A Developmental Perspective on Parental Cognitions and Emotions in the Context of a Parent-Mediated Intervention for Children with ASD

Emily R. Hotez
Graduate Center, City University of New York

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A DEVELOPMENTAL PERSPECTIVE ON PARENTAL COGNITIONS AND EMOTIONS IN THE CONTEXT OF A PARENT-MEDIATED INTERVENTION FOR CHILDREN WITH ASD

by

EMILY HOTEZ

A dissertation submitted to Graduate Faculty in Developmental Psychology in partial fulfillment of the requirement for the degree of Doctor of Philosophy City University of New York

2016
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IN THE CONTEXT OF A PARENT-MEDIATED INTERVENTION FOR CHILDREN WITH
ASD

by

EMILY HOTEZ

This manuscript has been read and accepted for the Graduate Faculty in Developmental Psychology to satisfy the dissertation requirement for the degree of Doctor of Philosophy.

[Michael Siller]
_____________________________
[required signature]

Date
Chair of Examining Committee

[Maureen O’Connor]
_____________________________
[required signature]

Date
Executive Officer

[Kristen Gillespie-Lynch]
[Patricia Brooks]
[Herb Saltstein]
[Nava Silton]

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK
ABSTRACT

A Developmental Perspective on Parental Cognitions and Emotions in the Context of a Parent-Mediated Intervention for Children with ASD

By

Emily Hotez

Adviser: Michael Siller, Ph.D.

Previous research demonstrates that parenting-related schemas and perceptions, reflective functioning abilities, and emotional experiences (i.e., *parental cognitions and emotions*) play a pivotal role in predicting whether parents of children with Autism Spectrum Disorder (ASD) are actively involved in, and demonstrate capacity in, meeting their child’s needs in the context of intervention programs or services related to their child’s development. In light of these findings, researchers have focused increased attention towards investigating whether parent-mediated interventions that target children’s behaviors and developmental outcomes exert collateral effects on parental cognitions and emotions.

The current dissertation investigated a sample of 70 mothers of children with ASD (chronological age: $M = 57.13$ months; $SD = 12.30$) who participated in a randomized clinical trial evaluating the efficacy of a responsiveness-based parent-mediated intervention (Focused Playtime Intervention [FPI]). The first study presented as part of this research investigated baseline relationships among maternal insightfulness and resolution of diagnosis on narratives elicited by the Insightfulness Assessment (Oppenheim & Koren-Karie, 2002) and the Reaction to Diagnosis Interview (Pianta & Marvin, 1993), a range of questionnaire-based measures of parental cognitions and emotions, child characteristics, and family demographics. The second study investigated
patterns of longitudinal change in maternal insightfulness with a focus on evaluating treatment effects from FPI and determining contextual predictors of change.

Findings from multiple regression analyses revealed significant concurrent relationships among the constellation of parental cognitions and emotions evaluated as part of this research. Results from fitting a series of multilevel mixed models revealed that the rate of growth of maternal insightfulness was predicted by FPI treatment group allocation, family annual income, and the working alliance between mothers and interventionists. Follow-up analyses revealed that FPI treatment group allocation also predicted the rate of growth of maternal concepts of development and perceived sense of competence. Child characteristics were unrelated to baseline or longitudinal findings. Results are interpreted in the context of previous findings and the long-term research goals of this line of inquiry.
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I would also like to acknowledge the many faculty members at both The George Washington University and the CUNY Graduate Center who have contributed to my development as a researcher over the years. Thank you to Dr. Christina Gee at The George Washington University for providing me with the opportunity to work on the Young Parents Study, my most seminal undergraduate research experience and one that has had a profound impact on my work. In addition, thank you to Drs. Constance Battle, Roy Grinker, and Valerie Hu for helping me develop a deep understanding of the multi-faceted nature of autism spectrum disorders. Throughout my time in graduate school, the faculty at the Graduate Center have allowed me to cultivate a strong appreciation for the relationship between theory, methodology, and data analysis, which will continue to serve as the foundation for my work going forward. Thank you to all who have reviewed and provided feedback on my work over the years in the context of classes, doctoral exams, and other projects, especially Drs. Martin Ruck and Colette Daiute.

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GENERAL INTRODUCTION

Over the past two decades, intervention research for children with Autism Spectrum Disorder (ASD) has witnessed an increasing emphasis on parent-mediated intervention approaches that aim to promote families’ capacities to address the multifaceted needs of children with ASD (Wetherby & Woods, 2008). Findings from several randomized clinical trials reveal that parents can effectively implement a wide range of intervention strategies with their child in the context of parent-mediated interventions (e.g., establishing play routines, increasing coordinated attention, and promoting social communication [Green et al., 2010; Tonge, Brereton, Kiomall, Mackinnon, & Rinehart, 2014; Whittingham, Sofronoff, Sheffield, & Sanders, 2009; Wong et al., 2014]). Further, research has demonstrated that parent-mediated interventions effectively improve parenting behaviors and strategies directly targeted by the intervention (i.e., proximal outcomes), including parental responsiveness (Siller, Hutman, & Sigman, 2013). Research also shows the potential for parent-mediated interventions to facilitate gains in children’s behaviors in the context of parent-child interactions, including behaviors related to social communication (Green et al., 2010), attachment (Siller, Swanson, Gerber, Hutman, & Sigman, 2014), and play (Gillet & LeBlanc, 2007), although evidence is less conclusive in terms of distal outcomes (e.g., child behaviors observed outside of parent-child interactions [Oono, Honey, & McConachie, 2013]).

Parent-mediated interventions are distinct from other intervention approaches for children with ASD in that they aim to specifically address families' distinct needs, concerns, and priorities and emphasize providing the intervention in the context of families’ natural environments and
daily routines (Schultz, Schmidt, & Stichter, 2011; Wetherby & Woods, 2008). With these efforts in mind, researchers evaluating parent-mediated interventions have gradually recognized the need to not only assess children’s behavioral and developmental characteristics, but to also assess constructs increasingly recognized to be relevant for families' everyday lives, including parental cognitions and emotions.

Overview of Parental Cognitions and Emotions

A review of the parenting literature results in numerous discrete empirical studies and literature reviews that describe constructs associated with the ways in which parents think and feel regarding themselves in the parenting role, their child, and the parent-child relationship. This body of literature spans multiple decades, shifting historical and cultural contexts, and a range of diverse methodologies for conducting research. As the expansive research base on parenting continues to develop, it is increasingly recognized that the study of parenting is highly complex. As a result, explanations of parenting processes are progressively less reliant on “singular, deterministic views” (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000, p. 218).

The current dissertation employed a distinct definition of parental cognitions and emotions in order to formulate the substantive research aims, develop an analytical approach to address these aims, and identify the appropriate investigative lens for this research overall (i.e., a developmental perspective, described in detail in subsequent paragraphs). The definition of parental cognitions and emotions employed in the current research draws from multiple theoretical frameworks (e.g., attachment theory [Pederson, Cleason, Moran, & Bento, 1998]; social cognitive perspective [Azar et al., 2008]; and ecological and developmental systems theory [Bronfenbrenner, 1979, Thelen, 2005]), as well as empirical research of both normative parenting processes and parenting in the
context of risk (Azar et al., 2008; Belsky, 1984; Bornstein et al., 2003; Lerner, Rothbaum, Boulos, & Castellino, 2002). A wide research base was employed due to the fact that contemporary parenting perspectives generally posit that the parenting process is influenced by and embedded in multiple factors, including parents’ social and cultural context, psychosocial characteristics, and their child’s development (Bornstein et al., 2003; Bornstein & Cheah, 2005).

**Developing a definition of parental cognitions and emotions**

With this extensive and continuously advancing research base in mind, the current dissertation includes the following constructs to conceptualize parental cognitions and emotions.

**Perceptions.** Perceptions are “feelings of competence in the role of caregiver, satisfaction gained from caregiving relationships, investment in caregiving, and ability to balance caregiving with other social roles” (Bornstein, 2016, p. 196). Perceptions include parents’ perceived sense of competence (i.e., the degree to which parents see themselves as capable in the parenting role across multiple levels, including global, domain-specific, and task-specific levels [Coleman & Karraker, 2003; Sanders & Woolley, 2005]) and perceived social support (i.e., the extent to which individuals believe their family or other sources of support will be available and willing to assist them during a difficult time [Procidano & Heller, 1983]).

**Schemas.** Schemas are “information structures in memory that help us organize past experiences” and include “conceptions of the caregiving role, beliefs about one’s own functioning in that role, knowledge of children in general, and thoughts about one’s own children in particular” (Azar, Nix, & Makin-Byrd, 2005, p.45). Schemas include parents’ concepts of child development (i.e., extent to which parents can correctly respond to questions about normative child development as well as parental beliefs regarding developmental timetables, the importance that parents attach
to certain aspects of development, and ideas about child-rearing [Bond & Burns, 2006; Bornstein & Cote, 2004; Rubin & Mills, 1992]).

**Emotional experiences.** Emotional experiences are parents’ observed and reported affective expressions and experiences (Teti & Cole, 2011) regarding themselves in the parenting role, their children, and the parent-child relationship. Emotional experiences include parents’ levels of *parenting-related stress* (i.e., “negative feelings toward self and toward the child or children, and by definition these negative feelings are directly attributable to the demands of parenthood” (Deater-Deckard, 1998, p. 315).

**Reflective functioning capacities.** Reflective functioning capacities are parents’ capacity to understand behavior in light of underlying mental states and intentions (Fonagy, Steele, Steele, Moran, & Higgitt, 1991; Slade, 2005). Reflective functioning capacities include *parental insightfulness* (i.e., “parents’ capacity to consider the motives underlying their children’s behaviors and emotional experiences in a complete, positive, and child-focused manner while taking into consideration their children’s perspectives” [Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002, p. 534]) and *resolution of diagnosis* (i.e., “parents’ representational, or mental, models of the child with the disability or illness, and the extent to which the parent has resolved the trauma of the diagnosis and diagnostic process” [Pianta & Marvin, 1993, para. 2]).

Parental cognitions and emotions are grounded in, and continuously shaped by, multiple reciprocal and dynamic influences, including “personal psychological resources of parents; parental experiences with their child; and contextual sources of stress and support” (Belsky, 1984, p. 83).
A Developmental Perspective on Parental Cognitions and Emotions

The current dissertation will endeavor to convey the robust evidence that parental cognitions and emotions are important factors to consider in the context of parent-mediated interventions for families of children with ASD. Despite this mounting evidence, there is a need to more effectively capture the “dynamic processes” that encapsulate the experiences of families of children with ASD in order to leverage the research base to inform current clinical and research practices (Karst, Vaughan Van Hecke, 2012, p. 257). Specifically, there is a need to investigate parental cognitions and emotions from a perspective that 1) is consistent with well-established theories of developmental psychology (e.g., system-focused theories and cultural perspectives); 2) encapsulates the burgeoning research that highlights the parenting process to be increasingly complex relative to previous conceptualizations of parenting; and 3) takes advantage of modern statistical techniques that afford researchers the capability of accounting for and measuring the effects of the multitude of factors that diversify individuals and families and account for change over time (i.e., a developmental perspective).

A developmental perspective acknowledges the extent to which distinct parental cognitions and emotions are embedded within the broader context of parental psychosocial functioning, the bi-directional relationship between parents and children, and the impact of macro-level social factors inextricable from family well-being. Efforts towards developing theoretical models of parenting processes consistent with a developmental perspective are continuously advancing (e.g., a developmental systems perspective on parenting [Lerner, Rothbaum, Boulos, & Castellino, 2002]). While distinct theoretical frameworks are at the root of a developmental perspective, it is important to note that in the context of research, theory is inextricable from analytic and methodological considerations. Thus, a developmental perspective also acknowledges that
evaluating change over time necessitates investigating developmental patterns within and between individuals over time; examining non-linear trajectories; and investigating individuals within the multiple contexts in which they are embedded (Burchinal, Nelson, & Poe, 2006).

Taking this broad theoretical perspective into account was instrumental in developing the scope and specific aims of the current dissertation that are discussed below.

**Dissertation Aims and Rationale**

The current dissertation presents two sets of analyses on a sample of 70 mothers of children with ASD (chronological age: M = 57.13 months; SD = 12.30) who participated in a randomized clinical trial of a responsiveness-based parent-mediated intervention (Focused Playtime Intervention [FPI]; Siller, Hutman, & Sigman, 2013). This research was guided by the following three aims that were informed by a developmental perspective on parental cognitions and emotions.

The literature review for the current dissertation will provide evidence to support that parents of children with ASD experience compromised psychosocial functioning in comparison to parents of typically developing children and children with other special needs, including increased levels of stress that impede a parent’s capacity to engage in important intervention programs and services. In addition, the literature review will describe a range of parental cognitions and emotions that appear to bolster treatment engagement and promote optimal outcomes for families of children with ASD (e.g., perceived sense of competence, understanding of child development, and social support). However, the extent to which specific attachment-based parental cognitions and emotions (i.e., parental insightfulness and resolution of diagnosis) are situated in the broader context of parental psychosocial functioning, child characteristics, and family demographic factors
in this population is inconclusive. As will be described throughout the current dissertation, a more nuanced understanding of contextual factors associated with parental insightfulness and resolution of diagnosis has the potential to inform intervention programs and services for parents of children with ASD. *Thus the first aim of the current dissertation is to determine concurrent associations among maternal insightfulness, resolution of diagnosis, a range of additional parental cognitions and emotions, child characteristics, and family demographics.*

The findings that support the links between parental cognitions and emotions and intervention engagement among parents of children with ASD indicate the clinical significance of longitudinal investigations of parental cognitions and emotions. The current research base supports that change in parental cognitions and emotions may come about due to a wide range of factors, including expectations and knowledge pertaining to the child’s development, qualities of the parent-child relationship, and unique processes associated with parenting a child with a disability. The distinctive challenges experienced by parents of children with ASD warrant a systematic investigation into the multitude of factors that may influence parents’ psychosocial functioning over time. *Thus, the second aim of the current dissertation is to investigate the rate of change of parental cognitions and emotions (i.e., maternal insightfulness), particularly in response to contextual factors (e.g., child characteristics, family demographics, and working alliance between the parents and interventionists), among parents of children with ASD.*

In the context of investigating predictors of the rate of change of parental cognitions and emotions among parents of children with ASD, there is significant clinical utility to evaluating the extent to which parent-mediated interventions impact parents and families, particularly among families who enter the study with low baseline capacities. Our limited knowledge of the impact of ASD treatments on parents and families impedes our capacity to identify ways in which to
improve the quality of life of parents of children with ASD and comprehensively understand the effectiveness of the intervention programs we are increasingly disseminating to families (Karst, Vaughn, & Hecke, 2012; Vasilopoulou & Nisbet, 2015). Thus, the third aim of the current dissertation is to investigate whether parents of children with ASD randomized to the experimental group of Focused Playtime Intervention demonstrate a greater rate of growth in maternal insightfulness than parents randomized to the control group. As a supplement to the latter two aims, the current dissertation conducts a follow-up analysis to investigate whether the final statistical model developed for the purpose of predicting the rate of change of insightfulness has utility in predicting the rate of change of a range of other parental cognitions and emotions.
LITERATURE REVIEW

The Role of Parental Cognitions and Emotions in Parent-Mediated Interventions

Parental cognitions and emotions are particularly salient constructs to measure in the context of research on parent-mediated interventions for two main reasons. First, there is a well-established body of research that demonstrates parents of children with ASD experience poorer quality of life (e.g., impairments in overall well-being, including in the domains of physical and mental health and social relationships) compared to parents of children with other disabilities and typically developing children, and parental quality of life is closely linked with a range of parental cognitions and emotions (Giallo, Wood, Jellett, & Porter, 2013; Lee, Harrington, Louie, & Newscahffer, 2008; Montes & Halterman, 2007; Mugno, Ruta, D’Arrigo, & Mazzone, 2007; Vasilopoulou & Nisbet, 2015).

For example, compared with mothers of typically developing children, mothers of young children with ASD report significantly higher fatigue, which has been shown to correspond with a range of psychosocial challenges, including increased stress and lower parental self-efficacy and satisfaction (Giallo, Wood, Jellett, & Porter, 2013). Further, compared with mothers of children with ADD/ADHD, mothers of children with ASD have diminished quality of life; these results were found with mothers of toddlers, children and adolescents with ASD, suggesting that poor psychosocial functioning in this population is likely a challenge that persists over time (Lee et al., 2008). Negative maternal psychosocial functioning among mothers of children with ASD has been attributed to a wide range of factors, including but not limited to low perceived social support, maternal unemployment, and children’s behavioral difficulties (Vasilopoulou & Nisbet, 2015).

Although the directionality of the relationship between maternal psychosocial functioning and child outcomes has not been conclusively established, research has indeed demonstrated links
between these constructs. For example, research on both normative parenting processes and parents of children with ASD has linked parental psychosocial constructs (e.g., negative emotionality, poor health-related quality of life, high levels of stress) with children’s developmental outcomes (e.g., higher levels of anger and defiance, hyperactivity, conduct problems, delays in social skills (Allik, Larsson, & Smedjem, 2006; Kochanska, Clark, & Goldman, 1997; Davis & Carter, 2008). Thus, the available evidence, although still developing, suggests that we cannot reasonably expect intervention programs that promote active parental involvement to be effective for building familial capacity and enhancing children’s developmental outcomes without also addressing parental psychosocial factors.

Second, parental intervention involvement and engagement (e.g., completion of program tasks, attitudinal and emotional investment, and overall intervention buy-in) represents a significant priority to researchers, practitioners, and policy-makers in the delivery of programs and services. In fact, the National Institutes of Health has identified low engagement and retention as significant threats to evidence-based interventions (Hoagwood & Olin, 2002). Low parental engagement is significant because parents can be conceptualized as “gate-keepers” to children’s mental health service participation (Mackintosh et al., 2012, p. 58). In fact, parental cognitions and emotions have been suggested to be key to understanding parental intervention involvement and engagement in children’s mental health programs, with demonstrated links to three stages of the treatment process: help seeking, engagement, and retention (Kuhn & Carter, 2006; Morrissey-Kane & Prinz, 1999).

In the context of these findings on the role of parental cognitions and emotions in family-centered intervention programs, there has been a focus on a range of parental cognitions and emotions among parents of typically developing children and children with ASD, including, but
not limited to, 1) perceived sense of competence or self-efficacy (Kuhn & Carter, 2006); 2) concepts, knowledge, or understanding of child development (Rodriguez, Rodrigo, Janssens, & Triana, 2011; Siller, Reyes, Hotez, Hutman, & Sigman, 2013); 3) stress (Ingoldsby, 2010); and 4) social support (Boyd, 2002; Benson, 2006; Dunn, Burbine, Bowers, Tantleff-Dunn, 2001; Montes & Halterman, 2007).

The role of perceived sense of competence or self-efficacy

Research focusing on parental sense of competence or self-efficacy (i.e., the degree to which parents see themselves as capable in the parenting role across multiple levels, including global, domain-specific, and task-specific levels [Coleman & Karraker, 2003; Sanders & Woolley, 2005]) has demonstrated that parenting efficacy is an important consideration in understanding parental involvement in programs that actively engage parents (Mah & Johnston, 2008). Specifically, among mothers of children with ASD, mothers who report higher levels of self-efficacy are more likely to assume a more active role in promoting their child’s development in the intervention context (Kuhn & Carter, 2006).

Indeed, our previous research with a subset of parents from the current study lends support to these conclusions regarding parenting efficacy (Siller, Reyes, Hotez, Hutman, & Sigman, 2013). Specifically, we investigated parents enrolled in a short education program focusing on basic information and resources on advocating for a young child with ASD (i.e., Parent Advocacy Coaching [PAC]). We aimed to identify child characteristics, family demographics, and parental cognitions and emotions that predicted the rate of change in access to early intervention, special education, and related services among families of children with ASD over a period of 27 months. In this study, measures of parental self-efficacy predicted the subsequent rate of growth in the
intensity (i.e., hours per week) of children’s intervention programs over the course of the study period (Siller, Reyes, Hotez, Hutman, & Sigman, 2013). Taken together, perceived sense of competence or self-efficacy appears to be an important factor for parents of children with ASD in the context of intervention programs and services, although additional research is warranted. Specifically, previous findings may, in part, be due to the fact that self-efficacy has been shown to be associated with a broad spectrum of indicators of maternal well-being among mothers of children with ASD (e.g., depression, stress, agency, guilt, and fatigue [Giallo, Wood, Jellett, & Porter, 2013; Kuhn & Carter, 2006]).

