

Parental Attributions of Control and Self-Efficacy: Observed Parenting Behaviors in Mothers of
Preschool Children with Autism Spectrum Disorder

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ABSTRACT

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Background. Parents of children with Autism Spectrum Disorder (ASD) report higher levels of stress and experience more marital strain and divorce than parents of typically developing children and parents of children with other disabilities. However, no studies have yet examined the relationship between parental attributions or beliefs and observed parenting behaviors for parents of children with ASD, a particularly challenging parenting context. Promising experimental and intervention studies suggest that parents' perception of controllability can be modified, with consequential changes in parents' actual parenting behaviors (Bugental & Happaney, 2002; Slep & O'Leary, 1998). The present dissertation seeks to extend the study of the relationship between parental cognitions and behaviors by understanding the role of cognitions for mothers in a community sample at high risk for elevated parenting stress, and by evaluating how the relationship between cognitions and parenting behaviors may vary based on the child's level of functioning. Parenting behaviors were observed across different types of tasks intended to mimic naturalistic dyadic situations in order to identify the degree to which parenting behaviors may vary as a function of context. By identifying whether parental cognitions influence more or less competent parenting strategies, results will guide tailoring of interventions for the needs of this highly stressed population.

Methods. Forty-two mother-child dyads, with children ages 2 years and 6 months to 5 years and 6 months, were included in this study. Children were students at a specialized preschool utilizing an Applied Behavior Analysis approach to education, and all participating

children had a diagnosis of ASD, verified by either the *Autism Diagnostic Observation Schedule, Second Edition* (Lord et al., 2012), a gold-standard measure of ASD, or the *Childhood Autism Rating Scale, Second Edition* (Schopler, Van Bourgondien, Wellman, & Love, 2010) as part of their study participation. Mother-child dyads participated in several interaction tasks, including a 5-minute teaching task, 5-minutes of free play, and a 2-minute cleanup task, which were videotaped for later coding using the *Psychological Multifactor Care Scale – ASD Adapted Preschool Version* (Brassard, Donnelly, Hart, & Johnson, 2016). Mothers also completed questionnaires assessing parental stress, cognitions, child behavior problems, and demographic characteristics. Two cognitions were evaluated: attributions of control were measured using an adapted version of the *Parent Attribution Test* (Bugental, 2011; Woolfson, Taylor, & Mooney, 2011), which has previously been related to harsh parenting behaviors, particularly with maltreating families; and self-efficacy was measured using the *Parenting Sense of Competence – Efficacy* subscale (Gibaud-Wallston & Wandersman, 1978), a widely used measure of parental self-efficacy with a positive relationship to quality of parenting. Parental stress was assessed by the *Parenting Stress Index – Fourth Edition, Short Form* (Abidin, 2012). Participating children’s classroom teachers completed the Communication domain of the *Vineland Adaptive Behavior Scales –Fourth Edition* (Sparrow, Cicchetti, & Saulnier, 2016) as an assessment of children’s level of language functioning, and mothers rated their perceptions of their child’s behavioral functioning using the *Child Behavior Checklist* (Achenbach & Rescorla, 2000).

Results. Multiple regression analysis found significant direct effects of attributions of control for both positive and harsh observed parenting behaviors, and significant interactions between attributions of control, parental self-efficacy, and child language functioning for observed harsh parenting behaviors. Observed harsh parenting behaviors were also predicted by

the interacting relationship between parenting stress, self-efficacy, and parent perception of child behavior problems. There was no significant difference in the relationship between parental attributions and observed parenting behaviors between each of the three task types, though harsh parenting behaviors were more frequently observed during free play, relative to teaching and cleanup tasks. Regression models controlled for parental race, parent perception of child behavior problems, and the number of adults in the home – a proxy for caregiving support. Though mothers engaged in infrequent and mild levels of harsh parenting behaviors, those who did reported higher levels of stress, lower self-efficacy, and higher attributions of control, particularly during free play.

Conclusions. Parental attributions of control have been found to be a powerful and modifiable variable for maltreating samples, where mothers who believe child control is more important than adult control in impacting the outcome of a failed interaction are more likely to engage in harsh parenting. In this sample, a relationship was found in the opposite direction, in that mothers who perceived adult control as more important displayed more harsh parenting behaviors. The difference is likely related to the significantly distinctive context for parenting a child with ASD, given the unique relational and behavioral characteristics associated with the disorder. Whereas self-efficacy did not directly relate to observed parenting behaviors, it interacted with other family factors to predict parenting behaviors. Directions for future research and clinical implications are discussed.

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Introduction

Certain characteristics of the early childhood years make the parenting of preschool-aged children a particularly challenging task. For example, preschool-aged children require a high level of attention as they increase mobility and test limits; additionally, public options for early childhood schooling are often limited in the United States. Beyond the challenges associated with parenting typical preschool-aged children, parenting a preschool-aged child with a disability is an even more challenging, as children with disabilities require more financial resources, parental time and energy devoted to their higher level of care.

Parenting a child with autism spectrum disorder (ASD) can be especially demanding. Unique challenges associated with parenting a child with ASD include managing difficult behaviors and the child's social-communication deficits that may challenge relationships (Fox, 2014; Hall & Graff, 2011; Hastings & Johnson, 2001). These factors, among others, contribute to particularly high levels of parenting stress (Estes, et al., 2013; Hayes & Watson, 2013; Schieve, Blumberg, Rice, Visser, & Boyle, 2007) and higher rates of marital strain and divorce (Hartley, Barker, Seltzer, Floyd, Greenberg, Orsmond, & Bolt, 2010), relative to parents of typically developing children and children with other disabilities. The present study focuses on mother-child dyads of preschool-aged children with ASD in order to examine some of the modifiable factors that may influence parenting behaviors. Specifically, this dissertation focuses on parents of preschool-aged children attending a specialized, Applied Behavior Analysis (ABA) preschool in a suburb of New York City. Many of the children who attend the school have ASD, as the ABA educational method has been demonstrated to be very effective for children with ASD (Eikeseth, Klintwall, Jahr, & Karlsson, 2012; Sambandam, Rangaswami, & Thamizharasan, 2014; Virués-Ortega, 2010). The present study examines modifiable parent factors that can be

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targeted in families with a developmentally delayed preschool child in order to promote competent parenting.

Broadly, parenting is a varied, complex process driven by many variables that interact with one another to determine the quality of the parent-child relationship, as well as parent and child individual well-being. Many researchers agree that individual characteristics of the parent, such as developmental history, psychopathology and personality are the most significant contributing factors to parenting outcomes (e.g., Belsky, 1984; Pianta, Egeland, & Erickson, 1989; Polansky, 1981; Verhoeven, Junger, van Aken, Dekovic, & van Aken, 2007). These characteristics interact with other strengths and vulnerabilities in the family system such as co-parenting, informal social network support, and financial resources. Individual characteristics of the child, such as the presence of a disability, may increase risk for harmful parenting behaviors. Specifically, Jones et al. (2012) found that children with disabilities are at an increased risk for experiencing emotional abuse and neglect by their parents, with odds ratios of 4.4 and 4.6 respectively, compared to children without disabilities. Given the risk of experiencing maltreatment for children with disabilities, it is the aim of the proposed dissertation to understand some parenting factors that contribute to harsh parenting (a risk factor for maltreatment) in families of children with ASD. Further, this dissertation seeks to understand the protective factors of parents who demonstrate adaptive and skillful parenting strategies.

Previous studies of typically developing children have established a relationship between parental cognitions and behaviors, and other studies, largely in the child abuse risk literature, have indicated that changing parents' perceptions of control can change parenting behaviors (e.g., Bugental, 2011; Bugental, Blue, & Cruzcosa, 1989; Bugental & Johnston, 2000; Rodriguez & Tucker 2015; Wilson, Gardner, Burton, & Leung, 2007). This study examines two types of

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parental cognitions that are likely to impact parenting behaviors: parent attributions of adult versus child control over failure (who the parent believes is more responsible for a poor caregiving interaction) and parental self-efficacy (parents' perceptions of their competence as a parent). In Bugental and colleagues' work, a self-report measure compares parents' perceptions of control, based on parents' attributions of how much control the adult and child have, respectively, in the outcome of a poor caregiving interaction. Parents who view the child as having more control than the adult are more likely to behave harshly towards their children. Whereas the aforementioned parenting cognition focuses on parents' perceptions of control relative to their child, the second cognition of study, parental self-efficacy, focuses on parents' perceptions of their own competence in their role as a parent. Harsh parenting (Bondy & Mash, 1997, as cited in Bugental & Johnston, 2000) and high parenting stress (Hassall, Rose, & McDonald, 2005) have been linked to poor parental self-efficacy, or perceived feelings of incompetence with regard to parenting skills.

Promising experimental and intervention studies suggest that parents' perception of controllability can be modified, with consequential changes in parenting behaviors (Bugental & Happaney, 2002; Slep & O'Leary, 1998). The proposed dissertation seeks to extend the study of the relationship between parental cognitions and behaviors by understanding the role of cognitions for parents in a community sample at high risk for elevated parenting stress, and by evaluating how the correlation between cognitions and parenting behaviors may vary based on the child's level of intellectual functioning. Further, the study aims to evaluate whether the relationship between cognitions and parenting behaviors varies across types of parenting tasks. Parenting behaviors will be observed across different types of tasks intended to mimic naturalistic dyadic situations in order to identify the degree to which parenting behaviors may

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vary as a function of context. By identifying how parental cognitions influence more or less competent parenting strategies across various contexts, results will guide tailoring of interventions for the needs of this highly stressed population.

Of the existing studies that have demonstrated the link between parental cognitions and parenting behaviors, most measure parenting behaviors by the parents' self-report, with fewer studies using objective observational measures to evaluate behaviors. The present study adds to the literature by evaluating parental cognitions in connection to direct observation to understand how cognitions relate to behaviors. The observational coding system that will be used is based off of a wide expanse of research that categorizes quality of parenting into three dimensions: (1) parents' quality of instruction, scaffolding, constructive discipline and feedback to the child on his/her behavior; (2) emotional support, such as comforting and protecting a child who is scared, hurt, or distressed, the absence of which is emotional neglect; and (3) harsh parenting, which includes the presence of psychological aggression towards the child.

Overall, this dissertation seeks to examine cognitive mechanisms that may differentiate mothers of preschool-aged children with ASD who behave with a harsh or psychologically neglectful style, and those who demonstrate parenting competence, even under stressful circumstances. Previous research on parenting children with ASD has focused on parental cognitions and coping mechanisms, and separately on parenting behaviors (Maljaars, Boonen, Lambrechts, Van Leeuwen & Noens, 2014); additional domains of literature have linked parental cognitions to actual parenting behaviors; however, the relationship between cognitions and actual observed parenting behaviors for children with ASD has not been studied. This research extends previous findings by providing new insights that can best inform interventions for the unique needs of parents of children with ASD. The study also examines different types of cognitions

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that may account for the attributional differences depending on the child's level of functioning, given the range of functioning across the autism spectrum. This study aims to fill gaps in the literature on parenting children with ASD and the cognitions and contexts that influence parenting behaviors.

Finally, while many previously established interventions for highly stressed families have promising outcomes, the unique stress of parenting a child with ASD brings attention to the mental health needs of parents in this population. Modification of maladaptive parental cognitions may be an important target for intervention for parents of children with ASD, who present a uniquely challenging parenting context, to enhance their positive parenting outcomes while also mitigating the parents' experiences of stress. Due to established parenting differences between mothers and fathers, (e.g. Dabrowska & Pisula, 2010; Gryczkowski, Jordan, & Mercer, 2010; Pelchat, Lefebvre, & Perreault, 2003), and the presumed difficulty of recruiting a balanced sample, this dissertation specifically focuses on mothers of children with ASD.

Chapter One: Literature Review

Parenting Children with Autism Spectrum Disorder (ASD)

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that includes deficits in social communication and the presence of restricted interests and repetitive behaviors (American Psychiatric Association [DSM-5], 2013). Individuals with ASD present with a range of symptom severity and cognitive abilities, making the spectrum of ASD quite heterogeneous. The latest prevalence rates published by the Center for Disease Control and Prevention indicate that ASD affects approximately one in 68 children in the United States, and boys are impacted approximately four to five times more than girls. ASD symptoms are present early in life (usually between 12-24 months of age), and the diagnosis persists throughout the lifespan, with

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75-85% of individuals maintaining their diagnosis into adulthood (Howlin, Goode, Hutton, & Rutter, 2004).

According to the DSM-5, diagnoses that were previously classified within the category of Pervasive Developmental Disorders (i.e., PDD-NOS, Asperger's Syndrome, autism, among others) are now classified within one diagnostic category of ASD. Specifiers indicate whether ASD is accompanied by an intellectual impairment, language impairment, and/or whether it is associated with a known medical, genetic, or other neurodevelopmental condition. Studies indicate that up to 79 percent of individuals with autism have comorbid intellectual impairments (Edelson, 2006; Volkmar & Klin, 2005). Other findings indicate that up to 74 percent have comorbid psychiatric disorders, including behavioral disorders (44%), anxiety disorders (42%) and tic disorders (26%; Mattila et al., 2010).

Children with ASD exhibit deficits in two domains of functioning: social communication and restricted, repetitive patterns of behaviors, interests or activities. Deficits in social communication may include abnormal social approach and social reciprocity; abnormalities in eye contact, body language, and use of gestures; limits in imaginative play and interest in peers.; and difficulties processing emotions. Deficits in restricted, repetitive patterns of behavior may include: stereotyped motor movements, speech or use of objects, such as echolalia (repeating language heard immediately or after a delay) or flipping objects; ritualized patterns of behaviors and inflexibility to changes in routine; and abnormal sensitivity to sensory input. DSM-5 diagnostic severity levels (ranging from 1 to 3) of ASD are determined based on level of support needed in order to function.

Parents of children with ASD experience a uniquely challenging context of parenting, resulting in high levels of stress and isolation (Estes, et al., 2013; Hayes & Watson, 2013;

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Schieve, Blumberg, Rice, Visser, & Boyle, 2007). Related effects include higher levels of divorce and depression (Hartley et al., 2010; Hartley et al., 2012; Weiss & Lunsky, 2011), and lower levels of well-being and sense of competence (Abbeduto et al., 2004; Benson, 2010) compared to parents of children with other developmental disorders, such as Down Syndrome, Fragile X Syndrome, and Intellectual Disability. Given that parents of children with ASD experience more distress on average than other parents, due, in part, to their child's higher level of need, parents' increased fatigue, and added financial stress associated with supports and interventions, it is important to examine factors that contribute to both child and parental well-being. Through observing quality of parenting of children with ASD, this dissertation aims to identify mothers' cognitive mechanisms that relate to parenting behaviors that have been known to promote children's growth and development and parenting behaviors that may be ineffectual in parenting children with ASD.

Dimensions and Determinants of Parenting

Broadly, parenting is interactional and determined by a multitude of factors. First and foremost, the parental role is intrinsically embedded in evolutionary and biological propensities of the human species. Physiological changes are observed in expectant mothers during pregnancy and postpartum, and a recent longitudinal study observed hormonal changes in both mothers and fathers in expectant couples (Edelstein et al., 2015). The hormonal changes found in both mothers and fathers in committed partnerships before birth of their first child indicate a biological response to parenting, beyond the maternal hormonal changes associated with pregnancy. Researchers explain that hormonal changes might be driven by the psychological, emotional, and behavioral changes of anticipating a new child (although the direction of this relationship is unclear — whether the hormones change as a result of the behavioral changes, or

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behaviors are driven by the hormones). Other studies have linked hormonal changes in mothers to longer term infant outcomes, such as cognitive development (e.g., Davis & Sandman, 2010), suggesting a relationship between the biological implications of prenatal parenting and postnatal child. As children's characteristics are pre- and postnatally influenced by their parents' biology, parenting behaviors interact with child characteristics, while also shaping the child's neural development; in turn, parenting skills adapt based on evolving needs (Rilling & Young, 2014). The biological implications of parenting are vast and complex, yet fundamentally demonstrate the mammalian instinct to parent by way of nurturance, bonding, and protection. Evidently, there is a biological nature to parenting in both mothers and fathers.

Beyond the adaptive, biologically induced human parenting repertoires, parenting skills are learned both explicitly and implicitly from environmental and societal factors. Parents learn behaviors from the sociocultural environment in which they were raised. Race, ethnicity, religion, and other cultural factors drive attitudes towards child rearing and discipline (Bornstein, 2002; Ferrari, 2002). For example, beliefs about the use of corporal punishment differ between various cultures (Lansford & Dodge, 2008). Further, individuals' own experiences of *being* parented forge deeply embedded and unarticulated ideas that lead to implicit beliefs about parenting (attachment theory and attachment style provide a framework, although a full review of the attachment literature is beyond the scope of this dissertation; see Bowlby, 1973; Bretherton, Biringen, Rideway, Maslin, & Sherman, 1989; Wallin, 2007; Wilson, Rholes, Simpson, & Tran, 2007).

The biological and sociocultural factors interact with other variables to determine parenting behaviors and relational outcomes. Belsky (1984) proposed a theoretical model of parenting that captures three domains of determinants that contribute to parenting and child

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outcomes: (1) individual characteristics and psychological well-being of the parent; (2) individual characteristics of the child, such as temperament and disability status; and (3) external contexts, such as social support and employment. Belsky's ecological process model has been confirmed and expanded extensively (Michalcio & Solomon, 2002; van Bakel & Riksen-Walraven, 2002; Verhoeven, Junger, van Aken, Dekovic, & van Aken, 2007). Belsky (1984) argues that individual characteristics of the parent, such as personality, psychological well-being, and personal developmental history, are likely the largest contributors to effective parental functioning. Parental characteristics also act directly and indirectly on other social-contextual factors that affect the entire child rearing and family context (e.g., marital relationship, social support, employment, etc.). Though vulnerabilities in the latter two components of the model lead to heightened risk factors, Belsky and other scholars (e.g., Appleyard, Egeland, Dulmen, & Sroufe, 2005; Pianta, Egeland, & Hyatt, 1986; Polansky et al., 1981) strongly indicate that the greatest contribution to child outcomes is the individual characteristics of the parent. Belsky (1980) suggested that parents may be more resilient, and the effects of other risks may be buffered, if parents' personal resource system is effective.

Within the category of parental behavior, previous research identifies three universal dimensions of parenting: (1) instruction, guidance, and limit setting that promotes the facilitation of social and cognitive development appropriate for a given culture, which includes the parents' quality of instruction, scaffolding, constructive discipline and feedback to the child on his/her behavior; (2) emotional support, such as comforting and protecting a child who is scared, hurt, or distressed; providing continual signs of investment in and caring for the child such as warmth, affection, and sharing mutual pleasure between the parent and child — the absence of which is emotional neglect; and (3) harsh parenting, which includes the presence of psychological

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aggression towards the child, coercion and manipulation, as well as physical and sexual abuse, and physical neglect (Brassard et al., 1993; Britto & Ulkuer, 2012; Lansford & Deater-Deckard, 2012; Whiting & Edwards, 1988). Although terminology somewhat varies across the literature, these three core dimensions of parenting quality are nevertheless identified repeatedly (e.g., Verhoeven et al., 2007). Research has demonstrated that parents who provide scaffolding and instruction to facilitate their child's learning, who provide emotional support, and who do not display chronic harsh parenting tactics are more likely to facilitate their child's long-term well-being (Baumrind, 1996, 2005; Canetti et al., 1997; Dix, 1991). A parent's ability to utilize these three dimensions optimally is likely determined by numerous factors, some of which the proposed study seeks to explore.

The first two dimensions of parenting behaviors comprise an overall category of positive parenting, whereas the third is negative parenting behaviors. Recent research has established that parenting behaviors can be conceptualized as positive and negative dimensions (Dishion, Mun, Drake, Tein, Shaw & Wilson, 2015). A review of the three previously described dimensions follows, within the categories of Positive Parenting and Negative/Harsh Parenting, which will inform the framework of the present study.

Positive Parenting.

Quality of Instruction. Parental instructional skills significantly impact children's cognitive development and achievement abilities (Baumrind, 1967; Brown & Iyengar, 2008; Englund, Luckner, Whaley, & Egeland, 2004). The presence of parental scaffolding, guidance and limit setting in children's early development facilitates growth and impacts later competencies across all areas of functioning, including social, emotional, behavioral, cognitive, and academic skills. Furthermore, parental instruction intends to promote cognitive, academic,

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and language development, as informed by cultural influences. Parents facilitate this development through actively playing, reading to children, and teaching vocabulary and basic concepts. When applicable, parents may also provide instruction for survival tasks, such as gathering water, learning to sow, and caring for animals (Bornstein & Putnick, 2012; Brassard & Boehm, 2007; Rogoff, 2003). Parental instruction also includes a parent's active involvement in their child's education (Englund et al., 2004).

Parental instruction varies across developmental levels. For example, in early childhood, this domain includes focus on scaffolding early problem-solving skills, whereas for adolescents, parents support the adolescent's drive for autonomy while scaffolding development in moral reasoning. Across development, parental instruction includes developmentally appropriate supervision, limit setting, and consistent expectations (Baumrind, 1996). Cultural values also inform parent instruction (Rogoff, 2003; Whiting & Edwards, 1988).

For children with ASD, parental instruction is particularly important. With skill deficits in areas that come more naturally to typically developing children, such as joint attention, imitation, communicating needs, and tolerating change, children with ASD benefit from direct instruction and therapeutic intervention. Studies that evaluate parents as co-therapists for implementing early intervention indicate that specialized parent instruction leads to improvements in social-communication deficits and parent-child interactions (Burrell & Borrego, 2012; Jang, Dixon, Tarbox, Granpeesheh, Kornack, & de Nocker, 2012; McConachie & Diggle, 2007; Roberts et al., 2011). As parenting a child with ASD requires an additional set of instructional skills, compared to parenting typically developing children, parent training is demonstrated to be effective in implementing specialized instructional skills and reducing parent stress.

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In this dissertation, parental instruction is defined as the observed facilitation of social and cognitive development during the tasks of teaching, free play, and cleanup. Specific behaviors that will be evaluated include the amount of support and structure provided by the mother, her use of language, strategies for maintaining the child's task involvement, and respect for the child's autonomy (Brassard et al., 2016; Donnelly et al., 2014; Brassard et al., 1993).

Emotional Support. Parents' emotional support includes responsiveness, sensitivity, warmth, and attunement to the child (Baumrind, 2005) and is critical for children's healthy development. Naturally, parenting evokes a range of emotional experiences, both positive and negative, which is a necessary and adaptive function of the human experience (Dix, 1991; Mantymaa, Puura, Luoma, Latva, Salmelin, & Tamminen, 2015; Plutchik, 2001). Ongoing parental emotional support for the child is critical in the parent-child relationship. It communicates attention and security that is essential to the dyadic attachment, with long-term developmental implications (Eisenberg et al., 2003; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Saarni, 1999; Wallin, 2007). The emotional support that parents provide to their children includes warmth and empathetic communication, praising a child for desirable behaviors, soothing a child who is having difficulties, easing a child's fear or anxiety through emotional comfort and physical affection, and modeling emotional self-regulation (Canetti, Bachar, Galili, Kaplan-DeNour, & Shalev, 1997; Strayer & Roberts, 2004). The presence of emotional support not only facilitates social and cognitive development in children (Brophy-Herb et al., 2011), but also serves as a protective factor later in life (Shaw, Krause, Chatters, Connell, & Ingersoll-Dayton, 2015; Yeung & Leadbeater, 2010). The absence of emotional support from parents in childhood has been linked to poor physical and mental health outcomes in adolescence and adulthood (Shaw, 2006; Shaw, Krause, Chatters, Connell, & Ingersoll-Dayton, 2004; Yeung &

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Leadbeater, 2010); at its most extreme, emotional neglect can be deadly (Music, 2009; Norman, Byambaa, Butchart, Scott & Vox, 2012).

In this dissertation, emotional support is measured as the presence of encouragement with positive emotional regard, emotional connectedness of the dyad evident by mutual pleasure, and physical indicators of connection such as body orientations.

Negative Parenting. In addition to the positive dimension of parenting, inclusive of parental quality of instruction and emotional support (the extreme absence of which is cognitive and emotional neglect), negative or harsh parenting practices are also examined as influential to the broad spectrum of potential observed parenting behaviors. The following section provides a review of harsh parenting in the form of psychological and emotional maltreatment (excluding physical forms of abuse), because it is the only form that is likely to be exhibited by parents when observed in the mother-child interaction task used in this study.

