpediatrics.2009.98

Rubin, D. B. (1986). Statistical matching using file concatenation with adjusted weights and multiple imputations. *Journal of Business & Economic Statistics*, *4*, 87-94.

Schreibman, L., Dawson, G., Stahmer, A. C., Landa, R., Rogers, S. J., McGee, G. G., ... & McNerney, E. (2015). Naturalistic developmental behavioral interventions: Empirically validated treatments for autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *45*, 2411-2428. doi:10:1007/s10803-015-2407-8

Schieve, L. A., Tian, L. H., Baio, J., Rankin, K., Rosenberg, D., Wiggins, L., ... & King, L. (2014). Population attributable fractions for three perinatal risk factors for autism spectrum disorders, 2002 and 2008 autism and developmental disabilities monitoring network. *Annals of Epidemiology*, *24*, 260-266. doi:10.1016/j.annepidem.2013.12.014

Sofronoff, K., & Farbotko, M. (2002). The effectiveness of parent management training to increase self-efficacy in parents of children with Asperger syndrome. *Autism*, *6*, 271-286. doi: 10.1177/1362361302006003005

Stadnick, N. A., Stahmer, A., & Brookman-Frazee, L. (2015). Preliminary effectiveness of project impact: a parent-mediated intervention for children with autism spectrum disorder delivered in a community program. *Journal of Autism and Developmental Disorders, 45,* 2092-2104. doi:10.1007/s10803-015-2376-y

Van IJzendoorn, M. H., Rutgers, A. H., Bakermans-Kranenburg, M. J., Swinkels, S. H., Van Daalen, E., Dietz, C., ... & Van Engeland, H. (2007). Parental sensitivity and attachment in children with autism spectrum disorder: Comparison with children with mental retardation, with language delays, and with typical development. *Child Development, 78,* 597-608. doi:10.1111/j.1467-8624.2007.01016.x

Zablotsky, B., Black, L. I., Maenner, M. J., Schieve, L. A., & Blumberg, S. J. (2015). Estimated prevalence of autism and other developmental disabilities following questionnaire changes in the 2014 National Health Interview Survey.

Appendix A - Demographics

ID: Your Unique ID will be the first letter of your first and last name in addition to the first letter of your child's first and last name. For example, if my name was Andrew Smith and my child's name was Joe Smith, my ID would be ASJS. Your unique ID is anonymous. It will not be used to identify you in any way.

ID: ___ Parent Age: ____ Gender_____ Child Age: ____ Gender____ Birth order of Child: ____

Has your child been identified as:

□ at risk for ASD □ Has an ASD diagnosis

□More than one diagnoses (please specify) _____

How many children do you have? ____

If you have more than one child, do any of the other children have an ASD diagnosis? _____

Ethnicity:

□ European-American □ African-American □ Latino/a-Hispanic

□ Asian-American □ Native-American □ Mixed Ethnicity

□ Other (please specify) _____

Education Level:

□ No Formal Education □ Finished Grade School

□ Finished Middle School Or Junior High □ Finished High School

□ Some College □ Finished College □ Finished Graduate School

□ Other (please specify) _____

Employment Status:

□ Not employed outside the home □ Part-time (1-34 hours)

□ Full-time (35 hours or more) □ Other (please specify)

What is your annual income, in thousands _____

How many days of work did you miss in the past 30 days due to poor physical health? _____

How many days of work did you miss in the past 30 days due to mental stress or family problems?

_____

How many days of work did you miss in the past 30 days due to mental or emotional stress related to your child's ASD diagnosis? _____

Marital Status:

□ Married □ Single □ Cohabitate with Partner □ Separated

□ Divorced □ Widowed □ Re-married

□ Other (please specify) _____

How many times have you been married?

□ 0 □ 1 □ 2

What is the estimated total amount of time your child has received early intervention services?