**The role of concepts or knowledge of child development**

In addition to parenting efficacy, several studies have explored the utility of parental concepts, knowledge, or understanding of child development (i.e., extent to which parents can correctly respond to questions about normative child development as well as parental beliefs regarding developmental timetables, the importance that parents attach to certain aspects of development, and ideas about child-rearing [Bond & Burns, 2006; Bornstein & Cote, 2004; Rubin & Mills, 1992]).

Specifically, previous research employing structural equation modeling techniques with a sample of 75 mothers found that the complexity of maternal thinking surrounding socialization goals was linked to mothers’ responses regarding meeting their child’s emotional and cognitive needs and ensuring their child’s health and education. In the context of this research Rodriguez, Rodrigo, Janssens, & Triana (2011) suggested that the complexity of maternal thinking might be an essential component of bolstering parental capacity in at-risk contexts. Additional research has complemented these findings. For instance, in the context of mental health-focused intervention
programs that promote parental active involvement, parental beliefs regarding the origin of children’s challenging behaviors (e.g., within the child versus attributable to parenting practices), have been suggested to predict parental acceptance of, and engagement with, the intervention program (Morrissey-Kane & Prinz, 1999). Indeed, our previous research with families of children with ASD in the current sample is consistent with these findings. Specifically, we found that in addition to parental self-efficacy, parental understanding of child development also independently predicted the subsequent rate of change in the intensity of children’s intervention programs (Siller, Reyes, Hotez, Hutman, & Sigman, 2013).

The role of stress

In the context of research on parental cognitions and emotions among parents of children with ASD, the lion’s share of literature discusses parental stress. There is currently a well-established body of literature on parental stress among parents of children with ASD due to the fact that research consistently finds parents of children with ASD to have higher levels of stress than parents of typically developing children and children with other disabilities (Baker-Ericzen, Brookman-Frazee, & Stahmer, 2005; Lai, Goh, Oei, & Sung, 2015; Pastor-Cerezuela, Fernández-Andrés, Tárraga-Mínguez, & Navarro-Peña, 2015; Valicenti-McDermott et al., 2015).

Comprehensive reviews of general mental health prevention and intervention programs have identified that those programs found to produce a long-term impact on engagement and retention in programming have also integrated enhanced family stress and coping strategies at multiple points throughout treatment (Ingoldsby, 2010), suggesting that there is an important link between treatment engagement and stress.

Indeed, these findings are supported in research with samples of parents of children with
ASD, with high levels of parenting stress found to impede the effectiveness of intervention programs for children with ASD (Osbourne, McHugh, Saunders, & Reed, 2008; Stadnick, Stahmer, & Brookman-Frazee, 2015). Specifically, Osbourne, McHugh, Saunders, & Reed (2008) conducted a community-based study with 65 children with ASD in England to test the influence of early teaching interventions and assess the role of intervention time-input and parenting stress on child outcomes. Findings revealed that treatment-related gains were lower when parents reported high feelings of parenting stress, particularly in instances where the intervention required a substantial time commitment. However, although the evaluated sample was diverse with respect to sociodemographic information, the lack of inclusion of socioeconomic factors in the analyses is concerning due the well-documented link between stress and socioeconomic factors (e.g., Lantz, House, Mero, & Williams, 2005). Stadnick, Stahmer, & Brookman-Frazee (2015) controlled for socioeconomic factors in the context of a pilot study of the effectiveness of a community-based parent-mediated intervention for children with ASD. This research found that higher baseline parenting stress was negatively related to children’s social gains (Stadnick, Stahmer, & Brookman-Frazee, 2015). Although evaluating parent-mediated interventions with community-based samples is particularly valuable with respect to ecological validity and identifying strategies for effective intervention dissemination, the lack of random assignment in this study impedes our capacity to draw more affirmative conclusions.

In addition to these caveats, findings on stress may, in part, be complicated by the fact that parental stress is closely linked to a range of other parental psychosocial factors (e.g., parental coping mechanisms [Minnes, Perry & Weiss, 2015]; mind-mindedness [McMahon & Meins, 2012]; health-related quality of life [Tung et al., 2014]; parental locus of control and parenting satisfaction [Hassall, Rose, & McDonald, 2005]) as well as child characteristics (e.g., child
maladaptive and conduct behavior [Lovell, Moss, & Wetherell, 2015; Tomanik, Harris, & Hawkins, 2004] and ASD severity [Lyons, Leon, Phelps, & Dunleavy, 2010; Tung et al., 2014]). Further, some studies have identified that not all mothers of children with ASD demonstrate clinically significant levels of parenting stress, suggesting that various protective factors (e.g., coping strategies) may ameliorate high levels of stress (Davis & Carter, 2008).

The role of perceived social support

Perceived social support may be associated with intervention or service engagement through its associations with a range of parental cognitions and emotions that have been demonstrated to be linked with engagement. Specifically, several studies using a range of methodologies (e.g., mediation analyses, literature reviews) have proposed that social support reduces the negative effects of stress among parents of children with ASD (Boyd, 2002; Benson, 2006; Dunn, Burbine, Bowers, Tantleff-Dunn, 2001; Montes & Halterman, 2007). In fact, survey research with parents of children with ASD identified that acquiring social support was among the most frequently used strategies for coping with stress (Luther, Canham, & Cureton, 2005). Research employing multiple mediation analysis has further elucidated linkages with perceived social support and stress. For example, Weiss et al. (2013) demonstrated that perceived social support, along with self-efficacy, mediated the link between the pile-up of stressors and family hardiness (i.e., resilience).

A Focus on Maternal Insightfulness and Resolution of Diagnosis

The research reviewed thus far suggests that parental cognitions and emotions (e.g., perceived sense of competence, concepts of development, stress, and perceived social support) are
important components to consider in the context of parent-mediated interventions. However, the current review of parenting cognitions and emotions contains notable theoretical gaps, particularly in regards to parental cognitions and emotions derived from theoretical and empirical work on a central dimension of the parenting process: attachment (i.e., “the affective bond between parents and children”), which is said to be “seminal to the study of parenting” (Cummings & Cummings, 2002, p. 35). Therefore, it is necessary to describe the extent to which measures of parental cognitions and emotions derived from the attachment discipline (e.g., parental insightfulness and resolution of diagnosis) are associated with the research discussed thus far.

Attachment is a specific perspective on parenting that focuses on the relational dimension of the parent-child relationship (i.e., refers to the mutual interaction between parents and children [Cummings & Cummings, 2002, p. 35]). Although attachment-based constructs and their corresponding measures have been investigated largely in isolation from the range of parenting constructs previously discussed, the relational focus of attachment-based constructs strongly positions these constructs to be important for parents of children with ASD in the context of parent-mediated interventions. Two such constructs are: parental insightfulness (i.e., “parents’ capacity to consider the motives underlying their children’s behaviors and emotional experiences in a complete, positive, and child-focused manner while taking into consideration their children’s perspectives” [Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002, p. 534]) and resolution of diagnosis (i.e., “parents’ representational, or mental, models of the child with the disability or illness, and the extent to which the parent has resolved the trauma of the diagnosis and diagnostic process” [Pianta & Marvin, 1993]).

According to Oppenheim, Koren-Karie, Dolev, & Yirmiya (2012), “insight into the child’s internal experience and, in the case of a child with a serious diagnosis, resolving the loss and pain
associated with the diagnosis, lays the basis for sensitive maternal behavior, which in turn facilitates the development of a secure attachment” (p. 577). It should be noted that attachment is not an isolated phenomenon; rather, it exists in the context of broader family and contextual factors. For example, Marvin & Pianta (1993) describe resolution as a process that evolves over time, “depending on the child’s and parent’s circumstances, as well as developmental history.” Due to the fact that attachment and non-attachment researchers have called for “both differentiated and integrative considerations of parenting across multiple approaches”, it is an important endeavor to investigate attachment-based constructs in the context of broader parenting constructs (Cummings & Cummings, 2002, p. 52).

The role of parental insightfulness

Parental insightfulness is one of several constructs developed to measure the broader construct of reflective functioning (i.e., parents’ capacity to understand behavior in light of underlying mental states and intentions [Fonagy, Steele, Steele, Moran, & Higgitt, 1991; Slade, 2005]). Specifically, parental reflective functioning is “parents’ ability to use a non-defensive, open thought process regarding their children’s mental states, feelings, and motives underlying their behavior” (Oppenheim & Koren-Karie, 2002, p. 595). There is an extensive range of measures intended to capture reflective functioning constructs, many of which have been linked to measures of qualities of the parent-child relationship, including attachment and parental responsiveness (i.e., Adult Attachment Intervention [George, Kaplan, & Main, 1985]; Parent Development Interview [Aber, Slade, Berger, Bresgi, & Kaplan, 1985]; Working Model of the Child [Zeanah et al., 1995]).

An additional reflective functioning measure is the Insightfulness Assessment (IA
[Oppenheim & Koren-Karie, 2002), which specifically captures *parental insightfulness*. The IA is a semi-structured interview that asks parents to discuss three previously recorded video vignettes of their interactions with their child. After each video, parents are asked what the child was thinking and feeling during the preceding interaction; whether the behavior was typical of the child; and whether the video elicited any parental emotions (e.g., surprise, concern, happiness). Afterwards, parents are asked general questions about their child’s characteristics and their relationship with their child. Parental insightfulness offers unique contributions to this field because the IA is grounded in the context of natural parent-child interactions. Similar constructs (e.g., mind-mindedness) require caregivers to reflect on their child more generally, rather than articulate their child’s thoughts and feelings in specific moments of interactions (Koren-Karie et al., 2002).

Parental insightfulness has been shown to represent a central dimension of sensitive caregiving and has been demonstrated to be an antecedent to secure attachment (Koren-Karie et al., 2002). Specifically, sensitive mothers are posited to understand and respond to their children appropriately, promptly, and effectively on the basis of their insightfulness and their capacity to see things from the infant’s point of view (Ainsworth, 1978). Our previous research with the current sample found baseline measures of parental insightfulness to significantly moderate treatment effects on responsive parental behaviors among parents of children with ASD participating in a randomized clinical trial of a responsiveness-based parent-mediated intervention (Focused Playtime Intervention [FPI]). Specifically, parents whose baseline narratives were classified as *positively insightful* were more likely to experience increases in parent-child synchrony than parents whose narratives were classified as *non-insightful* (Siller, Hutman, & Sigman, 2013). These findings suggest that insightfulness may enable parents to fully engage in
family-centered interventions that promote parents as active participants in the intervention process (Siller, Hutman, & Sigman, 2013; Woods & Brown, 2011). More generally, this finding suggests the need to continue to broaden our analyses of insightfulness to understand how it relates to parent, child, and family characteristics to more effectively understand its clinical utility for families.

The role of resolution of diagnosis

According to Oppenheim, Koren-Karie, Dolev, & Yirmiya (2012), parental insightfulness among parents of children with ASD may be limited by parents’ capacity to demonstrate resolution of diagnosis on narratives elicited by the Reaction to Diagnosis Interview (RDI [Pianta & Marvin, 1993]). The RDI is a semi-structured interview that consists of five questions regarding parents’ early experiences with their children’s diagnosis and how their feelings regarding the diagnosis have changed over time. Marvin & Pianta (1996) present a theoretical argument for attachment theory as a framework for understanding the resolution process as measured by the RDI. Specifically, the RDI is grounded in the notion that “parental failure to grieve or resolve the trauma of receiving [a] diagnosis could interfere with sensitive caregiving during infancy and early childhood, leading to an increased risk for insecure attachment” (p. 437).

Indeed, among families with children with cerebral palsy, mothers’ resolution of diagnosis status has predicted secure or insecure child-parent attachment in the Strange Situation paradigm (Marvin & Pianta, 1996). Specifically, 82% of mothers classified as resolved had children who were securely attached and only 19% of mothers classified as unresolved had securely attached children. This finding reflects the fact resolved parents have integrated representational models of the parent-child relationship, and are subsequently able to organize caregiving behaviors, whereas
unresolved parents have caregiving behaviors that reflect conflicting representational models and continuously impaired by feelings of distress related to the diagnosis.

Research suggests that the maternal resolution status is linked to maternal stress levels; husbands’ satisfaction of the marital relationship; perception of social support; and parents’ decision-making regarding treatment selection for their child (Sheeran, Marvin, & Pianta, 1996; Shyu, Tsai, & Tsai, 2010), suggesting the RDI to be an important predictor of maternal well-being as well as factors related to treatment use. Given both its proposed linkage with insightfulness and previously identified associations with family factors, resolution appears to be an important parenting variable to investigate in the context of parent-mediated interventions for families of children with ASD.

In sum, there are clear links among insightfulness, resolution, and attachment-related constructs. The fact that insightfulness and resolution appear to underlie important qualities to the parent-child relationship necessitate a consideration of these constructs in the context of parent-mediated interventions, for which parent-child interactions exist at the core. However, there is a clear gap in the literature as it relates to a broader perspective on insightfulness and resolution; this gap necessitates investigating insightfulness and resolution from a developmental perspective, particularly in the context of an intervention programs for families of children with ASD.

Findings that parental cognitions and emotions (e.g., perceived sense of competence, concepts of development, stress, perceived social support, insightfulness, and resolution) have important implications for intervention involvement and engagement among parents of children with ASD indicate the clinical significance of longitudinal investigations of parental cognitions and emotions. Specifically, the potential to change parental cognitions and emotions suggests the possibility for interventionists to enhance treatment engagement and, in turn, represents a potential
avenue to bolster treatment outcomes among families of children with ASD.

**Evaluating Stability and Change in Parental Cognitions and Emotions**

A number of research studies support that parental cognitions and emotions demonstrate change over time in response to a myriad of factors (Bornstein, Cote, Haynes, Hahn, & Park, 2010; Lee, 2005; Meins, Fernyhough, & Harris-Waller, 2014). Specifically, particular parenting cognitions, including mothers’ mental representations of their children (i.e., mind-mindedness), have been demonstrated to be “relational” constructs, rather than “trait-like” constructs (Meins, Fernyhough, & Harris-Waller, 2014, pp. 4-5), which suggests that parental cognitions and emotions may be more contingent upon parents' continuously developing relationship with their child, rather than representing more stable personality characteristics.

Indeed, several studies support that parental cognitions and emotions may change as a result of changing parental expectations and knowledge regarding parenting, child development, and their relationships with their children (Bornstein, Cote, Haynes, Hahn, & Park, 2010; Lee, 2005; Teti & Cole, 2011). For example, Cole, LeDonne, & Tan (2013) found that maternal positive and negative emotions regarding their children increase and decrease depending on children’s developmental changes in self-regulation. The authors concluded that individual differences in children's emotions might influence parental emotions. In addition, Cote & Bornstein (2003) found that mothers rate their children’s behavior as a reason for failing to complete a parenting task significantly more when their children were 20 months old than when they were 5 months old. The authors interpreted this finding to reflect the fact that parents see their children as more responsible for their behaviors as their children get older.
Change in parental cognitions and emotions may also come about due to specific life circumstances, including challenges or difficulties in the family environment. For example, researchers have examined the process of *post-traumatic growth*: the study of how people often change in positive ways in their struggles with adversity (Joseph, Murphy, & Regel, 2012). This research posits that there is a corresponding level of post-traumatic growth to a level of post-traumatic stress, with low to high levels of stress corresponding to low to high levels of growth, respectively. This relationship is maintained up to a certain threshold of post-traumatic stress at which point post-traumatic growth becomes more difficult (Joseph, Murphy, & Regel, 2012).

There is preliminary research on post-traumatic growth among parents of children with special needs. For example, qualitative research with mothers of preschool children with disabilities in Mainland China suggests that perceived social support, peer example, effective coping style and self-efficacy enhancement are facilitating factors of post-traumatic growth (Zhang, Yan, Barriball, While, & Liu, 2015). However, given the stark contextual differences between and within cultural climates in terms of reception of children’s diagnoses, the applicability of these findings for U.S. samples must be interpreted with caution.

While research supports the dynamic relationships among parental cognitions and emotions, children’s development, the parent-child relationship, and processes associated with specific events or life circumstances, research also suggests that a degree of stability is expected among parental cognitions and emotions. For example, Bornstein, Hahn, & Haynes (2011) investigated whether the Five-Factor model of personality (i.e., Openness, Neuroticism, Extraversion, Agreeableness, and Conscientiousness [Goldberg, 1993]), which has shown to demonstrate stability over time, was related to parenting cognitions in a large non-clinical sample. Findings from this study revealed that specific personality factors (e.g., the Openness to
Experience factor) were related to specific parenting cognitions (e.g., maternal parenting knowledge and reported parenting competence). This perspective lends support to the hypothesis that parental cognitions and emotions are more trait-like, as opposed to relational. However, the authors of this research also acknowledged that parenting is multiply determined and can be explained by a wide range of factors in addition to personality.

Broadly speaking, findings indicate that a degree of stability in parental cognitions and emotions may be expected, in that parental cognitions and emotions may to some extent be a function of maternal personality. However, research demonstrates a wide range of potential predictors of change, including expectations and knowledge pertaining to the child’s development, qualities of the parent-child relationship, and unique processes associated with parenting a child with a disability. As a result, factors like maternal emotionality, reflective functioning capacity, and stress, are likely to change and develop over time. Parent-mediated interventions have also yielded promising findings for promoting change in maternal stress (Estes et al., 2014), self-efficacy (Keen, Couzens, Muspratt, & Rodger, 2010; Sofronoff & Farbotko, 2002; Whittingham, Sofronoff, Sheffield, & Saunders, 2009), and perception of child attachment (Siller, Swanson et al., 2014).

Collateral Treatment Effects of Parent-Mediated Interventions on Parental Cognitions and Emotions

In comparison to evidence for the effects of parent-mediated interventions on proximal targets, evidence is far less clear for treatment effects on outcomes that are not directly targeted by the intervention (Oono et al., 2013). Specifically, a prominent limitation of the existing research
relates to how ASD treatments more broadly impact parents and families, including the extent to which programs facilitate gains in parental cognitions and emotions.

This gap in the research is notably salient for two specific reasons. First, the National Research Council has identified all comprehensive programs for children with ASD to include some form of a parent component (Steiner et al., 2012). Thus, our lack of understanding of the impact of ASD treatments on parents and families impedes on researchers’ capacities to fully understand the effectiveness of intervention programs for children with ASD (Karst, Vaughn, & Hecke, 2012). Second, parents of children with ASD experience poorer quality of life (e.g., impairments in overall well-being, including in the domains of physical and mental health and social relationships) compared to parents of children with other disabilities and typically developing children, which is linked to higher levels of stress and lower levels of self-efficacy (Giallo, Wood, Jellett, & Porter, 2013). The family-centered nature of parent-mediated interventions ideally positions these programs to not only target children’s developmental outcomes, but also influence parental cognitions and emotions, which the research underscores are potentially important intervention targets.

There is limited research that specifically focuses on the extent to which parent-mediated interventions affect parental cognitions and emotions. Findings from non-randomized controlled trials are promising regarding the potential for parent-mediated interventions to improve child-related parenting stress and parental self-efficacy (Keen, Couzens, Muspratt, & Rodger, 2010; Sofronoff & Farbotko, 2002). For example, Keen et al. (2010) applied a pre-post quasi-experimental design to compare the effects of a professionally supported parent-focused intervention (i.e., a workshop and a series of home visits) versus self-directed parenting intervention (i.e., DVD and activity sheet) on stress and sense of competence among parents of
children with ASD. Results demonstrated reduced child-related parenting stress and increased parenting self-efficacy in the parent-focused intervention compared to the self-directed intervention, suggesting that individualized information and professional support have important implications for parental psychosocial functioning among parents of children with ASD.