Harsh parenting includes behaviors such as terrorizing, corrupting/exploiting and spurning. The absence of or very low levels of harsh interactions in a parent-child relationship is an important contributor to positive outcomes. The absence of supportive parenting, such as emotional support and parental instruction, coupled with psychological abuse, which includes cognitive and emotional neglect, all constitute psychological maltreatment (PM). As will be reviewed, PM is more likely to occur in high-risk families; as the presence of a child's disability increases a family's risk for maladaptive parenting, harsh parenting behaviors will be examined in this study through observations of mother-child interactions. Notably, however, the present sample is a community sample, rather than clinical sample at-risk for maltreatment, so levels of harsh parenting are not likely to be as severe or as frequent as is found in solely abuse-risk samples. Additionally, parents in this sample demonstrate a self-selected level of

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resourcefulness, demonstrated by their children's enrollment in a therapeutic school; as such, parents in the current study may differ from the larger population of parents of preschool-aged children with ASD.

PM has been consistently found to be damaging to a child's development and well-being, including socio-emotional, behavioral and learning problems, in addition to poor physical health outcomes later in life. PM is a type of child maltreatment that may include both abuse, the chronic presence of harsh tactics, and/or neglect, the absence of positive, essential elements of childrearing. Broadly, PM is "a repeated pattern or extreme incident(s) of caretaker behavior that thwart the child's basic psychological development needs (e.g., safety, socialization, emotional and social support, cognitive stimulation, respect) and convey a child is worthless, defective, damaged, unloved, unwanted, endangered, primarily useful in meeting another's needs, and/or only expendable" (Hart, Brassard, Baker & Chiel, 2017). PM can involve acts of commission, such as verbal attacks on the child by the parent, and/or acts of omission, such as an absence of emotional responsiveness. Importantly, the term "psychological" is used to define PM to convey the cognitive, affective and interpersonal aspects of this form of maltreatment that are not implicit to the terminology "emotional abuse," which is frequently used in the literature and in child welfare work. However, definitions of forms of psychological maltreatment vary between states (Baker, 2009) and terminology varies across the research literature, so it is important to note that other common terms for PM include "emotional abuse," "harsh parenting," "emotional maltreatment" or "coercive parenting."

Six types of caregiver acts, when presented as a repeated pattern of behavior, can constitute PM: (1) spurning (e.g., belittling, degrading, and shaming the child); (2) exploiting/corrupting (e.g., modeling or permitting developmentally inappropriate/maladaptive

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behaviors); (3) terrorizing (e.g., placing a child in frightening or dangerous situations); (4) emotional unresponsiveness (e.g., ignoring or failing to express affection towards the child); (5) isolating (e.g., deny the child opportunities to interact with peers or other adults); and (6) neglect of health and education (e.g., failing to provide treatment for serious mental health, physical health or educational problems for the child). Each of these conditions conveys to the child that he or she is worthless, defective, or unloved. In the present study, the harsh parenting behavior scale on the observational coding measure will examine milder forms of PM, including the first five of the aforementioned types of PM, as a dependent variable representing one element of parenting quality. Unlike other forms of child maltreatment, such as physical or sexual abuse, in which the child draws conclusions of his or her own self-worth based indirectly on behaviors of the perpetrator, PM is often a direct and explicit message to the child that he or she is worthless. This direct impact is incredibly damaging to the child's social, emotional, behavioral and cognitive development.

As the present study seeks to evaluate behaviors related to PM in the context of children with ASD, the prevalence of PM in samples of children with disabilities is considered. A meta-analysis of 16 studies that included a total of 14,721 individuals, examining physical, sexual, emotional abuse and neglect, against children with any type of disability, including physical, mental, intellectual and multiple impairments (Jones et al., 2012), found that children with disabilities are at a significantly greater risk for maltreatment than their peers without disabilities. The risk of victimization for children with disabilities is greater because of the need for increased care, a lack of social support and resources to reduce caregiver burden, and societal stigmas associated with disabilities, among other reasons (Jones et al., 2012). Further, specific impairments associated with a disability, such as a child's communication or behavioral

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difficulties, may increase a child's vulnerability to victimization. For children with mental or intellectual disabilities, Jones and colleagues found a pooled prevalence of 21% for the combined measure of violence, 27% for emotional abuse, and 8% for neglect; this class of disability seemed to have a higher prevalence and risk of violence than other disability types (e.g., physical or sensory disabilities). Further, analyzing the risk of violence in 11 studies with 13,505 children with disabilities, Jones and colleagues found that children with disabilities were at increased risk for experiencing emotional abuse and neglect, with odds ratios of 4.4 and 4.6 respectively, compared to children without disabilities. Given the high likelihood that PM is embedded in all forms of child maltreatment, and further, the high rate of emotional abuse and neglect found in the meta-analysis of studies that included children with disabilities, it is evident that behaviors related to PM in a disability sample warrant attention. Of note: studies examining prevalence of emotional abuse and neglect include broad categories of disability types and do not examine the rates of PM in exclusively ASD samples.

Risk Factors for Harsh Parenting. Many factors can interact to increase vulnerability to harsh parenting behaviors. In particular, parenting a child with a disability, such as ASD, requires a considerable amount of additional personal, social, and financial commitment and resources, relative to parenting a typically developing child. Caregivers may approach parenting a child with a disability as a poor investment given the child's reduced likelihood of producing grandchildren and taking care of other family members, including the parents in their old age. The significant amount of parenting resources that a child with a disability requires may place other siblings at risk of poor developmental outcomes due to consequentially reduced parental attention and resources (Werner & Smith, 1992). Depending on the type and severity of disability, children require additional supports and services, necessitating more familial and

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community resources. Lack of access to services, either due to lack of community availability or inability to financially support, contributes to increased strain and distress on the family. Further, when a child's disability is associated with externalized behavioral symptoms, such as ASD, ADHD, or conduct disorder (Govindshenoy & Spencer, 2007), caregiver consequential reactivity increases risk for maltreatment. Thus, understanding risks in the context of parenting a child with a disability may provide targets for prevention and promotion of well-being.

The presence of a disability and its associated symptoms may increase the likelihood that caregivers utilize maladaptive parenting strategies. Though a disability or other child characteristics may increase vulnerability, children are not responsible for the maltreatment they experience. However, child temperament and behavior can also increase their vulnerability, such as persistent negative mood, distractibility, resistance to soothing, or aggression. Despite the difficulties that caregivers may face when caring for children with high maintenance characteristics, it has been established that these children can be cared for in a way that promotes well-being, without experiencing maltreatment (Cowen & Reed, 2002; Hanson & Hanline, 1990).

On the family system level, vulnerability is impacted by inadequate financial and social resources, which limit the family's basic need fulfillment. Lack of social resources and support includes poor connection to extended family and community, such as school, health services, and/or religious institutions. Risk is also heightened by a high ratio of children to adults in the household and father absence (Werner & Smith, 1992). Furthermore, community level characteristics may exacerbate effects. Family level risk factors, and community level of poverty as evaluated by participants' zip codes, will be controlled for in the proposed study.

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Certain caregiver features may make them more likely to perpetrate maltreatment, with the risk of perpetration increasing as the number of risk factors increase. For example, Stier et al. (1993) found that young and unprepared caregivers, age 18 and below, were more likely to commit maltreatment. Caregivers who have psychological disorders and vulnerabilities, such as depression, low self-esteem, poor impulse control, low empathy and poor coping skills, are also at an increased risk (Pianta, Egeland, & Erickson, 1989; van Bakel, H. J. A., & Riksen-Walraven, J. M., 2002). Insufficient knowledge of caregiving and child development, as well as a lack of appreciation for child's strengths, further stimulates risk. Several of the aforementioned caregiver factors will be measured in the present study, including maternal depression, stress, and self-efficacy. Notably, all mothers participating in the present study are above age 18.

The aforementioned risk factors on the child, caregiver and family levels interact to exacerbate the risk for children with disabilities experiencing maltreatment (Murphy, 2011). The present study seeks to expand upon the literature by investigating the mechanisms through which caregiver characteristics influence actual parenting behaviors.

Parenting Behaviors in an ASD Population. Research on parenting behaviors for children with ASD has only begun to recently re-emerge after an inaccurate theory in the 1950s purporting that cold parenting behaviors (“refrigerator mothers”) cause ASD. As a result, research on behaviors of parents of children with ASD is currently limited, although growing; given the specific challenges of parenting a child with ASD, continued research in this area is necessary. Numerous studies in the past decade have emerged to extend the literature on parenting behaviors broadly to the specific parenting behaviors for children with ASD; several are reviewed below.

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Parenting stress is related to self-reported parenting behaviors. Osborne, McHugh, Saunders, and Reed (2008) studied dyads of parents and children with ASD, from ages 5-16, who had been diagnosed with ASD prior to the study by a specialist pediatrician and had their diagnosis confirmed in the study using a rating scale. Osborne and colleagues found that parenting stress negatively correlated with three parenting domains, as measured by the *Parent Child Relationship Inventory* (PCRI; Gerard, 1994): limit setting, communication, and involvement. Parents with higher levels of parenting stress reported poorer abilities to utilize effective parenting strategies. After an intervention, only the negative correlation between parenting stress and limit setting remained significant, in that parents with higher reported stress levels reported less limit setting. Maljaars, Boonen, Lambrechts, Van Leeuwen, and Noens (2014) also found differences in parenting behaviors of mothers of children with ASD from ages 6-18, whose ASD diagnosis was reported by their parents. Maljaars and colleagues found that relative to a typically developing control group, mothers of children with ASD report setting fewer rules and using less discipline. Further, mothers of adolescents with ASD (aged 13-18) were more likely to adapt the environment, stimulate the development of their child, and use positive parenting strategies, relative to parents of typically developing adolescents. However, this significant finding may be more likely attributed to the necessary additional levels of support needed by adolescents with ASD, whereas younger children, with and without ASD, require high levels of parental support.

Observational studies also provide insight to the parenting behaviors for children with ASD. Boonen et al. (2015) compared parent-child dyads of school-aged children (ages 7 to 11) with and without ASD. Researchers confirmed the participants ASD diagnosis using the Autism Diagnostic Observation Schedule, as well as a clinical interview. Findings indicated that mothers

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of children with ASD, compared to typically developing children, were observed to demonstrate less sensitivity and provision of structure (similar to the “emotional responsiveness” and “quality of instruction” domains to be defined in the present study). However, when parenting stress was controlled for, group differences were no longer significant. Additional findings indicate that parents of children with ASD reported higher levels of material rewarding and adapting the environment, consistent with self-report findings from Maljaars et al. (2015), which are also consistent with evidence-based instructional modifications common for children with ASD. Of note: the observational coding system that will evaluate parenting quality in the present study will examine parents’ behaviors in reference to structuring the environment, use of verbal praise, and physical and verbal supportive behaviors.

Finally, Donnelly (2015) utilized observational methods to study parent-child relationships for 5 to 12-year-old children with ASD, whose diagnoses were confirmed by a semi-structured parent interview (*Autism Diagnostic Interview-Revised*; Rutter, LeCouter, & Lord, 2003) and the Autism Diagnostic Observation Schedule. Findings indicated that parents of children with ASD generally display supportive and flexible parenting. Participants also demonstrated low rates of harsh parenting behaviors on average, although a third of the sample demonstrated minimal to a great deal of PM. Notably, Donnelly found that parents of children with a comorbid disorder, most frequently ADHD in addition to ASD, exhibited higher levels of negative parenting and lower levels of patience. However, parents had higher levels of patience during a structured task when children had lower levels of intellectual functioning.

Parenting behaviors are important contributors to the parent-child relationship in typically developing and developmentally disabled populations. The study of parenting behaviors in the context of the specific challenges of parenting a child with ASD is limited and primarily focuses

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on school-aged children. The existing literature provides a framework for extending the literature to examine parenting behaviors in the early childhood years and the mechanisms that influence parenting behaviors.

Parental Cognitions

To investigate factors that drive parents of preschool-aged children with ASD to behave in positive or maladaptive ways, the proposed dissertation seeks to examine several types of parental cognitions as they relate to quality of parenting.

Attributions are cognitive interpretations in response to an experience or stimulus, including appraisals of the causality of a particular outcome. Weiner (1985) proposed that attributions of locus of causality, stability, and controllability affect emotions and behavior. Locus of causality distinguishes between internal (i.e., causes within the person, such as cognitive ability) and external (i.e., environmental factors) perceptions of the causes of behavior. Stability refers to whether the cause is perceived to be constant or susceptible to fluctuation or change. Finally, controllability refers to the level of control a person perceives himself or herself to have over an outcome. For example, effort is thought to be more controllable than cognitive ability. Through empirical investigation and rational conceptualization, Weiner's exploration of attributions illuminates the relationship between an individual's cognitions and behaviors.

Parental attributions can contribute to a framework for understanding quality of parenting behaviors. A review highlights the relatively consistent relationship between parents' beliefs about what is important to do as a parent (e.g., believing it is important to attend to infant child by feeding, cleaning and holding the child, or providing support and guidance for older children who no longer need hands-on care) and parents' behavior toward their children (Mowder, 2005). For example, parents who view their parenting role as primarily disciplinary tend to behave

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towards their children in ways that reflect their emphasis on discipline, with fewer behaviors reflecting other roles of parenting, such as education, bonding, or affection. Parental goals also change throughout the lifespan as the developmental needs of the child evolve (see Mowder's Parent Development Theory; Mowder, 2005). The parental goals for an infant are necessarily different than those for an adolescent; parental goals are modified over time.

By nature, parenting is a social role that is an interaction between the parents' perceived role responsibilities and personal characteristics of both the parent and the child. Parental cognitions include beliefs about the parenting role and parental goals. Parental goals are considered to be a link between values (e.g., views on the desirability of certain types of child behaviors and/or parenting strategies) and actions, with much evidence suggesting a relationship between this type of belief and actual parenting behaviors (Bugental & Johnston, 2000). Parenting behaviors are influenced by different types of cognitions, including goals (Hastings & Grusec, 1998), whereby goals that focus on the needs of the parent, rather than supporting the child, are related to more power assertion and less warmth.

Bugental and colleagues identify attributions as more automatic types of goal-oriented cognitions (Bugental, Johnston, New, & Silvester, 1998). Attributional biases of parents are the underlying views that parents tend to hold to explain their children's behaviors. Attributional biases, such as parents' attributions of controllability, have been repeatedly linked to harsh parenting practices, resulting in physical and psychological harm. Parenting self-efficacy cognitions have also been linked to parenting behaviors and child outcomes, with a significant portion of the literature examining the association between poor parental self-efficacy and actual lower parental competence, including the use of harsh parenting practices.

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The present study seeks to understand some contributory factors to parenting young children with ASD. Specifically, parental self-efficacy or sense of competence, represent parents' perceptions of their own effectiveness in the parenting role, and parental attributions refer to parents' perceptions of their child's behavioral intentions and the relative control of both an adult and child in a dyadic interaction. Both of these types of parental cognitions have been associated with abuse risk, with poor self-efficacy and an imbalance of control attributed to the child relative to the adult relating to a greater risk of harsh parenting behaviors. Conversely, more balanced attributions of control and higher self-efficacy are associated with competent parenting. These relationships are increasingly relevant when considered in the context of added risk factors and individual vulnerability of the child, as is the case for children with ASD. The individual variance regarding attributions of and self-efficacy is to be explored in greater depth to further understand the parental behaviors associated with parental cognitions regarding parenting their children with ASD.

Parent Self-Efficacy. In Bandura's (1977) seminal paper, he conceptualized self-efficacy as personal expectations of behavior. He writes, "the strength of people's convictions in their own effectiveness is likely to affect whether they will even try to cope with given situations" (p. 193). For parents of children with ASD, who are more stressed than their contemporaries, feelings of competence are critical to examine so as to inform coping strategies to promote well-being.

Parents' sense of competence in their parenting role is related to various family outcomes. Bugental and Johnston (2000) describe "efficacy cognitions" as a correspondence between perceived and desired reality. They propose that in well-functioning families, the perceived and desired realities are closely matched, whereas in more conflictual family contexts,

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there is a greater disparity. Parental self-efficacy is theoretically derived from the difference between perceived and desired reality. Bugental and Johnston indicate that parental feelings of efficacy develop from their actual experiences as a parent, as well as their own childhood experiences being parented, influenced by sociocultural factors.

Other research has demonstrated the relationship between parental-self efficacy and parenting stress. One study showed the mediating role of parental self-efficacy in the relationship between child with ASD's challenging behaviors and maternal distress, where lower self-efficacy is predictive of greater maternal anxiety (Hastings & Brown, 2002). Hassall and colleagues (2005) investigated the role of parental attributions on parenting stress for 46 mothers of children, ages 6 to 16 years old, with diagnosed intellectual disabilities, a population known to be challenging and high-risk for poor outcomes. Through maternal self-report measures of child adaptive and maladaptive behaviors, family support, parenting sense of competence, and parental locus of control, the researchers examined factors that contribute to parenting stress. Hassall and colleagues found that parenting cognitions, including locus of control and self-efficacy, were significant predictors of parenting stress. Parents who reported an external locus of control, and who reported low self-esteem about their parenting competence, were more likely to experience higher levels of stress, particularly associated with the level of child's behavioral difficulties. In other words, parents were more stressed when they did not view themselves as in control of outcomes and as competent to parent effectively. Parenting stress has been demonstrated to significantly impact both parent and child well-being. There are limitations to Hassall et al.'s study due to the bias that results from using a single source of data (i.e., self-report method) as the study's measures; therefore, value will be added to the literature through the use of observational outcome measures in the present study.

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Parental self-efficacy has been consistently found to be related to parenting behaviors (Jones & Prinz, 2005), such as responsiveness and disciplinary style. A review by Bugental and Johnston (2000) cited research by Bondy and Mash (1997) that found that parents with low parental self-efficacy are more likely than parents who are high in self-efficacy to use a coercive disciplinary style. Parental self-efficacy must be examined when considering both parent and child behaviors and outcomes: high levels of self-efficacy are related to more effective parenting strategies, and parents with low self-efficacy may benefit from interventions that address the low self-efficacy cognition. In fact, several recent studies have demonstrated improvements in parents' self-reported self-efficacy through various types of interventions to provide parental support and promote more effective parenting behaviors (Dekovic, Asscher, Hermanns, Reitz, Prinzie, & van den Akker, 2010; Katsikitis, Bignell, Rooskov, Elms, & Davidson, 2013; Seabra-Santos et al., 2016). One study (Seabra-Santos et al., 2016) investigated the effects of the Incredible Years program for parents of children (aged 3 to 6 years old) at risk for disruptive behavior problems, and demonstrated an increase in self-efficacy on the Parenting Sense of Competence — Efficacy scale, which was related to changes in observed parenting practices at post-intervention and 12 and 18 months follow-up.

While parental perceptions of self-efficacy are evidently modifiable, research has identified that parents of children with developmental disabilities are particularly likely to report perceptions of low self-efficacy (Coleman & Karraker, 2003; Johnston & Mash, 1989).

Attributions of Control. Parental attributions of control have been found to be important because of the relationship with actual parenting behavior. According to Weiner's theory, parents react emotionally and behaviorally to children's behavior depending, in part, on whether the parent judges the child to be responsible for their behavior. If a parent perceives the child's

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aggression to be outside the child's own control, the parent is less likely to react harshly; in contrast, if the parent perceives the aggression to be intentional, the parent is more likely to respond harshly.

Using Weiner's model of attributional constructs as a framework, Bugental, Blue, & Cruzcosa (1989) developed a measure of parental attributions of parent-child interactions to extend Weiner's (1985) three dimensional theory to assess affective and behavioral outcomes of parent-child interactions. Bugental et al. (1989) considered the moderating effects of parental attributions on parental responses to children who have been identified as at a higher risk for abuse in order to explore how attributions of control influence their interpretation of and response to child behavior. In the study, abuse risk was identified based on parent responses to the *Conflict Tactics Scale* (Straus, 1979; a measure of the degree to which a parent uses psychological and physical aggression to resolve conflicts) and parents' ranking of "perceived difficulty" of their target child in terms of problem behavior relative to the child's siblings. Bugental and colleagues found that attributions of parent-child interactions were most effectively understood in terms of child and adult controllability over outcomes. Parents rated their perceptions of factors that contribute to parent-child interactions in terms of how much control the child and adult each hold over particular situations. The resultant measure is known as the *Parent Attribution Test* (PAT) (Bugental, 2011; Bugental et al., 1989).

Bugental and colleagues have used the PAT to investigate the relationship between perceived balance of power and harsh parenting. In the PAT, subjects are asked to assign, on a Likert-scale, the level of importance to causes of caregiving success and causes of caregiving

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failure¹. Responses fit into four attributional categories: factors that are controllable or uncontrollable by the adult or by the child. Results yield scores of Adult Control of Failure (ACF) and Child Control of Failure (CCF). An imbalance between perceived adult and child control over failure, as reported by the caregiver, whereby the caregiver views the child as having more control than the adult, is associated with harsh and abusive parenting (Bugental, 2011; Bugental et al., 1989; Bugental & Johnston, 2000). That is, when parents believe that their children are the cause of parent-child conflict, they respond more harshly than when they think they are to blame.

Although children with disabilities experience higher rates of emotional neglect (Sedlak et al., 2010), parental perception of controllability may vary due to an alternative explanation of the child's behavior. Rather than attributing behavior problems to characterological features of the child, some parents may attribute behavior problems to the disability or diagnosis (Whittingham, Sofronoff, Sheffield, & Sanders, 2008), and may therefore respond to their child differently in terms of sensitivity to child responsibility, or lack thereof. Thus, parents who attribute a child's behavior problems to their disability may be less likely to be harsh.

Social Information Processing and Other Attribution Theories. Milner's (2000; 1993) application of social information processing to child physical abuse risk presents a theoretical framework for the relationship between cognition and parental behavior. Although much of the research has focused on physical abuse risk because physical abuse typically co-occurs with PM, some literature has also examined harsh parenting strategies as they occur in isolation, particularly harsh discipline (Claussen & Crittenden, 1991; Glaser, 2000; Norman, et al., 2012).

¹ Whereas the initial measure asks parents to attribute control for successful and unsuccessful situations, Bugental (2011) reported that significant results and research utility have only been found for responses to the failure situation; a discussion of parent PAT responses to success situations is excluded from review and investigation in the present study.

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As such, Claussen and Crittenden (1991) argue that it is important to consider risk of multiple forms of abuse when evaluating the relationship between parental cognitions and abuse risk.

Milner's model conceptualizes parental abusive behaviors through several stages. There is an assumption that caregivers already have a set of preexisting beliefs, prior to integrating new information, that influences how parents perceive new information and experiences. This stage incorporates parents' preexisting beliefs about parenting and children, such that, presumably, abusive parents may hold more inaccurate and biased views that prime their interpretation of interactions with their child. These may develop from the parent's own childhood and cultural upbringing: for example, cultures that value harsh and/or physical punishment as an effective form of discipline. Thus, abusive parents, relative to non-abusive parents, may have particular ineffective attributional beliefs and biases that influence their caregiving behavior. The rest of the model integrates parental perceptions (e.g., distortions in perceptions of child's behavior may increase abuse risk), interpretations and evaluations (e.g., abusive versus non-abusive parents show differences in judgment of child's behavior, and may be more inclined to view child's behavior as having a hostile intent), information integration and response section (e.g., abusive parents may be less likely to integrate situational and contextual information, external from the child, into their interpretation of an event before making a response), and finally, the parent's ability to implement a parenting strategy and to modify the strategy as needed. Milner's model provides a theoretical framework for how parents' cognition drives their parenting behavior.

Milner's theories have been widely cited and have been tested across various samples. A recent example of a study utilizing Milner's framework evaluated the role of parents' maladaptive cognitive processes in increasing child abuse risk (Rodriguez & Tucker, 2015). Participants were a community sample of 95 mother-child dyads with children ranging from ages

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6-9 who responded to self-report measures. Measures included self-report questionnaires of parents' views of their child's behaviors and children's reported experiences of their parent's positive and negative behaviors. Analyses indicated that families with more social support, as reported by mothers, had a decreased risk of abuse, as measured by the *Child Abuse Potential Inventory* (CAPI; Milner, 1994), but parental negative attributions of child's behavior (measured by responses to child vignettes), particularly in combination with poorer empathic abilities, as measured by the *Interpersonal Reactivity Index* (IRI; Davis 1983) a maternal self-report scale, exacerbated abuse risk. The measure of empathy in that study provides insight as to parents' abilities to take another's perspective, the absence of which is related to high-risk outcomes. The relationship between perspective-taking and attributions of child's behaviors and abuse risk confirms the influential role of parental cognitive processes on parenting behaviors. Additionally, children's reported experience of negative parenting behaviors was significantly correlated with abuse risk on the CAPI ($r=.30, p < .01$).