Days: _____ Weeks: _____ Months: _____ Years: _____

How many hours per week does your child attend early intervention services? _____

What types of services does your child currently receive? (Check all that apply)

□ Speech □ Therapy □ Occupational Therapy

□ Other(please specify): _____

Who is the primary caretaker of your child?

□ Self □ Other (What is their relation to you?): _____

Appendix B - Child Attachment Scale

For the following questions, please indicate how much each statement applies to your child. Please circle the answer which best describes your view of your child. While you may not find an answer which exactly fits the way you view your child, mark the answer which comes closest to describing your child. Your first reaction to each question should be your answer.

1.	My child imitates things I do around the house (such as cooking, cleaning, caring for or feeding the children, mowing the lawn, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
2.	My child comes to me when s(he) wants help with something.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
3.	How often does your child show an interest in helping you or participating in activities that you are doing around the house (such as cooking, washing the car, fixing things around the house, picking up things, setting the table, cleaning up leaves in the yard, etc.)?	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
4.	When I play with my child, my child will imitate gestures I make or things I do while playing (such as gestures while playing patty cakes, building blocks, playing with dolls, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently

5.	How often does your child initiate or ask to play with you?	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
6.	My child initiates physical contact with me (by hugging, cuddling, sitting on your lap, tickling, rough physical play, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
7.	When my child is hurt or in pain, s(he) comes to me for comfort and help.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
8.	My child reacts with jealousy when I pay attention to other people (child may communicate jealousy be becoming angry, throwing a tantrum, requesting to be held, requesting some other form of attention, communicating unhappiness, becoming noisy or doing something to get your attention).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
9.	My child seems to seek my attention mostly when s(he) wants me to give him/her something.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
10.	When I help my child with something (giving child a toy or food, dressing child, etc.), my child conveys appreciation for my help by smiling at me, thanking me, or showing some other gesture of appreciation.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently

11.	My child treats me more like an object to be used to obtain the things s(he) wants and needs rather than a person who is very important to him/her.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
12.	My child enjoys my company and attention and actively seeks my attention on a regular basis.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
13.	When my child is frightened or upset by something, s(he) usually comes to me for reassurance/comfort.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
14.	When I go out and leave my child at home with a familiar adult, my child communicates distress or unhappiness about my leaving. (Child may communicate distress or unhappiness by fretting, crying, protesting, wanting to join you or hold onto you, getting angry, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
15.	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 my again (greeting me with a warm smile, moving close to me, touching me, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently

16.	When I say goodbye to my child when s(he) leaves for school, s(he) will resist leaving me (by crying, fretting, tantruming, wanting to hold onto me, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
17.	In general, my child seems to show an awareness of my feelings. (Child may demonstrate an awareness by commenting on your feelings, "you're mad, sad, etc." or by demonstrating some change in behavior in response to your feelings.)	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
18.	When I communicate that I am angry with my child for misbehaving, my child seems to recognize my anger (by commenting on it, discontinuing what s(he) was doing, approaching me to try to win my approval, apologizing, looking sad or guilty, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
19.	When I cry or show sadness in my child's presence, I feel that my child becomes aware of my feelings (by trying to comfort or approach you in some way, changing his/her own mood or behavior in response to your mood).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently

20.	I wish my child showed more interest in wanting to have contact with me (by initiating play, physical contact, talking with me, staying in closer physical proximity, etc.).	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
21.	My child and I have a close, intimate relationship that is very mutual. In other words, I Feel that my affectionate, close, loving feelings toward my child are returned by my child toward me.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
22.	At times, my child seems to be completely unaware of my feelings.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently
23.	I wish my child demonstrated more feelings of love and affection toward me.	1 never	2 seldom	3 occasionally	4 fairly often	5 frequently

Appendix C - Attachment Parental Gratification Measure sub scale

For the following questions, please indicate how much each statement applies to you. Please circle the answer which best describes your feelings. While you may not find an answer which exactly fits the way you feel, please select the answer which comes closest to describing your feelings. Your first reaction to each question should be your answer.