Initial findings from evaluations of randomized controlled trials for families of children with ASD are also promising. For example, significant treatment effects were identified in the context of a randomized controlled trial of the Stepping Stones intervention for families of children with ASD. Specifically, significant improvements in parental satisfaction and “sleeper effects” for parental self-efficacy (i.e., significant effects six months following the intervention) were observed (Whittingham, Sofronoff, Sheffield, & Saunders, 2009). Further findings from a parent-coaching intervention based on the Early Start Denver Model (P-ESDM) found that the experimental group reported no increase in parental stress, whereas the community comparison group experienced an increase in stress over the same three-month period (Estes et al., 2014). Importantly, our previous research from the current sample identified significant treatment effects for a questionnaire measure evaluating maternal perceptions of child attachment (Siller, Swanson, et al., 2014). Taken together, research supports the potential for parent-mediated interventions to exert collateral effects on parental cognitions and emotions.
CHAPTER ONE:

Investigating Relationships among Parental Cognitions and Emotions, Child Characteristics, and Family Demographics among Parents of Children with Autism Spectrum Disorder

In recent years, researchers of families of typically-developing children and children with Autism Spectrum Disorder (ASD) have identified that parents’ developmentally-based schemas and perceptions, reflective functioning capacities, and emotional experiences (i.e., parental cognitions and emotions) are associated with parents’ capacity to meet their child’s physical, emotional, and cognitive needs in the context of intervention programs, services, and treatment approaches that aim to address children’s development. Specifically, among families of both typically developing children and children with ASD participating in family-centered intervention programs that promote active parental involvement, a range of parental cognitions and emotions have been found to be associated with parents’ acceptance of and engagement with the program, level of collaboration with the intervention team, and subsequent treatment outcomes (e.g., perceived sense of competence and self-efficacy [Kuhn & Carter, 2006; Mah & Johnston, 2008]; concepts, knowledge, or understanding of child development [Morrissey-Kane & Prinz, 1999; Rodríguez, Rodrigo, Janssens, & Triana, 2011]; and parental stress [Osbourne, McHugh, Saunders, & Reed, 2008]).

In the context of this burgeoning research base, preliminary evidence suggests that two attachment-based parenting constructs (i.e., parental insightfulness and resolution of diagnosis) are important variables to consider in research on parent-mediated interventions for families of children with ASD. Thus, the current study focuses on two narrative measures of parental cognitions and emotions: the Insightfulness Assessment (IA [Oppenheim & Koren-Karie, 2002])
The role of parental insightfulness and resolution of diagnosis in intervention programs

The Insightfulness Assessment (IA) assesses parents’ level of insightfulness (i.e., “parents’ capacity to consider the motives underlying their children’s behaviors and emotional experiences in a complete, positive, and child-focused manner while taking into consideration their children’s perspectives” [Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002, p. 534]).

Our previous research identified baseline measures of parental insightfulness to significantly moderate treatment effects on responsive parental behaviors among parents of children with ASD participating in a randomized clinical trial of a responsiveness-based parent-mediated intervention (Focused Playtime Intervention [FPI]). Specifically, only parents whose baseline narratives were classified as positively insightful, rather than non-insightful, experienced significant treatment-related increases in parent-child synchrony (Siller, Hutman, & Sigman, 2013). These findings suggest that insightfulness may enable parents to fully engage in family-centered interventions that promote parents as active participants in the intervention process (Siller, Hutman, & Sigman, 2013; Woods & Brown, 2011).

Oppenheim, Koren-Karie, Dolev, & Yirmiya (2009) suggest that a lack of resolution about the child’s diagnosis may constrain the parents’ ability to demonstrate insightfulness. Specifically, resolution is a key component of insightfulness because “seeing things from the child’s point of view must also include understanding accepting the challenges associated with the child’s diagnosis” (Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2009, p. 519). For example, a key component of insightfulness is the degree to which parents demonstrate acceptance of their child’s strengths and challenges, which necessitates accepting and moving beyond the child’s diagnosis.
In their research, Oppenheim and colleagues evaluated parental resolution using the Reaction to Diagnosis Interview (Pianta & Marvin, 1993), which defines resolution of diagnosis as the degree to which parents of a child with a diagnosis of a disability or other condition are able to 1) integrate information, experiences, and emotions surrounding the diagnosis within their existing schemas of themselves in the parenting role, their child, and the parent-child relationship; and 2) move forward with accepting the diagnosis, addressing their child's needs, and actively planning for the future.

Taken together, we are gradually understanding parental insightfulness and resolution of diagnosis to be potentially important factors to consider in relation to important intervention programs and services among parents of children with ASD. However, there are a number of remaining gaps in the literature in this area that impede researchers’ and clinicians’ capacity to apply this information towards developing, evaluating, and implementing strategies that bolster intervention and treatment outcomes for this population. These gaps include a lack of understanding regarding the extent to which parental insightfulness and resolution of diagnosis are associated with the constellation of other parental cognitions and emotions, child characteristics, and family demographics.

**Associations among insightfulness, resolution, and other parental cognitions and emotions**

Previous research with both parents of typically-developing children and children with ASD has established links among a range of specific parental cognitions and emotions, including stress, perceived social support, and self-efficacy (Boyd, 2002; Benson, 2006; Dunn, Burbine, Bowers, Tantleff-Dunn, 2001; Montes & Halterman, 2007; Weiss et al., 2013). However, there is currently no research that comprehensively explores how insightfulness and resolution of
diagnosis are associated with the wide constellation of other parental cognitions and emotions.

In addition, there is a well-established body of literature that has identified psychosocial characteristics of parents of children with ASD to be distinct from parents of children with other disabilities and parents of typically developing children (e.g., higher levels of stress [Baker-Ericzn, Brookman-Frazee, & Stahmer, 2005; Lai, Goh, Oei, & Sung, 2015; Pastor-Cerezuela, Fernández-Andrés, Tárraga-Mínguez, & Navarro-Peña, 2015; Valicenti-McDermott et al., 2015] and greater need for social support [Boyd, 2002; Benson, 2006; Dunn, Burbine, Bowers, Tantleff-Dunn, 2001; Montes & Halterman, 2007]).

Parental cognitions and emotions among parents of children with ASD are also distinct due to the specific challenges of receiving a diagnosis of ASD, as opposed to a diagnosis of another disability. For example, parents of children with ASD first notice a developmental problem before their child’s first birthday, yet the average age of diagnosis is four-years-old (Baio, 2014; Kozlowski, Matson, Horovitz, Worley, & Neal, 2011). This contrasts with the diagnostic process for other developmental disorders (e.g., cerebral palsy). Specifically, the Centers for Disease Control (CDC) cites that among children with cerebral palsy, movement issues are generally observed at 9 months, and most movement delays can be identified by 30 months. Generally speaking, parents of children with ASD are notably dissatisfied with the diagnostic process, and their experiences with receiving a diagnosis are influenced by a myriad of factors, including the time taken to receive a diagnosis, satisfaction with the information provided at the diagnosis, the manner of the diagnosing professional, the stress associated with the diagnostic process, and satisfaction with post-diagnostic support (Crane, Chester, Goddard, Henry, & Hill, 2015). Thus, there is a particular need to understand the distinct relationships among parental cognitions and emotions in this population.
Associations among insightfulness, resolution, and child characteristics

An additional gap in the literature is the conflicting research on how parental insightfulness and resolution of diagnosis are associated with specific child characteristics. There is substantial discordance in the current body of literature as to whether insightfulness and resolution are contingent on specific characteristics of the child. For example, parental resolution has been found to be associated with children’s ASD symptom severity, suggesting that resolution status may depend on children’s characteristics (Poslawsky, Fabienne, Naber, Van Daalen, & Van Engeland, 2014). In addition, research with samples of mothers of children with ASD demonstrated that mothers’ insightfulness and resolution of diagnosis are linked to children’s secure attachment (Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2009).

Although these findings suggest that child characteristics are indeed linked with insightfulness and resolution, additional research provides conflicting information. Specifically, Oppenheim, Koren-Karie, Dolev, & Yirmiya (2012) subsequently found that maternal sensitivity mediates the association between insightfulness/resolution and child attachment among children with ASD and that upon controlling for maternal sensitivity, there were no significant associations between insightfulness/resolution and children’s attachment. In addition, research with foster caregivers that found that caregivers show similar patterns of insightfulness towards both easy and challenging children (Koren-Karie & Markman-Gefen, 2015), suggesting that insightfulness is not related to child level of functioning. Similarly, Milshtein, Yirmiya, Oppenheim, Koren-Karie, & Levi (2010) investigated parental resolution of diagnosis among mothers and fathers of children with ASD aged 2-17 years and found no association between resolution status and child characteristics (i.e., gender, chronological age, severity of symptoms, mental age, and daily living
skills). Rather, only parent characteristics were associated with resolution status. Specifically, compared to resolved mothers, unresolved mothers reported a higher perceived negative impact of the diagnosed child on the family’s social life and negative feelings about parenting and marriage. These findings may be interpreted as indicating that insightfulness and resolution are attributes of the parent rather than related to the child. Importantly, all of the available research in this area was conducted internationally, making it difficult to draw conclusions that generalize to families in the United States.

**Associations among insightfulness, resolution, and family demographics**

A final gap in the literature pertains to the contradictory research on the extent to which parental insightfulness and resolution of diagnosis are associated with family demographic variables. Existing research in this area presents contradictory findings. For example, Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso (2002) investigated a sample of Israeli infant-mother dyads with a wide range of educational attainment (i.e., 10 to 23 years) and identified no differences in maternal vocabulary or education by insightfulness classification. However, other studies have demonstrated that mothers classified as positively insightful have completed significantly more education and have higher income than those classified as non-insightful (Hawkins, Madigan, Moran, & Pederson, 2015; Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2009). Further, additional research with parents in the Netherlands found that parental reaction to diagnosis was associated with parent nationality (i.e., Dutch vs. Non-Dutch [e.g., Chinese, Colombian, Israeli, Irish, French]), suggesting that resolution status may not only be contingent on parental factors, but also on broader cultural and systemic factors (Poslawsky, Fabienne, Naber, Van Daalen, & Van Engeland, 2014).
Overview of the current study

The current study investigates a sample of 70 families of children with ASD originally recruited for participation in a 12-week randomized clinical trial of a responsiveness-based parent-mediated intervention that aimed to increase parental responsiveness and child communication (Focused Playtime Intervention [FPI]). FPI is a parent education program that involves 12 in-home training sessions (one session per week for 12 weeks, 90 minutes per session) and follows a standardized intervention manual. The intervention manual and a corresponding illustrated workbook for parents are available as an online resource to Siller, Hutman, & Sigman (2013). Several previous publications have emerged from research with this sample (Siller, Hutman, & Sigman, 2013; Siller, Reyes, Hotez, Hutman, & Sigman, 2013; Siller, Swanson, et al., 2014).

The current study aims to identify baseline associations between maternal insightfulness and resolution of diagnosis and 1) other parental cognitions and emotions (e.g., stress, concepts of development, sense of competence, and perceived social support); 2) child characteristics (e.g., chronological age, language age, nonverbal mental age, autistic symptoms, and time since diagnosis); and 3) family demographic characteristics (e.g., maternal age, maternal education, maternal employment, minority status, household income, and home ownership) prior to participation in FPI. One sub-goal of this research is to develop continuous composite scores to represent individual differences in the parents’ responses during the IA and RDI. To date, both measures have exclusively been used to derive categorical classifications, which limits the utility of the measures when evaluating change in parental responses over time (e.g., as outcomes in intervention studies). Generally speaking, the present research study will provide key contextual information on how parental insightfulness and resolution of diagnosis are both related to one
another and most effectively conceptualized in the context of the broader body of literature on parental cognitions and emotions, child characteristics, and family demographics. This information can be used to more effectively understand the utility of parental cognitions and emotions in the context of family-centered intervention programs and services.

**Methods**

**Overview**

Families participated in three baseline assessment sessions. Assessments included a standardized test of children’s nonverbal cognitive and language abilities, two autism diagnostic measures, a family demographic questionnaire, several questionnaires evaluating parent cognitions and emotions, and administration of the Insightfulness Assessment and the Reaction to Diagnosis Interview.

**Participants**

The current study involved 70 parents of children with ASD (chronological age: $M = 57.13$ months; $SD = 12.30$; male: $n = 64$) who participated in a randomized clinical trial of FPI (experimental group: $n = 36$; control group: $n = 34$). Families were eligible to participate if (1) the child was six years or younger when entering the study; (2) the child had previously been diagnosed with ASD; and (3) the child showed limited or no use of spoken language (generally fewer than 25 words and no phrases based on parent report). Descriptive information on child characteristics and non-project services are presented in Table 1.1.

All children met diagnostic criteria for Autistic Disorder on the Autism Diagnostic Interview-Revised (ADI-R [Lord, Rutter, & Le Couteur, 1994]) and 64 children also met diagnostic criteria for Autistic Disorder on the Autism Diagnostic Observation Schedule-Generic
(ADOS-G [Lord et al., 2000]). Of the remaining six children, five met criteria for ASD on the ADOS and one child was not administered the ADOS.

Overall, the sample effectively approximated the diversity of the local community as reported in the U.S. Census, with the exception that mothers with low educational attainment (i.e., mothers who did not complete high-school) were underrepresented. Demographic information for the sample and census data are presented in Table 1.2.

Table 1.1
Descriptive information on baseline child characteristics and participation in non-project services

<table>
<thead>
<tr>
<th>Child characteristics and services</th>
<th>M ± SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child age (months)</td>
<td>57.13 ± 12.30</td>
<td>(32, 82)</td>
</tr>
<tr>
<td>Time since diagnosis (months)</td>
<td>26.59 ± 12.75</td>
<td>(6, 60)</td>
</tr>
<tr>
<td>Mullen Scales of Early Learning</td>
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<tr>
<td>Receptive Language Age (in months)</td>
<td>16.99 ± 7.9</td>
<td>(1, 36)</td>
</tr>
<tr>
<td>Expressive Language Age (in months)</td>
<td>15.87 ± 9.00</td>
<td>(4, 37)</td>
</tr>
<tr>
<td>Autism Diagnostic Observation Schedule</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Affect Total</td>
<td>14.71 ± 3.29</td>
<td>(4, 20)</td>
</tr>
<tr>
<td>Restricted &amp; Repetitive Behavior</td>
<td>5.06 ± 2.06</td>
<td>(0, 8)</td>
</tr>
<tr>
<td>Total</td>
<td>19.77 ± 4.11</td>
<td>(7, 26)</td>
</tr>
<tr>
<td>Non-Project Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASD Individual Services</td>
<td>2.16 ± 2.18</td>
<td>(0, 9.52)</td>
</tr>
<tr>
<td>School Programs</td>
<td>12.04 ± 6.82</td>
<td>(0, 28.75)</td>
</tr>
</tbody>
</table>

1 Represents average hours/week of services during 12 month period prior to the baseline assessments.
Table 1.2.

*Demographic information for study participants*

<table>
<thead>
<tr>
<th>Demographic information</th>
<th>Frequency (Percent)</th>
<th>Census Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Educational Attainment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-11th Grade</td>
<td>1 (1.4%)</td>
<td>29.2%</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>9 (12.8%)</td>
<td>17.6%</td>
</tr>
<tr>
<td>Partial College</td>
<td>26 (37.1%)</td>
<td>28.1%</td>
</tr>
<tr>
<td>Standard College Graduate</td>
<td>18 (25.7%)</td>
<td>17.9%</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>16 (22.8%)</td>
<td>7.2%</td>
</tr>
<tr>
<td>Maternal Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No work outside the home</td>
<td>36 (51%)</td>
<td></td>
</tr>
<tr>
<td>Part time</td>
<td>16 (25.7%)</td>
<td></td>
</tr>
<tr>
<td>Full time</td>
<td>18 (26%)</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>13 (19%)</td>
<td>13.5%</td>
</tr>
<tr>
<td>Black</td>
<td>5 (7%)</td>
<td>8.3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>31 (44%)</td>
<td>47.7%</td>
</tr>
<tr>
<td>White</td>
<td>14 (20%)</td>
<td>27.8%</td>
</tr>
<tr>
<td>Mixed</td>
<td>7 (10%)</td>
<td>2.7%</td>
</tr>
<tr>
<td>Annual Household Income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below $19,000</td>
<td>8 (11%)</td>
<td>19.8%</td>
</tr>
<tr>
<td>$20,000 to $39,999</td>
<td>13 (19%)</td>
<td>23.6%</td>
</tr>
<tr>
<td>$40,000 to $74,999</td>
<td>17 (24%)</td>
<td>28.1%</td>
</tr>
<tr>
<td>Above $74,999</td>
<td>32 (46%)</td>
<td>28.5%</td>
</tr>
<tr>
<td>Mother Born in U.S.</td>
<td>36 (51%)</td>
<td></td>
</tr>
<tr>
<td>Birthfather living with family</td>
<td>60 (85.7%)</td>
<td></td>
</tr>
<tr>
<td>Child has siblings (y/n)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>49 (70%)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* U.S. Census Data for Los Angeles County at the time of the study were presented when available.
Measures

Assessment of child characteristics. The current study included several assessments of child characteristics.

Mullen Scales of Early Learning (MSEL, Mullen, 1995). Children were administered the Mullen Scales of Early Learning (MSEL, Mullen, 1995). The MSEL includes four subscales measuring nonverbal cognitive (Visual Reception and Fine Motor Subscales) and language (Receptive and Expressive Language Subscales) abilities. The data analysis includes average age equivalent scores for children’s nonverbal cognitive and language abilities, computed by dividing children’s age equivalent scores by their chronological ages, as well as children’s chronological age.

Autism Diagnostic Observation Schedule (ADOS). The ADOS (Lord et al., 2000) was administered to all the children to evaluate current autism symptomatology and to confirm their ASD diagnosis. A raw total score, rather than a standardized severity score, was used for the current analyses based on the fact that all children completed Module 1 on the ADOS except for two children who completed Module 2. Findings reported in this paper yielded the same results when these two children were excluded from the analyses, suggesting that the use of raw scores is appropriate.

Time since diagnosis. Children’s age of diagnosis (in months) was obtained from mothers’ responses on the Reaction to Diagnosis Interview (described in detail below). Two independent coders extracted this information from the videotaped interviews and obtained inter-rater agreement on a sample of 15% of the interviews ($n = 11$; $ICC = .99$). In order to obtain the time since diagnosis, children’s age of diagnosis was subtracted from children’s chronological age at baseline.
**Family demographics questionnaire.** Parents were asked to complete a demographic questionnaire that included questions about the child’s race and ethnicity, family constellation (i.e. maternal age, whether or not the child had siblings), and various indicators of the families’ socioeconomic status (i.e. annual household income, home ownership, and the parents’ educational attainment).

**Assessment of parental cognitions and emotions.** Parents were asked to complete four questionnaires assessing parental cognitions and emotions.

**Questionnaire of Resources & Stress (QRS [Konstantareas, Homatidis, & Plowright, 1992]).** The QRS is a parent self-report questionnaire that measures a wide range of parental stressors as well as perceptions of available resources to manage stress. The current study utilized the 78-item, 9-scale Clarke modification of the QRS, which is an adaptation from the 285-item, 15-scale version of the QRS (Holroyd, 1974). In order to develop the Clarke modification, 87 items were chosen from the original measure for their potential relevance to families with children with disabilities. Subsequently, items that focused primarily on physical handicaps or impending death were excluded.

The following subscales and corresponding example items comprise the Clarke Modification: 1) Time Demands (e.g., [Child] demands that others do things for him/her more than is necessary); 2) Community Reaction (e.g., Even if people don’t look at [Child], I am always wondering what they might think; 3) Child Characteristics (e.g., I watch to make sure [Child] does not do physical harm to himself/herself or others); 4) Family Sharing (e.g., Members of the family share in the care of [Child]); 5) Presenting Symptoms (e.g., [Child] does not have problems with seeing or hearing); 6) Sacrifice (e.g., I have had to give up on education [or a job] because of [Child]); 7) Support (e.g., The special opportunities needed by [Child] are available in our
community); 8) Family Enrichment (e.g., Other members of the family have to do without things because of [Child]); and 9) Existential issues (e.g., I feel sad when I think of [Child]). The Clarke modification has been validated with samples of parents of children with ASD and determined to have an average internal consistency value of .68 (Konstantareas, Homatidis, & Plowright, 1992).

**Concepts of Development Questionnaire (CODQ [Sameroff & Feil, 1985]).** The CODQ is a 20-item self-report parent questionnaire that measures the complexity of the parent’s view of child development (e.g., the degree to which the parent interprets the child’s behavior from a contextual and age-appropriate perspective). The CODQ consists of 10 statements that demonstrate less complex (i.e., categorical) beliefs of child development (e.g., simple and one-dimensional understanding of children and their behaviors). Examples of categorical statements include, “Parents must keep to their standards and rules no matter what their child is like.” The CODQ also consists of 10 statements that demonstrate more complex (i.e., perspectivistic) beliefs about child development (e.g., flexible and multidimensional understanding of children and their behaviors). Examples of perspectivistic statements include, “Parents change in response to their children.” Each item is scored using 4-point Likert scales (strongly disagree to strongly agree). The current measure of the CODQ is the composite of both sets of statements, with the categorical statements reverse-coded so that higher values are considered to represent a greater degree of perspectivistic thinking. Previous research has identified that the internal consistency for the CODQ is in the range of .60 to .70 among mothers of young children (Winstanley et al., 2014).