Attributions and abuse risk has also been studied by Bugental and colleagues (1989). A vast literature has developed to further understand mediating and moderating factors in the attributions-abuse risk relationship, with findings noting the impact of parental stress and affect, such as anger (Rodriguez & Richardson, 2007), social support (Rodriguez & Tucker, 2015), empathy and perspective taking (Wiehe, 2003), among others. As researchers continue to identify key risk and protective factors, and the role of parental cognitions, better interventions that target modifiable factors can be implemented for families at risk for abuse and/or harsh parenting.

Attributions and Observed Behavior. Parental attributions are often measured through the use of self-report or narratives. Although many studies examine the relationship between

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attributions and other self-reported parenting behaviors, the literature relating parental attributions to actual observed parenting behavior is limited. The predominant use of self-report measures when investigating the relationship between attributions and parenting behaviors increases the susceptibility of results to self-report biases, such as respondents providing socially desirable answers. However, some measures, such as the CAPI, control for some measurement biases through the use of validity indices to detect “faking-good,” “faking-bad” and random response patterns (Milner, 1994). Also, it is expected that attributions will be reflected in parents’ self-report responses to other external measures. For example, a parent who reports negative attributions of their child’s behavior is likely to have those attributions influence their ratings of the child’s level of behavior problems. Further, other studies have demonstrated that high parenting stress increases the likelihood that parents rate children’s behaviors more negatively (Reed, Howse, Ho & Osborne, 2016). Therefore, the use of observations of parenting can illuminate in a novel way the relationship between parental attributions and actual parent-child interactions and behaviors. Observational outcome measures can also provide objective insight to best inform and tailor interventions. Few studies of parental attributions use direct observations as an outcome measure (MacKinnon-Lewis, Lamb, Hattie, & Baradaran, 2001; Wilson, Gardner, Burton, & Leung, 2007).

The few studies that consider parental attributions in relation to observed parenting behaviors demonstrate a significant relationship between parental attributions and observed quality of parenting. In a study of mothers and their 3-year-old children (N=60, 52% boys), Wilson, Gardner, Burton, and Leung (2007) investigated the relationship between maternal attributions of their children’s behaviors and the strategies that the mothers used to control their children’s behaviors. Sixty-eight percent of the children in the sample were referred with

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concerns of oppositional behaviors or conduct problems, with elevated scores on the externalizing scale of the *Child Behavior Checklist* (CBCL; Achenbach & Rescorla, 2000). The other children in the sample were not reported to exhibit behavioral concerns, with scores within the average range on externalizing scale of the CBCL. The researchers observed the parent-child dyad in their home and coded the interaction for observed conflict. They evaluated attributions using an adaptation of the *Parental Attribution Questionnaire* (PAQ; Walker, 1985). Wilson and colleagues found that mothers who rated their children's misbehavior as more internal to the child (i.e., believing that the child had more control over his behavior) had higher rates of observed conflict with their children, even when controlling for the level of behavior problem, as measured by parent report of externalizing problems on the CBCL. Moreover, they found that mothers who used more negative parenting strategies (e.g., yelling or threatening) also rated their children's misbehavior as internal to the child. These results illustrate the relationship between parents' beliefs about parent-child interaction outcomes, whereby parents who believe that their child's poor behavior is due to stable and internal characteristics of the child (e.g., oppositional, mean, demanding) rather than to external or contextual circumstances (e.g., hunger, fatigue, age of child), are more likely to use more negative and reactive (i.e., used in reaction to child's behavior, rather than used to prevent problem behaviors) parenting strategies.

Parental attributions appear to influence parenting behavior, which in turn influence child behavior. Although the direction of this relationship is complex, studies have demonstrated that this association develops early in a child's life (Wilson, Rholes, Simpson, & Tran, 2007), which highlights the importance of adding a focus on parental cognitions to early interventions for managing child behavior problems and enhancing the parent-child relationship. However, it is also important to consider that a parent's harsh responses to their child may be due to their

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child's high level of behavior problems, and the same parent may not respond as harshly to other children. In other words, children's behaviors may influence parental attributions (Anderson, Lytton and Romney, 1986), as parents may be responding to the specific characteristics of the child. Directionality of the relationship is difficult to ascertain, but several experimental manipulations to alter attributions produce promising results, suggesting that regardless of the directionality, initially changing parenting attributions can change parent-child interactions.

Attributions of Children with Developmental Disabilities

Belsky (1984) noted the contributory roles of parent characteristics, child characteristics, and environmental context as they influence parenting. He proposed parent characteristics as the most influential variable. However, child characteristics are also crucial, particularly when the child presents with certain vulnerabilities that interact with parent characteristics to amplify negative outcomes. With regard to parent characteristics, as previously discussed, research has demonstrated the heightened influence of parental cognitions for high-risk children (Bugental & Happaney, 2002), with one type of risk being the presence of a developmental disability, as is the focus of the current study.

Certain child characteristics may make children more vulnerable to harm. However, in the context of parental attributions, parents may be less likely to attribute controllability and intentionality to a child who has external characteristics that may explain their behavior, such as a diagnosed disability (Karst & Van Hecke, 2012; Wasserman et al., 2010; Whittingham et al., 2008). Chavira, López, Blacher, and Shapiro (2000) investigated this question by studying the attributions of Latina mothers (N=149) with children with intellectual disabilities, ranging in age from 3 to 19 years old (55% boys). Descriptive statistics revealed that most mothers tended to not view their child as responsible for problem behaviors. However, in further analyses,

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attributions of child responsibility were viewed dichotomously: attributions of high or low responsibility. Mothers who viewed their children as having high responsibility (relative to others in the sample) were more likely to report responding to their children's behavior problems with negative emotions and aggressive behavior. The results support a relationship between maternal attributions and maternal behaviors for children with disabilities. Though there was no control group of children without disabilities, it is important to emphasize that most mothers of children with disabilities in this sample did not view their child as highly responsible for behavior problems. A control group would show whether overall, mothers of children with disabilities were less likely than typical developing counterparts to attribute high child responsibility for problem behaviors. Also, results of this study must be interpreted with caution, as the researchers did not use pre-existing, validated measures; rather, layperson coders rated interview transcripts to evaluate type of child behavior problems, maternal attributions, and maternal emotional and behavioral responses, which limits the interpretation of the findings. Reliability was established by two of three coders agreeing on codes; no validity data was provided. Despite these limitations, the study raises important questions for future research, as the relationship between attributions and harsh parenting may still exist but at a lower level of strength compared to children without disabilities.

Woolfson, Taylor, and Mooney (2011) also found significant relationships between attributions of control and parental behavior for mothers of children with developmental disabilities using validated measures. In their study, Woolfson and colleagues compared the relationship of attributions of control, through the use of an adapted version of the *Parent Attribution Test* (PAT; Bugental, 2011; Bugental et al., 1989) and child behavior problems, measured by four subscales of the *Child Behavior Checklist* (rule breaking, aggressive behavior,

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social problems and other problems), in both developmentally disabled (DD) and typically developing (TD) children ranging from ages 6 to 12 years old. Results indicated that the level of problem behaviors reported for both typically developing and developmentally delayed children varied based on whether mothers rated adults as having high or low control over failure in a caregiving situation. When parents rated low adult controllability, there were more reported behavior problems for the developmentally delayed group compared to the typically developing group. High adult controllability was associated with fewer behavior problems in the developmentally delayed group. There was no difference in behaviors found for children in the TD group between low and high adult controllability, suggesting that a minimum level of adult controllability may be sufficient for parents to perceive their typically developing children as behaving appropriately.

These results illustrate the relationship between adult controllability and child behavior problems in samples of children with autism or other developmental disabilities, suggesting that parent attributions of high adult controllability are likely to be associated with fewer behavior problems. Notably, Woolfson and colleagues do not delineate the directionality of the relationship, leaving open the question of whether parents' attributions influence their behavior which then elicits more child behavior problems, or whether a high level of child behavior problems influence parents' attributions of children's behavior.

The present study seeks to further clarify the relationship between parental attributions of control and parenting behaviors in a sample of children with ASD. Although much of the research indicates the increased risk for abuse when parenting a child with a disability, parents of children with autism may interpret their children's responsibility differently, which may alter how parents respond to children's behaviors. For example, parents of children with ASD may

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understand that their child's aggression may be due to deficits associated with ASD, such as difficulties with expressive language, rather than an intention to harm. This attribution may allow the parent to respond with more warmth and support than parents who attribute the child's aggression to hostile intent or instrumental behavior on the part of the child.

Parenting Interventions

Many intervention programs have been demonstrated to be effective in helping parents cope with and manage challenging behaviors in their typically developing children. The Incredible Years (Webster-Stratton, 2015), Parent Child Interaction Therapy (Hembree-Kigin & McNeil, 1995), and Triple P — Positive Parenting Program (Sanders, Markie-Dadds, & Turner, 2003) are examples of widely used evidence-based parent training interventions that target behavior change and improving the parent-child relationship. These programs generally aim to facilitate responsive and sensitive parenting, while teaching parents effective strategies for behavior management. Moreover, many of these programs demonstrate post-intervention improvements in parenting stress and self-efficacy (Seabra-Santos et al., 2016; Thomas & Zimmer-Gembeck, 2007).

Although many programs have promising outcomes, the unique stress of having a child with ASD may necessitate an intervention that directly addresses parents' own mental health and well-being. Modification of attributions and maladaptive parenting cognitions may be an important target for intervention for parents with children who present a uniquely challenging parenting context to improve their outcomes.

An enhanced version of Triple P incorporates a parent cognitive component, focusing on attributional retraining and anger management, that has been shown to effectively improve self-esteem and reduce negative child attributions for parents at risk for maltreating their children,

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relative to a comparison group that only included training in parenting skills (Sanders et al., 2004); notably, the study did not evaluate observed parenting skills. As previously described, parenting attributions have a strong relationship with parenting observed and self-reported behaviors: negative attributions of the child's behavior relate to more frequent patterns of harsh parenting strategies. Some promising research has revealed the modifiability of attributions, with emphasis on applying these findings to intervention in order to mitigate the effects of ineffective parenting attributions on harsh parenting behaviors, and subsequently, negative child outcomes.

Slep and O'Leary (1998) effectively manipulated parental attributions and demonstrated the impact of parental attributions on observed parenting behaviors in a randomized experimental manipulation. Mothers (N=40), with toddlers ranging in age from 24 to 42 months, were randomly assigned to one of two conditions, each of which primed the mother with a particular attribution prior to a parent-child interaction. In both conditions, mothers were told that their child was expected to misbehave during the interaction task. Half of the mothers were told that the child was responsible for his behavior, and half were told that the child was not responsible. In the child-responsible condition, mothers were told that the child was highly responsible for his misbehavior, as the child was inclined to misbehave to get his own way or get the mothers attention. In the child-not-responsible condition, mothers were provided with attributions of low child responsibility, suggesting that misbehavior would be due to the child's age, underdeveloped skills, or other factors that were external to the child. Following the scripted introduction, dyads engaged in several interaction tasks. Mothers then viewed selections from a video recording of the interaction and the experimenter probed to elicit the mothers' attributions of the child's affect and behaviors. Mothers' responses were coded for the domains of causality and responsibility, either child-centered or mother-centered.

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Slep and O’Leary found their experimental manipulation had a significant effect. As intended, mothers who were initially told that their child was responsible for their misbehavior reported more dysfunctional child-centered responsibility attributions. Moreover, mothers in the child-responsible group were found to be more over-reactive in their discipline, and to report marginally more subjective anger. Interestingly, children of the mothers in the child-responsible group exhibited more negative affect, including crying and screaming. Children in the two groups only differed in negative affect, but showed no differences in rates of misbehavior, suggesting that the manipulation of maternal attributions effects maternal disciplinary behavior, maternal affect, and child affect.

It is worthwhile to consider the findings regarding modifiability of attributions. As Slep and O’Leary demonstrated that parental attributions can be modified, and that attributions have a consequent effect on parents’ disciplinary behaviors, modifiable attributions must be considered in developing interventions to minimize the use of harsh parenting, promote positive parenting strategies, and to foster maternal well-being.

Bugental et al. (2002) also demonstrated that a cognitive intervention was effective in preventing maltreatment. In Bugental’s program, researchers targeted parents’ cognitions about the caregiving relationship in a sample of high-risk families, focusing on pregnant mothers or mothers with newborn infants (N = 96). The study randomly assigned participants to a control condition, a home visitation program, or an enhanced home visitation with a cognitive component. Parents participated in the program for approximately 17 weekly sessions. In the enhanced home visitation group, which included the cognitive component, mothers were asked to share a recent caregiving challenge, and were then guided to discuss potential causes of the problems and potential solutions. When the mother provided a misattribution for a causal

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appraisal (e.g., the mother suggested that the infant was crying inconsolably because “the child was mad at her”), the clinician asked for additional reasons for the concerning behavior until the mother provided a neutral reason that did not attribute blame to the child.

The researchers investigated the impact of the programs on harsh parenting, defined by physically abusive tactics measured by the self-report *Conflict Tactics Scale* (CTS; Straus, 1979). An ANOVA compared the levels of harsh parenting across the three conditions and found a significant main effect. The enhanced home visiting condition (i.e., with the addition of the cognitive component) showed a frequency of harsh parenting mean of .06, while the unenhanced home visitation program and control condition had frequencies of .23 and .25, respectively. In other words, parents who had the cognitive component of the program were significantly less likely to be physically abusive than parents who did not have the cognitive component of the program, or who did not get any form of postnatal home visitation program. Moreover, further analysis demonstrated that child risk moderated the effect, where risk was defined as preterm status and low Apgar scores. High-risk infants in the unenhanced and control conditions were at highest risk for experiencing harsh parenting, compared to high-risk infants in the enhanced condition and low-risk infants in all conditions, who were significantly less likely to experience harsh parenting. Additional analyses indicated that mothers in the enhanced condition demonstrated greater increases on Adult Control over Failure (ACF) scale of the *Parent Attribution Test*, compared to mothers in the two other conditions, when comparing pre- and post-program measures. Furthermore, researchers found partial support for the role of perceived power, as measured by parents’ drawings of self and child (whereby Bugental proposed that parents who perceive their child as a threat would draw their child’s head larger than parents who did not share this view), as a mediator between condition and harsh parenting. Overall, Bugental

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and colleagues demonstrated the powerful effect of cognitive reappraisals on reducing harsh parenting with high-risk children. However, limitations of the study include the use of parental report for outcome variables, which is prone to social desirability biases, rather than observational measures of harsh parenting. Notably, the CTS was only obtained as a post-program measure, as the scale could not be completed prior to beginning the program before the child was born.

Context Dependence of Parent-Child Interactions

As has been discussed, parenting outcomes are influenced by many interacting factors, including the child's individual vulnerabilities and the parents' beliefs and cognitive appraisals. Another variable that influences parent-child interaction is the parenting context or task that dyads encounter. Previous studies have demonstrated that the type of interaction task yields different types of parental behaviors. Caron, Weiss, Harris, and Catron (2006) showed that parents emphasized different levels of the three core dimensions of parenting (defined by Caron et al. as behavior control, psychological control, and warmth, previously discussed using the terminology of quality of instruction, harsh parenting, and emotional responsiveness, respectively) depending on the type of interaction task. Caron et al. showed that it is empirically and logically evident that parents practice different types of parenting behaviors depending on the demands of the parenting context, as evaluated through a "conflict task," where the parent and child (mean age = 9.7 years) discuss a conflict, and "close feelings task," where they discuss times they felt close. Notably, Caron and colleagues found that parents' behaviorally (e.g., limit setting, stating a consequence, suggesting an alternative) and psychologically (e.g., guilt induction, hostile tone, emotional over-involvement) controlling tactics varied depending on type of task; however, parental warmth (e.g., emotional responsiveness, praise about the child) did not

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vary across tasks. These findings may be indicative that parental warmth is a characteristic of the relationship between the parent and the child, an effect that overrides the context of the task; in contrast, the use of psychologically controlling tactics is more dependent on the demands of the parenting context. Notably, Caron et al. utilize tasks that vary significantly from those used in the present study.

Kwon, Bingham, Lewsader, Jeon, and Elicker (2013) also found variance in parenting quality depending on task type. In their study, Kwon et al. compared parent and toddler behaviors (N=60) in a structured task, in which dyads were given specific instructions for playing with a particular toy, and a free play task, in which dyads were to play freely from a selection of various toys. Results showed that parents exhibited more cognitive scaffolding and less negative parenting during free play as compared to the structured task.

The tasks to be evaluated in the present study include a structured play task (similar to Brassard, Hart, & Hardy, 1993; Kwon et al., 2013; Volling et al., 2002), a free play task (e.g., Martin et al., 2002; Volling et al., 2002), and a cleanup task (e.g., Spinrad et al., 2012).

Research that has evaluated parenting demands in the lab have found that parental and child behaviors vary as a function of task. A study comparing dyadic free play to structured or teaching tasks found that mothers demonstrate more cognitive scaffolding and less negativity in free play (Kwon et al., 2013), whereas another study found more parental emotional responsiveness and instructiveness in structured task relative to free play (Volling et al., 2002). Other variables in these studies may have contributed to the varied results, yet both studies found differences in behaviors between structured and free play tasks, indicating the value of comparing behaviors in these contexts.

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Task dependence allows for consideration of the context in which certain positive and dysfunctional behaviors are more likely to occur. This provides information on parental strengths and weaknesses as they relate to particular parenting contexts, identifying potential targets for intervention. The present study adds to this body of literature by relating parental attributions of control to parental behaviors across tasks, taking into account the unique demands of parenting a child with ASD.

Summary

There are multiple components in the process of parenting that determine parenting outcomes – factors that compel parents to behave in effective or maladaptive ways. Parenting a child with ASD is a uniquely stressful parenting challenge. It is therefore crucial to evaluate, within the ASD population, factors that influence parenting behaviors, which ultimately impact the child's well-being.

A review of the literature indicates that there is a significant relationship between parents' cognitions and their parenting behaviors. Studies have demonstrated that parents who attribute more responsibility to their child than to an adult in a failed interaction are more likely to parent harshly, and parents who view themselves with a low sense of competence are also more likely to use harsh parenting strategies. The long-term effects on children of chronic harsh parenting have been well documented, and thus, understanding the relationship in specialized populations can guide prevention and intervention efforts.

The proposed dissertation seeks to fill gaps in the literature regarding the proposed ASD population, given the unique demands of parenting a child with ASD. Parents of children with ASD are more stressed than other parents, including those of children with other disabilities. Whereas a child with a disability is more likely to experience abuse, some parents may not view

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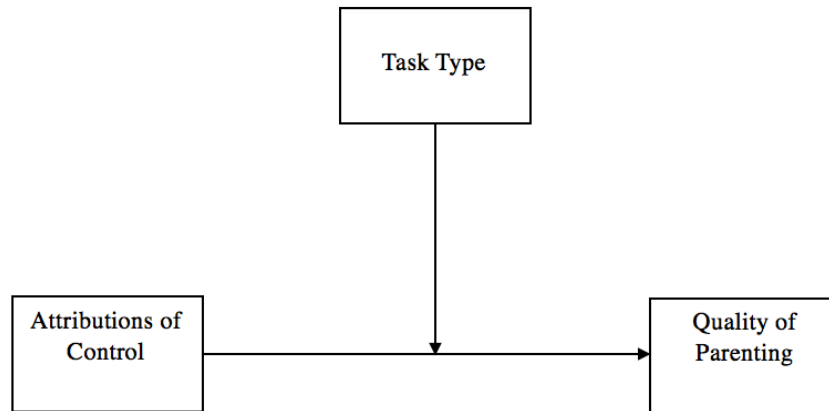
their child with ASD as responsible for poor behavior, rather attributing the behavior problems to the diagnosis (Greenberg et al., 2006; Wasserman et al., 2010).

Cognitive interventions are effective in altering many parents' maladaptive thoughts and subsequently their maladaptive parenting behaviors. The purpose of this dissertation is to investigate the relationship between parents' cognitive perceptions that have been previously demonstrated to be modifiable and actual parenting behaviors for preschool children with ASD, a high-need population for whom these relationships have not been thoroughly investigated. By understanding the relationship of parental cognitions to behaviors for this uniquely stressed population, the present study aims to provide support for modifying parents' cognitions through interventions.

Furthermore, the proposed dissertation seeks to examine observed parenting across three parenting contexts, as parental cognitions may affect some parenting tasks more than others. This dissertation will investigate how self-report attributions of control over caregiving failure and parenting self-efficacy predict observed quality of parenting in a sample of preschoolers with ASD, and whether the effect of these cognitions is exacerbated by more demanding parenting tasks.

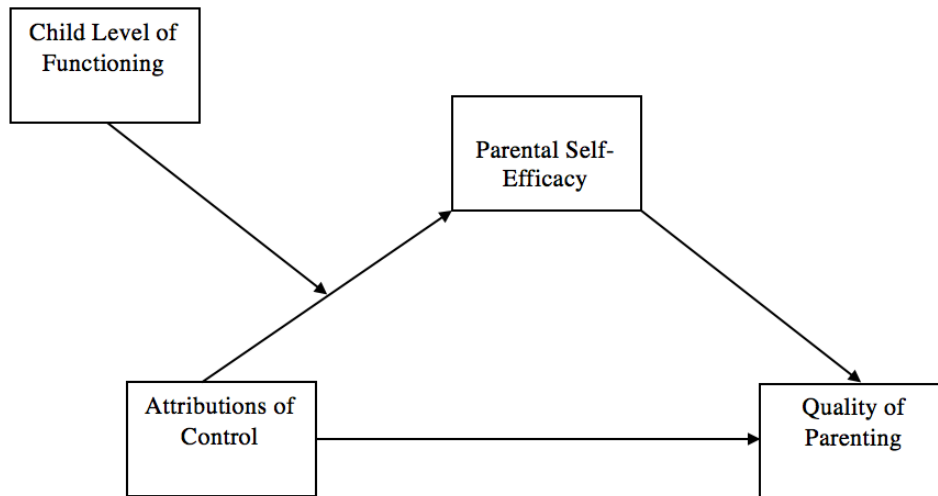
Chapter Two: Hypotheses

Hypothesis 1.



Based on a review of the literature, it is expected that lower attributions of control (i.e., perceived control over failure: PCF) will be related to more harsh parenting behaviors, and less positive parenting behaviors. This relationship is expected to be moderated by task type. On a teaching task, mothers with lower attributions of control (perceive that child has more control than adult) are predicted to engage in more harsh parenting and less positive parenting than mothers with higher attributions of control, but there will be no differences in the free play task. The expected moderation effect is supported by literature that suggests that psychologically controlling tactics are more prevalent in demanding parenting contexts, such as the goal-oriented task of teaching.

Hypothesis 2.

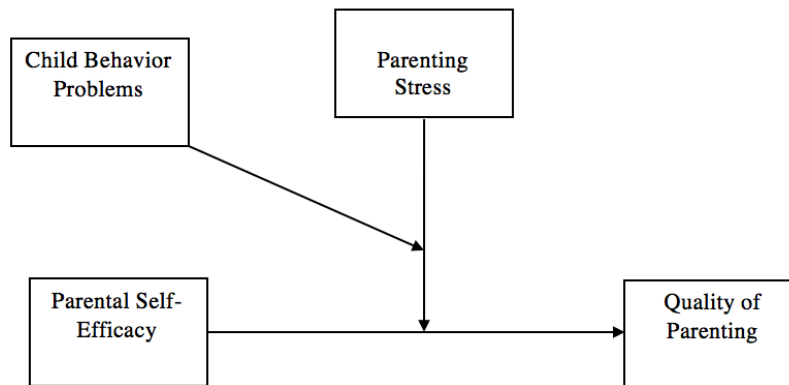


A review of the literature informs the hypothesis predicting that mothers' attributions of control will be related to quality of parenting via its effect on parental self-efficacy (i.e., higher attributions of control is related to higher perceptions of self-efficacy, predicting higher overall quality of parenting). The relationship between attributions of control and parental self-efficacy is predicted to be moderated by the child's level of functioning (i.e., mothers with low attributions of control will have low self-efficacy if their child is high functioning, but not if the child is low functioning). This hypothesis is supported by literature that suggests that parents of children with disabilities may attribute child behavior problems to the child's diagnosis rather than internal factors controllable by the child. As such, parental self-efficacy will not be related to attributions of control and quality of parenting for parents of low functioning children. Child functioning will be assessed with the Teacher Version of the Vineland Adaptive Behavior Scales-3 Communication Domain. Parents with high attributions of control will have high self-efficacy regardless of their child's level of functioning, which will predict high quality of parenting. This hypothesis will examine parenting behaviors across all three tasks, rather than investigating the differences between tasks.