1.	I enjoy spending time with my child and find him/her very pleasant to be around.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
2.	My relationship with my child helps me feel good about being a mother.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
3.	My child rarely does things that make me feel good.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
4.	When I am separated from my child, I find myself looking forward to his/her return.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
5.	I feel very frustrated and disappointed with my interactions with my child.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree

6.	I miss my child when we are separated for any period of time.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
7.	I enjoy teaching my child new things.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
8.	Sometimes I feel so sad and disappointed about the ways my child responds to me.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
9.	The house seems empty without my child.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
10.	I enjoy playing with my child.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
11.	I like to touch my child and be affectionate with him/her.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
12.	I don’t enjoy being around my child as much as I would like to and this bothers me.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree

13.	I feel that I give a lot to my child, but do not receive much in return for all that I give.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
14.	I expected to have closer and warmer feelings for my child than I do and this bothers me..	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree
15.	I find mothering my child to be very enjoyable, rewarding, and gratifying.	1 Strongly Disagree	2 Mildly Disagree	3 Uncertain/ Neutral	4 Mildly Agree	5 Strongly Agree

Appendix D -The Early Intervention Parenting Self-Efficacy Scale (EIPSES)

Please consider whether you agree or disagree with each statement, and circle the number that you think best describes you and your child. When you see the words "early interventionist," this means the person who provides services to your child such as a speech therapist, occupational therapist, or parent educator, and who is a part of this research project.

1.	If my child is having problems, I would be able to think of some ways to help my child.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
2.	When my child shows improvement, it is because I am able to make a difference in my child's development.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
3.	When it comes right down to it, parents really can't do much because most of a children's development depends on their early interventionists.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree

4.	If one of my child's early interventionists has difficulty with my child, I would be able to offer some suggestions.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
5.	Children will make the most progress if their early interventionists work with them rather than if the parents work with the children.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
6.	Even a good parent may not have much impact on whether children feel good about themselves.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
7.	I feel that I can work well with my child's early interventionist as part of my child's team.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree

8.	Because there is so little help from the community, I am often sad or angry about how few services I can find for my child and the rest of my family.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
9.	If my child learns something quickly, it would probably be because I know how to help my child learn new things.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
10.	The amount that a young child will learn is mostly due to family background, the neighborhood, and the early interventionist rather than their parents.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree

11.	On most days, I can handle most of the ups and downs of being a parent.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
12.	I worry that I am not a good enough parent due to outside demands placed upon my time and energy.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
13.	When my child is ill, I feel that there is nothing I can do to help my child or other members of my family.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
14.	Over the past year, I can see the progress that I have made in becoming a better parent.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree

15.	No matter how hard I try, it seems that I just cannot find a way to get the services that my child and my family needs.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree
16.	The traits that a child has before he or she is born are more important than anything that the child's parents can do for the child.	1 Strongly Disagree	2 Disagree	3 Somewhat Disagree	4 Neutral	5 Some what Agree	6 Agree	7 Stron gly Agree

Appendix E - Parenting Stress Index

Please consider whether you agree or disagree with each statement, and circle the number that you think best describes you and/or your child.

1.	I often have the feeling that I cannot handle things very well.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
2.	I find myself giving up more of my life to meet my child's needs than I ever expected.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
3.	I feel trapped by my responsibilities as a parent.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
4.	Since having my child I have been unable to try new and different things.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
5.	Since having my child I feel that I am almost never able to do things that I like to do.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

6.	I am unhappy with the last purchase of clothing I made for myself.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
7.	There are quite a few things that bother me about my life.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
8.	Having a child has caused more problems than I expected in my relationship with my spouse.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
9.	I feel alone and without friends.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
10.	When I go to a party I usually expect not to enjoy myself.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
11.	I am not interested in people as I used to be.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
12.	I don’t enjoy things as I used to.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