**Parenting Sense of Competence Scale (PSOC [Johnston and Mash, 1989]).** The PSOC is a 16-item self-report parent questionnaire that measures parental competence on two dimensions (i.e., parenting satisfaction and self-efficacy). The PSOC was adapted from a questionnaire that originally aimed to assess parenting self-esteem (Gibaud-Wallston & Wandersman, 1978). Each
item is measured on a 6-point Likert scale (strongly agree to strongly disagree), with nine questions assessing satisfaction and seven questions assessing efficacy. Items assessing parenting satisfaction include, “Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age” and “My talents and interests are in other areas, not being a parent.” Items assessing efficacy include, “The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired” and “I would make a fine model for a new mother/father to follow in order to learn what she/he would need to know in order to be a good parent.” Both PSOC dimensions have demonstrated good internal inconsistency on a normative community sample of parents of children aged four to nine (alpha = .75 - .76 [Johnston & Mash, 1989]).

Perceived Social Support from Family Scale (PSS-FA [Procidano & Heller, 1983]). The PSS-FA assesses the extent to which individuals believe their family will be available and willing to assist them during a difficult time. The PSS-FA is a 20-item scale that consists of declarative statements to which an individual answers “yes” or “no” or “don’t know.” Examples of items include, “My family gives me the moral support I need” and “Members of my family share many of my interests.” The internal consistency of the PSS-FA has been shown to be .90.

Parents were also asked to complete the Insightfulness Assessment and the Reaction to Diagnosis Interview (described in detail below).

The Insightfulness Assessment.

Administration. The Insightfulness Assessment (IA [Oppenheim & Koren-Karie, 2002]) is a semi-structured interview that asks parents to discuss three previously recorded video vignettes of parent-child interactions. The video footage was obtained at the laboratory assessment session and the interview was conducted during the home visit by an interviewer blind to treatment
condition. Parents were shown the first two minutes of three interactions, always in the same order: (1) parent and child engaging in free play without toys; (2) parent and child playing with a standard set of toys; and (3) parent and child cleaning up the play area. After each video clip, parents were asked what the child was thinking and feeling during the preceding interaction; whether the behavior was typical of the child; and whether the clip elicited any parental emotions (e.g., surprise, concern, happiness). Following the vignettes, parents were asked general questions about characteristics of the child and the relationship with the child.

**Coding.** The IA is coded from verbatim interview transcripts. IA transcripts are scored on 10 nine-point rating scales, including insight into the child’s motives; flexibility of thought; complexity in describing the child; maintenance of focus on the child throughout their narrative; richness of description of the child; acceptance of the child’s strengths and challenges; hostility towards the child; concern about the child; degree of separateness from the child; and coherence of thought.

Profiles of scores on the ten scales indicate one of three primary classifications for each interview. Interviews are classified as *positively insightful* (high levels of insight, flexibility, complexity, richness, acceptance, coherence, and focus; low levels of hostility and concern), *one-sided* (low levels of insight, flexibility, complexity, richness, acceptance, coherence, and focus; high levels of hostility and concern) or *disengaged* (low levels of insight, flexibility, complexity, richness, acceptance, coherence, concern, and hostility; high levels of focus). The latter two categories are considered *non-insightful*. In addition to these categorical classifications, a composite subscale score was obtained from the subscales by averaging two sets of subscales that were highly correlated.
**Developing subscale composites.** To explore shared variance among the ten subscales, we conducted a Principal Components Analysis. Results suggest a two-component solution (the Eigenvalues for the 1\(^{st}\), 2\(^{nd}\), and 3\(^{rd}\) component were 5.3, 2.3, and 0.8, respectively). Factor loadings for the two-component solution are reported in Table 1.3. The first component accounted for 53% of the overall variance, and included high factor loadings (\(>.30\)) on six subscales (insight, flexibility, complexity, richness, acceptance, and coherence). The second component accounted for 23% of the overall variance, and included factor loadings (\(>.30\)) on four subscales (hostility, separateness, concern, and focus).

Based on the results of this Principal Component Analysis, we computed two composite scores. The first composite was computed as the average of the insight, flexibility, complexity, richness, acceptance, and coherence subscales (Cronbach’s alpha = 0.97), with higher scores corresponding to a greater degree of insightfulness. Based on the fact that this composite appears to represent the key capacities of insightfulness (i.e., the extent to which mothers are able to discuss their child’s thoughts, feelings, and emotions in a multi-dimensional, opening, and warm manner), this composite was named the *positive insight* composite. The second composite was computed as the average of the hostility, separateness, concern, and focus subscales (Cronbach’s alpha = 0.76). Based on the fact that the second composite appears to represent the degree to which mothers are able to remain focused on the child throughout the narrative without exhibiting overwhelming worry or anger, this composite was named the *focus on the child* composite. Low scores on the *focus on the child* composite indicate that the mother demonstrated marked difficulties in focusing the narrative on the child, which may have been the result of a high degree of concern or hostility or challenges in describing the child’s thoughts and emotions as separate from her own.
Table 1.3.

Factor loadings from Principal Components Analysis for parental insightfulness subscales

<table>
<thead>
<tr>
<th></th>
<th>Factor 1: Positive insight</th>
<th>Factor 2: Focus on the Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insight</td>
<td>.40</td>
<td>-.12</td>
</tr>
<tr>
<td>Complexity</td>
<td>.41</td>
<td>-.05</td>
</tr>
<tr>
<td>Acceptance</td>
<td>.41</td>
<td>.01</td>
</tr>
<tr>
<td>Flexibility</td>
<td>.38</td>
<td>-.04</td>
</tr>
<tr>
<td>Richness</td>
<td>.38</td>
<td>-.20</td>
</tr>
<tr>
<td>Coherence</td>
<td>.40</td>
<td>-.09</td>
</tr>
<tr>
<td>Focus</td>
<td>.08</td>
<td>.54</td>
</tr>
<tr>
<td>Separateness</td>
<td>.15</td>
<td>.51</td>
</tr>
<tr>
<td>Concern</td>
<td>.08</td>
<td>.54</td>
</tr>
<tr>
<td>Hostility</td>
<td>.10</td>
<td>.31</td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>5.26</td>
<td>2.29</td>
</tr>
<tr>
<td>% of Total Variance</td>
<td>.53</td>
<td>.23</td>
</tr>
</tbody>
</table>

**Reliability.** The process for obtaining inter-observer agreement on the IA was threefold. Specifically, we obtained an intra-class correlation coefficient (ICC) at three levels. First, two coders were certified reliable by the developers of this measure on the subscales and categorical classifications (i.e., based on 25 transcripts from mixed samples at least 80% of the each of the coder’s classifications were the same as those assigned by the developer and subscale intraclass correlation coefficients for scores between coders and the developer were greater than .6). Second, the two coders established reliability with the developers of this measure based on 15 selected transcripts (parents of children with ASD) collected in our own lab (*positive insight* composite: \( ICC \text{ range} = 0.82-0.84; \) focus on the child composite: \( ICC \text{ range} = 0.76-0.77; \) kappa = 0.72), demonstrating substantial to perfect agreement (McHugh, 2012). Third, the two coders established reliability based on a random sample of 27 transcripts from the current study (*positive insight* composite: \( ICC = .66; \) focus on the child composite: \( ICC = .67; \) kappa = 0.60), demonstrating moderate agreement (McHugh, 2012).
**Reaction to Diagnosis Interview.** The Reaction to Diagnosis Interview (RDI [Pianta & Marvin, 1993]) is a semi-structured, standardized interview conducted with the parent that takes approximately 15 minutes to administer. It consists of five questions that are meant to elicit an individual’s thoughts and emotions regarding the self and the child in relation to the child’s condition. The questions specifically ask the parent about the time they began noticing anomalies in their child’s development (“when did you first realize that your child had a problem?”); how they felt at the time of this realization; and how these feelings have changed over time, if at all. Parents are also asked in more detail about the day they received the diagnosis (“Tell me exactly what happened when you learned of your child’s diagnosis) in addition to their thoughts about why they have a child with special needs. The responses to these questions ultimately determine the parent’s final dichotomous classification of *resolved* or *unresolved*.

To better conceptualize a parent’s resolution classification, this study used the Wachtel & Carter (2008) coding adaptation to the Pianta and Marvin (1993) original classification system. This version groups a parent’s responses into nine distinct dimensions that reflect the content of the interview questions. The dimensions are: 1) cognitive distortions vs. realistic; 2) search for reasons or self-blame about cause/treatment decisions vs. suspending search for reasons; 3) stuck in the past vs. oriented to the present; 4) confusion/disorganization vs. clarity/organization; 5) cut off from the experience vs. in touch with the experience; 6) denial about impact on self vs. realistic about impact on self; 7) feelings stay the same vs. recognition of change in feelings; 8) not moving on in planning for child vs. moving on; and 9) feeling depressed, preoccupied, or overwhelmed by managing the child’s disability vs. feeling able to handle the situation. Each dimension is rated on a five-point Likert scale, with five being the most resolved and one being the least resolved.
The scores for each subscale help organize the characteristics of a resolved/unresolved status and allow coders to make a more informed decision regarding classification. The nine subscales were averaged together to create a composite (Cronbach’s alpha = .85).

Agreement between two coders’ scores was determined on a sample of 28 interviews (20%). To determine agreement on the subscales, an ICC was calculated between the subscale averages of two coders ($ICC = 0.98$). To determine agreement on the resolution classification, kappa coefficients were calculated ($kappa = 1.0$). Reliability coefficients revealed perfect agreement (McHugh, 2012).

Analytic Approach

The current study involved two sets of data analyses. The first set of analyses was preliminary and included 1) descriptive analyses on the classifications and continuous subscale composite measures for the IA and RDI; 2) analyses testing associations between the IA and RDI; and 3) correlational analyses evaluating relationships among parental cognitions and emotions. The second set of data analyses included a series of multiple regression analyses to evaluate our primary research questions concerning the relations between the IA/RDI composite scores and 1) a range of other parental cognitions and emotions; 2) child characteristics; and 3) family demographics.

Results

Preliminary Analyses

**Descriptive statistics.** Descriptive statistics were conducted to explore the distribution of the IA and RDI composites and classifications (reported in Table 1.4). Results from descriptive analyses identified the average positive insight score to be 4.31 ($SD = 1.58$) and the average focus
on the child score to be 6.99 (SD = 1.87). The average resolution composite score was 3.26 (SD = 0.77).

In regards to the IA classifications, analyses revealed 28 mothers (40%) were classified as positively insightful and 42 mothers (60%) were classified as non-insightful. Among the mothers classified as non-insightful, 20 were one-sided, 21 were disengaged and 1 was mixed. There were 44 (63.8%) mothers classified as unresolved and 25 (36.2%) mothers classified as resolved.

Cross-tabulations for the two RDI classifications and three IA classifications were also conducted (the single mixed mother was unresolved). As reported in Table 1.4, the highest proportion of mothers was both non-insightful and unresolved (38.2%). Of the 38.2%, 22% were both one-sided (n = 15) and unresolved and 16.2% were both disengaged and unresolved (n = 11). There was also a high proportion of mothers who demonstrated discordant profiles on the IA and RDI, with 22% scoring both non-insightful and resolved (n = 15) and 25% scoring both positively insightful and unresolved (n = 17). Only 14.7% of the sample was both positively insightful and resolved (n = 10).
Table 1.4.  
*Descriptive statistics for baseline parental insightfulness and resolution of diagnosis*

| Parental Insightfulness |  
|-------------------------|---|
| **Composites**| **M ± SD** |---|
| *Positive insight* | 4.31 ± 1.58 |---|
| *Focus on the Child* | 6.99 ± 1.87 |---|
| **Classifications** | **N (%)** |---|
| *Positively insightful* | 28 (40%) |---|
| *One-Sided* | 20 (29%) |---|
| *Disengaged* | 21 (30%) |---|
| *Mixed* | 1 (1%) |---|

| Parental Resolution of Diagnosis |  
|-------------------------|---|
| **Composites**| **M ± SD** |---|
| *RDI Composite* | 3.26 ± 0.77 |---|
| **Classifications** | **N (%)** |---|
| *Resolved* | 25 (36%) |---|
| *Unresolved* | 44 (64%) |---|

| IA-RDI classifications | **N (%)** |---|
|-------------------------|---|
| *Positively insightful-Resolved* | 10 (14.7%) |---|
| *Positively insightful-Unresolved* | 17 (25%) |---|
| *Non-insightful-Resolved* | 15 (22%) |---|
| *One-sided-Resolved* | 5 (7.4%) |---|
| *Disengaged-Resolved* | 10 (14.7%) |---|
| *Non-insightful-Unresolved* | 26 (38.2%) |---|
| *One-sided-Unresolved* | 15 (22%) |---|
| *Disengaged-Unresolved* | 11 (16.2%) |---|

**Inferential statistics testing for the IA and RDI.** One-way ANOVA analyses and independent sample t-tests were conducted to determine whether the subscale composites tested as part of this research significantly differentiated the IA and RDI composites. Findings from one-way ANOVA analyses analyzing the IA are displayed in Table 1.5 and a scatterplot displaying the IA composites is provided in Figure 1.1. As reported in Table 1.5, mothers who were classified as *positively insightful* had significantly higher *positive insight* composite scores ($M = 6.05$, $SD = .68$) and *focus*
on the child composite scores \((M = 7.35, SD = .71)\) than mothers who were classified as one-sided \((Positive\ insight: M = 3.49, SD = .71; \ Focus\ on\ the\ child: M = 5.60, SD = 1.00)\). Although mothers classified as insightful had significantly higher positive insight scores than mothers classified as disengaged \((M = 2.83, SD = .43)\), mothers classified as disengaged had higher focus on the child scores \((M = 7.88, SD = .51)\).

In regards to the RDI, findings from independent sample t-tests are displayed in Table 1.6. Mothers who were classified as resolved had significantly higher composite scores \((M = 4.06, SD = .39)\) than mothers classified as unresolved \((M = 2.81, SD = .54)\).

<table>
<thead>
<tr>
<th>PI (M (SD))</th>
<th>OS (M (SD))</th>
<th>DE (M (SD))</th>
<th>df</th>
<th>Mean square</th>
<th>(F) value</th>
<th>(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive insight</td>
<td>6.05 (.68)</td>
<td>3.49 (.71)</td>
<td>2.83 (.43)</td>
<td>68</td>
<td>71.85</td>
<td>182.95</td>
</tr>
<tr>
<td>Focus on the Child</td>
<td>7.35 (.71)</td>
<td>5.60 (1.00)</td>
<td>7.88 (.51)</td>
<td>68</td>
<td>29.56</td>
<td>51.91</td>
</tr>
</tbody>
</table>

\*\(p < .05\); \**\(p < .01\); \***\(p < .001\)

Note. One participant was Mixed \((Positive\ insight: M = 2.83; \ Focus\ on\ the\ child: M = 6.33)\).
Figure 1.1.
Scatterplot of baseline Insightfulness Assessment composite scores with regression line

Table 1.6.
Independent sample t-test for RDI composite by classification

<table>
<thead>
<tr>
<th></th>
<th>Resolved M (SD)</th>
<th>Unresolved M (SD)</th>
<th>t-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDI Composite</td>
<td>4.06 (.39)</td>
<td>2.81 (.54)</td>
<td>-10.08***</td>
</tr>
</tbody>
</table>

*p < .05; ** p < .01; *** p < .001
Concurrent correlations among parental cognitions and emotions. In order to begin investigating the extent to which insightfulness and resolution are situated in the broader context of parental cognitions and emotions, we conducted descriptive statistics (reported in Table 1.7) and correlational analyses (reported in Table 1.8). There were significant concurrent associations among the range of additional parental cognitions and emotions evaluated as part of this research. Specifically, maternal stress was significantly associated with perceived sense of competence \( (r = -0.61, p < .001) \), and perception of social support \( (r = -0.48, p < .001) \). Perceived sense of competence was also significantly associated with the perception of social support \( (r = 0.05, p < .001) \).

Table 1.7.

<table>
<thead>
<tr>
<th></th>
<th>( N )</th>
<th>Range</th>
<th>( M \pm SD )</th>
</tr>
</thead>
<tbody>
<tr>
<td>QRS</td>
<td>64</td>
<td>(1.77, 3.21)</td>
<td>2.44 ± 0.35</td>
</tr>
<tr>
<td>CODQ</td>
<td>65</td>
<td>(4.80, 6.90)</td>
<td>5.88 ± 0.49</td>
</tr>
<tr>
<td>PSS-FA</td>
<td>66</td>
<td>(0, 1)</td>
<td>0.68 ± 0.30</td>
</tr>
<tr>
<td>PSOC</td>
<td>64</td>
<td>(4.95, 11.78)</td>
<td>8.1 ± 1.52</td>
</tr>
</tbody>
</table>

Note. QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985); PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983).
### Table 1.8.

**Concurrent baseline correlations among parental cognitions and emotions**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Positive insight</strong></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Focus on the Child</td>
<td>.14</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. RDI</td>
<td>.14</td>
<td>.22</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. CODQ</td>
<td>.34**</td>
<td>-.24</td>
<td>.00</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. PSOC</td>
<td>.27*</td>
<td>.03</td>
<td>.32*</td>
<td>.21</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. PSS-FA</td>
<td>.20</td>
<td>.23</td>
<td>.40***</td>
<td>.18</td>
<td>.51***</td>
<td>-</td>
</tr>
<tr>
<td>7. QRS</td>
<td>-.29*</td>
<td>-.06</td>
<td>-.34**</td>
<td>-.08</td>
<td>-.61***</td>
<td>-.26</td>
</tr>
</tbody>
</table>

*p < .05; ** p < .01; *** p < .001

**Note.** QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985); PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983).

**Relation between the IA and RDI.** Relations between the IA and RDI were evaluated using correlation analyses for the composite scores and ANOVA and chi square analyses for the categorical classifications. Results revealed that there was no significant correlation between positive insight composite scores and the RDI composite, although there was an association approaching significance between the focus on the child composite and the RDI composite (r = .23, p = .06). Excluding the one mixed mother, ANOVA analyses revealed no significant differences in resolution classification by parental insightfulness classification (i.e., positively insightful, one-sided, and disengaged), F(2) = 1.12, p = .33. Further, chi square analyses revealed no significant difference in resolution classification by the dichotomous positively insightful/non-insightful classification, F(46) = .77, p = .39.
**Primary analyses**

To address our primary research questions, we specified a series of multiple regression models using SAS PROC REG. Each model included both IA composites and the RDI composite as independent variables. Primarily, models were run with main effects for each independent variable, as well as two- and three-way interaction effects among the independent variables. Due to the fact that none of the interaction terms was significant, the following results were obtained from main effects-only models. Estimates and standard errors derived from these analyses are presented in Table 1.9.

**Parental cognitions and emotions.** Regression analyses revealed that stress was significantly related to the positive insight composite, \( t (62) = -2.24, p = .03 \) and the RDI composite, \( t (62) = -2.84, p = .006 \) in that mothers with higher IA and RDI composite scores demonstrated lower levels of stress. Concepts of development was significantly associated with the positive insight composite, \( t (63) = 3.23, p = .002 \) and the focus on the child composite, \( t (63) = -2.67, p = .009 \) in that mothers who were more perspectivistic in their thinking about their children demonstrated higher levels of positive insight, but lower levels of focus on the child. Perceived sense of competence scores were significantly related to the positive insight composite, \( t (62) = 2.19, p = .03 \) and the RDI composite, \( t (62) = 2.67, p = .009 \) in that mothers with a higher degree of perceived sense of competence demonstrated higher levels of insightfulness and resolution with respect to their child’s diagnoses. Perception of social support was associated with the RDI composite, \( t (64) = 2.98, p = .004 \) in that mothers who reported a greater level of social support demonstrated a greater level of resolution for their child’s diagnoses.

**Child characteristics.** Regression analyses revealed that none of the investigated child characteristics were associated with the IA composites or the RDI composite.
**Family demographics.** Regression analyses revealed that none of the investigated family demographic characteristics were associated with the IA composites or the RDI composite. Logistic regression analyses were conducted for the categorical variables (maternal employment, minority status, and home-ownership). Log-transformed scores were used for household income.
Table 1.9.