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As the data in this study are cross-sectional and thus the time of measurement of independent variables cannot be expected to precede the dependent variables, this model will be tested with self-efficacy as a mediator and a moderator. There is no theoretical reason to assume that it is more likely that self-efficacy impacts attributions of control or that attributions of control influence self-efficacy – both directional models are equally likely.

Hypothesis 3.



It is anticipated that the attribution of parental self-efficacy will be related to observed positive and harsh parenting, moderated by parenting stress. Mothers who have high self-efficacy and low levels of stress will demonstrate better observed positive parenting behaviors than mothers with high self-efficacy and high levels of stress. Parent perception of child externalizing behavior problems are expected to further moderate the relationship, based on the literature that relates child behavior problems to parenting stress and maladaptive parenting behaviors, whereby mothers of children with elevated behavior problems and highest levels of stress will demonstrate the poorest parenting quality, regardless of self-efficacy. A moderated moderation model will be used because data are cross-sectional and the direction of the variable effects is unclear.

Chapter Three: Methods

Participants

Forty-nine² mother-child dyads participated in a research study, Teachers College IRB #16-310. The approved IRB protocol for this dissertation's use of the data is IRB #17-100. All 49 participating dyads included children who attended an Applied Behavior Analysis school in a suburb of a large city in the northeastern United States. Inclusion criteria were that: a) children had to have either an Individual Education Program (IEP) classifying them as a Preschool Student with a Disability or an Individualized Family Service Plan (IFSP) for children in the early intervention program, b) children were between the ages of 30 months to 5 years and 11 months, c) mothers had to state that they could speak and read English fluently, and d) children had to meet criteria for a diagnosis of ASD on the ADOS-2, or, if unavailable, the CARS-2. The first three criteria were met upon entry into the study, and once participants were identified, the fourth inclusion criterion of meeting diagnostic criteria for ASD was applied to form the final sample. Due to established parenting differences between mothers and fathers, (e.g. Dabrowska & Pisula, 2010; Gryczkowski, Jordan, & Mercer, 2010; Pelchat, Lefebvre, & Perreault, 2003), and the presumed difficulty of recruiting a balanced sample, this study specifically focused on recruiting mothers of children with ASD.

All students who attended the specialized school where the study was being conducted, who met inclusion criteria, were provided with recruitment flyers in their take-home folders. Of the over 100 students who were provided with recruitment flyers, approximately 10 parents responded proactively, consenting to participate in the study. The remaining majority of

² Three of the 49 mothers were the participants of the pilot study. As few changes that affected this dissertation occurred between the pilot and the actual study, the pilot participants are included in relevant analyses.

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participants required follow up by phone or face-to-face inquiries, facilitated by a supervisor and the parent coordinator.

Of the 49 dyads who participated in data collection, 42 were included in this dissertation. Of the seven excluded dyads: one voluntarily dropped out of the study; four dyads' interaction video files were corrupted, rendering them unusable for analysis of mother-child interactions; one child did not meet diagnostic criteria for ASD on the ADOS-2; and one participating child whose ASD diagnosis was assessed by the CARS-2 did not meet diagnostic criteria for inclusion in this study.

Participating caregivers were all biological mothers of their child (parent, family and child demographic data is presented in greater detail in Appendix A, Tables A1, A2 and A3), and were paid \$35 for their participation in the dyadic interaction and questionnaire completion. Mothers' ages ranged from 27 to 47, with a mean age of 36.8. Most mothers were well educated, attaining a bachelor's degree or higher (n=32; 78%). Most mothers who reported their race/ethnicity identified as either White (n=18; 44%) or Hispanic/Latina (n=12; 29%). Regarding marital status, the vast majority of mothers reported being married or in a committed partnership at the time of the study (n=33, 79%), with several others reporting no prior marriage or partnership (n=5, 12%) or a status of divorced/separated (n=4, 10%). Mothers who disclosed their household income reported a range of income level, with a nearly bimodal distribution: approximately 26% reported an income within the \$75,000 to \$99,999 range (n=10) and another 23% reported income above \$200,000 (n=9). Based on participants' reported zip code, an estimate of community level poverty was derived as an additional measure of family resource availability and accessibility (Appendix A, Table A2). While 27% of the sample lives in communities where fewer than 5% of people live below the federal poverty line – indicative of

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the least impoverished and generally more affluent communities – 29% of the sample lives in communities where over 15% of the community lives below the poverty line – indicative of a more impoverished community.

Of the children in the sample, 81% are male. The high ratio of males to females is fairly consistent with the literature indicating greater prevalence of ASD in males, where best estimates indicate a male-to-female ratio of 3:1 (Loomes, Hull, & Mandy, 2017). Children’s ages ranged from two years and six months to five years and six months, capturing a rich range of early childhood development. To verify all participating children’s ASD diagnosis and to document the level of ASD severity, 40 participating children were administered Autism Diagnostic Observation Scale-Second Edition (ADOS-2; Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012) and met criteria for ASD at the following levels of severity: low (n=4), moderate (n=14), and high (n=22).

For two included participants, who were not available to participate in the ADOS-2 because they had moved away after participating in the first portion of the study, the *Childhood Autism Rating Scale, Second Edition* (CARS-2; Schopler & Van Bourgondien, 2010) was completed by a PhD in Applied Behavior Analysis, who is a supervising teacher at the school, is research reliable on the ADOS-2, and was familiar with the school functioning of all participating children, gaining diagnostic information from her own observations and the participants’ classroom teachers. One child received a classification of “moderate” severity, and one received a classification of “severe.”

Procedure

Institutional Review Board (IRB) approval for the pilot study was obtained from the Fred S. Keller School and from the Teachers College, Columbia IRB. The pilot study was conducted

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in June 2016 and the protocol was revised, as described below. Data collection began in July 2016 and was completed in June 2017. Participants were recruited by the school's parent coordinator and an administrator, who sent home recruitment letters with eligible students and spoke to parents during school pick up (see recruitment letter in Appendix B).

After reviewing the recruitment letter and verbally consenting to participate, a member of the research team reviewed the consent forms (see consent forms in Appendix C) with the mother in person before beginning a 70-minute assessment session at the school during school hours or on the weekend. Trained graduate students in School Psychology and ID/Autism implemented the procedure in teams of two or three. When the mother arrived for her 70-minute session, she joined her child in the assessment room, which included a child size table, chairs, and a play mat (see layout in Appendix D). The experimenter provided instructions and introduction to the 20-minute interaction consisting of five core tasks/situations (see attached script in Appendix E): completing demands, teaching task (i.e., structured task), free play (i.e., unstructured task), cleanup, and a frustration task. Only the teaching, free play, and cleanup tasks are included in this dissertation and described below.

In the teaching task, the dyad was instructed to build a block house together, using developmentally-appropriate materials (e.g., Legos or Duplos, determined based on the mother's judgement of which of the two would be most appropriate for their child's level of functioning) for five minutes. This task was demanding enough for the child to elicit the mother's instruction and guidance. The dyad then was provided with additional toys for the five-minute free play task, including cars, a toy phone, a doll family, Magna Doodle, crayons with coloring pages, a ball, and the remaining building materials. After free play, the experimenter entered the room and handed the mother a sheet of paper stating, "When I leave the room, please tell your child to

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cleanup. Do not cleanup by yourself.” The cleanup task lasted for two minutes, or until the dyad finished cleaning up – whichever happened first.

Following the dyadic component, the child was returned to their classroom or, if the procedure occurred outside of school hours, was cared for by one of the experimenters, while the mother spent approximately 45 minutes completing a questionnaire, including questions about family demographics, child behaviors, parental cognitions and feelings, and self-care.

The aforementioned procedures were piloted to evaluate procedure feasibility in two circumstances: (1) with three parent-child dyads with typically developing preschool-aged children, who were friends of members of the research team and volunteered to help with procedure development, and (2) with three mother-child dyads from the school who met inclusion criteria for this study. Results from the feasibility and pilot studies guided refinement of experimental procedures, as adjustments needed to be made to account for the developmental and behavioral needs of the ASD population. These six pilots also included a debrief interview with the parent to yield qualitative data on the parents’ tolerance of the questionnaires and the procedure as a whole. Feedback from the three mothers who participated in the pilot at the school informed further refinement of the questionnaire in order to reduce administration time.

Measures

Demographic Covariates. Mothers answered questions regarding demographic and family characteristics including maternal age and education, marital status, ethnicity, and family income — variables that are often found to be significantly related to child outcomes due to the direct effect on access to services and support, for example. Socioeconomic status of the participants’ communities was estimated based on estimates median household income and percent below poverty line (United States Census Bureau, 2015). Other pertinent data was

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collected from the children's school records, such as their diagnostic history, length of time as a student at the therapeutic school, and classroom teacher-student ratio (one indication of a child's level of functioning), though were excluded from analyses as they were not found to be significantly related to the dependent variables.

Measures of Child Functioning.

Vineland Adaptive Behavior Skills. The *Vineland Adaptive Behavior Skills, Third Edition* (VABS-III; Sparrow, Cicchetti, & Saulnier, 2016) was used as a measure of the child's level of functioning. The VABS-III assesses adaptive functioning in Communication, Socialization, Daily Living Skills and Motor Skills domains. Because the VABS-II Communication domain has been demonstrated to be highly correlated with cognitive ability in children with ASD ($r = .80$; Perry, Flanagan, Dunn Geier, & Freeman, 2009), VABS-III Communication domain, Teacher Rating Form, was completed by the participating child's classroom teacher as an estimate of child's level of functioning. The Communication domain includes ratings of the child's receptive, expressive, and written language. There is a high level of internal consistency reliability for the teacher report Communication domain ($\alpha = .97$ in the standardization sample; $\alpha = .94$ in the present study's sample).

VABS-III standard scores have a mean of 100 and standard deviation of 15. In this study's sample, VABS-III Communication standard scores range from 44 to 105, with a mean of 75.76 and standard deviation of 14.81, indicating an overall sample of lower functioning children compared to typically developing peers.

The VABS-III Communication scale is normed to be used with children from age three years and above. Given the lower range of child age in this sample, four children fell below the age three cutoff. VABS-III rating forms were still completed by the child's classroom teacher,

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but raw scores could not be converted to standard scores. VABS-III Communication standard scores were estimated using the conversion norms for age three for children from ages two years, ten months and above. This estimate applied to one participant; three other participants ranging from ages two years and six to eight months could not have reliable VABS-III Communication standard scores computed, and therefore were excluded from analyses with VABS-III ratings.

Child Behavior Checklist. Parent perceptions of child behavioral characteristics were considered as covariates that may relate to parenting behavior observed during the mother-child interaction. In particular, parent perceptions of child behavior problems were considered, as measured by parent report on the Externalizing behavior scale of the Preschool Scale of the *Child Behavior Checklist* (CBCL; Achenbach & Rescorla, 2000). The externalizing scale assesses behaviors associated with hyperactivity, aggression, and noncompliance. Test-retest reliability across scales of the CBCL mostly falls within the .8 to .9 range indicating high reliability. The CBCL has been shown to discriminate significantly between referred and non-referred children in multiple countries, demonstrating content validity. Within this study's sample, there was a high level of internal consistency on the CBCL Externalizing scale, $\alpha = 0.92$, respectively.

Autism Diagnostic Classification. Forty of the participating children's diagnoses of ASD were confirmed using the Autism Diagnostic Observation Schedule – Second Edition (ADOS-2; Lord et al., 2000). The ADOS-2 is considered one of the gold standard measures for assessing ASD and has been shown to have high inter-rater reliability, high inter-item correlation, (Lord, Rutter, DiLavore, Risi, Gotham & Bishop, 2012) and high validity (Gotham, Risi, Pickles, & Lord, 2007). It is a widely used tool for the diagnostic assessment of ASD in both clinical and research settings. The ADOS-2 was administered by research-reliable PhD students in the school

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psychology and ID/Autism programs at Teachers College. These evaluators had achieved on-site reliability with a research-reliable individual with a PhD in Applied Behavior Analysis, who had been trained by ADOS-2 trainers and obtained 80% reliability with these trainers. Reliability is defined as greater than or equal to 80% on two consecutive administrations for each module.

The ADOS-2 generates two scores: Social Affect, which is comprised of Communication and Reciprocal Social Interaction behaviors, and Repetitive Behavior Scores. The Social Affect Score and Repetitive Behavior Scores are combined to create the Total Score. During administration, the researcher engaged the child in a variety of tasks intended to measure the communication, social aptitude, and stereotyped or repetitive behaviors. Tasks are specifically designed to elicit social responses such as requesting, joint attention, symbolic play, and gesturing. The ADOS-2 is not a measure of intelligence or language ability. There are five different Module options in the ADOS-2 that are based upon the participant's language ability and age, and these aforementioned tasks vary based on the module given. Modules 1, 2 and 3 were used in the current study; neither the Toddler Module or Module 4 was administered. When administering Module 1 or 2, the child's mother or member of the child's classroom instructional team (head teacher, teacher's aide) sat in the room during administration.

Behaviors are coded based the researcher's observations and notes. They are then transferred to a three- or four-point scale (0 to 2 or 3, depending on the item), where 0 represents the absence of an atypical behavior or the presence of a typical behavior, so that lower scores represent more developmentally typical behaviors. Individual items are next added to a diagnostic algorithm, which creates subscales for Social Affect and Repetitive Behaviors. These subscales are combined to reach a Total Score, which is then converted to an Autism Classification and Conversion Score. The scores align to symptom severity scores as follows:

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scores of 1-2 represents little to no evidence of Autism Spectrum Disorder, 3-4 represents low levels of Autism Spectrum related symptoms, 5-7 represents moderate levels of Autism Spectrum related symptoms, and 8-10 represents high levels of Autism Spectrum related symptoms. This score allows for standardized comparison of symptoms across all modules utilized.

For children who participated in the mother-child interaction component of the study but were unable to participate in an ADOS-2 administration, ASD diagnostic information was obtained from the *Childhood Autism Rating Scale, Second Edition (CARS-2; Schopler & Van Bourgondien, 2010)*. The CARS-2 is a 15-item measure, where each item addresses functional areas associated with autism, such as relating to people, body and object use, adaptation to change, and communication. Items are rated on a 4-point response scale based on the frequency, intensity, peculiarity, and duration of the behavior in question based on direct observations and interviews. The measure has strong psychometric properties as a diagnostic measure of ASD (Perry et al., 2005) and correlates .79 with scores from the ADOS-2 (Malcom, 2011).

Measures of Parent Functioning.

Parent Attribution Test, Adapted. Mothers' attributions of control were assessed using an adapted version of the *Parent Attribution Test (PAT)*. The original PAT was developed by Bugental (2011; Bugental et al., 1989) to assess parents' perceptions of causes of caregiving failures. The adapted PAT measure used in this study was previously used in a sample of children with developmental disabilities (Woolfson, et al., 2011).

The PAT includes a short vignette, followed by factors that may be viewed as causes for negative behavioral outcomes in a caregiving situation. Although the original measure assessed for perceptions of caregiving successes as well, that portion of the measure is excluded due to its

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poor predictive validity (Bugental, 2011). Caregivers rate their perception of the importance of various factors that may contribute to poor caregiving outcomes. The PAT yields four subscores: Adult Control over Failure for controllable (ACF+) and uncontrollable (ACF-) characteristics of the adult, and Child Control over Failure for controllable (CCF+) and uncontrollable characteristics (CCF-) of the child. The PAT is a 12-item measure, where three items contribute to each of the four subscore domains.

Bugental constructed the measure to capture relative perceptions of adult control compared to child control by subtracting CCF scores from ACF scores to yield a total score of perceived balance of control (PCF), or *attributions of control*. Test-retest reliability of the PCF score was found to be adequate ($r=.63$) from a sample of mothers over a two-month time period; internal reliability was not reported (Bugental, 2011). Bugental and colleagues found that parents with low ACF and high CCF scores were at increased risk for using harsh parenting tactics when parenting high-risk children (Bugental & Happaney, 2004).

In previous research with parents of children with developmental disabilities, an adapted version of the PAT has been utilized (Woolfson et al., 2011). The vignette in the original PAT asks respondents to imagine taking care of “a neighbor’s child;” however, Woolfson and colleagues speculated that parents of children with developmental disabilities may provide attributions about typically developing children, when the intention is to understand attributions in reference to their child with a developmental disability. In line with Woolfson, this study uses the same adapted vignette to best capture attributions regarding the mother’s own child with ASD. Thus, rather than the vignette prompting the respondents to imagine taking care of a neighbor’s child, the respondent is asked to imagine that “a neighbor was looking after *your* child.” For the adapted PAT, items ask the respondent to rate the importance of various factors

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that impact a caregiver-child interaction. For example: “Whether or not your neighbor used the wrong approach for this child” (ACF+); “What kind of mood your neighbor was in that day” (ACF-); “How little effort the child made to take an interest in what your neighbor said or did” (CCF+); and “Whether the child was tired or not feeling well” (CCF-).

With regard to internal reliability, Woolfson found that reverse-coding half the items (i.e., the Adult and Child Uncontrollable items), as was done in the original PAT, was problematic for assessing internal reliabilities of overall PCF, ACF, and CCF. The present study also encountered problems assessing internal reliabilities when Controllable and Uncontrollable items were combined to create an overall score. However, internal reliabilities for the separate positive (Controllable) and reverse-scored (Uncontrollable) subscales were acceptable for adult scales and questionable for child scales: Cronbach’s α for Adult Controllable positively scored items (ACF+) was 0.74, in the acceptable range; Cronbach’s α for Adult Uncontrollable reverse-scored items (ACF-) was 0.91, in the excellent range; CCF+ (Child Controllable items) Cronbach’s α = 0.63, in the questionable range; and CCF- (Child Uncontrollable items) Cronbach’s α = .64, in the questionable range. As a comparison, Woolfson et al. (2011) found that Cronbach’s α for each of the four subscales were 0.63, 0.75, 0.72, and 0.45, respectively.

When scores were summed to compute the overall PCF, ACF, and CCF scores in this sample, the domain scores were found to be unreliable (when reverse-scored items did not reliably load with positively scored items). As a result, the use of the PAT in this study will not incorporate the continuous measures of adult controllability relative to child controllability. To approximate perceptions of relative control, data will be analyzed using a modified PCF+ measure, which subtracts the mean of the three CCF+ items from the mean of the three ACF+ items to estimate mothers’ perception of relative control of adult compared to child, referred to

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as *attributions of control*. Though a literature review did not find previous use of the combined positively scored items, its use here approximates prior studies' use of a PCF score that includes reverse-scored items. Given the reliability problems with reverse-scored items in this dataset, PCF+ will be examined as an assessment of perception of relative control, where a positive number indicates that the mother ascribes greater importance to adult controllability than child controllability, and a negative number indicates that the mother perceives child control as more important than adult control.

Bugental (2011) reported discriminant validity (though did not report specific correlations) between the original PAT and measures of depression, self-esteem, and affect, as well as maternal education and age; additionally, mothers with low PCF are significantly more likely to report higher levels of stress. In the present sample, PCF+ was not significantly correlated to maternal age, depressive symptoms, self-efficacy, or parenting stress.

Parental Self-Efficacy. *Parenting Sense of Competence* scale (PSOC; Gibaud-Wallston & Wandersman, 1978; Ohan, Leung, & Johnston, 2000) assessed mothers' self-efficacy in their role as a parent. The 7-item Efficacy subscale from the larger 16-item scale was used; the other 9 items pertain to the Satisfaction subscale. Using a 6-point Likert scale, the PSOC-Efficacy measures the perceived degree to which parents feel competent and confident in their role as a parent. This measure includes items such as: "Being a parent is manageable, and any problems are easily solved" and "I meet my own personal expectations for expertise in caring for my child." The Efficacy scale shows a satisfactory level of internal consistency ($\alpha=0.77$) as reported by the authors. The efficacy scale for this study's sample also has a high level of internal consistency, as determined by a Cronbach's alpha of 0.86.

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The PSOC is the most commonly used measure of parental self-efficacy (Jones & Prinz, 2005), and analyses of convergent and divergent validity have found that the PSOC-Efficacy measures a belief construct distinct from that measured by the PAT (Lovejoy, Verda, & Hays, 1997). Compared to other primary variables in this study, the efficacy scale is significantly negatively correlated with the Parenting Stress Index Total Score ($r=-.38, p=.03$).

Parenting Stress Index. Parenting stress was measured using the *Parenting Stress Index-Fourth Edition, Short Form* (PSI-4: SF; Abidin, 2012). The measure consists of 36 items that assess for parental stress across three subdomains: parental distress, parent-child dysfunctional interaction, and difficult child, all of which contribute to total parenting stress. Responses are completed on a 5-point Likert scale. This measure includes items such as: “I feel trapped by my responsibilities as a parent” and “Since having a child, I feel that I am almost never able to do things that I like to do.” The PSI has excellent internal consistency as reported by the authors ($\alpha=0.95$) and as found within this study’s sample ($\alpha=0.92$).

Within the present study’s sample, Total Parenting Stress was significantly positively correlated to parent perceptions of externalizing child behavior problems, $r =0.57, p < .001$) and maternal depressive symptoms ($r=0.66, p <.001$).

Maternal Depressive Symptoms. This study considers maternal depressive symptoms as a potential covariate if found to be significantly related to primary study variables. Maternal depressive symptoms were measured by the *Center for Epidemiological Studies of Depression Scale-Revised (CESD-R, Radloff, 1977)*, a widely used measure of clinical depressive symptoms in adults, developed for the general population. The measure asks participants to respond to items regarding how they have felt in the past week or so, rating frequency in levels ranging from “Nearly every day for 2 weeks” to “Not at all or less than 1 day.” Items include symptoms

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of depression, such as “My appetite was poor,” “I lost interest in my usual activities,” and “I felt sad.” Internal consistency for this measure was high ($\alpha=.85-.90$), and analysis of convergent and divergent validity indicate strong psychometric properties (Van Dam & Earleywine, 2011). The present study’s sample had a similar level of high internal consistency ($\alpha = 0.90$).

Observed Quality of Parenting. Videos of the mother-child interaction were coded based on observed nonverbal and verbal behavior that reflect positive parenting: the degree of mothers’ emotional support (Quality of Emotional Support) and quality of the mothers’ instruction and scaffolding (Facilitation of Social/Cognitive Development); and harsh parenting: the degree to which mothers are critical or punitive of their child (Psychological Abuse). The coding system used, the *Psychological Multifactor Care Scale* (formerly known as the *Psychological Maltreatment Rating Scale*; Brassard, Hart, & Hardy, 1993), has been validly modified for use in an ASD sample and was adapted for use in this preschool sample (*Psychological Multifactor Care Scale — ASD Adapted Version*; Donnelly, 2015; Donnelly, Brassard & Hart, 2014; *Psychological Multifactor Care Scale — ASD Adapted Preschool Version*, Brassard, Donnelly, Hart, & Johnson, 2016). The original PMRS scale was developed as an observational measure of emotional maltreatment in an child protection population and a matched classroom control sample; the measure included positive parenting behaviors (Emotional Support and Quality of Instruction, the absence of which are psychological and cognitive neglect, respectively) and harsh parenting behaviors in order to capture a full range of parenting validated by the literature, indicative of construct validity (Hart, Brassard, Baker, & Chiel, 2017; Binggeli et al., 2001; Brassard & Donovan, 2006; Hart & Brassard, 1995; Hart & Glaser, 2011; Trickett et al., 2009). Based on the original evaluation of the PMRS, the scale reliably distinguished between maltreating and non-maltreating families (Brassard et al., 1993),

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and test-retest reliability was established with a sample of middle class mother-child dyads two weeks apart.

Modifications for the ASD adaptation of the PMCS included truncating the range of ratings for several scales, including Mother's Supportive Presence, Mutual Pleasure, Mother's Emotional Response to Task and Situation, and Quality of Instruction/Structure. In Donnelly (2015), the PMCS-ASD was used with three types of tasks: a teaching, free play and cleanup task. Many code definitions were revised slightly for this study to reflect the tasks and toys available during these three interaction sequences, which were different from those in Brassard et al. (1993) and Donnelly (2015).

The scale used in this study includes a new code of Parental Intrusiveness (Ispa, Fine, Halgunseth, et al., 2004) to the teaching and free play tasks as an additional measure of a harsh parenting behavior. The scale for rating Parental Intrusiveness was reduced from its original scale due to a more restricted range of parenting behaviors seen in this population and to facilitate coding reliability.