13.	My child rarely does things for me that make me feel good.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
14.	Most times I feel that my child likes me and wants to be close to me.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
15.	My child smiles at me much less than I expected.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
16.	When I do things for my child, I Get the feeling that my efforts are not appreciated very much.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
17.	When playing, my child doesn't often giggle or laugh.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
18.	My child doesn't seem to learn as much as most children.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
19.	My child is not able to do as much as I expected.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

20.	My child doesn't seem to smile as much as most children.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
21.	It takes a long time and it is really hard for my child to get used to new things.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
22.	I feel that I am: (being a parent)	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
23.	I expected to have closer and warmer feelings for my child than I do and this bothers me.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
24.	Sometimes my child does things that bother me just to be mean.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
25.	There are some things my child does that really bother me a lot.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
26.	My child generally wakes up in a bad mood.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

27.	I feel that my child is very moody and easily upset.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
28.	My child does a few things that bother me a great deal.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
29.	My child reacts very strongly when something happens that my child doesn't like.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
30.	My child gets upset easily over the smallest thing.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
31.	My child's sleeping and eating schedule was much harder to establish than I expected.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
32.	I have found that getting my child to do something is:	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
33.	Think carefully and count the number of things which your child does that bothers you.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

34.	My child turned out to be more of a problem than I expected.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
35.	My child makes more demands on me than most children.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree
36.	My child seems to cry more often than most children.	1 Strongly Agree	2 Agree	3 Not Sure	4 Disagree	5 Strongly Disagree

Appendix F - Autism Intervention Responsive Scale

Please read each response carefully then circle the option that best fits your child.

Domain	1	2	3
Communication	Does not speak or use gestures to communicate; may exhibit nonfunctional vocalizations or repetitive words.	Uses spoken single words or phrases and some gestures to communicate follows single-step instructions.	Considerable phrase speech; tendency for excessive verbosity; follows multistep instructions.
Joint Attention	No Joint Attention	Some or occasional Joint Attention	Frequent Joint Attention
Imitation	Not motor or verbal imitation	Some motor and limited verbal imitation	Good motor and moderate to good verbal imitation
Social Interest	Shows no interest in people except to meet his or her needs; prefers to be left alone	Some social interest but lacks skills to interact with others	Definite social interest; prefers to be with others people, but lacks typical social skills
Insistence on Sameness	Many activities performed as rigid daily routines; tantrums if routines are not followed	Appears uncomfortable if predictable routines are not followed, but tolerate some changes	Has one or two highly specific routines (e.g. bed-time), but otherwise flexible about daily activities

Domain	1	2	3
Narrow Interests	Interested in 1-3 toys or motor activities; no interest in purposeful games; motor activities are performed with little variability	Interest in several toys or activities or games, but can be distracted fairly easily to engage with another toy or activity	Interest in specific verbal topics (e.g. dinosaurs, vehicles, weather, computer games) or complex toys; can be distracted verbally; may resist or protest
Repetitive Motor Behavior	Nearly constant nonfunctional repetitive behavior involving body parts, items of clothing, thread, or a single to; extremely difficult to redirect	Moderate repetitive motor behavior, but can be distracted by another activity; motor behavior involves parts of the environment, such as light switches, doors, video, vehicles	Infrequent, brief, mild self-stimulatory motor behavior when excited or upset; otherwise no stereotypic mannerisms
Attention	Fleeting, very poor attention	Fair to moderate attention to tasks	Attends to tasks for extended periods
Activity	Nearly constantly moving; does not persist at any activity more than seconds	More active that same-age typical peers; sits still for several minutes to participate in some activities	Generally calm, readily remains seated; does not appear more active than typical peers

Domain	1	2	3
Anxiety/fearfulness	**Often fearful in many situations**	**Moderate anxiety in several situations**	**Not overly apprehensive exhibits anxiety in novel situations**
Physical Features	Atypically small or large head size; atypical teeth spacing/size ear features, or eye/brow placement; other unusual physical features	Subtle difference in some facial features from others, but not strikingly unusual appearance; normal head size	Typical features resembling those of other family members and typical peers; normal head size