Estimates and standard errors derived from multiple regression analyses of the Insightfulness Assessment and the Reaction to Diagnosis Interview on parental cognitions and emotions, child characteristics, and family demographics

<table>
<thead>
<tr>
<th></th>
<th>Intercept</th>
<th>Positive insight</th>
<th>Focus on the Child</th>
<th>RDI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parental cognitions/emotions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QRS</td>
<td>2.44 (.04)**</td>
<td>-.06 (.03)*</td>
<td>.03 (.04)</td>
<td>-.16 (.06)**</td>
</tr>
<tr>
<td>CODQ</td>
<td>5.88 (.06)**</td>
<td>.11 (.04)**</td>
<td>-.14 (.05)**</td>
<td>.04 (.08)</td>
</tr>
<tr>
<td>PSOC</td>
<td>8.10 (.18)**</td>
<td>.25 (.12)*</td>
<td>-.18 (.17)</td>
<td>.68 (.25)**</td>
</tr>
<tr>
<td>PSS-FA</td>
<td>.68 (.03)**</td>
<td>.03 (.02)</td>
<td>.03 (.03)</td>
<td>.14 (.05)**</td>
</tr>
<tr>
<td><strong>Child characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronological age</td>
<td>56.92 (1.46)**</td>
<td>.34 (.94)</td>
<td>2.41 (1.27)</td>
<td>.43 (1.95)</td>
</tr>
<tr>
<td>Language age</td>
<td>16.47 (.96)**</td>
<td>.10 (.62)</td>
<td>1.25 (.84)</td>
<td>-.31 (1.29)</td>
</tr>
<tr>
<td>Nonverbal mental age</td>
<td>27.05 (1.24)**</td>
<td>.17 (.80)</td>
<td>1.63 (1.09)</td>
<td>.31 (1.67)</td>
</tr>
<tr>
<td>Autism symptoms</td>
<td>19.81 (.51)**</td>
<td>-.13 (.33)</td>
<td>-.24 (.45)</td>
<td>.24 (.69)</td>
</tr>
<tr>
<td>Time since diagnosis</td>
<td>26.62 (1.55)**</td>
<td>.37 (1.00)</td>
<td>1.60 (1.36)</td>
<td>1.07 (2.08)</td>
</tr>
<tr>
<td><strong>Family constellation/demographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal age</td>
<td>36.06 (.68)**</td>
<td>.54 (.44)</td>
<td>-.61 (.59)</td>
<td>-.34 (.91)</td>
</tr>
<tr>
<td>Maternal education</td>
<td>15.39 (.31)**</td>
<td>.19 (.20)</td>
<td>-.12 (.27)</td>
<td>.36 (.42)</td>
</tr>
<tr>
<td>Minority status¹</td>
<td>-.09 (.24)</td>
<td>-.09 (.16)</td>
<td>-.01 (.21)</td>
<td>.41 (.33)</td>
</tr>
<tr>
<td>Home ownership¹</td>
<td>.59 (.26)*</td>
<td>.25 (.17)</td>
<td>-.16 (.22)</td>
<td>.18 (.35)</td>
</tr>
<tr>
<td>Child has siblings (y/n)¹</td>
<td>-.87 (.27)**</td>
<td>.22 (.18)</td>
<td>-.33 (.24)</td>
<td>.24 (.35)</td>
</tr>
<tr>
<td>Household income²</td>
<td>16.14 (.11)**</td>
<td>.10 (.07)</td>
<td>.01 (.09)</td>
<td>.13 (.14)</td>
</tr>
</tbody>
</table>

¹ Logistic regression; ² Log-transformed scores

*p < .05; ** p < .01; *** p < .001

Note. None of the interaction terms was statistically significant. QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985); PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983).
Discussion

There has been an increasing body of research that demonstrates that parental cognitions and emotions are related to the extent to which parents of children with ASD are actively involved in, and demonstrate capacity in, meeting their child’s physical, emotional, and cognitive needs in the context of intervention programs or services related to their child’s development. In light of these findings, there is an increased need to more effectively understand parental cognitions and emotions in the context of family-centered intervention programs and services.

The objective of this study was to evaluate two narrative measures of parental cognitions and emotions: the Insightfulness Assessment (IA [Oppenheim & Koren-Karie, 2002]) and the adapted version of the Reaction to Diagnosis Interview (RDI [Pianta & Marvin, 1993; Wachtel & Carter, 2008]) in order to identify concurrent relationships among parental cognitions and emotions, child characteristics, and family demographics among 70 families of children with ASD.

This study had three major substantive findings. First, mothers who demonstrated higher levels of insightfulness demonstrated lower levels of stress and higher levels of perceived sense of competence, and understanding of child development. Second, mothers who demonstrated higher levels of resolution in regards to their child’s diagnosis demonstrated lower levels of stress and higher levels of perceived sense of competence and perceived social support. Finally, child characteristics and family demographics were unrelated to either parental insightfulness or resolution of diagnosis.

In addition to these three major findings, the current study also employed a novel way of conceptualizing the IA and RDI as continuous variables. This facet of the study effectively positions parenting researchers to evaluate the extent to which parents change over time in their responses on these measures at a greater level of detail and nuance than previously available with
an exclusive focus on categorical classifications. This line of research is of particular clinical significance due to the recent influx of parent-mediated interventions that target parental cognitions and emotions and, in turn, evaluate change over time (Estes et al., 2013; Stahmer & Pellecchia, 2015; Welterlin, 2009).

**Validation of continuous measures of the IA and RDI**

Previous research based on the IA and the RDI exclusively utilized the categorical classifications to capture individual differences between parents. Results from the current research show that both measures’ subscales can be coded with acceptable inter-observer reliability and used to derive composite scores with good internal consistency. This is important because the use of robust continuous variables positions researchers to describe between- and within-person variability at a greater level of detail than previously available with an exclusive focus on the continuous subscales.

In the context of analyses on the IA, it appears that the *positive insight* and *focus on the child* composites represent different dimensions of parental insightfulness. Based on the distribution of the subscales within the two composites, it also appears that *positive insight* represents the key capacities of insightfulness (i.e., the degree to which parents are insightful regarding their child’s thoughts, motives, and emotions), whereas the *focus on the child composite* represents a checklist of factors that are required for parents to demonstrate the key capacities of insightfulness. Specifically, given that both *disengaged* and *one-sided* participants are both characterized by low levels of the *positive insight* composite, the *focus on the child composite* serves as an effective marker of the particular type of *non-insightful* categorization of parents’ narratives. For example, if a mother is flooded with concern and hostility, she may present
challenges with demonstrating insightfulness, complexity, and acceptance in her narratives about her child.

**Associations between insightfulness and resolution**

In the context of evaluating the extent to which maternal insightfulness and resolution of diagnosis are embedded in the constellation of other parenting constructs, this research initially sought to investigate relationships between insightfulness and resolution. Findings revealed no significant associations between insightfulness and resolution of diagnosis.

The finding that insightfulness and resolution are not related is inconsistent with results reported by Oppenheim et al. (2012) with a sample of Israeli parents of young children with ASD. Specifically, Oppenheim et al. (2012) not only posits that resolution is a key component of insightfulness, but also empirically identified only a small subset of parents who were both insightful and unresolved (i.e., 7 out of 45 participants, 16%) or non-insightful and resolved (i.e., 3 out of 45 participants, 7%). Findings from the current study demonstrated both a lack of association between insightfulness and resolution, and a high proportion of parents who were both insightful and unresolved (i.e., 17 out of 70, participants 25%) or non-insightful and resolved (i.e., 15 out of 70 participants, 22%). Therefore, our research offers a contrasting viewpoint to that of previous research, namely that mothers may have the capacity to move beyond and accept their child’s diagnosis without the demonstrated ability to interpret their child’s thoughts and feelings in the context of their observations of their child, and vice versa. Indeed, our methodological and experiential knowledge of administering, coding, and interpreting the IA and RDI suggests that it is theoretically plausible that mothers would demonstrate discrepant profiles on these measures.
For example, in regards to mothers who scored insightful and unresolved, it is conceivable that unresolved mothers do not show acceptance regarding their child’s diagnosis and may, in turn, conceptualize their child’s diagnosis as separate from their child’s other characteristics (e.g., thoughts, feelings, and personality characteristics). Thus, due to the fact that the topic of their child’s ASD diagnosis may not specifically arise in the context of the IA, it is conceivable that mothers may show insight, acceptance and complexity in discussing their child on the IA but subsequently demonstrate marked difficulties when asked specifically about their child’s ASD diagnosis and the process of obtaining the diagnosis on the RDI.

In regards to mothers who score non-insightful and resolved, it is conceivable that mothers who have accepted and come to terms with their child’s diagnosis are still challenged by the reflective nature of the tasks presented in the IA. For example, a mother may have accepted the child’s diagnosis, but her descriptions of the child in play interactions primarily focus on her child’s characteristics in relation to the diagnosis and do not demonstrate a multi-faceted perspective on the child. Generally speaking, it may also be difficult for certain parents to interpret and articulate their child’s thoughts and feelings based on numerous factors not accounted for in the current study, including social or cultural factors or family dynamics. Taken together, it is possible that the IA and RDI assess distinct dimensions of parental psychosocial functioning.

It is also possible that discrepancies between previous findings and our current findings are due to methodological differences between the two studies, including the sociocultural context of the research (e.g., country in which the research was administered and family demographics of the participants) and child characteristics (e.g., duration of time since receiving the diagnosis and ASD symptoms), both of which were moderately different between the two studies and may have impacted the findings in a myriad of ways. For example, all families in the Oppenheim et al.
(2012) study were Israeli and spoke fluent Hebrew and our sample was distinctly diverse in regards to race and ethnicity and located in the Los Angeles area. In addition, children in the Oppenheim et al. (2012) study included children who were relatively higher functioning (18% completed a Module 2 on the ADOS, whereas only 3% of our sample completed a Module 2). Finally, our study included families for whom the time since diagnosis was up to five years, whereas the Oppenheim et al. (2012) study included families for whom the time since diagnosis was up to approximately three years. The available body of research does not allow us to fully understand the extent to which these differences may have yielded discrepant results. Thus, further research with additional samples is necessary to more conclusively determine whether resolution is a prerequisite to insightfulness, or vice versa, or whether the two constructs speak to distinct dimensions of parental psychosocial functioning that are not mutually exclusive.

**Correlation analyses among parental cognitions and emotions**

Prior to evaluating the role of the IA and RDI in relation to other parental cognitions and emotions, relationships among the additional four parental cognitions and emotions were evaluated using concurrent correlation analysis. As anticipated, there were linkages among the range of parental cognitions and emotions investigated as part of this research (i.e., stress, perceived social support, perceived sense of competence, and concepts of development). Specifically, mothers who identified higher levels of stress also demonstrated significantly lower perceived social support and sense of competence. Mothers who identified a higher level of sense of competence also demonstrated higher perceived social support.

These findings are consistent with previous research that has linked social support to stress and self-efficacy among parents of both typically developing children and children with ASD.
(Boyd, 2002; Benson, 2006; Dunn, Burbine, Bowers, Tantleff-Dunn, 2001; Montes & Halterman, 2007; Weiss et al., 2013). More broadly, these findings support that maternal psychosocial function is multi-dimensional and complex, suggesting that measuring a single psychosocial construct likely omits concurrent information regarding others.

**Insightfulness and resolution in the context of other parental cognitions and emotions**

Multiple regression analyses were employed to evaluate parental insightfulness and resolution in relation to a range of other parental cognitions and emotions. Parental narratives on the IA and RDI were associated with scores on several questionnaire-based measures of parental cognitions and emotions.

First, mothers who reported lower levels of stress had higher positive insight composite scores and higher RDI composite scores than mothers who reported higher levels of stress. These findings are consistent with previous findings with mothers of typically developing children that demonstrated that mothers who scored higher on a reflective functioning measure (i.e., mind-mindedness) reported lower parenting stress (McMahon & Meins, 2012), as well as research with samples of children with disabilities which has identified links between maternal resolution status to maternal stress levels (Sheeran, Marvin, & Pianta, 1996).

Parental stress is a particularly salient variable to investigate in samples of families with children with ASD for two specific reasons. First, research consistently finds parents of children with ASD have higher levels of stress than parents of typically developing children and children with other disabilities (Lai, Goh, Oei, & Sung, 2015; Pastor-Cerezuela, Fernández-Andrés, Tárraga-Mínguez, & Navarro-Peña, 2015; Valicenti-McDermott et al., 2015). Second, previous
research has found that high levels of parenting stress counteract the effectiveness of early intervention for children with ASD (Osborne, McHugh, Saunders, & Reed, 2008).

The current research adds to the existing body of literature on parents of children with ASD by suggesting that parental stress impedes parents’ ability to understand motives behind their child’s behavior, come to terms with their child’s diagnosis, and move forward in caring for their child. Due to the fact that the analytic techniques employed in the current study cannot determine directionality, it is also possible that mothers’ capacity to demonstrate insightfulness may effectively serve as a protective factor for experiencing high levels of stress. Generally speaking, due to its association with perceived social support, sense of competence, as well as its relations with the IA and RDI, stress appears to be a critical indicator of overall maternal psychosocial well-being. This broad interpretation of the current results may partially explain the finding that stress serves as a barrier to the efficacy of early intervention programs for children with ASD (Osborne, McHugh, Saunders, & Reed, 2008). Further analysis with the QRS subscales is necessary to determine the specific sources of stress that may be the most influential among mothers of children with ASD. In addition, longitudinal research applying more advanced statistical methods will be necessary to understand how the role of stress unfolds over time in response to insightfulness, resolution of diagnosis and other parental cognitions and emotions. These analyses would more conclusively determine the directionality of the current findings.

Second, mothers who reported a greater degree of perspectivistic, rather than categorical thinking, on the CODQ had higher positive insight composite scores. These findings are consistent with previous research on parental cognitions and personality that identified parents’ responses on the “Openness to Experience” dimension on the Five-Factor model of personality to be associated with parents’ reported parenting knowledge (Bornstein, Hahn, & Haynes, 2011). The positive
insight composite consists of a flexibility/openness dimension, which scores parents on the extent to which they are open to learning new information from the video segments and incorporate this information into their existing schemas of their child.

Although positive insight was positively associated with the CODQ, mothers who reported a higher degree of perspectivistic thinking on the CODQ had lower focus on the child scores (i.e., higher hostility and concern and lower separateness and focus), suggesting that mothers who have a more categorical view of child development are more effective in focusing in their narratives about their child with lower levels of concern and hostility. This may reflect the fact that mothers who are less informed about child development may, in turn, be less concerned about their child and subsequently speak less about their worries in the narratives. However, further research is necessary to more conclusively determine whether particular subscales are driving these results.

Third, the current study identified mothers’ perceived social support to be associated with resolution, indicating that the extent to which mothers felt supported by their family predicted whether or not they were resolved in regards to their children’s diagnoses. This finding is consistent with previous research that has linked maternal resolution status to perception of social support (Sheeran, Marvin, & Pianta, 1996). Social support is a particularly important indicator for mothers of children with ASD due to the fact that compared with mothers of typically developing children, mothers of children with ASD report significantly higher fatigue, which is associated with a high need for social support (Giallo, Wood, Jellett, & Porter, 2013). Taken together, findings suggest that the extent to which mothers experience social support is an important predictor for the well-being of mothers of young children with ASD and, in part, is predicted by the process by which mothers accept and move beyond their child’s diagnosis.
Fourth, mothers who reported higher perceived sense of competence had higher positive insight and resolution scores, indicating that mothers who expressed greater self-efficacy and satisfaction in the parenting role were more effectively able to discuss their child’s thoughts and feelings and come to terms with their child’s diagnosis. Our finding that perceived sense of competence was associated with both insightfulness and resolution of diagnosis is particularly notable in light of both previous research as well as our aforementioned finding on perceived social support. Specifically, both self-efficacy and social support have been shown to mediate the link between the pile-up of stressors and family hardiness, also known as resilience (Weiss et al., 2013). Based on this finding, our research suggests that resolution of diagnosis and insightfulness may also play a role in promoting resilience among mothers of children with ASD.

Generally speaking, researchers should consider including the aforementioned variables in multiple mediation or moderation analyses to understand the role of the IA and RDI in relation to existing conceptual models. For example, the IA and RDI are both linked with stress and perceived sense of competence. More complex models should be evaluated to more conclusively determine how these facets of maternal psychosocial functioning interact in order to gain a more complete picture of these relationships.

**Relation between insightfulness, resolution, and child and family characteristics**

Due to the link between parenting cognitions and children’s developmental level among parents of children with typical development (Dix, Ruble, Grusec, & Nixon, 1986), it was expected that differences in parental cognitions and emotions would be associated with differences in children’s characteristics in the current sample. The current study tested the IA and RDI in relation
to several indicators of child development, including chronological age, time since diagnosis, language and nonverbal mental age, and autism symptoms.

Regression analyses revealed that none of the evaluated child characteristics predicted parents’ IA and RDI composite scores. This finding adds to the existing body of research that demonstrates the IA and RDI to be unrelated to temperament, and other child characteristics (Koren-Karie & Markman-Gefen, 2015; Milshetin et al., 2010). However, several studies have found the IA and RDI to be related to child characteristics, indicating the need for additional research (Poslawsky, Fabienne, Naber, Van Daalen, & Van Engeland, 2014). Given the conflicting body of research, longitudinal research that more robustly captures possible relationships among the IA, RDI, and child characteristics is necessary.

Regression analyses also revealed that none of the evaluated family constellation or demographic variables (i.e., maternal age, minority status, and level of educational attainment, whether the child had any siblings, home ownership, and family household income) was associated with parents’ IA and RDI composite scores. This finding is particularly robust due to the fact that this research was conducted on a diverse range of participants who were representative of the U.S. Census data for the Los Angeles area at the time of the study. These findings are inconsistent with previous conclusions that have posited that educated mothers may be better equipped to address the needs of a child with disabilities (Krstic, Mihic, & Mihic, 2015). Due to the fact that previous findings have identified links among the IA and RDI and family demographic characteristics, there is a need to further explore the IA and RDI in diverse samples to understand potential mechanisms by which socioeconomic status influences parental narratives. Therefore, there is a need to further examine these relationships in the context of studies that specifically address socioeconomic status and subsequently administer a wide range of empirically validated socioeconomic measures.
The findings that parental insightfulness and resolution of diagnosis are unrelated to child characteristics and family demographics are particularly promising for practitioners who aim to provide support to a diverse range of families. Generally speaking, the aforementioned findings suggest that parents have the capacity to understand their child’s thoughts, emotions, and motives, come to terms with their child’s developmental challenges, and move forward in effectively supporting their child’s development, regardless of their child’s abilities or socioeconomic status. However, longitudinal research is needed to more conclusively argue this interpretation of these findings in light of the myriad of complexities surrounding the experiences of parenting in the context of risk.

**Future directions**

Findings from the current study suggest an important direction for future research that will be addressed in the remainder of the current dissertation. Most notably, it is currently unknown whether insightfulness and resolution are best interpreted as fixed characteristics or learned abilities that can be cultivated. Given the links between insightfulness and resolution with a range of other parental cognitions and emotion, there is a need to investigate whether insightfulness and resolution are amenable to interventions.

Previous research has aimed to assess the extent to which parental cognitions and emotions map onto traditionally stable constructs, including personality. For example, Bornstein, Hahn, & Haynes (2011) investigated whether the Five-Factor model of personality (i.e., Openness, Neuroticism, Extraversion, Agreeableness, and Conscientiousness [Goldberg, 1993]) is related to parenting cognitions and practices. Findings from this study revealed that specific personality factors relate to specific maternal parenting cognitions and practices. The authors interpreted these
findings to indicate that personality predicts parenting-related cognitions as well as parenting practices. However, the authors also acknowledged that parenting is multiply determined and can be explained by a wide range of factors in addition to personality.