Based on well-validated conceptualization of parenting behaviors described in the literature (e.g., Dishion et al., 2015), Observed Quality of Parenting will be measured as two subdomains: Positive and Harsh Parenting. Positive parenting behaviors are those from the initially conceptualized Quality of Emotional Support and Facilitation of Social/Cognitive Development domains, excluding one item from each scale (reverse scored) that was categorized as a harsh parenting behavior (Denying Emotional Responsiveness and Parental Intrusiveness, respectively). Harsh parenting behaviors include behaviors on the Psychological Abuse subscale, as well as the two aforementioned harsh parenting behaviors from the first two subscales.

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Variables were rated based on Likert scales, with ordinal ranges from 1 to 3, 1 to 4, 0 to 3, and 1 to 5. The varied ranges facilitated more accurate and reliable coding. However, in order to maintain consistency and comparability of measurement across all variables, final codes were standardized to z-scores in IBM SPSS Statistics 24. When the dependent variables of positive and harsh parenting are: (a) distinguished by task, a sum of the scale's z-scores is used; or (b) represented across all tasks, a mean score of the totals from all tasks is used. A mean score, rather than total, is used across all tasks in order to be most inclusive of participants, as two participants did not engage in cleanup; by using means across tasks, those participants behaviors are represented by their participation in teaching and free play.

The variables that comprise the positive and harsh parenting domains, respectively, are delineated below, following conclusions drawn from assessments of interrater reliability.

Coding and reliability of the mother-child interaction. The mother-child task was videotaped, transcribed³, and then coded by trained research assistants who had both the transcript and the video available for making coding decisions. A summary of the final included variables and their reliability can be found in Tables 1 and 2.

Four students enrolled in the Ed.M. program in School Psychology at Teachers College, Columbia University were trained to become reliable coders with the doctoral research team trainers. All coders completed the CITI research training courses required for Teachers College. They were blind to the hypotheses of the study and were not given any identifiable information regarding the participants (other than being able to see faces in videos). Coders first practiced coding mother-child interactions using the PMRS-ASD Adapted Preschool version on the three pilot videos. They were then trained over the course of several weeks using videos from actual

³ Transcriptions were completed by a trained master's level research assistant, and a second transcriber verified accuracy of all transcriptions.

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study participant, which had been previously consensus coded by the doctoral research team trainers, until they reached an acceptable level of reliability on each item (80% agreement or greater following procedures established for the ADOS-2; Lord, et al, 2012). One research assistant was assigned to code each of the three tasks: teaching, free play, and cleanup. The research assistants for teaching and cleanup each coded 44 videos. Due to the unforeseen unavailability of one original coder, two research assistants were used to code the teaching task: one research assistant coded 28 videos and one research assistant coded 17 videos.

Video coding began when the experimenter exited the room for each task and returned at its completion; as a result, 5 minutes of both teaching and free play were coded and 2 minutes of clean-up were coded (or fewer if the dyad finished cleaning prior to 2 minutes). Coding and double-coding were completed in the order of participants' involvement in the study. Seventeen videos (38.64%) were double-coded by the doctoral-level trainer in order to calculate interrater reliability of each task (see Tables 1 and 2 below).

When there was a disagreement among raters on a code, differences in ratings were discussed among both raters (doctoral-level trainer and master's level research assistant) and a consensus score was obtained. When consensus coding was required, the consensus code was used in all future analyses. In all other cases, the independent rater's code was used for analyses.

Reliability statistics were considered acceptable with a Cohen's kappa of .40 (moderate) or .60 (good), (Cicchetti, Bronen, Spencer, Haut, Berg, & Oliver, 2006, Fleiss, Levin, & Paik, 2003). If a Cohen's kappa could not be calculated, a percent agreement of 80% or better was deemed acceptable (Lord, et al., 2012). Observational assessment of items with restrictions in range (e.g., on harsh parenting variables when ratings were restricted to mostly scores of 0 on the scale) can create problems in calculating reliability statistics (Hallgren, 2012). Therefore, on

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items where Cohen’s kappa reliability could not be calculated due to little or no variability across codes, percent agreement between raters was used (Birkimer & Brown, 1979). Notably, percent agreement was used for all harsh parenting variables due to the low levels of frequency and severity across tasks.

In summary, the variables comprising the positive parenting domain are listed in Table 1, and the variables comprising the harsh parenting domain are listed in Table 2. For positive parenting, the final composition for teaching task includes eight variables, free play includes seven variables, and cleanup includes six variables, as indicated in the table below. The positive parenting variables are derived from the theoretically conceptualized domains of Quality of Instruction and Emotional Support. For harsh parenting, teaching and free play tasks are comprised of six variables and cleanup is comprised of five.

Table 1.

Interrater Reliability Using Cohen’s Kappa for Positive Parenting Variables of Psychological Multifactor Care Scale – Autism Spectrum Disorder Adapted Version

Positive Parenting Variables	Teaching	Free Play	Cleanup
Mother's Supportive Presence	82.4%*	1.00	1.00
Mutual Pleasure	.86	.85	.55
Body Harmonics	.86	.61	.64
Mother's Mental Status	1.00	100%*	94.1%*
Mother's Emotional Response to Task and Situation	.85	.82	<i>n/a</i>
Quality of Instruction	.56	.63	.62
Respect for Child's Autonomy	.70	<i>n/a</i>	<i>n/a</i>
Strategies for Child's Task Involvement	.56	.45	.86

Note. * indicates that percent agreement, rather than Cohen’s kappa, was used to demonstrate interrater reliability. Percent agreement was used when the kappa statistic could not be calculated because one or both of the comparison variables was a constant (at least one rater gave all participants the same code for a variable). “*n/a*” indicates that an aspect of parent-child relationships could not be adequately evaluated on a specific task and does not apply.

Table 2.

Interrater Reliability Using Percent Agreement for Harsh Parenting Variables of Psychological Multifactor Care Scale – Autism Spectrum Disorder Adapted Version

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Harsh Parenting Variables	Teaching	Free Play	Cleanup
Denying Emotional Responsiveness	94.10	100	100
Intrusiveness	100	76.50	<i>n/a</i>
Spurning	88.20	100	88.20
Terrorizing	94.10	100	100
Isolating	94.10	94.10	100
Corrupting/ Exploiting	94.10	94.10	100

Note. “*n/a*” indicates that the aspect of parent-child relationships could not be adequately evaluated with an ASD population in this sample on a specific task and does not apply.

Chapter Four: Results

Data Preparation

Mean Imputations. Raw data from questionnaires was examined to identify the scope of missing data. SPSS missing value analysis did not find any significant patterns of missing data (e.g., particular items that were skipped at an unusually frequent rate). Given the small amount of missing data, and the random pattern of missing data, a more sophisticated method of multiple imputation was determined to be unnecessary (Azur, Stuart, Frangakis, & Leaf, 2011). Thus, the single imputation method of mean imputations was utilized. Missing items were imputed using the mean score of other items on the scale, when at least 80% of the participant’s responses to other items on the scale were available. This method allows for imputed scores to be consistent with the participant’s pattern of responses to similar items when an adequate number of actual responses were available.

For the *Parent Attribution Test*, each of the four subscales are comprised of three items. Due to the small size of the scale, missing data could not be imputed, as one missing item leaves 66.7% of responses available, below the 80% cutoff for implementing the mean imputation procedure. Of the 44 total participants in the sample, one participant did not complete any items on the PAT measure, and therefore is excluded from PAT analyses.

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On the Parenting Stress Index, imputations were conducted using subscales in order to best estimate the missing item using categorically similar items. On the Parental Distress subscale, three participants had one missing item, each with three different items. Thus, missing items were imputed with the remaining 91.67% of available responses for that 12-item scale. On the Parent-Child Dysfunctional Interaction subscale, one participant had one missing item, and thus the missing item was imputed with the remaining 91.67% of available responses for that 12-item scale. On the Difficult Child subscale, four participants each had one missing item (all different items), so the missing items were imputed with the remaining 91.67% of available responses in the 12-item scale. For participants with PSI-4 imputations, a T-score comparing parenting stress to a normative population were not computed, as the total raw scores with imputed items included decimal numbers not accounted for by the PSI-4 conversion tables. Thus, T-scores were used to describe clinical significance within the sample, whereas total raw scores will be used for analyses.

For the Parenting Sense of Competence – Efficacy seven-item measure, three participants had one missing item, having provided responses for 85.7% of the total items. Because the PSOC is one scale, rather than imputing individually missed items, a total mean score was calculated for each participant, and the participants' mean scores are used to represent PSOC in analyses.

For the Center for Epidemiologic Studies Depression Scale Revised, one participant did not respond to the entire scale, and no other participants skipped individual items. Thus, no scores were imputed for this scale.

For the Child Behavior Checklist, syndrome scales were used to impute missing data when at least 80% of the items on the syndrome scale were completed. One participant skipped many items on the CBCL, such that her Internalizing, Externalizing, and Total scores could not

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be computed; that participant was excluded from the analysis of hypotheses that included the CBCL. Within the Internalizing domain: on the Emotionally Reactive nine-item scale, four participants skipped one item; on the Anxious/Depressed eight-item scale, two participants skipped the same one item; on the Somatic Complaints 11-item scale, seven participants each skipped one item; on the eight-item Withdrawn scale, four participants each skipped one item. Within the Externalizing domain: on the five-item Attention Problems scale, three participants each skipped one item; on the 19-item Aggressive Behavior scale, eight items were skipped by 12 participants overall, with allowance for imputations, excluding one participant who skipped seven of the 13 items (no response for 53.8% of the scale). For participants with CBCL imputations, a T-score comparing child behavior problems to a normative population was not computed, as the total raw scores with imputed items included decimal numbers not accounted for by the CBCL conversion tables. Thus, T-scores were used to describe the sample, whereas raw scores will be used for analyses.

For three participating children on the VABS-III who were under the age of three, raw scores could not be converted to standard scores. Given the necessity of using norm-referenced standard scores on the VABS-III to compare children's communication skill level to developmental expectations, these three participants' VABS-III scores are classified as missing and therefore excluded from related analyses.

Testing Assumptions. The dataset was evaluated to determine whether the dependent variables were normally distributed. A skewness or kurtosis statistic between -1 and 1 typically indicates a reasonably normal distribution (Klein, 1998). According to Klein's (1998) recommendation, cut-offs of z-scores for skew (skewness/standard error) greater than 3.0 and kurtosis (kurtosis/standard error) greater than 10 were used in this dissertation, in that values of

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skewness greater than 3 and kurtosis greater than 10 are considered extreme. However, regression analyses tend to be robust to skew; therefore, skewness is reported as a descriptive feature of the sample.

A summary of skewness and kurtosis tests can be found in Table 3, which reviews all descriptive statistics for the dependent variables. In general, across all interaction tasks and types of parenting behaviors, the negative skew statistic for positive parenting and the positive skew for harsh parenting, in the extreme ranges, indicate that most mothers display parenting behaviors in the upper range of skillfulness. Kurtosis scores were not found to be in the extreme range.

Descriptive Statistics of Primary Study Variables

Maternal Characteristics. Characteristics of participating mothers in this study were compared to other mothers of children with ASD or normative samples to establish how representative this sample is of mothers of children with ASD.

In one study of preschool-aged children with ASD and their mothers (Estes, Munson, Dawson, Koehler, Zhou, & Abbott, 2013), participating mothers were reported to be of an average age of 35.99, 54% were college graduates and 70% identified as Caucasian. In another study of preschoolers with ASD and both their parents (Davis & Carter, 2008), mothers' average age was 36.5, the majority of mothers (63%) had a college education, 83% were Caucasian, and most of the mothers were married (94%; though involvement of both parents was a necessary criterion for inclusion in the study). In comparison, the average age of mothers in the current study tended to be quite comparable to similar studies in the literature (36.8 years old), whereas more mothers in the current study were more highly educated than were mothers in other studies (78% were graduates of college or graduate schools). However, compared to other studies that

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had a majority of Caucasian participants, this study was relatively more ethnically diverse (44% of participants were Caucasian).

In a study examining access to services for 143 families of children ages 2 to 18 with ASD (Hodgetts, Zwaigenbaum, & Nicholas, 2015), a third of the sample reported an annual income above \$120,000, whereas 10% of the sample reported an annual income below \$45,000. Similarly, nearly 10% of this study's sample report an annual income below \$25,000 and 35% of the present study's sample reported an annual income above \$150,000. With a higher cutoff of range and a greater percentage falling into the higher range, this sample appears to be slightly more affluent, though still draws participants spanning a wide range of income levels, including many who fall into a very low-income category.

In this sample, total parenting stress raw scores were found to have a mean score of 83.77. Based on a cutoff T-score of 60, eight mothers reported significantly elevated levels of parenting stress (19% of the sample). A meta-analysis compared studies of parenting stress for parents of children with ASD and a typically developing groups (Hayes & Watson, 2013). Two of the included studies measured stress using the PSI-SF and found total parenting stress means for the ASD and typically developing groups, respectively, to be 101.71 and 66.00 (Brobst et al., 2009 in Hayes & Watson, 2013) and 91.52 and 60.71 (Lee et al., 2009 in Hayes & Watson, 2013). The level of parenting stress in the present sample is higher than parents of typically developing children, and comparable or slightly lower than other samples of ASD.

Regarding self-efficacy in this sample, scores were based on the mean of responses to all seven items on a Likert scale ranging from 1 to 6, where 6 reflects highest perception of competence: the overall mean of the respondents was 3.95. Of the 39 mothers who completed the measure, 18 had self-efficacy scores at 4 or above (where scores of 4 and above were labeled in

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the “agree” range), and 21 had self-efficacy scores below 4 (in the “disagree” range). Compared to a study of parental self-efficacy in a normative sample, where mean self-efficacy was 4.41 (Gilmore & Cuskelly, 2009), mothers in this sample reported slightly lower levels of self-efficacy.

Observed Parenting Behaviors. Table 3 summarizes descriptive statistics for observed parenting behaviors, including overall mean scores across tasks, and total scores within each task for the standardized scores of positive and harsh parenting behaviors. As mentioned previously there was a low incidence of harsh or neglectful behaviors in this sample, and a high level of positive parenting. Descriptive statistics of raw scores for each variable of maternal behaviors on the PMCS-ASD are reported in Appendix F, Table F1, separated by task type. Table F2 in Appendix F summarizes the PMCS-ASD descriptive statistics for the standardized scores of the dependent variables, which are used in hypothesis testing.

Table 3.
PMCS-ASD Descriptive Statistics for Raw Scores of Positive and Harsh Parenting Behaviors by Task (N=42)

Task/Parenting	<i>M</i>	<i>SD</i>	Min.	Max.	Skewness ^a	Skew z-score ^d	Kurtosis ^b	Kurtosis z-score ^d
Across all tasks [*]								
Positive	3.30	.34	2.38	3.67	-1.24	-3.57	.82	1.14
Harsh	.23	.13	.12	.59	1.32	3.57	.98	1.36
Teaching [^]								
Positive	26.62	4.63	14.00	31.00	-1.75	-4.73	1.98	2.75
Harsh	1.60	1.38	1.00	7.00	2.53	6.84	6.08	8.44
Free Play [^]								
Positive	23.29	2.28	17.00	26.00	-1.17	-3.16	.54	.75
Harsh	2.00	1.33	1.00	6.00	1.39	3.76	1.27	1.76
Cleanup ^{^e}								
Positive	19.38	1.97	15.00	22.00	-.75	-2.03	-.49	-.67
Harsh	.33	.69	.00	3.00	2.37	6.41	5.60	7.67

* Parenting behaviors are reflected as a mean score across all tasks

^ Parenting behaviors are a total score for each separate task

^a Standard error of skewness for all tasks = .37

^b Standard error of kurtosis for teaching, free play and total = .72; standard error for cleanup = .73

^c n=40 due to two participants who did not attempt to engage in cleanup when instructed

^d Z-statistic for skewness and kurtosis is determined by dividing the produced statistic by standard error

Maternal Report Measures. Descriptive data for all included measures are presented in Table 4. On the *Parent Attribution Test*, attributions of control were measured by subtracting child-control items from adult-control items. Attributions of control scores ranged from -3.33 to 5.33, with a mean of 1.27 and standard deviation of 1.47. Negative scores on this scale represent a mother's perception that the child's control is more impactful than the adult's. As the attributions of control score is comprised of adult-controllable and child-controllable items, the descriptive statistics for those subscales follow. For adult-controllable (ACF+) items, scores ranged from 2.33 to 7.00, with a mean of 6.23 and standard deviation of 1.03, indicating that many mothers rated high importance to factors controllable by the adult. For child-controllable (CCF+) items, scores ranged from 1.67 to 7.00, with a mean of 4.96 and standard deviation of 1.36, indicating that mothers reported a more centered, though still positively leaning, perception of the importance of factors controllable by the child.

In this sample, the mean self-efficacy score was 3.95, with a standard deviation of 1.04, and scores ranging from 1.14 to 6, spanning nearly the full range of possible self-efficacy scores. Total Parenting Stress was found to have a T-score mean of 51.80 standard deviation of 8.44, with scores ranging from 33 to 65, and 7 participants with clinically significant T-scores above 60. For the CBCL Externalizing subscale, T-scores ranged from 32 to 69, with a mean of 53.33 and standard deviation of 8.92. Of the participants for whom standardized T-scores could be computed, a cut-off score of 60 was used to identify significantly elevated problem areas. For

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CBCL Externalizing Problems, 33 participants had available T-scores, 9 of whom demonstrated significantly elevated externalizing problems (27%).

Mothers in this sample reported the number of adults who live in their home, and it is included as a covariate in hypothesis testing. The number of adults reported typically ranged from one to three (one adult: $n=3$; two adults: $n=31$; three adults: $n=5$), though one mother reported eight adults living at home. When analyses were conducted with and without this outlier, results remained comparable; thus, the outlier is included.

Teacher/Clinician Rated Measures. Vineland Communication standard scores ranged from 44 to 105, with a mean of 75.10 and standard deviation of 14.89. As expected, the children participating in this study tend to demonstrate lower levels of functioning, as measured by teacher-reported communication skills, than other same-aged peers across a normative sample. ADOS-2 scores ranged from 3 to 10, with a mean of 7.40 and standard deviation of 2.01. Of the 40 participants who received an ADOS-2 during this study, 55% ($n=22$) were in the high range of severity, 35% ($n=14$) were in the moderate range, and 10% were in the low range ($n=4$). Of note: 50% ($n=20$) participated using Module 1, 32.5% ($n=13$) participated using Module 2, and 17.5% ($n=7$) participating using Module 3, indicating that most children were not verbally fluent (Modules 1 and 2). Of the two participants whose autism severity was rated by the CARS-2, the mean was 37.25, with one child receiving a classification of moderate and one severe.

Correlations of Study Variables. Demographic variables that had significant correlations with dependent variables (DV) were considered in hypothesized models in order to control for the given variable, and are presented in Table 4. Significant correlations were found between several potential covariates and the dependent variables. The number of adults in the home (which may be treated as a proxy for social and caregiving support) is significantly

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positively correlated with the mean of positive parenting across tasks ($r=.38, p=.02$). The number of adults in the home ranges from 1 to 3, with the exception of one parent reporting 8 adults in the home. The variability suggests that the effect of number of adults in the home represents more than marital or domestic partnership status. Though the relationships of additional adults in the home was not identified (e.g., grandparents, adult siblings, live-in nanny, etc.), it appears that in this sample, more adults in home may reflect an added level of caregiving support to positively impact quality of parenting.

Point-biserial Pearson's correlations were conducted to assess the correlations between dichotomous covariates, including child gender, mother's marital status, income, and race/ethnicity, and the dependent variables (see Table 4). Given that White and Hispanic mothers made up the majority of the sample, two correlations were conducted to assess the association between race and study variables. A significant positive correlation between the dummy coded variable of white mothers indicated that white mothers were associated with higher levels of positive parenting overall ($r = .39, p = .01$). A dummy coded variable comparing Hispanic mothers to all others indicated a significant negative correlation between Hispanic mothers and positive parenting ($r=-.42, p=.006$). Notably, though Hispanic mothers were rated as showing lower levels of positive parenting, there is no significant association between Hispanic mothers and harsh parenting behaviors; cultural and measurement implications will be discussed. Child gender, mother's marital status, mother's education level, child's autism severity score, community level poverty, maternal age, number of children in the home, and maternal depressive symptoms were not correlated with measures of observed parenting and were dropped from further consideration.

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Pearson's and point-biserial Pearson's correlations were conducted to assess the relationship between primary study variables and dependent variables. Missing cases were excluded by pairwise deletion for all correlations (see Table 4).

Correlations were conducted to determine whether maternal cognitions/symptoms, including parenting stress, self-efficacy, and attributions of control correlate with observed harsh and positive parenting behaviors. Negative correlations between parenting stress and quality of parenting were found. There was a significant negative correlation between total parenting stress and positive parenting overall ($r = -.38, p = .01$) and specifically during the free play task ($r = -.34, p = .03$); the correlations were not significant specifically for teaching or cleanup tasks, or for harsh parenting within or across tasks. Although the PSI-4-SF offers subscale scores of other domains of parenting stress (e.g., Parental Distress, Parent-Child Dysfunctional Interaction, Difficult Child), the correlations were no different than what is represented by the Total Parenting Stress scale, so only total parenting stress is reported.

Maternal cognitions of self-efficacy and attributions of control were not significantly directly correlated to either harsh or positive observed parenting. Mothers' perceptions of how competent or in-control they view themselves is not directly correlated with how competent they are objectively observed to be in this sample.

With regard to correlations of child characteristics and dependent variables, there was a significant negative correlation between overall positive parenting behaviors and parent perception of child externalizing behavior problems ($r = -.40, p = .01$): there lower levels of observed positive parenting observed was correlated with higher reported child externalizing problems. Child internalizing problems and overall problems (comprised of externalizing, internalizing, and several extraneous problem scales on the CBCL) were either less or

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equivalently correlated to study variables, relative to child externalizing problems; therefore, only child externalizing problems is reported and used in analyses.

Correlations between the dependent variables of positive and harsh parenting, as measured individually by task and as a mean across all tasks, are summarized in Table 5.

Table 4
Means, Standard Deviations, and Intercorrelations for Primary and Covarying Study Variables

Measure	<i>n</i>	<i>M</i>	<i>SD</i>	PSI	PSOC	PCF+	VL	CBCL	#Adults	White	Hispanic
PSI-Total	42	83.77	19.65	--							
PSOC	39	3.95	1.04	-.38*	--						
PCF+	41	1.27	1.47	.04	-.16	--					
Vineland	39	75.10	14.89	-.05	.01	.01	--				
CBCL Externalizing	41	15.99	8.47	.58**	-.05	-.08	-.12	--			
Number of Adults in the Home	40	2.20	1.04	.17	.01	.02	-.13	-.09	--		
Race/Ethnicity (White vs. not)	41	.44	.50	.02	-.03	.06	.17	-.00	.07	--	
Race/Ethnicity (Hispanic vs. not)	41	.29	.46	.04	-.05	.08	.11	.15	-.29	-.57**	--
Positive Parenting, Teaching	42	-.15	6.60	-.30	-.12	-.20	-.08	-.19	.23	.32*	-.30
Harsh Parenting, Teaching	42	.08	4.27	.25	.23	.19	.16	.24	-.21	-.35*	.31
Positive Parenting, Free Play	42	-.21	4.70	-.34*	-.02	-.07	.13	-.43**	.35*	.29	-.38*
Harsh Parenting, Free Play	42	.10	3.02	.08	-.21	-.01	-.27	.07	-.22	-.01	.22
Positive Parenting, Cleanup	40	.03	3.01	-.29	.06	.08	.07	-.46**	.46**	.34*	-.31
Harsh Parenting, Cleanup	40	.05	2.00	.22	-.06	.06	-.20	-.14	.07	-.07	-.15
Positive Parenting, Overall Mean	42	-.09	3.75	-.38*	-.08	-.13	.03	-.40**	.38*	.39*	-.42**
Harsh Parenting, Overall Mean	42	.05	2.07	.26	.05	.14	-.09	.15	-.29	-.26	.27

Note. PSI = Parenting Stress Index, Raw Scores; PSOC = Parenting Sense of Competence – Efficacy, Mean Response; PCF+ = Attributions of Control: Perceived Control over Failure for Controllable Scales of Parent Attribution Test; Vineland = Vineland Communication Domain Standard Score. CBCL = Child Behavior Checklist, Externalizing Scale

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

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Table 5.
Pearson's Correlations for Dependent Variables, By Type and Task

Measure	1	2	3	4	5	6	7
1. Positive Parenting, Teaching	--						
2. Harsh Parenting, Teaching	-.83**	--					
3. Positive Parenting, Free Play	.43**	-.46**	--				
4. Harsh Parenting, Free Play	.02	-.06	-.54**	--			
5. Positive Parenting, Cleanup	.24	-.22	.53**	-.31	--		
6. Harsh Parenting, Cleanup	-.38*	.38*	-.28	.19	-.29	--	
7. Positive Parenting, Overall Mean	.84**	-.74**	.81**	-.30	.63**	-.42**	--
8. Harsh Parenting, Overall Mean	-.68**	.78**	-.67**	.51**	-.40*	.68**	-.79**

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

Hypothesis Testing

All hypotheses are tested with IBM's SPSS Statistics software, using a conditional process analysis macro called PROCESS (Hayes, 2013) developed for use with SPSS. The PROCESS macro includes the use of bootstrapping, which strengthens the power and interpretability of results, particularly when there is non-normality in the sampling distribution.

Hypothesis 1. To examine the relationship between attributions of control and quality of parenting, as moderated by task type, moderation analyses were conducted using PROCESS analysis (Model 1; Hayes, 2013) within SPSS 24.0 for Mac. The following moderation equation was examined for both positive and harsh parenting as outcome variables, with task type coded as dummy variables: $Y(\text{Quality of Parenting}) = X(\text{Attributions of Control}) + M(\text{Task Type}) + XM(\text{PCFpos} * \text{Task Type}) + e^4$. Race (white compared to all others), the number of adults in the home, and child externalizing problems were included as covariates. In order to explore task type as a moderator, the dataset was restructured such that each participant had three separate cases in the dataset, representing each of the three tasks: teaching, free play and cleanup. This

⁴ An equation is used to help the reader visualize the tested model. Y = dependent variable; X = independent variable, M = moderator, XM = interaction, e = error.

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restructuring allowed for the variables of positive and harsh parenting to be separated from task type so that dummy variables of task could be created. Based on the exclusion of participants with missing data, 39 participants were included in this analysis. Because each participants' data was represented by three observations, the number of total observations in this analysis was 115 (two participants did not participate in the cleanup task).

A main effect for attributions of control was supported for observed positive parenting (Table 6) and approached significance for observed harsh parenting (Table 7). However, the interaction terms were not significant for either positive or harsh parenting, indicating no support for an interaction between task and attributions of control. Thus, the hypothesis that attributions of control is moderated by task type to effect parenting quality was not supported.

Table 6.
Regression Analysis Summary for Interaction of Task and Attributions of Control on Observed Positive Parenting

Variable	Coefficient	SE	<i>t</i>	<i>p</i>
Constant	-.08	1.69	-.05	.96
Attributions of Control	-1.21	.48	-2.51	.01
Task: Free Play vs. Others	-.89	1.30	-.69	.49
Task: Cleanup vs. Others	-1.01	1.32	-.77	.44
Free Play X Attributions	.71	.68	1.05	.30
Cleanup X Attributions	1.15	.68	1.69	.09
Adults in home	1.21	.47	2.58	.01
Perception of child externalizing behavior	-.18	.05	-3.71	<.01
Race, White	3.26	.84	3.89	<.01

Note. N=39, with 115 total observations included in data analysis, due to three observations per participant, and excluding two observations for two participants who did not participate in the cleanup task.

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Table 7.

Regression Analysis Summary for Interaction of Task and Attributions of Control on Observed Harsh Parenting

Variable	Coefficient	SE	<i>t</i>	<i>p</i>
Constant	.61	1.24	.49	.63
Attributions of Control	.65	.35	1.84	.07
Task: Free Play vs. Others	.67	.96	.69	.49
Task: Cleanup vs. Others	.48	.97	.49	.62
Free Play X Attributions	-.58	.50	-1.15	.25
Cleanup X Attributions	-.50	.50	-1.00	.25
Adults in home	-.53	.34	-1.54	.13
Perception of child externalizing behavior	.04	.04	1.00	.32
Race, White	-1.31	.62	-2.12	.04

Note. N=39, with 115 total observations included in data analysis, due to three observations per participant, and excluding two observations for two participants who did not participate in the cleanup task.

Hypothesis 2. Regression analysis was conducted to investigate the hypothesis that parental self-efficacy mediates the relationship between attributions of control and observed positive parenting, further moderated by child’s level of language functioning on the Vineland, controlling for the number of adults in the home, parent perception of child behavior problems, and race. The hypothesis examined parenting behaviors across the interaction as a whole, rather than comparing behaviors across individual tasks. The moderated mediation model was tested using PROCESS Model 7, and the model was not significant. The part of the model examining whether child’s language level moderates the effect between attributions of control and parental self-efficacy was not significant, and accounted for approximately 10% of the variance ($R^2=.10$); $F(6, 26) = .48, p=.82$, with no significant main effects or interactions.

For the portion of the model examining direct effects of the independent variables of attributions of control and parental self-efficacy on overall positive parenting quality, the predictor variables accounted for approximately 70% of the variance ($R^2=.69$); $F(5, 27) = 12.12, p<.001$, and the direct effect of attributions of control on observed parenting quality was

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significant ($b=-.96, p = .002$), with a negative relationship between attributions of control and positive parenting quality. Results from this portion of the overall model are summarized in Table 8.

Table 8.
Direct Effects of Predictor Variables on Observed Positive Parenting (N=33)

Variable	Coefficient	SE	<i>t</i>	<i>p</i>
Constant	-.16	2.09	-.08	.94
Self-efficacy	.19	.37	.51	.61
Attributions of control	-.96	.28	-3.46	.002
Adults in home	1.25	.35	3.58	.001
Perception of child externalizing behavior	-.02	.05	-4.63	<.001
Race, White	1.98	.76	2.60	.02

Tested as moderated moderation (Hayes' PROCESS Model 3), whereby the interaction between self-efficacy and attributions of control was evaluated as a predictor of observed positive parenting, the model summary was significant, $R^2=.71; F(10,22) = 5.43, p < .001$, though the only significant variables in the model were the two covariates of adults in the home and parent perception of child behavior problems. In other words, the model of parental self-efficacy moderating the relationship between attributions of control and observed positive parenting, further moderated by child's level of language functioning on the Vineland, controlling for the number of adults in the home, parent perception of child behavior problems, and race was significant. However, only the number of adults in the home (positively related to observed parenting) and parent perception of child behavior problems (negatively related to observed parenting) were significant predictors.

Overall findings were similar when both mediated moderation and moderated moderation models were tested with observed harsh parenting behaviors, rather than positive parenting behaviors, as the dependent variable. For mediated moderation, the overall model was not significant, though there was a significant direct effect of attributions of control on harsh

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parenting, $b = .46, p = .05$, controlling for the number of adults in the home, parent perception of child behavior problems, and race.

In the moderated moderation model (Hayes' PROCESS Model 3) for harsh parenting, whereby the interaction between self-efficacy and attributions of control was evaluated as a predictor of observed harsh parenting, further moderated by the child's language functioning, the overall model was not significant, $R^2 = .49, F(10, 22) = 2.11, p = .07$. However, several interaction terms were found to be significant, as reviewed in Table 9 below. Notably, due to the significant inclusion of the three-way interaction in the model, R^2 was found to significantly increase to account for an additional 12% of the variance (R^2 change = .12; $F(1, 22) = 4.98, p = .04$).

Table 9.

Moderation Effects of Predictor Variables on Observed Harsh Parenting (N=33)

Variable	Coefficient	SE	<i>t</i>	<i>p</i>
Constant	-12.30	13.70	-.90	.38
Self-efficacy	3.19	3.16	1.01	.32
Attributions of control	30.03	13.52	2.22	.04
PCF X SE	-7.60	3.55	-2.14	.04
Vineland (Child language functioning)	.18	.17	1.04	.31
PCF X Vineland	-.37	.16	-2.28	.03
SE X Vineland	-.04	.04	-1.09	.29
PCF X SE X Vineland	.10	.04	2.23	.04
Adults in home	-.71	.29	-2.43	.02
Parent perception of child externalizing behavior	.02	.04	.47	.64
Race, White	-.37	.67	-.55	.58

Notes. PCF = Attributions of Control; SE = Parental Self-Efficacy

Results from the conditional process model with the three-way interaction of attributions of control, self-efficacy, and child level of language functioning as a predictor of observed harsh parenting behaviors, depicted in Figure 1, suggest that for mothers with high self-efficacy and who have children with higher level of functioning, attributions of control are related to harsh parenting. Mothers who perceive adult control as more important than child control are more

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likely to engage in harsh parenting behaviors. A similar relationship between attributions and observed harsh parenting is found for mothers with low self-efficacy and whose children have a lower level of language functioning.

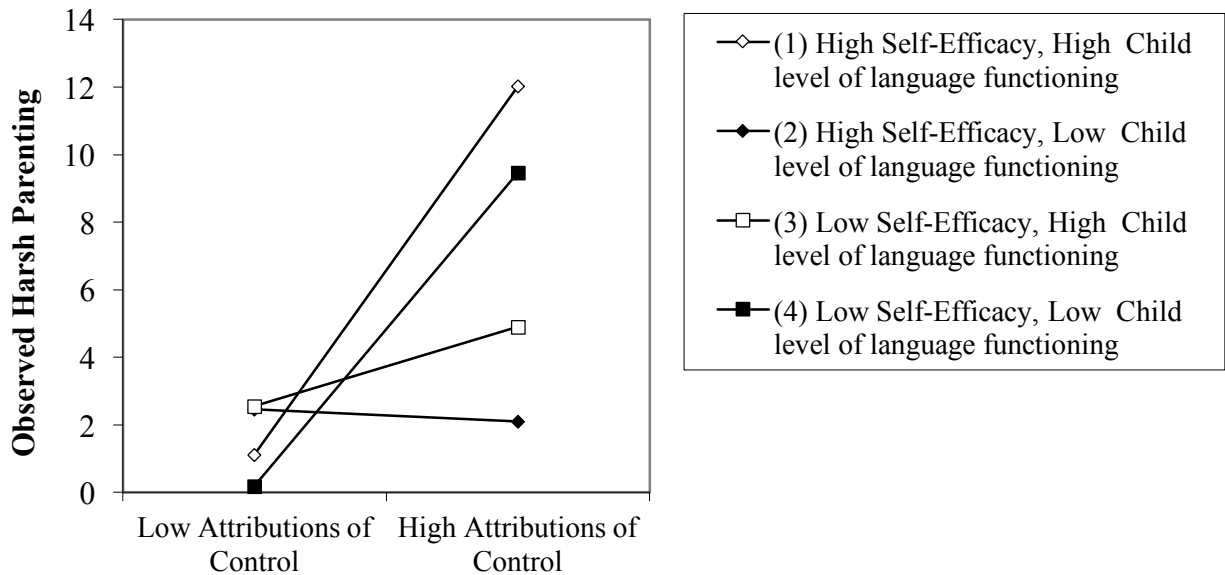


Figure 1. Relationship between attributions of control and observed harsh parenting behaviors, as moderated by parental self-efficacy and child level of functioning, modeled as a three-way interaction.⁵

As recommended by Hayes (2013), the Johnson-Neyman technique was implemented to identify the level of child level of language functioning where the interaction between attributions of control and self-efficacy transition between statistically significant and not. Results of the Johnson-Neyman technique indicate that when child level of language functioning is rated with VABS-III Communication standard score of 91.52 or above, there is a statistically significant difference in the effect of attributions of control between mothers with varying levels

⁵ Note: the scale of the Y-axis reflects the inclusion of unstandardized control variables; however, interpretation of graph is not affected (Dawson, 2014).

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of self-efficacy. These results indicate that for higher functioning children, mothers who perceive adult control as more impactful than child control *and* report high self-efficacy engage in more harsh parenting behaviors. Below that level of language functioning, there is not a statistically significant moderation effect between self-efficacy and attributions of control on harsh parenting behaviors.

Hypothesis 3. Regression analysis was used to test the hypothesis that parenting stress moderates the effect of self-efficacy on observed positive parenting, further moderated by the parent's perception of child's level of externalizing behavior problems; number of adults in the home and race were included in the model as covariates. Because the moderator of parenting stress is significantly correlated with the dependent variable of positive parenting (and approaching statistical significance in its correlation with harsh parenting), results may be interpreted with caution (see Table 4).

The moderated moderation model was tested using the PROCESS macro, Model 3 ($n = 36$). Although the overall model was significant and accounted for approximately 70% of the variance in observed positive parenting ($R^2 = .69$; $F(9, 26) = 6.57, p < .001$), neither the primary independent variables nor the interaction terms were found to be significant predictors of positive parenting behaviors. Only the dummy coded variable of race (White vs. not) was found to significantly relate to observed positive parenting ($b = 3.30$; $t = 3.85, p < .001$).

The model was also tested with observed harsh parenting as the dependent variable, and the overall model was found to account for 61% of the variance ($R^2 = .61$; $F(9, 26) = 4.49, p = .001$). Several interaction terms were significant, as summarized in Table 10 below. The three-way interaction between parental self-efficacy, parenting stress, and parent perception of child

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behavior problems contributed to an additional 7% of the variance in harsh parenting (R^2 -change = .07; $F(1, 26) = 4.86, p = .04$).

Table 10.
Regression Analysis Summary for Interactions of Parenting Stress, Self-Efficacy, and Perception of Child Externalizing Behavior Predicting Quality of Harsh Parenting (N=36)

Variable	<i>b</i>	<i>t</i>	<i>p</i>
Constant	-31.36	-2.06	.05
Parenting Stress	.44	2.51	.02
Self-Efficacy	5.36	2.00	.06
PS x SE	-.07	-2.33	.03
Perception of child externalizing behavior	2.07	1.79	.09
SE x CB	-.41	-1.70	.10
PS x CB	-.03	-2.26	.03
SE x PS x CB	.01	2.21	.04
Race (White)	-1.46	-2.69	.01
Adults in Home	-.18	-.54	.59

Note. PS = Parenting Stress; SE = Self-Efficacy; CB = Perception of child externalizing behavior

Results from the conditional process model with the three-way interaction of self-efficacy, parenting stress, and parent perception of child behavior problems as a predictor of observed harsh parenting behaviors, depicted in Figure 2, suggest that for mothers with high parenting stress and who have children with elevated levels of behavior problems, self-efficacy is related to harsh parenting, in that mothers who perceive themselves as highly efficacious are more likely to engage in harsh parenting behaviors.

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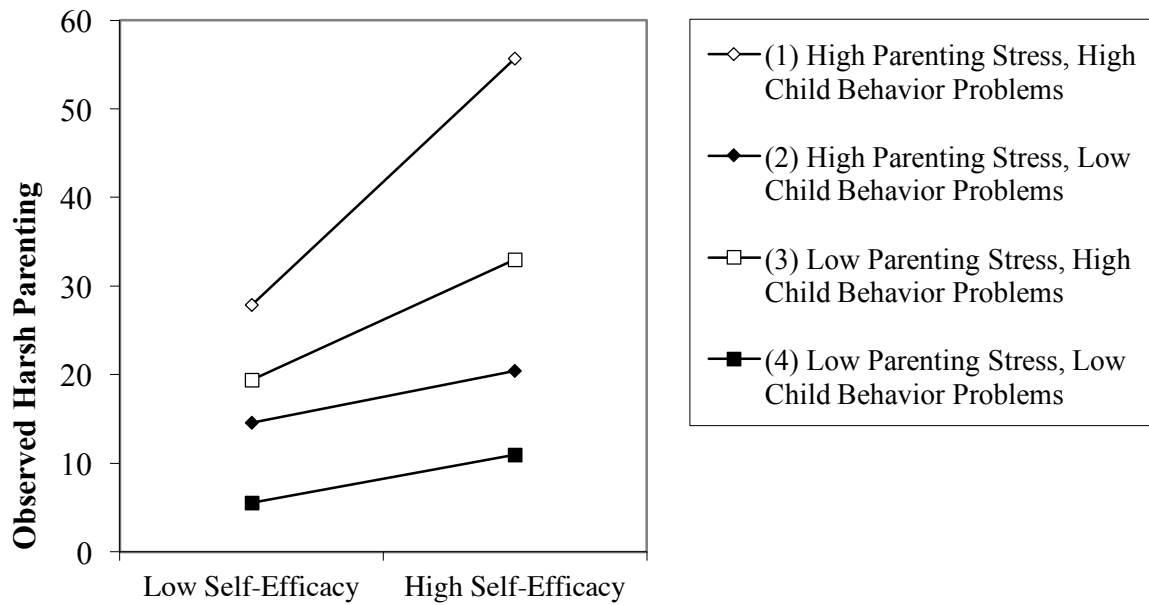


Figure 2. Relationship between parental self-efficacy and observed harsh parenting behaviors, as moderated by parenting stress and parent perception of child behavior problems, modeled as a three-way interaction.⁶

As recommended by Hayes (2013), the Johnson-Neyman technique was implemented to identify the level of parent perception of child behavior problems where the interaction between self-efficacy and parental stress transition between statistically significant and not. The statistically significant transition point was when the level of parent perception of child behavior problems was quite low, at an estimated raw score value of 3.69 ($p = .03$) on the Externalizing scale of the Child Behavior Checklist. That is, at this low level of behavior problems and below, the model showed a statistically significant difference in the effect of self-efficacy between mothers with reported high stress and low stress as they relate to observed harsh parenting behaviors. When parent perception of child behavior problems is at a highly elevated level, at an

⁶ Note: the scale of the Y-axis reflects the inclusion of unstandardized control variables; however, interpretation of graph is not affected (Dawson, 2014).

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estimated raw score of 30.38 (i.e., a T-score of approximately 69, which is at the high end of the “at risk” range), the difference in the effect of self-efficacy between mothers with reported high stress and low stress approaches statistical significance ($p = .10$) in the relationship to predict harsh parenting behaviors.

Exploratory Analyses

Exploratory analyses were conducted on a post hoc basis to explore follow up questions that were raised following analyses of initial hypotheses.

To take a closer examination of the maternal characteristics related to observed harsh parenting behaviors, mothers’ whose observed behaviors were one standard deviation or more above the mean were categorized into the “harsh parenting” group. Mothers within the average range of harsh parenting were considered to be in the “no harsh parenting” group. Given the differing task demands, mothers were separately categorized for teaching and free play tasks.

In the teaching task, 36 to 39 mothers (depending on the measure) were in the “no harsh parenting” group and 3 mothers were in the “harsh parenting” group. Results should be interpreted with caution given the substantial differences in group size. An independent-samples t-test was run to determine if there were differences in self-report ratings of parenting cognitions of self-efficacy and control, and parenting stress. Mothers with significant levels of harsh parenting unexpectedly reported higher self-efficacy and attributions of control, and expectedly reported higher levels of stress, though none of these differences were statistically significant (see Table 11). Notably, of the three mothers in the “harsh parenting” group, two were mothers of children under the age of three years old (thus did not have a Vineland available for comparison); results may be influenced by the younger age of the children.

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Table 11.

Differences in Maternal Characteristics Between Mothers with Significant vs. Average Levels of Harsh Parenting on Teaching Task

Maternal Characteristic	Harsh Parenting		No Harsh Parenting [^]		<i>t</i>	<i>P</i>
	M	SD	M	SD		
Self-Efficacy	4.38	.84	3.92	1.06	-.736	.47
Attributions of control	1.78	1.50	1.23	1.48	-.62	.54
Parenting Stress	98.67	10.69	82.63	19.80	-1.38	.18

Note. [^]Self-efficacy: n=36; Attributions of Control: n=38; Parenting Stress: n=39

In the free play task, 33 to 35 mothers were in the “no harsh parenting” group (depending on the measure) and 6 to 7 mothers were in the “harsh parenting” group. As with the teaching task, results should be interpreted with caution given the substantial differences in group size. An independent-samples t-test was run to determine if there were differences in self-report ratings of parenting cognitions of self-efficacy and control, and parenting stress. Though no results were statistically significant, mothers with significant levels of harsh parenting in free play reported lower self-efficacy, higher attributions of control, and higher levels of stress (see Table 12). Additionally, children of mothers in the “harsh parenting” group were reported to have lower levels of language functioning ($M=66.00, SD=14.84$), compared to children of mothers in the “no harsh parenting” group ($M=77.09, SD=14.37$), a difference that approached statistical significance, $M=11.09, 95\% CI[-1.12, 23.31], t(37)=1.84, p = .07$.

Table 12

Differences in Maternal/Child Characteristics Between Mothers with Significant vs. Average Levels of Harsh Parenting on Free Play Task

Maternal/Child Characteristic	Harsh Parenting ⁺		No Harsh Parenting [^]		<i>t</i>	<i>P</i>
	M	SD	M	SD		
Self-Efficacy	3.26	1.65	4.08	.87	1.18	.29
Attributions of control	1.43	1.01	1.24	1.56	-.31	.76
Parenting Stress	88.57	6.46	82.82	21.27	-1.32	.20
Vineland	66.00	14.84	77.09	14.37	1.84	.07

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Note. ^Self-efficacy: n=33; Attributions of control: n=34; Parenting Stress: n=35; Vineland: n=32
*Self efficacy: n=6; all other measures: n=7

Overall, 11 mothers engaged in significant levels of harsh parenting behaviors: six mothers had elevated harsh parenting scores on one task, five mothers were elevated on two tasks, and no mothers demonstrated significant levels of harsh parenting across all three tasks. In conducting an independent-samples t-test to compare these 11 mothers on the aforementioned scales of maternal/child characteristics, there was only a significant difference found in parenting stress. Specifically, mothers who demonstrated significant levels of harsh parenting behaviors across two tasks reported higher levels of parenting stress ($M = 97.40, SD = 9.02$) compared to mothers who were observed to demonstrate significant harsh parenting behaviors on only one task ($M = 84.00, SD = 5.06$), a statistically significant difference, $M = 13.40, 95\% CI[2.33, 24.47], t(6.05) = 2.96, p = .03$.

Overall, this study's sample was infrequently observed to engage in harsh parenting behaviors. However, the presence of some level of harsh parenting called for an exploration of the specific forms of harsh parenting behaviors that were observed in order to guide formation of interventions for the unique needs of the ASD sample and, in particular, the families who enroll their children in the school from where data was collected.

Table 13 reviews each harsh parenting behavior by task, noting the number of participants for whom any level of the listed harsh parenting behavior was observed. Notably, more instances of harsh parenting were observed overall on the free play task. In particular, 40.5% of mothers were observed to engage in some level of intrusive behaviors on free play, which involves exertion of control over her child rather than behaving in a child-centered manner that respects the child's choices and perspective. Additionally, nearly 20% of mothers engaged in

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corrupting/exploiting behaviors on free play (e.g., interfering with the child’s engagement, in a way that seems to serve the mother’s own needs) compared to 7% on teaching and none during cleanup. More mothers were observed to deny emotional responsiveness on free play compared to other tasks, whereby mothers showed limited interest in or responsiveness to her child’s reactions.

Table 13.
Frequencies of Harsh Parenting Behaviors by Task

Behavior	<i>N</i>	%
Teaching		
Denying Emotional Responsiveness	4	9.5
Intrusiveness	4	9.5
Spurning	5	11.9
Terrorizing	1	2.4
Isolating	5	11.9
Corrupting/Exploiting	3	7.1
Free Play		
Denying Emotional Responsiveness	6	14.3
Intrusiveness	17	40.5
Spurning	2	4.8
Terrorizing	1	2.4
Isolating	1	2.4
Corrupting/Exploiting	8	19.1
Cleanup		
Denying Emotional Responsiveness	3	7.1
Spurning	3	7.1
Terrorizing	1	2.4
Isolating	3	7.2
Corrupting/Exploiting	0	0

Given the higher frequency of intrusive behaviors relative to several other harsh parenting behaviors, regression analyses from Hypotheses 2 and 3 were reevaluated with Intrusiveness as the dependent variable to explore whether the models may be significant in particular relationship to a single harsh parenting behavior. Regression analysis models were not significant in relation to Intrusiveness alone, suggesting that the relationships that were found to

be significant in Hypotheses 2 and 3 are due to the combination of parenting behaviors that contribute to the variable of harsh parenting, rather than the single variable of Intrusiveness.

Chapter Five: Discussion

Summary of Findings

In order to understand the relationship between maternal cognitions and actual parenting behaviors for the unique caregiving dynamic between parents and their children with ASD, this dissertation examined two types of parental cognitions that have been previously found to relate to parenting behaviors in typically developing and maltreating samples: attributions of control and self-efficacy. In this racially diverse sample of mothers and their preschool-aged children with a gold-standard diagnosis of ASD attending a specialized preschool program, results were found to differ from expectations based on literature of non-ASD samples – parental attributions of control related to parenting behaviors in the opposite direction from what was predicted, and self-efficacy was not directly related to parenting behaviors.