Indeed, there are many additional influences that may affect parenting cognitions, including child characteristics. For example, research indicates the possibility that parental attributions are expected to change with development, as parents’ expectations about children change (Teti & Cole, 2011). Previous research has identified particular parenting cognitions, e.g., mind-mindedness, as “relational” constructs, rather than “trait-like” constructs (Meins, Fernyhough, & Harris-Waller, 2014). Further, additional research suggests that parental expression of warmth towards their children is based more on parents’ relationship with their individual children, rather than being evidence of a personality trait (Griffith, Hastins, Petalas, & Lloyd, 2015). These conclusions suggest that parental cognitions and emotions may be more contingent on their relationship with their child, rather than a more stable personality characteristic. Along these lines, it is necessary to investigate whether the relationships identified in the current study hold across multiple time points, determine the directionality of these relationships, and explore the influence of intervention on these processes.
CHAPTER TWO:

A Parent-Mediated Intervention that Targets Parental Responsiveness Increases Insightfulness among Mothers of Children with ASD: Results from a Randomized Clinical Trial

Over the past two decades, intervention research for children with Autism Spectrum Disorder (ASD) has witnessed an increasing emphasis on parent-mediated intervention approaches that aim to promote families’ capacities to address the multifaceted needs of children with ASD (Wetherby & Woods, 2008). Findings from several randomized clinical trials reveal that parents can effectively implement a wide range of intervention strategies with their child in the context of parent-mediated interventions (e.g., establishing play routines, increasing coordinated attention, and promoting social communication [Green et al., 2010; Tonge, Brereton, Kiomall, Mackinnon, & Rinehart, 2014; Whittingham, Sofronoff, Sheffield, & Sanders, 2009; Wong et al., 2014]). Further, research has demonstrated that parent-mediated interventions effectively improve parental social and communication outcomes directly targeted by the intervention (i.e., proximal outcomes), including parental responsiveness (Siller, Hutman, & Sigman, 2013). Research has also determined the potential for parent-mediated interventions to facilitate gains in children’s behaviors in the context of parent-child interactions, including behaviors related to social communication (Green et al., 2010), attachment (Siller, Swanson, Gerber, Hutman, & Sigman, 2014), and play (Gillett & LeBlanc, 2007). Importantly, parents’ developmentally-based schemas and perceptions, reflective functioning capacities, and emotional experiences (i.e., parental cognitions and emotions) may have a pivotal role in predicting whether parents are actively involved in, and demonstrate capacity in, meeting their child’s physical, emotional, and cognitive needs in the context of parent-mediated interventions. Specifically,
among families of both typically developing children and children with ASD participating in family-centered intervention programs that promote active parental involvement, a range of parental cognitions and emotions have been found to be associated with parents’ acceptance of and engagement with the program; level of collaboration with the intervention team; and subsequent treatment outcomes (e.g., perceived sense of competence and self-efficacy [Kuhn & Carter, 2006; Mah & Johnston, 2008]; concepts, knowledge, or understanding of child development [Morrissey-Kane & Prinz, 1999; Rodríguez, Rodrigo, Janssens, & Triana, 2011]; and parental stress [Osbourne, McHugh, Saunders, & Reed, 2008]).

Findings that parental cognitions and emotions are important predictors of engagement among parents of children with ASD indicate the clinical significance of longitudinal investigations of parental cognitions and emotions, particularly in response to treatment and intervention programs.

Collateral effects of parent-mediated interventions on parental cognitions and emotions

In comparison to evidence for the effects of parent-mediated interventions on proximal targets, evidence is far less clear for treatment effects on outcomes that are not directly targeted by the intervention (Oono et al., 2013). Specifically, a prominent limitation of the existing research surrounds how ASD treatments more broadly impact parents and families, including the extent to which programs facilitate gains in parental cognitions and emotions.

This gap in the research is notably salient in light of findings from the National Research Council that have identified all comprehensive programs for children with ASD to include some form of a parent component (Steiner et al., 2012). Thus, our lack of understanding of the impact of ASD treatments on parents and families impedes researchers’ capacities to fully understand the
effectiveness of intervention programs for children with ASD (Karst, Vaughn, & Hecke, 2012). In addition, current research suggests that, in general, parents of children with ASD experience poorer quality of life compared to parents of typically developing children or to population norms (Vasilopoulou & Nisbet, 2015). The family-centered nature of parent-mediated interventions ideally positions these programs to not only target children’s developmental outcomes, but also influence parental cognitions and emotions.

As described earlier in the current dissertation, recent clinical trials of parent-mediated interventions have indeed revealed significant treatment effect on parental cognitions and emotions, including self-efficacy, maternal perception of child attachment, and stress (Estes et al., 2014; Siller, Swanson, et al., 2014; Whittingham, Sofronoff, Sheffield, & Saunders, 2009).

A focus on treatment effects on maternal insightfulness

Taken together, findings from randomized clinical trials suggest the potential for parent-mediated interventions to influence parental cognitions and emotions among families of children with ASD. However, little attention has been paid to treatment effects on parental insightfulness, (i.e., “parents’ capacity to consider the motives underlying their children’s behaviors and emotional experiences in a complete, positive, and child-focused manner while taking into consideration their children’s perspectives” [Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002, p. 534]).

This gap in the literature is salient due to the fact that our previous research found that baseline measures of parental insightfulness moderated treatment effects among mothers of children with ASD participating in a randomized controlled trial of a 12-week responsiveness-based parent-mediated intervention (Focused Playtime Intervention [FPI]; Siller, Hutman, &
Sigman, 2013). We interpreted these findings to suggest that parental insightfulness may enable parents to fully engage in family-centered programs that aim to engage parents as active participants in the intervention process (Siller, Hutman, & Sigman, 2013; Woods & Brown, 2011).

Based on this finding, it is of clinical significance to investigate the potential for parent-mediated interventions to facilitate the development of insightfulness. However, the majority of research on maternal insightfulness has focused on establishing its links with maternal attachment and sensitivity and establishing its utility as an important indicator of maternal psychosocial functioning (Koren-Karie et al., 2002; Oppenheim et al., 2009; Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2012; Ramsauer, Quitmann, Lotzin, & Romer, 2011). Thus, few researchers have investigated how parental narratives on the IA change over time. One notable exception is a small intervention study (n = 32), investigating outcomes associated with a therapeutic preschool program (Oppenheim, Goldsmith, & Koren-Karie, 2004; Virmani & Ontai, 2010). Although the study design did not include a control group, results demonstrated a statistically significant shift from non-insightful before treatment to positively insightful after treatment. Similarly, Virmani & Ontai (2010) investigated the effects of 2.5 months of reflective versus traditional supervision and training methods on insightfulness among 21 professional caregivers. Findings revealed that insightfulness classifications were stable over the course of the study, with only a small proportion of caregivers shifting from non-insightful to positively insightful. Importantly, the conclusions we can draw from these two studies are limited because neither study included 1) a control group, or 2) samples of children with ASD. The latter gap is particularly salient given the distinct needs and challenges faced by parents of children with ASD, including increased levels of stress (Baker-Ericzn, Brookman-Frazee, & Stahmer, 2005; Lai, Goh, Oei, & Sung, 2015; Pastor-Cerezuela, Fernández-Andrés, Tárraga-Mínguez, & Navarro-Peña, 2015; Valicenti-McDermott et al., 2015).
Thus, the current study is the first study to employ a randomized design to test the potential for a responsiveness-based parent-mediated intervention for children with ASD to facilitate the development of parental insightfulness.

**Overview of the current study**

The current study presents analyses from a randomized clinical trial evaluating the efficacy of Focused Playtime Intervention (FPI), a parent-mediated intervention that has previously been shown to increase responsive parental communication in young children with ASD (Siller et al. 2013) children’s observed attachment-related behaviors, and maternal perception of child attachment (Siller, Swanson, et al., 2014). To investigate the effects of FPI on maternal insightfulness, we administered the Insightfulness Assessment (Oppenheim & Koren-Karie, 2000) before and after the 12-week intervention period, as well as at a 12-month follow-up.

The first aim was to evaluate patterns of longitudinal change in maternal insightfulness among mothers of children with ASD with a focus on evaluating treatment effects from FPI. Based on previous research, we hypothesized that mothers allocated to the experimental group would demonstrate a greater rate of growth in insightfulness than mothers randomized to the control group. The following two aims were exploratory in nature. We aimed to determine the potential for child characteristics, family demographics, and working alliance between parents and interventionists to explain variability among individual growth trajectories in insightfulness. In addition, we sought to identify whether the final model generalized to predict the rate of change of a range of other parental cognitions and emotions.
Methods

Overview

Timeline. The current study collected three waves of data (i.e., baseline, exit, and follow-up). Baseline assessments included diagnostic measures; standardized assessments of nonverbal cognitive and language abilities; a demographic questionnaire; and several questionnaires evaluating parent cognitions. Following completion of baseline assessments, families were randomly assigned to either the experimental or control condition. A consort diagram depicting an overview of allocation to treatment groups and assessment time points is shown in Figure 2.1.

Across both treatment conditions, parents were invited to participate in a four-month education program that aimed to support the parents’ ability to effectively advocate for their young children with ASD (Parent Advocacy Coaching [PAC]). Families randomized to the experimental group participated in both the Focused Playtime Intervention (FPI) and PAC. The FPI intervention manual and a corresponding illustrated workbook for parents are available as an online resource to Siller, Hutman, & Sigman (2013), which provides the full details of the intervention procedures.

After the intervention period was completed, all families participated in a series of exit assessments. Families were invited to participate in a final wave of follow-up assessments, scheduled approximately 12 months after exit. Measures of parental insightfulness and all other parental cognitions and emotions were obtained at all three time points.

Randomization. Once the baseline assessments were completed, families were randomly assigned to either the experimental condition (FPI and PAC \( n = 36 \)) or control condition (PAC only \( n = 34 \)). To ensure that out of every four consecutive children, two were assigned to the experimental and two were assigned to the control group, children were randomized in clusters of four children. This approach retains the positive attributes of random assignment, while equalizing group size, which is useful in terms of preventing cohort effects and managing resources.
Throughout the study, staff and students involved in administering assessments or coding observations were kept blind to the participants’ group assignments. Prior to all outcome assessment sessions, parents were reminded not to reveal their group assignment to our assessment staff.
Figure 2.1.

Consort diagram

![Consort diagram](image)

- **Assessed for eligibility (n = 104)**
- **Enrollment**
- **Randomized (n = 70)**
- **Allocated to experimental condition (n = 36)**
  - Received allocated intervention (n = 34)
  - Reason: Scheduling difficulties (n = 2)
- **Allocated to control condition (n = 34)**
  - Received 3+ sessions of the allocated intervention (n = 32)
  - Received 2 sessions of the allocated intervention (n = 2)
- **Excluded (n = 34)**
  - Did not meet inclusion criteria (n = 10)
  - Refused to participate (n = 4)
  - Scheduling difficulties/lost contact (n = 20)

**Baseline**
- IA (n = 36)
  - Other parental cognitions (e.g., RDI [n = 36]; QRS [n = 33])
  - Child characteristics (e.g., MSEL [n = 36])
  - Family demographics (e.g., income [n = 36])
- IA (n = 34)
  - Other parental cognitions (e.g., RDI [n = 33]; QRS [n = 31])
  - Child characteristics (e.g., MSEL [n = 34])
  - Family demographics (e.g., income [n = 33])

**Exit**
- IA (n = 34)
  - QRS (n = 31)
  - MSEL (n = 34)
- IA (n = 30)
  - QRS (n = 26)
  - MSEL (n = 30)

**Follow-up**
- IA (n = 27)
  - RDI (n = 28)
  - QRS (n = 21)
  - MSEL (n = 30)
- IA (n = 28)
  - RDI (n = 29)
  - QRS (n = 23)
  - MSEL (n = 32)

*Note. QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985); PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983); IA = Insightfulness Assessment (Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002); RDI = Reaction to Diagnosis Interview (Pianta & Marvin, 1993); MSEL = Mullen Scales of Early Learning (Mullen, 1995).*
Participants

The current study involved 70 children with ASD (chronological age: \( M = 58.3 \) months; \( SD = 12.7 \); male: \( n = 64 \)) who participated in a randomized clinical trial of FPI. The current study involves the same sample as described in the previous chapter. Refer to the previous chapter for a description of eligibility criteria and Table 1.1 and Table 1.2 for participant characteristics.

Focused Playtime Intervention

Structure. FPI involves 12 in-home training sessions (one session per week for 12 weeks, 90 minutes per session) and follows a standardized intervention manual that outlines an ordered sequence of eight topics. Eight of the 12 intervention sessions are used to introduce one of these topics at a time. The remaining four sessions provide the parent with additional practice opportunities on a previously introduced topic (i.e., coaching sessions) and includes a review of all intervention topics, accomplishments throughout the intervention, and anticipated future challenges. Trained undergraduate and graduate students in psychology delivered FPI.

All intervention sessions were videotaped and at least two sessions per child were chosen at random and coded using a fidelity checklist. The inter-observer reliability of this fidelity checklist was evaluated based on 20 videotaped sessions, revealing excellent agreement between two independent raters (\( ICC = 0.85 \)). Results from applying this checklist to 77 intervention sessions (at least 2 intervention topics were selected at random for each child) revealed that 88.3% showed fidelity scores above 80% (\( M = 89.6\% ; \ SD = 9.0 \) )

Each treatment session consists of two parts. The first part (30 minutes during a typical session; 60 minutes during the three coaching sessions) involves both parent and child and
provides opportunities for parent and interventionist to take turns interacting with the child. In the context of these interactions, the interventionist demonstrates strategies, provides specific and concise feedback on the parent’s play (accentuating positive contributions), and comments on the child’s responses. All interactions between parent, child, and interventionist are videotaped and captured using a laptop computer.

The second part of each session (60 minutes during a typical session; 30 minutes during the three coaching sessions) involves only the parent (a co-interventionist is available to help with child care). During this time, each intervention topic is elaborated using a range of adult learning strategies, including an illustrated workbook for the parent, video feedback, conventional teaching, and review of weekly homework assignments. Particular emphasis is given to video feedback where parent and interventionist review specific moments of the videotapes captured during the first half of the session. The interventionist carefully chooses these moments to illustrate specific activities, adult behaviors, or child responses as they relate to the topic of the respective session. In discussing the challenges that a parent may face while engaging the child in coordinated toy play, the interventionist aims to maintain a collaborative working relationship and engage the parent in active problem solving.

**Content.** The FPI intervention manual outlines an ordered sequence of eight topics. During the early sessions, parent and interventionist develop a detailed understanding of the child’s communication skills (Topic 1: When and how does my child communicate?), evaluate and reframe the parent’s goals (Topic 2: What do I hope to accomplish during play?), and develop strategies to arrange the play environment in ways that are conducive to play (Topic 3: How do I develop a special play time routine?). During Topic 3, parent and interventionist also collaborate to develop a playtime routine that can feasibly be incorporated into the family’s daily schedule.
After these three initial topics, parent and interventionist develop a shared understanding of the goal of this intervention (i.e., the parent and child will learn to coordinate their attention and collaborate to accomplish shared goals during toy play), as well as three specific sub-goals: coordinating attention, coordinating actions, and sharing control (Topic 4: How to tackle play one step at a time?). These three sub-goals are addressed in more detail as part of Topics 5-8 during which the parent and interventionist discuss and practice strategies to support coordinated attention (Topic 5: Who gets to pick the toys?), ensure that parent and child establish a shared way of using the toys (Topic 6: Who decides the ‘correct’ way of using the toys? Topic 7: How do I speak to my child during play?), and gradually shift increasing amounts of responsibility for initiating and maintaining the shared encounter to the child (Topic 8: How do I make play more balanced between my child and me?).

**Approach.** FPI aims to enhance the capacity of families to meet the needs of their children. Important principles of such a family-centered approach were outlined by Woods & Brown (2011), including the importance of 1) addressing the families’ informational needs (e.g., to accommodate different learning styles, material and practices were presented in multiple formats); 2) using their natural environments as the intervention context (e.g., all intervention sessions were held in the families’ homes and focused on play as a preferred everyday activity); 3) engaging parents to be active participants in the intervention process (e.g., parent and child engaged in weekly practice while the interventionist observed, guided, modeled, and provided feedback in the form of comments, suggestions, reflective questions, and encouragement); and 4) supporting the caregivers’ reflection and self-evaluation (e.g., FPI used video-feedback and play journals to teach parents the observational tools necessary to evaluate the consequences of specific parental choices and strategies).
**Active control condition: Parent Advocacy Coaching**

Parent Advocacy Coaching (PAC) is a structured education program that aims to promote the parents’ ability to actively participate in the planning of their child’s treatment and educational program. Most families of children with ASD in California participate in at least two annual planning meetings; one meeting is scheduled with a representative from the families’ local California Regional Center (i.e., Individual Program Plan Meeting); the second meeting is scheduled with the child’s teacher and/or representative from the child’s school district (i.e., Individualized Education Program Meeting).

Families randomized to the control condition were invited to participate in four PAC sessions (one session per month, 90 minutes per session). Given that the first sessions of PAC and FPI include several shared components (e.g., gathering information on the family and the child’s current intervention program), families in the experimental condition were only invited to participate in three PAC sessions. While participating in PAC, parents learned about the structure of the individualized planning process and how to access available resources. They also participated in a structured conversation that aimed to identify developmental needs in the areas of health, daily-living skills, challenging behaviors, social integration, education and family supports. In addition to the detailed report about the results from assessments, parents were provided with a written report summarizing the needs identified during this parent interview.

**Measures**

**Assessments of child characteristics.** The Mullen Scales of Early Learning (MSEL) and Autism Diagnostic Observation Schedule (ADOS) were administered to assess children’s
characteristics. Refer to the previous chapter for detailed descriptions of assessments of child characteristics.

**Working alliance.** In order to evaluate the working alliance between mothers and the interventionists, a modified version of the Working Alliance Inventory (WAI [Horvath & Greenberg, 1989]) was used as a framework for two independent coders to evaluate video-taped intervention sessions. Two intervention sessions were chosen at random for each participant and coded for working alliance based on six items scored using a 5-point Likert scale (Disagree to Agree). The items include the following: 1) What the mom is doing in our work gives her new ways of looking at her child’s problem; 2) I believe the mom likes me; 3) The mom takes an active role in identifying and solving challenges; 4) I feel that the mom appreciates what the intervention has to offer; 5) We agree on what is important for the mom to work on with her child; and 6) The mom and I trust on another. The two working alliance scores from the individual sessions were averaged for each participant to create a single working alliance score. For 72 evaluated videos in the experimental and control groups, inter-rater reliability was established with an intraclass correlation coefficient of .79. Consistency between the two treatment sessions that were averaged for each child was established with an intraclass correlation coefficient of .84.

**Questionnaire measures of parental cognitions and emotions.** As described in the previous chapter, parents were asked to complete four questionnaires: (1) the Questionnaire of Resources & Stress (QRS [Konstantareas, Homatidis, & Plowright, 1992]) measures a wide range of parental stressors as well as perceptions of available resources to manage stress; (2) the Concepts of Development Questionnaire (CODQ [Sameroff & Feil, 1985]) measures the complexity of the parent’s view of child development (e.g., to interpret the child’s behavior from a contextual and age-appropriate perspective); (3) the Parenting Sense of Competence Scale (PSOC [Johnston and
Mash, 1989]) measures the parents’ self-efficacy as well as overall level of satisfaction and frustration with parenting; and (4) the Perceived Social Support Family Scale assesses the extent to which individuals believe their family will be available and willing to assist them during a difficult time (PSS-FA [Procidano & Heller, 1983]). Refer to the previous chapter for details regarding each of these measures.

The Insightfulness Assessment. Parents were asked to participate in the Insightfulness Assessment (IA [Oppenheim & Koren-Karie, 2002]) across all three time points (described in detail in the previous chapter).

Analytic Approach

The objective of this study was to evaluate patterns of longitudinal change in maternal insightfulness among 70 mothers of children with ASD participating in a randomized clinical trial of Focused Playtime Intervention (FPI). Specifically, we were interested in evaluating whether FPI treatment group allocation, in addition to child characteristics, family demographics, and working alliance, would explain the variability among individual growth trajectories in maternal insightfulness. Subsequently, we aimed to determine whether predictors of the rate of change of insightfulness predicted the rate of change of a range of other parental cognitions and emotions.

Previous research based on the IA has almost exclusively used classifications (i.e, *positively insightful, non-insightful*) to capture individual differences between parental narratives. In the preceding section of this dissertation, we demonstrated the inter-observer reliability, internal consistency, and external validity of two composite scores, based on 10 continuous subscales coded based on interview transcripts. The first subscale, labeled *positive insight*, represents the average of six subscales (insight, complexity, acceptance, flexibility, richness, and coherence.
The second subscale, labeled *focus on the child*, represents the average of the remaining four subscales (concern, hostility, focus, and separateness). To evaluate longitudinal change in parent narratives, all subsequent analyses focused on *positive insight* composite. This decision is based on two reasons. First, we decided to use continuous composite scores rather than categorical classification to gain a more accurate measure of change. Second, we used the *positive insight* composite rather than the *focus on the child* composite because the former is most sensitive in differentiating between the *positive insight* and the two non-insightful classifications, while the *focus on the child* composite is most sensitive in differentiating between the two non-insightful classifications (i.e., *one-sided* vs. *disengaged*).