Contrary to the prediction that low attributions of control would be related to less positive and more harsh parenting behaviors only on the structured task of teaching (Hypothesis 1), no significant interaction between task type and attributions was observed. However, attributions of control were found to be associated with observed parenting behaviors, when controlling for race, parent perception of child externalizing behavior problems, and the number of adults in the home. Notably, the main effect of attributions of control as it related to observed parenting behaviors was in the opposite direction from what was predicted based on findings previously established in the literature. Whereas studies of children at risk of maltreatment found that when parental attributions that child control is rated as more impactful than adult control, parents were more likely to engage in harsh parenting behaviors, the present study found that for children with

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ASD, parental attributions that adult control is more impactful than child control were related to harsh parenting behaviors.

Though the overall predicted relationship presented in Hypothesis 2 was not found to be significant for positive parenting behaviors, where self-efficacy was predicted to mediate the relationship between attributions of control and observed parenting, mothers' attributions of control alone were found to predict both positive and harsh observed parenting behaviors. Lower attributions of control predicted more positive parenting, and higher attributions of control predicted more harsh parenting (controlling for race, number of adults in the home, and parent perception of child behavior problems), contrary to predictions developed based on prior research (Bugental 2011, Bugental et al., 1989; Bugental & Johnston, 2000). Furthermore, for the outcome of *harsh* parenting behaviors, attributions of control interacted separately with both self-efficacy and child's level of language functioning, and all three variables interacted together to predict observed harsh parenting. These results suggest that mothers who believe that adult control is more important than child control (i.e., higher attributions of control) are observed to demonstrate more harsh parenting behaviors when: (a) they perceive themselves to have high levels of parenting efficacy *and* have a child with a level of language functioning that is more consistent with a typically developing child, or (b) they perceive themselves to have low parenting efficacy *and* they have a child with delayed language skills. Self-efficacy was not directly related to positive or harsh parenting behaviors, but interacted with attributions of control and child's language functioning to relate to parenting behaviors. Child language functioning and parental self-efficacy seem to coalesce to play critical roles in how accurately mothers appraise their parenting, when considering harsh parenting behaviors.

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These results suggest that mothers with higher functioning children inaccurately appraise their parenting efficacy when they think adult control is more impactful, whereas mothers with lower functioning children may more accurately appraise their parenting efficacy when they think adult control is more impactful. In the latter group, perhaps mothers of lower functioning children have an expectation that the adult in a caregiving situation *should* be able to control the child given the child's lower level of functioning, but low levels of self-efficacy relate to the use of ineffective and harsh parenting strategies. Consistent with Bugental and Johnston's (2000) description of "efficacy cognitions" as the correspondence between a parent's perceived and desired reality, the discordance between a mother's expectations of how adults should interact with her lower functioning child and her perceptions of her caregiving competence relate to her use of harsh parenting behaviors.

In contrast, mothers of children with more typically developing language functioning, who perceive adult control as more impactful than child control, engage in harsh parenting behaviors when they report high parental self-efficacy. In circumstances where a child's higher level of functioning dictates that he may benefit from more autonomy, a mother's perception that adult control is more impactful than the child's control, compounded with her reported high self-efficacy suggesting that she believes she knows exactly what her child needs, may actually impede the relationship and evoke more harsh parenting behaviors from the mother.

In the examination of the interaction between parenting stress and self-efficacy as a prediction of parenting behaviors, further moderated by parent perception of child behavior problems and controlling for race and number of adults in the home (Hypothesis 3), a significant relationship between key variables was found for harsh parenting behaviors, but not positive parenting behaviors. For positive parenting, the covariate of race was the only significant

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predictor of observed parenting behaviors – white mothers were rated as demonstrating more positive parenting than mothers of other races (a discussion of race and observed parenting will follow in a later section). For harsh parenting, significant interactions between key variables accounted for more than 60% of the variance. Specifically, mothers with high parenting stress who have children with significant behavior problems were observed to engage in more harsh parenting behaviors when reporting high self-efficacy, suggesting that their appraisal of perceived parenting efficacy was discordant with actual observed parenting competence.

Overall, it appears that cognitions for these mothers of children with ASD relate to parenting behaviors differently from what the research has previously established in typically developing and maltreating populations. Furthermore, results suggest that factors related to child functioning and social context, including child behavior problems and language functioning, mothers' race, and caregiving support (estimated by number of adults who live in the home) also critically influence parenting behaviors in this sample.

Though harsh parenting behaviors were generally found to be mild and infrequent in this sample, exploratory analyses categorized mothers into two groups based on significant presence or absence of observed harsh parenting behaviors by task for teaching and free play. On the teaching task, only three mothers were categorized as engaging in a significant level of harsh parenting behaviors (more than one standard deviation above the mean); two of those mothers had children under the age of three years old. Though results were not statistically significant, parenting stress was higher in the harsh parenting group, though the difference may be related to the younger age of the children. On free play, seven mothers were categorized in the harsh parenting group, and though again results did not reach statistical significance, likely due in part to the substantial difference in group sizes, mothers in the harsh parenting group reported lower

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level efficacy, higher attributions of control, higher parenting stress, and their children were rated to have lower levels of language. Overall, mothers who were categorized in the harsh parenting group on two of the three tasks reported higher parenting stress than mothers who were categorized in the harsh parenting group on one or none of the three tasks. Though exploratory in nature, these results further highlight the relationships between parenting cognitions and well-being: mothers who engage in harsh parenting behaviors tend to report higher parenting stress, lower self-efficacy, and have children with lower language abilities. Mothers who engage in more harsh parenting also tend to perceive adults as having more control over an outcome than children.

Interestingly, the harsh parenting behaviors that were most frequently observed tended to occur during the free play task and seemed to relate to mothers' difficulties engaging in child-directed play. Specifically, during free play, mothers engaged in behaviors that included attempts to exert her control over her child, interfere with her child's engagement, and to show limited responsiveness to her child's emotions or reactions. Harsh parenting acts of commission, such as degrading or threatening the child, were rarely observed in this sample. These findings suggest that mothers of children with ASD may benefit from interventions that emphasize a child-centered approach to play and relationship-strengthening. Moreover, perhaps mothers' behaviors are due to their expectations about interacting productively with their child with a disability, in that an interfering behavior may be intended to be a helpful adaptation of the environment to accommodate the child's disorder, though doing so limits the child's autonomous exploration in play and experience of agency.

Overall, observed parenting behaviors in this sample were found to be skewed in the direction indicating that most mothers presented with high levels of positive parenting behaviors

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and low levels of harsh parenting behaviors, similar to findings in another study of observed parenting for children with ASD (Donnelly, 2015) – an encouraging finding given the elevated risk for abusive parenting for children with disabilities (Jones et al., 2012). Generally, mothers in this sample tended to report higher levels of stress and lower self-efficacy compared to normative samples, consistent with the literature on characteristics of parents of children with ASD. However, self-efficacy was not found to be directly correlated with observed parenting behaviors, though it was significantly associated with harsh parenting behaviors when interacting with other maternal and child characteristics.

A significant lesson from this study is the uniqueness of interactions between mothers and their children with ASD, and how parental cognitions, stress, and child behavior and language functioning relate to mother-child interactions in different settings. The distinctive presentation is evidenced by the frequent necessary adaptations to measurement tools in order to be appropriately utilized in this sample, as well as the finding that attributions of control operate differently from previously established findings in the literature regarding parent-child interactions for children without ASD (either typically developing or high-risk for maltreatment).

Exploring Attributions of Control

Attributions of control were found to have an opposite effect from what has been previously established in the literature. Whereas Bugental and colleagues (1989, 2002) have found that parents are more likely to engage in maltreating behaviors when they perceive that child control is more impactful than adult control in a failed caregiving situation, results from this study found the opposite effect. Harsh parenting behaviors in the present study were related to mothers' attributions that adult control is more impactful than child control, when mothers

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rated high self-efficacy and had children with high language functioning, and when mothers reported low self-efficacy and had children with poorer language functioning.

Whereas Bugental's *Parent Attribution Test* has been established for use with maltreating families, attributions by parents of children with ASD may inherently differ from attributions by parents of typically developing or maltreating children. For parents of children with ASD, perceiving adult control as more impactful may be a maladaptive cognition, due to the unique behavioral and social characteristics of children with ASD. When mothers of children with ASD believe that adult control is more impactful in a failed caregiving situation, they may be reflecting a belief that their child cannot be held responsible for his behavior. Perhaps mothers of children with ASD tend to attribute their children's behaviors to the disorder, a characteristic that cannot be controlled by the children. Thus, they perceive that a failed caregiving situation is more likely to be due to the caregiver's inability to adequately adapt to the child's needs.

In a study of parental attributions for children and adolescents with ASD, Hartley and colleagues (2013) found that parents of younger children with ASD, compared to older children and adolescents, were less likely to attribute causes of their child's behavior problems to internal characteristics, and that parents of children with a higher severity of ASD were more likely to believe that the child was unable to control his behavior. The authors suggested that parents of younger children with ASD may still be trying to contend with their child's diagnosis and prognosis, and thus may be attributing their child's behaviors to causes related to their disorder, rather than internal and controllable characteristics. Similarly, the present study focuses on the attributions of parents with young children with ASD, and therefore their attributions of control may reflect their new and evolving understanding of their child's needs.

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Additionally, children with ASD tend to require adult-facilitated structure and adaptation of the environment to promote development, socialization, and appropriate behaviors (Myers & Johnson, 2007). Mothers of young children with ASD may maintain an expectation that adults should modify the environment and their own behavior to suit their children's needs (e.g., McConachie & Diggle, 2007), which is reflected in their perception that adult controllable characteristics are more impactful than child controllable characteristics. However, mothers in this sample who overlook any perception of child responsibility may behave in a manner that denies the child of autonomy, related to the harsh parenting behaviors observed in this sample. Notably, in this sample, only four mothers rated child controllable factors as more impactful than adult controllable factors, and those four mothers tended to demonstrate more positive and fewer harsh parenting behaviors. The low proportion of mothers who rated child controllable factors as more impactful than adult controllable factors may represent tendencies within the preschool-aged ASD populations, where mothers may generally expect that their child's needs necessitate more caregiver-responsibility to affect the outcome of an interaction. As the disparity between ratings of perceived adult control and child control increases, harsh parenting behaviors are observed more frequently.

Though attributions of control do not operate in the same way as has been previously described in the literature on abusive parenting, it continues to be a powerful construct. Despite the differences, the way mothers conceptualize control in interactions with their children remains related to observed parenting behaviors.

Family Factors that Influence Parenting

Certain family characteristics were found to be particularly relevant to mothers' parenting behaviors. Specifically, mothers who reported having more adults living in home, a proxy for

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caregiving support, were observed to demonstrate more positive parenting behaviors. This relationship was different than marital status, as some mothers reported having more than two adults at home, and at least one mother anecdotally reported living apart from her spouse. Whereas many people living in the home can be associated with negative effects when it reaches a level of overcrowding (Gove, Hughes, & Galle, 1983), the present study found positive relationships between observed parenting behaviors and a report of more adults living in the home (often two or three adults in total, with one mother reporting eight). In a sample of parents of children with ASD, Sharpley, Bitsika and Efremidis (1997) found that the association between social support and lower levels of parenting stress was mediated by the parents' perception of the expertise of the person providing respite care. Importantly, this finding highlights the notion that parents of children with ASD particularly benefit from social support when their caregiving support system includes people who understand the child's particular needs. Though inconclusive, results from this dissertation reflect a similar finding, suggesting that when mothers have caregiving support in their home, presumably by other adults who understand the child's disorder and behaviors, they provide more supportive and competent parenting to their child. Notably, this study did not require mothers to identify the other adults in the home, so the relationship and level of caretaking responsibility is unclear.

Race was also related to positive parenting behaviors, with mothers identifying as white showing more positive parenting behaviors, and mothers identifying as Hispanic showing less positive parenting behaviors. Notably, there was no significant relationship between race and harsh parenting behaviors. However, cultural differences in parenting, particularly for Hispanic mothers, is well-documented and an important consideration in understand parenting practices. Cultural norms and practices may have implications for gender roles within a family, such as

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whether mothers or fathers are more likely to provide structure and discipline, and the level of parents' acculturation has been found to impact parenting practices (Barker, Cook, & Borrego, 2010; Cabrera, Shannon, West, & Brooks-Gunn, 2006). Some literature suggests that Hispanic parents tend to be laxer in their approach to discipline (Long, 2004). Regarding parenting differences for children with ASD, some research has found that Latina mothers reported lower levels of parental distress and higher levels of psychological well-being than non-Latina white mothers (Magaña & Smith, 2006). Findings from a recent study of observed parenting of children with ASD (Donnelly, 2015) found that Hispanic parents tended to have children who displayed less negativity, which may be attributable to cultural differences in parenting behaviors, perceptions of ASD, and parental coping strategies. Although the study did not indicate that there were differences in parenting behaviors by race/ethnicity, the differences in the child's response to the parent implies culturally distinctive approaches to parenting.

Findings from the present study suggest the importance of considering cultural practices as a factor in parenting behaviors. While Hispanic mothers in this sample were observed to demonstrate less positive parenting compared to other parents, and white mothers were observed to demonstrate more positive parenting than other parents, the presence of harsh parenting behaviors did not vary by race, suggesting that cultural practices may impact the level of warmth and guidance that parents show.

Strengths of the Study

The present study contributes to the previously limited research on objective observations of parent-child interactions for mothers of children with ASD. A major strength of this research is the verified diagnostic status of participating children to ensure that all participants met gold-standard criteria for ASD. Whereas many studies of ASD identify the diagnosis by parent-report,

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participants in this study met gold-standard diagnostic criteria, supervised by a PhD behavior analyst who had been research trained in the ADOS-2, has a significant amount of experience providing intervention to children with ASD, and specifically had spent a significant amount of time with participants in this study in a daily school context. Furthermore, other key variables in this study are measured by multiple sources and respondents, including: teachers' ratings of child's communication level; trained coders' ratings of parenting behaviors, blind to hypotheses of the study; and mothers' self-report. The multi-source contributions to the dataset reduce the level of bias that comes with exclusively self-report measures. Moreover, this study's use of an objective observational assessment of parenting behaviors strengthens the interpretability of results; much of the literature on parenting relies on parent-report of both internal characteristics (e.g., cognitions, stress) and behaviors, which is subject to response bias.

Additionally, there are characteristics that are inherent to the recruited sample that reduce the amount of variance between families that would otherwise need to be controlled. Specifically, all participating children are in a full day school program, where they receive a high level of intervention and services. Families have access to a school social worker and on-site parent coordinator who can provide additional support as needed. A consequence of enrollment in the intensive program is that participating mothers get a daily caregiving respite while their children are in school. Though these characteristics limit generalizability of findings, they importantly provide tremendous control over potential variance between families.

Finally, the study was collaboratively designed by an interdisciplinary team, whose multiple contributing perspectives facilitated enhancement of questionnaire materials and interaction procedure. The cooperative efforts allowed for the extensive collection of

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demographic variables for consideration, particularly regarding child's school-level functioning, allowing many potential covariates to be considered and ruled out in the process of data analysis.

Limitations of the Study

The conclusions drawn from this study are limited by the small sample size, lack of generalizability of the sample, and the absence of a comparison group. Participants for the study were recruited from a self-selected sample of children who received a diagnosis of ASD in early childhood and were enrolled in a therapeutic preschool that provides a high dosage of extremely effective intervention (Selinske, Greer, & Lodhi, 1991). Although all eligible children in the recruitment school received a recruitment flyer, most mothers agreed to participate after follow up by face-to-face or phone call inquiries by school staff members; thus, there may be further selection bias associated with the sample. Children in this sample received related services and interventions for ASD at an earlier stage relative to many children with ASD (Zablotsky, Colpe, Pringle, Kogan, Rice, & Blumberg, 2017; $n = 1287$; mean age of diagnosis = 5.23; mean age of first services = 3.90). Several interpretations can be drawn about this sample characteristic. First, parents who identified delays in their child's development and sought intensive intervention in the early childhood years are likely to be quite attuned, resourceful, and determined parents, suggesting some level of self-selection bias for higher parenting competency in this sample. Second, early identification of ASD tends to be associated with a more severe presentation of the disorder, further supported by the distribution of ADOS-2 and CARS-2 severity scores in this sample, so participants in this study may not represent the full spectrum of functioning in ASD. Thus, generalizability is limited, and conclusions regarding the full range of heterogeneity of children with autism and their mothers should be cautiously interpreted.

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Moreover, the ratio of participating male and female children in this sample may be considered a limitation. Though the sample of 81% male is consistent with the ratio of ASD found in the general population, parenting behaviors differ depending on the gender of the child: sons and daughters may be parented differently based on culturally-informed gender stereotypes (Leaper, 2005). However, given the ratio of males and females with ASD found in the general population, most studies of children with ASD include ratios of participants that are similarly reflective of the population. Preliminary exploratory analysis in this sample found no difference in parenting behaviors, parenting stress, or child behavior problems between male and female participating children, though females were found to have a more severe presentation of ASD. One notable difference between male and female participants in this sample is the inconsistent proportion of race/ethnicity. Of the 7 participating female participants, 29% were identified by their parents as Hispanic, 57% as Black, 14% as Asian or Pacific Islander, and none as White. Given the literature on differences in ratings of parenting behaviors by ethnicity, the interaction of child gender and ethnicity may pose as a limiting factor in this sample. However, when regression analyses were explored including only the male participants in this sample, no significant differences were found in the relationships between the independent and dependent variables, compared to analyses that included both males and females. Given the ratio of males to females in this sample, the limitations should be noted, but both are included to more closely represent the population of children with ASD.

Although a strength of this study was the ability to assess for many demographic, as well as mother and child, characteristics, there were limits to the extent of data collection. Notably omitted data points include: (1) the number and ages of other children in the family, as mothers who have older children may feel more efficacious in their role as a parent; (2) whether the

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mother was pregnant or recently pregnant at time of data collection, which may affect reporting of mood and stress levels; and (3) specifications of mothers' current employment status or occupation.

Another limited of the study is the order of measurement, whereby data on parental behaviors, measured in the observed parenting tasks, were collected prior to mothers' completion of self-report measures. Given that parental behaviors served as the dependent variables in all analyses, it may be considered problematic that the dependent variable was measured prior to the independent variables, the self-report measures. With one primary goal of the procedure being to optimize opportunities for natural interactions between mothers and children for observation, the order of the procedures was determined deliberately with several considerations in mind. First, given the length of the questionnaire, there was concern that completing the questionnaire first may result in mothers' fatigue that would negatively impact their interactions with their children. Second, feedback from pre-piloting the questionnaires with non-participants suggested that the questionnaires may bring to awareness parenting issues that mothers may not frequently think about and that awareness could impact the interactions with their children in a way that impedes a more natural, typical interaction. For example, the questionnaire required mothers to consider how difficult or stress-inducing their child is, how childrearing responsibilities are shared (or not) between co-parents, and levels of marital satisfaction. Pre-pilot reviewers reflected that responding to some these questions elicited reflections and reactions that they had not previously considered, such as the unequal distribution of childrearing responsibilities between co-parents. Given these considerations, and the notion that this study sought to examine individual differences, rather than making causal claims, the order of procedure in this was determined to be optimal within the constraints of the design. Notably, a negative interaction between mother

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and child may also impact the mother's responses to self-report measures (e.g., a negative interaction may make the mother feel less efficacious than she typically does, impacting her rating of parental self-efficacy at that time). Future research that expands upon these findings through experimental studies that aim to modify parental cognitions to effect change in observed parenting behaviors should take particular care to collect parent self-report data prior to observing parent-child interactions. In that case, to avoid concerns of fatigue or direct influence of topics explored in questionnaires, the parent questionnaire may be completed in a separate session one to two weeks prior to the parent-child interaction. However, for the purposes of this study, focused on observing individual differences, the order of measurement was determined to be reasonable.

Finally, because the study was designed based on the presumption that children with disabilities are at a higher risk for experiencing maltreatment, measures and hypotheses were guided by research on psychological maltreatment and harsh parenting. As a result, though all measures used reflected adequate internal reliability, modifications for an ASD sample were required. Specifically, for Bugental's *Parent Attribution Test*, the measure was modified based on Woolfson and colleagues' (2011) adaptation to reflect attributions for children with disabilities, and then further modified to only focus on attributions of controllable factors, excluding attributions of uncontrollable factors. While this study found that attributions of control impacted parenting behaviors in the opposite direction from what was expected based on prior research, conclusions can only be drawn cautiously due to the modified use of the measure.

Future Directions

Findings from this dissertation call for additional research to improve understanding of the impact of maternal cognitions and characteristics on observed parenting. First,

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interpretability of results would be greatly enhanced through a comparison to other groups of children and parents. To gain a deeper understand of the unique manifestations of interactions between parents and their children with ASD, the interpretations of these findings could be enriched with a comparison to a group of typically developing preschoolers and to preschool children with other disabilities who have been referred to Early Intervention or Committee on Preschool Special Education. Additionally, as this study was limited to inclusion of mothers, future research would benefit from including fathers to assess parenting outcomes from multiple caregiving figures.

Furthermore, because this study was of a cross-sectional design, conclusions regarding direction or causality of the relationships between maternal and child characteristics and behaviors cannot be drawn definitively. Mothers' perceptions of control, self-efficacy, and feelings of stress may have developed from successful or maladaptive behavioral interactions with their children. Researchers may gain a greater understanding of the relationships between cognitions and actual behaviors through study designs that assess parenting behaviors before and after interventions, where interventions that focus on stress-reduction, cognition-reframing, and behavior change can be compared. Moreover, the adapted PMCS-ASD measure of observed parenting behaviors for children with ASD can be further refined for enriched clinical utility, enhanced from the research utility it has established to date. Applicable clinical use of the PMCS-ASD measure can provide an opportunity for parents to receive immediate feedback on their behavioral and relational effectiveness as a one-session initial intervention.

Results from the measure of attributions of control were contrary to expectations based on the literature. Though the measure was modified for use with the ASD sample, the construct remains consistent with Bugental and colleagues' (1989) conceptualization of attributions of

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control. Interpretation of the modified measure may be improved with continued research. This study found very few mothers who rated child control as relatively more important than adult control (who were generally observed to engage in a higher level of positive and lower level of harsh parenting behaviors): is the high proportion of mothers who rate adult control as more important than child control typical for most children with ASD, perhaps due to parents' attributions related to the child's disorder? Might the relationship vary for older children with ASD? Given that Bugental's measure was designed particularly to assess abusive parents, and that participants in the present study demonstrated low and infrequent levels of harsh parenting behaviors, future research should examine how results may differ for children with ASD who have also been identified as having experienced parental abuse. Future research should continue to assess how attributions of control relate to observed parenting behaviors in order to continue broadening clinical understanding of cognitive and relational dynamics between parents and children with ASD. Additionally, though participating children's diagnosis of ASD was verified through participation in this study, the study did not assess whether mothers had been previously aware of their child's ASD diagnosis. Though all participating children were identified as a Preschooler with a Disability on their Individualized Education Program, 35% included documentation of a prior diagnosis of ASD. To advance understanding of the role of parental attributions in parenting children with ASD, future studies should consider whether parents are aware of their child's diagnosis and assess parents' understanding of the diagnosis. Parental awareness of and associations with the ASD diagnosis may relate to parents' attributions of control, observed parenting behaviors, and parental mental health (Dale, Jahoda, & Knott, 2006).

Clinical Implications

Evidently, there is a relationship between parental cognitions and observed behaviors. Moreover, parenting stress was found to pervasively impact parenting behaviors, particularly in its interaction with other variables. As data for this study was conducted in a specialized preschool for children with disabilities, this study is uniquely situated to inform intervention guidance for the participating population.

Maternal cognitions and stress were found to interact with child's level of language functioning in its relationship to parenting behaviors. As such, parents may benefit from interventions that focus on reducing feelings of parenting stress. While parenting interventions that help parents learn skills to manage their children's behavioral challenges have been found to influence child outcomes in addition to reducing parenting stress (Karst & Van Hecke, 2012), other programs that have focused specifically on parental stress reduction have demonstrated promising results for parents of preschool-aged children with developmental disabilities (Neece, 2014). A behavioral parenting program developed particularly for parents of children with disabilities, Stepping Stones Triple-P, has been found to be effective for reducing child behavior problems and improving parenting satisfaction and self-efficacy, though there were no reported changes in observed quality of parenting and minimal effects on parental stress reduction (Tellegen & Sanders, 2013). In a mindfulness-based stress reduction parenting intervention, child behavior problems and parental stress significantly reduced (Neece, 2014). Parents of participating students, who have been identified as highly stressed, may benefit first from a targeted intervention honing in on parents' mental health in order to improve their interactions with their child, as well as their overall well-being.

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Children's level of language functioning was found to be particularly influential in this study, as it interacted with attributions of control, and generally was found to be related to a higher presence of harsh parenting behaviors. Participants in this study are in a unique position to receive detailed feedback and psychoeducation regarding their children's level of language functioning from the school, informed by the extensive data collected on students' language development through the empirically validated use of *Preschool Inventory of Repertoires for Kindergarten* (e.g., Greer, McCorkle, & Twyman, 1996; McGarrell, Healy, Leader, O'Connor, & Kenny, 2009; Singer-Dudek, Speckman, & Nuzzolo, 2010). Mothers may benefit from teachers' feedback to help understand the limits and abilities of their child's language in order to adapt their interactional approach to be aligned with their child's developmental needs.

Mothers in this study engaged in more harsh parenting behaviors during the free play task, compared to teaching or cleanup tasks, suggesting that mothers may benefit from interventions that emphasize a child-centered approach to play and relationship-building. Interventions that encourage child-directed play for children with ASD, where parents are encouraged to follow their child's lead and interests, have been related to improvements in the child's play skills and peer social engagement (Strauss, Esposito, Polidori, Vicari, Valeri, & Fava, 2014). Studies have demonstrated the effectiveness of child-directed play interventions through improvements in participating children's behaviors, as well as reductions in maternal distress (Ginn, Clionsky, Eyberg, Warner-Metzger, & Abner, 2015).

Finally, attributions of control were found to be a powerful predictor of parenting behaviors. Intervention research has previously established that attributions of control are modifiable and can be affected to change parenting behaviors (Slep & O'Leary, 1998; Bugental et al., 2002). Interventions to modify attributions have focused on challenging ineffective

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cognitions to reframe explanations for a child's behavior. Whereas findings in the literature for children at high-risk for abuse focus on challenging parents' cognitions to reduce attributions that erroneously blame the child, interventions to modify attributions in this study warrant further exploration. Might a similarly structured, though differently targeted, cognitive intervention be effective for reducing harsh parenting behaviors for mothers of children with ASD? How might a cognitive intervention that challenges mothers' attributions increase their perception of their children's control and agency, and would that change be effective in reducing harsh parenting behaviors, improving maternal well-being, and impacting parent-child relationships for families of children with ASD? Clinical implications of this dissertation's findings call for further investigation as to what cognitive interventions may be effective for mothers of children with ASD.

Conclusion

As the rate of identifying children with ASD has increased over the years, so too has research to identify effective methods for education and behavior management, and to identify the financial and emotional impact for parents. However, there has been limited research to study parent-child relationships and interactions in an observational, rather than self-report, context (e.g., Donnelly, 2015). This dissertation extends the literature by investigating the relationship between characteristics of mothers and children, and the behaviors reflected in their interactions. Despite some limitations, the strengths convey significant implications for the relationship between maternal cognitions and behaviors in dyads with a preschool child with ASD. Overall, harsh parenting behaviors were observed relatively infrequently and at mild levels of severity in this sample, yet their presence was related to mothers' perceptions of control, self-efficacy, stress, and child functioning. Taken together, results suggest that although maternal cognitions

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relate to parenting behaviors for children with ASD, cognitions may operate differently from parents of typically developing children. The behavioral, verbal, and relational features that distinguish children with ASD from other children interact with parental characteristics to relate to parenting behaviors, demonstrating the need for specially tailored interventions to address the distinctive needs of mothers and their children with ASD.

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Appendix A: Demographic Tables

Table A1.
Demographic Characteristics of Participating Mothers (N = 42)

Characteristic	<i>n</i>	%
Maternal Age		
27-34	13	31.0
35-39	19	45.2
40-47	10	23.8
Highest Education Received (N=41)		
High School or Equivalent	2	4.9
Some college or Associate's Degree	7	17.1
Bachelor's degree (e.g., BA, BS)	17	41.5
Master's, professional or doctoral degree	15	36.6
Household Income (N=39)		
Less than \$25,000	3	7.7
\$25,000 to \$74,999	6	15.4
\$75,000 to \$99,999	10	25.6
\$100,000 to \$149,999	6	15.4
\$150,000 to \$199,999	5	12.8
\$200,000+	9	23.1
Race/Ethnicity (N=41)		
White	18	43.9
Hispanic/Latino/Spanish Origin	12	29.3
Black	7	17.1
Asian or Pacific Islander	4	9.8
Marital Status		
Currently Married/Committed Partnership	34	77.3
Divorced/Separated	4	9.0
Never married/partnered	6	13.6

Table A2.
Community Level Poverty (N=41)

Percent below poverty line within zip code	<i>n</i>	%
Less than 5%	11	26.8
5.1 to 10.0%	9	22.0
10.1 to 15.0%	9	22.0
15.1 to 26%	12	16.9

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Table A3.
Demographic Characteristics of Participating Children (N = 42)

Characteristic	<i>n</i>	%
Child Age (Years-Months)		
2-6 to 2-11	4	9.5
3-0 to 3-5	5	11.9
3-6 to 3-11	11	26.2
4-0 to 4-5	7	16.7
5-0 to 5-6	9	21.4
Child Gender		
Male	34	81.0
Female	8	19.0
ADOS Severity Score (N=40)		
High (8-10)	22	55.0
Moderate (5-7)	14	35.0
Low (3-4)	4	10.0
ADOS Module (N=40)		
Module 1	20	50.0
Module 2	13	32.5
Module 3	7	17.5

Appendix B: Recruitment Letter

Improving Parenting and Enhancing Maternal Wellbeing in Mothers of Preschool Children

Having a preschool child can be stressful. In the past the Keller schools have offered parents training in how to teach a child. We would like to offer more support for parents as new research indicates that additional supports may improve parents and children's lives. We are working with parent coordinator, Barbara Kimmel, and parent educators at the Rockland campus, to collaboratively create a parenting support program with Keller parents. We can't do this without your help! To that end we invite you to participate in our research project on parenting preschool age children and its relationship to the wellbeing of their mothers.

Who is eligible to participate?

Moms who speak English and their 3-5 year old attending the Fred Keller school.

What is involved?

A one-time 70-minute session that includes the following parent activities:

- a) 20 minute parent-child interaction task that incorporates some of the routine challenges of parenting – waiting, picking up toys, playing together, teaching your child, helping your child cope when mildly upset;
- b) 40-50 minutes of questionnaires on child behavior, parenting, and your opinion about supportive programs for parents;

Are there benefits to taking part in the study?

There are no benefits to participation.

Will I be paid for my participation?

We will pay you \$35 for your time.

Please consider participating in this study. If you have any questions about the study, please contact co-investigators, Marla Brassard, PhD, at 212 678 3368 or Laudan Jahromi, PhD at 212 678 38

Appendix C: Informed Consent

INFORMED CONSENT

Research Title: Improving Parenting and Enhancing Maternal Wellbeing in Mothers of Preschool Children

DESCRIPTION OF THE RESEARCH:

If you speak English and are the mother of a 3-5 year old child attending the Fred Keller schools, you and your child are eligible to participate in a study of how observed parenting is related to mother's wellbeing and child characteristics in order to develop interventions for parents that improve parenting as well as enhance maternal wellbeing.

If you agree to participate you and your child will attend a one-time session that includes the following parent and parent/child activities:

- a) 20 minute parent-child interaction task that incorporates some of the routine challenges of parenting – waiting, picking up toys, playing together, teaching your child, helping your child cope when mildly upset;
- b) 40-50 minutes of questionnaires on child behavior, parenting, self-care activities such as your sleep, diet, exercise, alcohol use, and your opinion about the questionnaire and supportive programs for parents.

We will also record 4 pieces of information from your child's file at Keller:

- a) the number of objectives your child met over six months of the school year on the CABAS® International Curriculum and Inventory of Repertoires for Children from Preschool through Kindergarten (C-PIRK);
- b) the rate of your child's learning as measured by the ratio of learn units-to-criterion;
- c) your child's level of verbal behavior development (e.g., listener); and
- d) any educational or psychiatric diagnoses in your child's file (e.g., developmental delay, autistic spectrum disorder).

RISKS AND BENEFITS:

There are no direct benefits to participating in the study. There is no major risk to the research subjects. Minimal risk may include fatigue or boredom or discomfort if your child might get mildly upset. In addition, the questionnaire contains some very sensitive items, some of which may make you feel emotional discomfort. In instances when the researcher finds that you are at risk and in need of support, we have a psychologist present or on call and the researcher may also refer you to Fred S. Keller School social worker, Latasha Gamble, who will help you access resources in the lower Hudson Valley Region.

PAYMENTS:

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We will pay you \$35 for your time.

DATA STORAGE TO PROTECT CONFIDENTIALITY:

We will ensure your confidentiality by giving a unique identification number (and not name) to you and your child for your video, for your questionnaire, and for the information from the file review. This identification number is how we will record your information in our computer file for analyses. We will keep the identifiable consent forms in a separate, locked filing cabinet in the Co-PI's office, which will be kept separate from the de-identified data. After we record the information from your child's file we will destroy the link between your name and your identification number. No one affiliated with the Fred S. Keller School (FSK) will have access to the key linking your identity or that of your child to the unique identification number.

The videos and the computer file will be kept on a password protected and encrypted files in Professor Marla Brassard's office 529D Thorndike and Professor Laudan Jahromi's office 529I Thorndike. Only authorized members of the research staff will have access to this information. Information will only be used for professional purposes and will not include identifiable information.

TIME INVOLVEMENT:

Participation in this study will last approximately 60-70 minutes and will take place on one day.

HOW WILL RESULTS BE USED:

The results of this study will be used to design a parent support intervention for parents at the Keller Schools starting AY 2017-18, to write articles, and for dissertations. Feedback on overall results may be provided to the Fred S. Keller School. No feedback will be given on individuals.

ROLE OF THE PRINCIPAL INVESTIGATORS:

Co-Principal Investigators Laudan Jahromi, PhD (212 678-3321), and Marla Brassard, PhD, (212 678-3368) will work closely with Barbara Kimmel, Keller School parent coordinator and liaison, to make sure this research study is completed according to Institutional Review Board standards. For questions about the study, please contact the co-principal investigators at any time with questions.

PARTICIPANT'S RIGHTS

Co-Principal Investigators: Marla Brassard, PhD, Laudan Jahromi, PhD

Research Title: Improving Parenting and Enhancing Maternal Wellbeing in Mothers of Preschool Children

I have read and discussed the Research Description with the researcher. I have had the opportunity to ask questions about the purposes and procedures regarding this study.

- My participation in research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements.
- The researcher may withdraw me from the research at his/her professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- For questions about the study, I can contact the Co-principal investigators Laudan Jahromi, PhD, 212 678-3821 and Marla Brassard, PhD, 212 678-3368 at any time.
- If at any time I have comments, or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Teachers College, Columbia University Institutional Review Board /IRB.
- The phone number for the IRB is (212) 678-4105. Or, I can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.
- I should receive a copy of the Research Description and this Participant's Rights document.
- If video and/or audio taping is part of this research, I
 - () consent to be audio/video taped.
 - () do NOT consent to being video/audio taped. The written, video and/or audio taped materials will be viewed only by the principal investigator and members of the research team.
- Written, video and/or audio taped materials
 - () may be viewed in an educational setting outside the research (for example, at a research conference presentation or in a graduate level course). This is an optional, additional level of consent that does not affect your participation in the research study.

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() may NOT be viewed in an educational setting outside the research (for example, at a research conference presentation or in a graduate level course). This is an optional, additional level of consent that does not affect your participation in the research study.

- () I agree to be contacted for possible participation in an hour-long parent-child interaction at FSK within the next year for which I will be offered additional payment and child care

() I do NOT agree to be contacted for possible participation in an additional parent-child interaction.

- My signature means that I agree to participate in this study.

Participant's signature: _____ Date: ____/____/____

Name: _____

If necessary:

Guardian's Signature/consent: _____

Date: ____/____/____

Name: _____

- My signature means that I agree to participate in this study.

I am the parent /legal guardian of

_____ and I voluntarily approve of his /her

participation and I agree to participate myself.

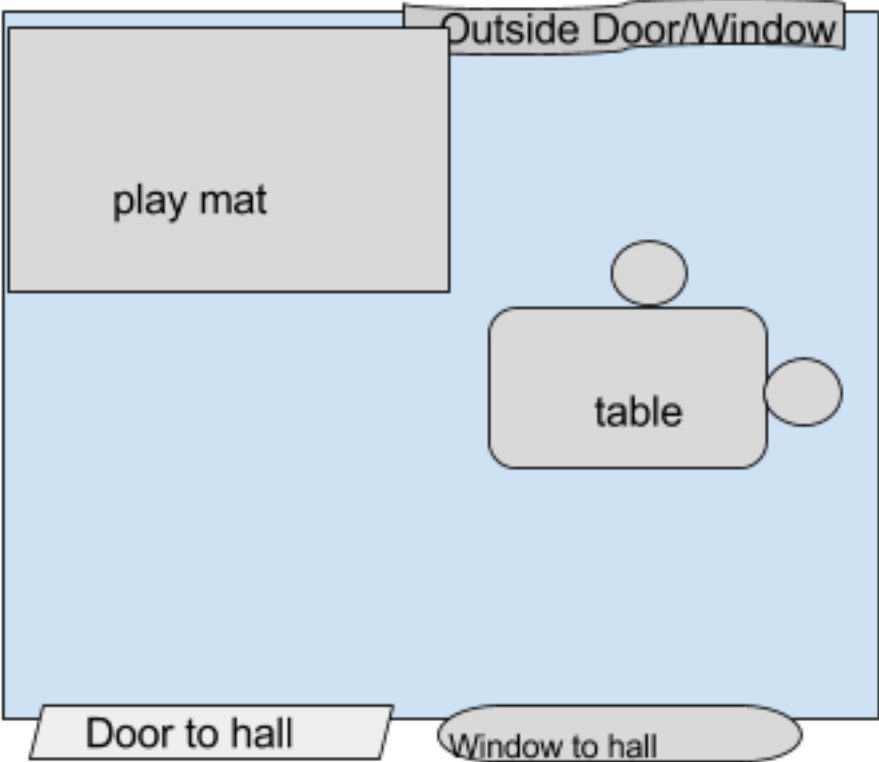
Guardian's Signature/consent:

_____ Date: ____/____/____

Name: _____

Appendix D: Room layout for parent-child interaction procedure

Not drawn to scale.



Appendix E: Script for Parent-Child Interaction

CONSENT MEETING

On the day of the Interaction Task, the parent will sign the consent form. [Prior to the day of the Interaction Task, parents will have received a recruitment letter and a copy of the consent form. A project staff member will speak to the parent by phone to walk through the consent form and address their questions].

PARENT-CHILD INTERACTION

Setup

**Empty room – with child table and 3 chairs
3 sitting at table**

- 1) **Start recording video.**
- 2) **Parent Instructions.** The parent, child, and interviewer are seated at a small (child-sized) table. The interviewer has an iPad from which he/she reads the script. While opening up the script on iPad say, **“Ok, let’s get started. What did we ever do before iPads? I have all my work saved on this one!”**. Next, tell the parent about the tasks. **“First you two will build something together. Which type of blocks are best for your child: wooden blocks, Duplos, or Legos?”** [Bring a Ziploc with the three block examples. Be sure to take it out with you when you leave the room for Competing Demands]. **“Then, I will bring in some toys and ask you guys to play for a while. After that, I will come back and hand you this sheet** [show parent the laminated clean-up sheet] **to remind you to ask your child to clean up. When I hand you this sheet, please wait until I leave the room, then ask your child to clean up.** [Hold up the sheet for the mom to read it. Point to the sentence about not cleaning up herself to highlight it for her]. **Finally, please do not use last names on the video”**.
- 3) **Competing Demands Task (5 minutes).** Tell the child, **“Ok, I’m going to go get some blocks. Your mom really needs to finish filling out these papers before I come back. I’ll be right back!”** Hand the clipboard with the demographic questionnaire [including the question about the child’s favorite prize for frustration task] to the parent and say, **“It would be really great if you could try to finish this form before I get back”**. Leave an iPad on the table with a “work” document (Word or Excel file) open.
- 4) Go into observation room, start timer, & make notes regarding interactions that may be difficult to see on the camera. Return to the room after 5 minutes of Competing Demands.
- 5) **Structured Task (5 minutes).** Bring out the appropriate structured task [We will confirm items via piloting; ultimately, we want three bins that each contain appropriate blocks and model picture]:
 - a. Nonverbal children/very low functioning children and children with fine motor difficulties – use basic (non-interlocking) blocks
 - b. Children 5-6 with disabilities? – Use Duplo’s
 - c. Children 3-5 typically developing and high functioning ASD? – Use Legos
- 6) **“Now I’d like you and your mom to build something together. Mom, please teach [child’s name] how to build this [picture]. Here are the blocks and a picture of the**

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- model**". [Leave out the correct number of blocks to complete the model plus 10-15 additional blocks; no instruction book will be provided].
- 7) Go into observation room and continue to make notes about interactions that may be difficult to see on camera. If you see that the chosen blocks are not working for the dyad (too easy, too hard), go back into room with the appropriate alternative and say "Now, we're going to try these blocks instead" and take away the inappropriate block set. After 5 minutes of structured task go in the room. Congratulate child on a job well done ("**You did a nice job building!**").
 - 8) **Free Play Task (5 minutes)**. Move the blocks to the floor during free play. Set up toys for free play [We will confirm items via piloting]:
 - a. Small basketball
 - b. Magna Tiles
 - c. Papers and crayons
 - d. Brio trains or cars
 - e. Make-believe play (dr. kit, for younger children use doll house doll props.)
 - 9) Instructions for free play – "**OK, let's move to the floor now. Try to face this way, if possible. Here are some toys I'd like you to play with for a little while**". Name each toy as you take it out of the bin, "**We have a basketball, some magna tiles, some paper and crayons, trains and cars, a doctor's kit...**". Be sure to take all individual pieces out; spill all the (8) crayons out, all the pieces of the doctor kit, all the magna tiles. Make sure the dyad is sitting facing the camera before you leave.
 - 10) Go into observation room and continue to make notes about interactions that may be difficult to see on camera
 - 11) After 5 minutes, enter the room and say, "**Hey guys, I forgot to give this to your mom**". Hand the parent the laminated sheet indicating that the clean-up session is to start when you leave the room [Wording on sheet: "Please tell your child to clean up. Please don't clean up by yourself"]. When the interviewer closes the door, this marks the beginning of Clean-Up task.
 - 12) **Clean-Up Task (2 minutes)**. After the child has fully cleaned up the toys (or 2 minutes of clean-up task, whichever comes first), re-enter the room. If the child has not finished cleaning up, quickly help them finish the clean up.
 - 13) Next, the interviewer enthusiastically tells the child "**You did such a great job today! I'm going to get you a prize!**" When the interviewer returns with the prizes, this marks the beginning of the frustration task.
 - 14) **Frustration Task (3 minutes)**. The interviewer enters the room (leaving the door open so that the second interviewer can enter quickly) and presents the child with a small bag of their favorite food snack item (e.g., goldfish, chips) saying, "**Thanks for doing such a great job! For doing such great work, I have some [goldfish] for you! I know how much you love [goldfish]!**" The interviewer hands the item to the child, immediately heads for the door, and as he/she exits, the second experimenter enters, announcing to the first interviewer "**Wait, you can't give him/her that**". The second interviewer takes the snack from the child, and says directly to the child, "**I'm so sorry, but you can't have that**". The interviewer looks apologetically at both the child and parent and leaves the child and parent in the room for **3 minutes**. Go into observation room and continue to make notes about interactions that may be difficult to see on camera. If mom asks

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Interviewer 2 what she should be doing next, he/she will say **“Let me go check where [Interviewer 1] went”**.

After 3 minutes, the 1st interviewer re-enters the room and says, **“Guess what? You can have the [goldfish] after all! You did such a super job today!”**

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Appendix F: Descriptive Statistics for Psychological Multifactor Care Scale

Table F1.

Descriptive Statistics for Psychological Multifactor Care Scale – Autism Spectrum Disorder Adapted Version Observed Parenting and Child Experience

	Min	Max	M	SD
Teaching				
Mother’s Supportive Presence (3)	1	3	2.70	.59
Mutual Pleasure (3)	1	3	2.55	.66
Body Harmonics (4)	1	4	3.61	.75
Mother’s Mental Status (4)	2	4	3.86	.51
Mother’s Emotional Response to Task and Situation (4)	2	4	3.61	.62
Quality of Instruction/Structure (3)	1	3	2.55	.70
Respect for Child’s Autonomy (5)	2	5	4.00	.86
Strategies for Maintaining Child’s Task Involvement (5)	1	5	3.84	.86
Denying Emotional Responsiveness ^a	0	1	.09	.29
Parental Intrusiveness ^a (3)	1	3	1.11	.39
Spurning ^a	0	2	.14	.41
Terrorizing ^a	0	2	.05	.30
Isolating ^a	0	1	.11	.32
Corrupting/Exploiting ^a	0	1	.07	.26
Free Play				
Mother’s Supportive Presence (3)	2	3	2.75	.44
Mutual Pleasure (3)	2	3	2.68	.47
Body Harmonics (4)	3	4	3.68	.47
Mother’s Mental Status (4)	2	4	3.86	.51
Mother’s Emotional Response to Task and Situation (4)	2	4	3.75	.49
Quality of Instruction/Structure (3)	1	3	2.55	.55
Strategies for Maintaining Child’s Task Involvement (5)	3	5	4.11	.44
Denying Emotional Responsiveness ^a	0	1	.14	.35
Parental Intrusiveness ^a (3)	1	3	1.50	.70
Spurning ^a	0	1	.05	.21
Terrorizing ^a	0	1	.02	.15
Isolating ^a	0	1	.02	.15
Corrupting/Exploiting ^a	0	2	.23	.52
Cleanup				
Mother’s Supportive Presence (3)	2	3	2.74	.45
Mutual Pleasure (3)	1	3	2.57	.59
Body Harmonics (4)	3	4	3.83	.38
Mother’s Mental Status (4)	4	4	4	0

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Quality of Instruction/Structure (3)	1	3	2.45	.74
Strategies for Maintaining Child’s Task Involvement (5)	0	5	3.76	.96
Denying Emotional Responsiveness ^a	0	3	.12	.50
Spurning ^a	0	1	.07	.26
Terrorizing ^a	0	1	.02	.15
Isolating ^a	0	2	.10	.37
Corrupting/Exploiting ^a	0	0	0	0

Note. Descriptives are reported based on raw scores before transformations. N=44 for Teaching and Free Play; N= 42 for Cleanup. All positive parenting scales and Intrusiveness begin at 1, and the number in parenthesis represents whether it was a 3-, 4-, or 5-point scale.

^a Harsh Parenting items, where a higher score indicates higher level of harsh behaviors. Item scales (except Intrusiveness) range from 0 to 3.

Table F2.

PMCS-ASD Descriptive Statistics for Standardized Scores of Positive and Harsh Parenting Behaviors by Task (N=42)

Task/Parenting	M	SD	Min.	Max.	Skewness ^a	Skew z-score ^d	Kurtosis ^b	Kurtosis z-score ^d
Across all tasks [*]								
Positive	-.09	3.75	-10.39	4.29	-1.18	-3.19	.66	.92
Harsh	.05	2.07	-1.89	6.09	1.43	3.86	1.25	1.74
Teaching [^]								
Positive	-.15	6.60	-18.83	5.75	-1.75	-4.73	1.94	2.69
Harsh	.08	4.27	-1.71	17.84	2.71	7.32	7.43	10.32
Free Play [^]								
Positive	-.21	4.70	-12.87	5.53	-1.15	-3.11	.45	.63
Harsh	.10	3.02	-2.06	7.51	1.36	3.68	.70	.97
Cleanup ^{^c}								
Positive	.03	3.01	-7.94	3.79	-.75	-2.03	-.25	-.34
Harsh	.05	2.00	-.92	5.62	1.94	5.24	2.45	3.36

^{*} Parenting behaviors are reflected as a mean score across all tasks

[^]Parenting behaviors are a total score for each separate task

^aStandard error of skewness for all tasks = .37

^b Standard error of kurtosis for teaching, free play and total = .72; standard error for cleanup = .73

^cn=42 due to two participants who did not attempt to engage in cleanup when instructed

^d Z-statistic for skewness and kurtosis is determined by dividing the produced statistic by standard error