Data analysis consisted of three steps: 1) preliminary analyses; 2) multilevel mixed modeling analysis with the full sample and 3) multilevel mixed modeling based on baseline insightfulness classification. Preliminary analyses included baseline analyses (i.e., baseline descriptive statistics and independent sample t-tests to test for treatment group baseline equivalence) and simple analyses describing change over time (i.e., descriptive statistics across time points, correlation analyses of gain scores, and unconditional mixed models). Multilevel mixed modeling with the entire sample investigated simple treatment effects on insightfulness, as well as whether treatment effects on the *positive insight* composite and parent questionnaires were moderated by baseline differences in insightfulness classifications. Finally, based on evidence that baseline classifications of maternal insightfulness moderated treatment effects on outcome measures, the final statistical models were developed separately based on mothers’ baseline insightfulness classifications. In addition to these three steps, follow-up analyses were conducted to evaluate whether the final model developed for predicting the rate of change of insightfulness
also significantly predicted the rate of change of other parents’ responses on the questionnaire measures assessing other parental cognitions and emotions.

Overview of multi-level mixed modeling

A series of multilevel mixed models for longitudinal data were specified using SAS PROC MIXED. Multilevel models of longitudinal change postulate statistical models at each of two levels. The level 1 model (within-subject model) describes each individual’s change trajectory with growth curve parameters, such as intercept (representing the individual’s initial status) and slope (representing the individual’s rate of linear growth). Simultaneously, individual differences in these growth curve parameters were modeled as part of the level 2 model (between subjects model). Thus, the level 2 model identified individual differences in growth curve parameters as a function of the predictors, addressing our key research questions. This analysis aimed to evaluate the unique contributions of child characteristics, family demographics, and treatment-related variables in predicting maternal insightfulness. Finally, we evaluated the extent to which the final statistical model developed to predict the rate of change of insightfulness significantly predicted the rate of change of a range of other parental cognitions and emotions.

Results

Preliminary analyses

Baseline analyses. Prior to evaluating the primary aims of the current study, a series of analyses were conducted to describe the sample at baseline and compare baseline characteristics between the experimental and the control groups. Findings revealed that 28 (40%) of the sample were classified as positively insightful at baseline (16 and 12 assigned to the experimental and control
groups, respectively), while the remaining participants \((n = 42, 60\%)\) received one of the two *non-insightful* (i.e., one-sided or disengaged) baseline classifications.

Next, in order to determine group equivalence between the experimental and control groups at baseline, independent sample t-tests were conducted among the total sample. Means, standard deviations, and independent sample t-test results are presented in Table 2.1. Results revealed no significant differences between the experimental group and control group on the *positive insight* composite, any of the parent questionnaires, child characteristics, or family demographics.

Table 2.1.

*Independent sample t-tests demonstrating treatment group equivalence at baseline*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample ((n = 70))</th>
<th>Experimental (M (SD)) (n = 36)</th>
<th>Control (M (SD)) (n = 34)</th>
<th>t-test</th>
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<tr>
<td>Parental cognitions</td>
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</tr>
<tr>
<td><em>Positive insight</em></td>
<td></td>
<td>4.44 (1.66)</td>
<td>4.16 (1.50)</td>
<td>-.75</td>
</tr>
<tr>
<td>QRS</td>
<td></td>
<td>2.42 (.34)</td>
<td>2.46 (.36)</td>
<td>.42</td>
</tr>
<tr>
<td>CODQ</td>
<td></td>
<td>5.85 (.47)</td>
<td>5.91 (.51)</td>
<td>.51</td>
</tr>
<tr>
<td>PSS-FA</td>
<td></td>
<td>.68 (.30)</td>
<td>.70 (.31)</td>
<td>.39</td>
</tr>
<tr>
<td>PSOC</td>
<td></td>
<td>8.18 (1.46)</td>
<td>7.99 (1.60)</td>
<td>-.48</td>
</tr>
<tr>
<td>Child characteristics</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Chronological age</td>
<td></td>
<td>58.33 (12.68)</td>
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<td>-.84</td>
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<tr>
<td>NVMA</td>
<td></td>
<td>27.61 (9.40)</td>
<td>26.76 (11.39)</td>
<td>-.34</td>
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<tr>
<td>LA</td>
<td></td>
<td>17.01 (8.32)</td>
<td>15.81 (7.47)</td>
<td>-.64</td>
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<tr>
<td>ASD symptoms</td>
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<td>19.58 (4.07)</td>
<td>19.97 (4.19)</td>
<td>.39</td>
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<td>Family demographics</td>
<td></td>
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<tr>
<td>Income</td>
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<td>16.01 (.93)</td>
<td>16.26 (.81)</td>
<td>1.17</td>
</tr>
<tr>
<td>Maternal education</td>
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<td>14.92 (2.58)</td>
<td>15.79 (2.51)</td>
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<tr>
<td>Maternal age</td>
<td></td>
<td>36.19 (5.25)</td>
<td>35.70 (6.08)</td>
<td>-.37</td>
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</tbody>
</table>

*p < .05; ** p < .01; *** p < .001

*Note.* QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985); PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983); NVMA = Nonverbal mental age; LA = Language age (MSEL, Mullen, 1995).
**Describing change over time.** Table 2.2 presents descriptive information for the *positive insight* composite, as well as measures derived from the parent questionnaires (i.e., QRS, CODQ, PSS-FA, PSOC), reported separately by assessment wave (i.e., BL, EX, FU) and group (i.e., experimental, control).

In addition, we conducted correlation analyses to evaluate zero-order correlations among *positive insight* and all predictor variables, which are presented in Table 2.3. Findings revealed that higher baseline *positive insight* was significantly associated with greater decreases in *positive insight* from baseline to exit ($r = -0.46, p < .001$) and baseline to follow-up ($r = -0.43, p < .001$). No significant associations were identified between *positive insight* and child characteristics, family demographics, and working alliance.

Finally, we used SAS PROC MIXED to fit two unconditional models to examine the variability of maternal insightfulness scores between and within participants as well as the mean and variability of individual growth parameters (intercepts and slopes). The *unconditional means model (UMM)* was specified with a random intercept. The *unconditional growth model (UGM)* was specified with both random intercept and slope under the assumption that individuals differ not only with regard to their initial insightfulness (intercept) but also with regard to their subsequent rate of insightfulness growth (slope).

Evaluation of the variance components of the *UMM* showed variation between subjects to explain 52% percent of the overall variance (derived from the interclass correlation calculated from these analyses). Subsequent calculations derived from the variances provided from the fixed effects output were calculated to measure the magnitude of variation among individuals in their mean insightfulness levels; based on these calculations, the range of plausible baseline values were between 1.81 and 6.42, demonstrating wide variability in initial *positive insight* status. In the
context of the UGM, adding a linear slope to the UMM to create the UGM reduced the unexplained variance from 1.26 to 1.10 (-13%), demonstrating that significant variation exists between subjects, but less variation exists within subjects across the total sample. Based on the intercept and slope provided in the UGM, the estimated average participant entered with an average positive insight score of 4.39 and decreased by .15 in their positive insight scores over the course of the study.
Table 2.2

Means and standard deviations for parental cognitions and emotions

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th></th>
<th></th>
<th>Exit</th>
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<th></th>
<th>Follow-up</th>
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<td>Exp.</td>
<td>Control</td>
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<td>n = 63</td>
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<tr>
<td>Positive insight</td>
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<td>4.09</td>
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<td></td>
<td>(1.66)</td>
<td>(1.50)</td>
<td>(1.58)</td>
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<td>(1.57)</td>
<td>(1.74)</td>
<td>(1.81)</td>
<td>(1.76)</td>
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<td>PSS-FA</td>
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<td></td>
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<td>(.30)</td>
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<td>(.27)</td>
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<tr>
<td>PSOC</td>
<td>8.18</td>
<td>7.99</td>
<td>8.10</td>
<td>8.46</td>
<td>8.57</td>
<td>8.51</td>
<td>8.51</td>
<td>7.87</td>
<td>8.18</td>
</tr>
<tr>
<td></td>
<td>(1.46)</td>
<td>(1.60)</td>
<td>(1.52)</td>
<td>(1.41)</td>
<td>(1.22)</td>
<td>(1.32)</td>
<td>(1.21)</td>
<td>(1.51)</td>
<td>(1.39)</td>
</tr>
</tbody>
</table>

*p < .05; ** p < .01; *** p < .001

Note. Exp. = Experimental group; QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985); PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983.)
### Table 2.3

**Zero-order correlations among predictors and outcomes**

<table>
<thead>
<tr>
<th></th>
<th>BL</th>
<th>EX</th>
<th>FU</th>
<th>BL-EX</th>
<th>EX-FU</th>
<th>BL-FU</th>
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<tbody>
<tr>
<td>CA</td>
<td>0.09</td>
<td>0.17</td>
<td>0.04</td>
<td>0.02</td>
<td>-0.15</td>
<td>-0.05</td>
</tr>
<tr>
<td>NVMA</td>
<td>0.06</td>
<td>-0.03</td>
<td>-0.02</td>
<td>-0.12</td>
<td>0.09</td>
<td>-0.12</td>
</tr>
<tr>
<td>LA</td>
<td>0.04</td>
<td>-0.12</td>
<td>0.03</td>
<td>-0.23</td>
<td>0.08</td>
<td>-0.09</td>
</tr>
<tr>
<td>ASD</td>
<td>-0.06</td>
<td>0.1</td>
<td>-0.06</td>
<td>0.2</td>
<td>-0.1</td>
<td>0.05</td>
</tr>
<tr>
<td>INC</td>
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<td>0.13</td>
<td>0.03</td>
<td>-0.09</td>
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<tr>
<td>EDU</td>
<td>0.11</td>
<td>0.02</td>
<td>0.14</td>
<td>-0.14</td>
<td>0.1</td>
<td>0.08</td>
</tr>
<tr>
<td>AGE</td>
<td>0.12</td>
<td>0.15</td>
<td>0.2</td>
<td>-0.03</td>
<td>-0.11</td>
<td>0.1</td>
</tr>
<tr>
<td>WA</td>
<td>0.13</td>
<td>0.23</td>
<td>0.2</td>
<td>0.13</td>
<td>-0.07</td>
<td>0.19</td>
</tr>
<tr>
<td>BL</td>
<td>--</td>
<td>.56***</td>
<td>.48***</td>
<td>-.46***</td>
<td>-0.13</td>
<td>-.43**</td>
</tr>
<tr>
<td>EX</td>
<td>--</td>
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<td>.47***</td>
<td>-0.1</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>FU</td>
<td>--</td>
<td>0.01</td>
<td>-0.11</td>
<td>.59***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL-EX</td>
<td>--</td>
<td>-0.01</td>
<td>.51***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXFU</td>
<td>--</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; ** p < .01; *** p < .001

**Note.** CA = Chronological age; NVMA = Nonverbal mental age; LA = Language age (MSEL, Mullen, 1995); ASD = ASD Symptoms (ADOS, Lord et al., 2000); INC = Family annual income; EDU = Maternal educational attainment; AGE = Maternal age; WA = Working alliance (Horvath & Greenberg, 1989); BL = Baseline positive insight; EX = Exit positive insight; FU = Follow-up positive insight.
Multilevel modeling analysis with the full sample.

The next step of this preliminary analysis was to investigate simple treatment effects on insightfulness as well as the questionnaire measures evaluating maternal stress, concepts of development, perceived sense of competence, and perceived social support. Models were specified as random intercept models in SAS PROC MIXED with main effects for time and group, as well as the time*group interaction term. Results showed that treatment group allocation predicted the rate of change of mothers’ concepts of development, $t(93) = 2.47, p = .02$.

One important result of our previous research was that baseline classifications of maternal insightfulness moderated treatment effects on increases in responsive parental behaviors. Thus, we investigated whether treatment effects on the positive insight composite and the parent questionnaires were also moderated by baseline differences in insightfulness classifications. In the context of these analyses, we specified a series of random intercept models that included main effects for group, time, and baseline insightfulness classifications, as well as the three corresponding two-way, and once corresponding three-way interactions. Results (reported in Table 2.4) demonstrated a significant three-way interaction among time, treatment group, and IA classification in terms of predicting the rate of change of several parental cognitions and emotions, including positive insight, $t(114) = 2.20, p = .03$ and perceived sense of competence, $t(91) = 2.13, p = .04$.

Based on the evidence that baseline classifications of maternal insightfulness moderated treatment effects on several outcome measures, we developed our final models separately for mothers with baseline classifications of non-insightful ($n = 42$) and mothers with baseline classifications of positively insightful ($n = 28$).
Table 2.4

Preliminary model building demonstrating significant three-way interaction effects among time, treatment group, and baseline IA classification in predicting parental cognitions and emotions

Effects by time and treatment group only

<table>
<thead>
<tr>
<th></th>
<th>Intercept</th>
<th>Time</th>
<th>TMT</th>
<th>Time* TMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive insight</td>
<td>4.05 (.26)***</td>
<td>-.01 (.01)</td>
<td>.31 (.36)</td>
<td>-.01 (.02)</td>
</tr>
<tr>
<td>QRS</td>
<td>2.44 (.06)***</td>
<td>-.00 (.00)</td>
<td>-.06 (.08)</td>
<td>.00 (.00)</td>
</tr>
<tr>
<td>CODQ</td>
<td>5.91 (.08)***</td>
<td>-.01 (.00)*</td>
<td>-.05 (.11)</td>
<td>.01 (.01)*</td>
</tr>
<tr>
<td>PSOC</td>
<td>8.18 (.24)***</td>
<td>-.00 (.01)</td>
<td>.08 (.34)</td>
<td>.01 (.01)</td>
</tr>
<tr>
<td>PSS-FA</td>
<td>.72 (.05)***</td>
<td>.00 (.00)</td>
<td>-.05 (.07)</td>
<td>.00 (.00)</td>
</tr>
</tbody>
</table>

Effects by time, treatment group, and baseline IA classification

<table>
<thead>
<tr>
<th></th>
<th>Intercept</th>
<th>Time</th>
<th>TMT</th>
<th>IA</th>
<th>Time* TMT</th>
<th>Time* IA</th>
<th>TMT*IA</th>
<th>Time* TMT*IA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive insight</td>
<td>7.96 (.68)***</td>
<td>-.05 (.05)</td>
<td>.56 (.92)</td>
<td>-2.38 (.40)***</td>
<td>-.14 (.06)*</td>
<td>.02 (.03)</td>
<td>-.31 (.55)</td>
<td>.09 (.04)*</td>
</tr>
<tr>
<td>QRS</td>
<td>2.26 (.22)***</td>
<td>-.01 (.01)</td>
<td>-.08 (.29)</td>
<td>.11 (.13)</td>
<td>.01 (.01)</td>
<td>.01 (.00)</td>
<td>.02 (.17)</td>
<td>-.00 (.01)</td>
</tr>
<tr>
<td>CODQ</td>
<td>6.43 (.28)***</td>
<td>-.02 (.01)</td>
<td>-.03 (.37)</td>
<td>-.32 (.16)*</td>
<td>.06 (.02)</td>
<td>.01 (.01)</td>
<td>-.03 (.22)</td>
<td>.01 (.01)</td>
</tr>
<tr>
<td>PSOC</td>
<td>9.37 (.87)***</td>
<td>.01 (.03)</td>
<td>.00 (1.13)</td>
<td>-.72 (.50)</td>
<td>-.07 (.04)</td>
<td>-.01 (.02)</td>
<td>-.01 (.67)</td>
<td>.05 (.03)*</td>
</tr>
<tr>
<td>PSS-FA</td>
<td>.76 (.19)***</td>
<td>.01 (.01)</td>
<td>.12 (.24)</td>
<td>-.03 (.11)</td>
<td>.00 (.01)</td>
<td>-.00 (.00)</td>
<td>-.11 (.15)</td>
<td>-.00 (.01)</td>
</tr>
</tbody>
</table>

*p < .05; ** p < .01; *** p < .001

Note. TMT p = FPI treatment group; IA = Baseline classification on the Insightfulness Assessment; QRS = Questionnaire of Resources & Stress (Konstantareas, Homatidis, & Plowright, 1992); CODQ = Concepts of Development Questionnaire (Sameroff & Feil, 1985);
PSOC = Parenting Sense of Competence Scale (Johnston and Mash, 1989); PSS-FA = Perceived Social Support from Family Scale (Procidano & Heller, 1983).

Multilevel modeling analyses for mothers classified as non-insightful at baseline

**Unconditional models.** Based on findings from the preliminary analyses, the process of model testing proceeded with evaluating change over time in *positive insight* based on baseline IA classification. Parallel plots depicting *positive insight* as a function of time by baseline classification are depicted in Figure 2.2. Evaluation of the unconditional models revealed that the variance components of the *UMM* showed variation between subjects to explain 43% of the overall variance (derived from the interclass correlation calculated from these analyses). Subsequent calculations derived from the variances provided from the fixed effects output were calculated to measure the magnitude of variation among individuals in their mean insightfulness levels; based on these calculations, the range of plausible baseline values were between 1.87 and 4.71. In the context of the unconditional growth model, adding a linear slope to the *UMM* to create the *UGM* reduced the unexplained variance from .69 to .50 (-27.5%), demonstrating that significant variation exists both between and within subjects. Based on the intercept and slope provided in the *UGM*, the estimated average participant entered with an average *positive insight* score of 3.03 and gained an additional .13 in their *positive insight* scores over the course of the study. Initial measures did not significantly predict the subsequent rate of change of *positive insight*, suggesting that findings are not attributable to regression to the mean tendencies, \( t (36) = 1.14, p = .26. \)
Single-predictor models. In order to begin to develop a model to predict the rate of change of maternal insightfulness, we fit a series of single predictor mixed models, each including one level 2 predictor. Predictors included four measures of child development (children’s chronological age, nonverbal mental age, language age, and autism symptoms); three measures of family demographics (i.e., family income, maternal education, and maternal age); and two treatment-related variables (working alliance and treatment group). Variables were entered simultaneously
as predictors of mothers’ initial insightfulness status and their subsequent rate of change in insightfulness. All models were specified as random intercept models.

Results showed that mothers’ initial insightfulness was not predicted by any of the evaluated child and family characteristics. The rate of change in insightfulness was not significantly predicted by any child and family characteristics either; although income predicted the rate of change of insightfulness at a level approaching significance, $t\ (65) = 1.78$, $p = .08$.

Next, we fit a series of single predictor models to explore the role of treatment-related variables. Based on our hypotheses, one-tailed significance tests were applied to evaluate treatment effects. Neither working alliance nor treatment group predicted mothers’ initial insightfulness. However, the rate of change in insightfulness was significantly predicted by working alliance, $t\ (65) = 1.97$, $p = .05$ and treatment group, $t\ (66) = 1.69$ (2-tailed: $p = .05$; 1-tailed: $p = .03$).

**Stepwise model development.** Next, to examine which variables were independent predictors of maternal insightfulness, predictors were incorporated into a model that included multiple level 2 predictors. Measures of child characteristics were entered first (step 1); measures of family demographics were entered second (step 2); and treatment-related variables were entered last (step 3). Within each level of this hierarchy, variables were entered stepwise. Improvements in model fit statistics were evaluated by comparing fit statistics (-2 log likelihood statistics) across nested models. The final models testing our primary hypotheses were specified as random intercept models.

At step 1, children’s chronological age was entered as the first predictor and did not predict either initial status or rate of change of maternal insightfulness (-2 log likelihood = 314.2). Thereafter, none of the other child characteristics predicted initial status or rate of change of
maternal insightfulness or substantially improved model fit (-2 log likelihood = 310.8). At step 2, family demographics were entered. The greatest improvement in model fit was due to adding family annual income to the model (-2 log likelihood = 291.9). At step 3, working alliance yielded significant improvements in model fit (-2 log likelihood = 278.8). Thereafter, treatment group also yielded significant improvements in model fit (-2 log likelihood = 266.3).

**The final model.** The final step of model development included identifying the best multi-predictor model using a random intercept as the model’s random effect structure. The final evaluated model included the following predictor variables: family annual income, working alliance, and treatment group. Findings revealed that each variable created a significant improvement in the fit of the model, *p* < .05. Mothers’ rate of change in insightfulness was significantly predicted by family income, *t* (61) = 2.17, *p* = .03; working alliance, *t* (61) = 2.42, *p* = .02; and treatment group, *t* (61) = 2.24, *p* = .02 (one-tailed). Fixed effects for initial status and rate of change as well as variance components are presented in Table 2.5. A graphical depiction of the treatment effects is provided in Figure 2.3.
Table 2.5
Parameter estimates (standard errors in parentheses) of fixed effects from a hierarchy of random intercept models with maternal insightfulness as the outcome variable among baseline non-insightful mothers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model A</th>
<th>Model B</th>
<th>Model C</th>
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</thead>
<tbody>
<tr>
<td>Fixed effects: Initial status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>6.47 (.34)*</td>
<td>6.76 (.31)*</td>
<td>6.69 (.32)*</td>
</tr>
<tr>
<td>Income</td>
<td>-.21 (.20)</td>
<td>-.27 (.20)</td>
<td>-.26 (.20)</td>
</tr>
<tr>
<td>Working alliance</td>
<td>.03 (.03)</td>
<td>.03 (.02)</td>
<td>.01 (.32)</td>
</tr>
<tr>
<td>Treatment group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed effects: Rate of change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-.40 (.24)</td>
<td>-.48 (.23)*</td>
<td>-.62 (.23)**</td>
</tr>
<tr>
<td>Income</td>
<td>.03 (.01)</td>
<td>.02 (.01)</td>
<td>.03 (.01)*</td>
</tr>
<tr>
<td>Working alliance</td>
<td>.00 (.00)*</td>
<td>.01 (.00)*</td>
<td>.04 (.02)*</td>
</tr>
<tr>
<td>Treatment group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variance components: Level 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within person</td>
<td>.64 (.11)***</td>
<td>.60 (.10)***</td>
<td>.56 (.10)***</td>
</tr>
<tr>
<td>Variance components: Level 2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Initial status</td>
<td>.55 (.18)***</td>
<td>.50 (.16)***</td>
<td>.47 (.15)***</td>
</tr>
<tr>
<td>Fit statistics</td>
<td></td>
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<td>-2 Log likelihood</td>
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</tr>
<tr>
<td>AIC</td>
<td>315.8</td>
<td>311.6</td>
<td>309.4</td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001

Note. Models were specified as random intercept models. Models include main effects for time. Model A adds a main effect for income and an income x time interaction effect. Model B adds a main effect for working alliance and a working alliance x time interaction effect. Model C adds a main effect for treatment group and a time x treatment group interaction effect.
Figure 2.3

Results from fitting the final multi-predictor mixed model with insightfulness as the outcome

Note. The graph includes only mothers who scored non-insightful at baseline. Working alliance and income were set to average to obtain parameter estimates for treatment effect.

Testing model utility. Finally, the current study evaluated whether the treatment group allocation predicted the rate of change of other parental cognitions and emotions (i.e., QRS [including individual subscales], CODQ, PSOC, and PSS-FA), controlling for income and working alliance. This analysis was conducted by testing the effects of time, treatment group allocation, and the time x treatment group interaction term on each additional time-varying parental cognition variable. Treatment group significantly predicted the rate of change of the PSOC, $t (46) = 2.24, p = .03$, and the CODQ, $t (47) = 2.18, p = .03$. Graphical depictions of these analyses are displayed in Figure 2.4.
Figure 2.4

*Graphical depictions of parameter estimates for treatment effects on (a) PSOC (b) CODQ.*

(a) The rate of change of PSOC scores by treatment group allocation

(b) The rate of change of CODQ scores by treatment group allocation

*Note.* Graphs include only mothers who scored *non-insightful* at baseline.
Multilevel modeling analyses for mothers classified as *positively insightful* at baseline

**Unconditional models.** Evaluation of the unconditional models revealed that the variance components of the *UMM* showed variation between subjects to explain 12% of the overall variance, suggesting that there is not a substantial amount of variation between subjects among mothers who enter the study as *positively insightful*. Subsequent calculations derived from the variances provided from the fixed effects output were calculated to measure the magnitude of variation among individuals in their mean insightfulness levels; based on these calculations, the range of plausible baseline values were between 4.24 and 6.34. Adding a linear slope to the *UMM* to create the *UGM* reduced the unexplained variance from 2.01 to 1.28 (-36%), indicating that there is substantial within-subject variation among mothers who entered the study as *positively insightful*. Based on the intercept and slope provided in the UGM, the estimated average participant entered with an average *positive insight* score of 6.40 and decreased by -.56 in their *positive insight* scores over the course of the study. Unlike with mothers who entered the study as *non-insightful*, initial measured significantly predicted the subsequent rate of change of *positive insight*, $t (26) = -2.58, p = .02$, with mothers with higher levels of *positive insight* demonstrating larger decreases over the course of the study, suggesting that decreases may, in part, be attributed to regression to the mean tendencies.

**Single-predictor models.** After fitting the unconditional models, the next step of model development was to fit a series of single predictor models. Results showed that neither mothers’ initial insightfulness nor rate of change of insightfulness was predicted by any of the evaluated child and family characteristics. Next, we fit a series of single predictor models to explore the role of treatment-related variables. Neither working alliance nor treatment group predicted mothers’ initial insightfulness or rate of change of insightfulness. At step 1, children’s chronological age
was entered as the first predictor and did not predict either initial status or rate of change of maternal insightfulness (-2 log likelihood = 276.1). Thereafter, none of the other child characteristics (-2 log likelihood = 273.0), family demographics (-2 log likelihood = 265.7), or treatment-related variables (-2 log likelihood = 261.4) significantly predicted initial status or rate of change of maternal insightfulness or substantially improved model fit. Given that none of the evaluated variables predicted initial status or rate of change of insightfulness, model development for baseline *positively insightful* mothers was completed at this stage.

**Discussion**

As autism researchers aim to design intervention programs that are more comprehensive in scope (i.e., target both child and parent outcomes) parent-mediated interventions are increasingly being designed with parental cognitions and emotions in mind. However, previous research is limited in that very little is known about 1) the stability of maternal insightfulness over time, 2) child and family characteristics that predict the trajectory of maternal insightfulness, and 3) treatment approaches that foster the development of maternal insightfulness, particularly among families of children with ASD.

The objective of the current study was to evaluate patterns of longitudinal change in maternal insightfulness among 70 mothers of children with ASD over the course of participating in a responsiveness-based parent-mediated intervention (Focused Playtime Intervention [FPI]). The current study was the first to employ a randomized design to test whether a responsiveness-based parent-mediated intervention for families of children with ASD had the potential to yield treatment effects on insightfulness.
This study had three major findings. First, and foremost, this study found that mothers who entered the study as non-insightful and were randomized to the experimental condition of FPI had a greater rate of change in insightfulness than mothers randomized to the control condition. To date, there has only been two studies that have investigated treatment effects on maternal insightfulness (Oppenheim, Goldsmith, & Koren-Karie, 2004; Virmani & Ontai, 2010). These studies did not have the advantage of a randomized control design, which limited the magnitude, generalizability, and clinical utility of the findings. Thus, the current study’s randomized control design significantly advances research in this area. Second, this study found that among mothers who entered the study as non-insightful, mothers with higher levels of annual family income and more effective working alliances with interventionists acquired insightfulness at a greater rate than mothers with lower levels of family income and working alliance. Third, several other parental cognitions and emotions changed in response to treatment group allocation. Specifically, mothers who entered the study as non-insightful and were randomized to the experimental group demonstrated greater rate of change of concepts of development and perceived sense of competence than mothers randomized to the control group.

**Evaluation of treatment effects on maternal insightfulness**

First and foremost, we evaluated whether Focused Playtime Intervention (FPI) yielded treatment effects on insightfulness. FPI has previously demonstrated significant treatment effects on parental responsive communication, children’s observed attachment-related behaviors, and maternal perception of child attachment among families of children with ASD.

The current study found that FPI treatment group allocation significantly predicted the rate of change in maternal insightfulness over the course of the study. Specifically, among mothers
who entered the study as non-insightful, mothers randomized to the experimental group (FPI) demonstrated a greater rate of growth in maternal insightfulness compared to mothers randomized to the active control group (PAC only). This study is the first randomized clinical trial to demonstrate treatment effects on maternal insightfulness among parents of children with ASD; this innovation is important for three reasons.

First and foremost, this finding suggests that insightfulness can indeed be cultivated in the context of a responsiveness-based parent-mediated intervention for families of children with ASD. The identified treatment effects on insightfulness may be particularly clinically relevant based on our previous findings that demonstrated insightfulness to moderate treatment effects from FPI. Specifically, the possibility that a parent-mediated intervention increases insightfulness may pave the way for an increasing number of diverse families to benefit from parent-mediated approaches. Further, research has previously established relations among insightfulness, attachment and maternal sensitivity (Koren-Karie et al., 2002; Oppenheim et al., 2009; Oppenheim, Koren-Karie, Dolev, & Yirmiya, 2012; Ramsauer, Quitmann, Lotzin, & Romer, 2011). Thus, it is possible that facilitating the development of insightfulness capabilities may improve parent-child relations more broadly, although further studies assessing these variables are necessary.

Second, this finding speaks more generally to the utility of parent-mediated interventions. Specifically, the existing research on parent-mediated interventions has identified treatment effects on parent and child behavior outcomes, including parental responsiveness and children’s communicative behaviors in the context of parent-child interactions. In accordance with the goal of parent-mediated interventions to meet the individualized needs of families, researchers are increasingly investigating a host of outcomes that are salient for families’ everyday lives, including parental cognitions and emotions. The current study adds to the growing body of research that
suggests treatment-related behavioral gains from parent-mediated interventions likely correspond with changes in the ways in which parents think about their roles as parents, their children, and the parent-child relationship. This finding is consistent with the existing, albeit limited, body of research on parent-mediated interventions that demonstrates parent-mediated interventions to exert treatment effects on a range of parental cognitions and emotions among parents of children with ASD including parental satisfaction, self-efficacy, stress, and maternal perception of child attachment (Estes et al., 2014; Siller, Swanson, et al., 2014; Whittingham, Sofronoff, Sheffield, & Saunders, 2009).

Third, the increased utility of parent-mediated interventions in targeting family outcomes is important based on the well-established body of research that demonstrates parents of children with ASD experience unique challenges relative to families of typically developing children and children with other special needs, including higher levels of stress, poorer quality of life, and increased need for social support (Giallo, Wood, Jellett, & Porter, 2013; Lee, Harrington, Louie, & Newscahffer, 2008; Montes & Halterman, 2007; Mugno, Ruta, D’Arrigo, & Mazzone, 2007; Vasilopoulou & Nisbet, 2015). Thus, the current research represents an important step towards addressing the mental health and treatment needs of parents of children with ASD.

**Predicting change in maternal insightfulness**

Existing longitudinal research on parental cognitions and emotions suggests that parental psychosocial factors may vary over time depending on a wide range of factors (Bornstein, Cote, Haynes, Hahn, & Park, 2010; Lee, 2005; Meins, Fernyhough, & Harris-Waller, 2014). Indeed, our final multilevel model indicated that two contextual variables that independently predicted the
rate of change of maternal insightfulness over the course of the study among mothers who entered the study as *non-insightful*.

First, this research identified that working alliance between parents and interventionists appears to be important in facilitating insightfulness in the intervention context. This finding suggests that researchers of parent-mediated interventions should pay particular heed to ensuring that the relationship between interventionists and families is supportive. Indeed, Steiner (2012) provides a number of recommendations to enhance the working alliance between parents and interventionists in the context of parent education programs for children with ASD. These recommendations include providing immediate feedback and demonstrating a responsive and collaborative teaching style.

Second, this research found that family annual income predicted the rate of growth of insightfulness over the course of the intervention. This finding suggests diverse samples may require distinct levels of support based on socioeconomic resources. Researchers may consider developing parent-mediated interventions specifically for low-income families or developing intervention programs with tiered levels of support based on socioeconomic status or access to resources. Efforts to develop parent-mediated interventions targeting child outcomes among low resource families have already begun. For example, Kasari et al. (2014) presents a randomized trial comparing two caregiver training interventions for preschool-aged children with ASD among families who were Medicaid eligible. This research found improvements in child outcomes and identified the need to provide additional support over time to maintain and generalize these gains over time. Additional studies that evaluate parent-mediated interventions for specific demographic populations are warranted.
Generally speaking, the current research does not support the assumption that insightfulness reflects a generalized personality characteristic that remains stable over time. Rather, the current research suggests that insightfulness demonstrates change, even over short periods of time, in response to a number of contextual factors. Thus, the current research aligns insightfulness with the myriad of other parental cognitions and emotions that have demonstrated change over time (e.g., self-efficacy and stress).

**Investigating model utility**

While the primary aim of this research was to investigate the rate of growth of maternal insightfulness, the fact that FPI also yielded significant treatment effects on concepts of development and perceived sense of competence among *non-insightful* mothers is illuminating. This finding suggests FPI to not only influence a singular measure of parental cognitions and emotions, but also maternal psychosocial functioning more broadly, which suggests these findings to be clinically meaningful. However, there were no significant effects for working alliance and income in predicting the rate of change of either of these additional parental cognitions and emotions. Thus, a systematic predictive model should be separately generated to more precisely predict the rate of change of concepts of development and perceived sense of competence. Nonetheless, these findings indicate that interventions that aim to influence particular parental cognitions and emotions indirectly affect the constellation of related parental psychosocial factors.

**The role of child characteristics for maternal insightfulness**

In the context of all of the aforementioned analyses, parental insightfulness was unrelated to child characteristics. Child characteristics were not associated with initial status or rate of
change in maternal insightfulness. Of note, the research sample predominantly included children who were severely affected both in terms of ASD symptoms and global developmental delays. For example, although children’s average chronological age was approximately 57 months, their receptive and expressive language age scores demonstrated their language abilities to correspond to those of children under the age of two years. In a more heterogeneous sample, child characteristics may have demonstrated linkages with maternal insightfulness. The current findings are consistent with some of the available previous research. Specifically, research with foster caregivers found that children’s challenging behaviors were associated with their caregivers’ emotional investment, but not with their insightfulness (i.e., caregivers demonstrated similar patterns of insightfulness towards easy and challenging children, but showed higher emotional investment in easy children [Koren-Karie & Markman-Gefen, 2015]). Given the limited breadth of research in this area, there is a clear need for additional studies in order to draw more concrete conclusions. Research should be conducted among parents of siblings to understand if there are individual differences within parents based on child characteristics. Research following children and their parents over longer periods of time may further elucidate how insightfulness and child factors are related over time.

**Limitations**

Existing longitudinal research investigating the Insightfulness Assessment is notably limited due to its exclusive focus on the categorical classifications of the measure. The current study is unique in its focus on the subscales that comprise the IA. That being said, a number of important caveats within the data exist. Most notably, although the continuous subscales utilized in the current study offer a greater potential to evaluate change over time in insightfulness, there
were limitations to assessing mothers who entered the study as *positively insightful* due to regression to the mean tendencies. Specifically, among mothers who entered the study as *positively insightful*, higher baseline levels of insightfulness were significantly associated with decreases in insightfulness between baseline and follow-up. Additionally, the current study was unable to determine predictors of change in insightfulness among mothers who entered the study as *positively insightful*. Additional studies should evaluate the trajectories of mothers who enter studies with a high degree of insightfulness to understand factors that support insightfulness over time.

**Future Directions**

Contemporary parenting researchers, particularly researchers of parenting in the context of risk increasingly conduct research from a *developmental perspective*, in that they acknowledge the extent to which distinct parental cognitions and emotions are embedded within the broader context of parental psychosocial functioning, the bi-directional relationship between parents and children, and the impact of macro-level social factors inextricable from family well-being. Efforts towards developing theoretical models of parenting processes consistent with a developmental perspective are continuously advancing (e.g., a developmental systems perspective on parenting [Lerner, Rothbaum, Boulos, & Castellino, 2002]). For example, Lerner, Rothbaum, Boulos, & Castellino (2002) outline a *developmental systems* approach to parenting. The current study supports a developmental perspective on parenting, suggesting that researchers of parent-mediated interventions should consider developing interventions appropriate for diverse families and ensuring appropriate support within the intervention context.
GENERAL DISCUSSION

Previous research suggests the clinical utility of investigating associations among parental cognitions and emotions, child characteristics, and family demographic variables and evaluating whether treatment-related and contextual factors demonstrate effects on the rate of change of parental cognitions and emotions over time. The long-term goals of this line of research are threefold: 1) to develop a comprehensive conceptual model of parental psychosocial development specifically tailored to the distinct needs, priorities, and concerns of families of children with ASD to be applied towards developing appropriate treatment models; 2) to gain a robust understanding of the wide-ranging outcomes of parent-mediated interventions; and 3) in the context of the efforts, identify the necessary components of intervention programs that effectively promote optimal parent and child outcomes in diverse samples.

With these long-term goals in mind, this dissertation reports findings from two sets of analyses on a sample of 70 mothers of children with ASD (chronological age: $M = 57.13$ months; $SD = 12.30$) who participated in a randomized clinical trial evaluating the efficacy of Focused Playtime Intervention (FPI). The first study presented as part of this research aimed to investigate relationships among maternal insightfulness and resolution of diagnosis on narratives elicited by the Insightfulness Assessment (IA [Oppenheim & Koren-Karie, 2002]) and the Reaction to Diagnosis Interview (RDI [Pianta & Marvin, 1993]); a range of questionnaire-based measures of parental cognitions and emotions; child characteristics; and family demographics. The second study aimed to evaluate patterns of longitudinal change in maternal insightfulness among mothers of children with ASD with a focus on evaluating treatment effects from FPI and identifying contextual predictors of the rate of growth of maternal insightfulness.
The following discussion situates findings from the current dissertation both in the context of previous research, as well as the long-term goals of this line of inquiry.

**Which factors are concurrently associated with maternal insightfulness and resolution of diagnosis among mothers of children with ASD?**

Findings from the dissertation revealed that maternal insightfulness and resolution of diagnosis are associated with a range of other facets of maternal psychosocial functioning. Specifically, mothers who demonstrated a greater level of insight into their child’s emotions and motives, acceptance of the positive and negative aspects of raising their child, and complexity in describing their child on narratives elicited by the IA demonstrated higher perceived sense of competence and understanding of child development and lower levels of stress. The extent to which mothers were able to move forward from the challenges related to their child’s diagnosis towards accepting, supporting, and caring for their child on narratives elicited by the RDI was associated with higher perceived sense of competency and social support and lower levels of stress.

Thus, the current research addresses extant gaps in the research on mothers of children with ASD by describing the role of maternal insightfulness and resolution of diagnosis and subsequently highlighting their utility in maternal psychosocial functioning. In turn, the research presented in this dissertation represents an important step towards developing a comprehensive conceptual model of maternal psychosocial functioning among mothers of children with ASD, which would inform the development of treatment programs that aim to influence both child and parent outcomes. However, the task of developing a comprehensive conceptual model of parental cognitions and emotions for parents of children with ASD is far from complete for two reasons.
First, the task of gaining a comprehensive understanding of general parenting processes is an ongoing exercise. As previously discussed, the existing body of research on parenting is expansive, in that it spans multiple decades, shifting historical and cultural contexts, and a range of diverse methodologies for conducting research. Thus, it is increasingly recognized that explanations of parenting processes are multi-faceted and complex (Collins et al., 2000, p. 218). In order to account for these complexities, contemporary parenting research embeds central ideas from a wide range of theories (i.e., attachment theory [Pederson, Cleason, Moran, & Bento, 1998] social cognitive perspective [Azar et al., 2008]; and ecological and developmental systems theory [Bronfenbrenner, 1979, Thelen, 2005], as well as empirical research of both normative parenting processes and parenting in the context of risk (Azar et al., 2008; Belsky, 1984; Bornstein et al., 2003). In doing so, parenting researchers are increasingly employing system-focused theoretical frameworks that attempt to develop and evaluate conceptual models to encapsulate the intricacies of parenting (Lerner, Rothbaum, Boulos, & Castellino, 2002).

Second, gaining a strong understanding of parental cognitions and emotions as they specifically pertain to families of children with ASD is particularly complex. While there are distinct challenges faced by parents of children with ASD pertaining to stress and the difficulties surrounding obtaining the diagnosis, the experience of parenting a child with ASD is also reported to be positive in many ways. For example, qualitative analyses with parents of children with ASD have yielded in-depth findings about the experience of parenting a child with ASD. Myers, Mackintosh, & Goin-Kochel (2009) identified a mix of negative and positive themes integrated within qualitative interviews among parents of children with ASD. The authors interpreted this finding to signify that the experience of parenting a child with ASD is "dialectical" (i.e., having a child with ASD is associated with ascribing positive meaning to life even while acknowledging
the stress and difficulties of having a child with ASD). This finding has been supported in additional qualitative studies. For example, while parents describe the confusion that resulted from their child's diagnosis and the feelings of loss and devastation that occurred after discovering their child had an ASD, they also discuss mobilizing their resources to support their child and describe positive experiences that resulted from raising a child with ASD (Altiere & von Kluge, 2009). In fact, in a qualitative meta-synthesis of 31 research articles, DePape & Lindsay (2015) identified six themes in parents' narratives about their child with ASD: pre-diagnosis, diagnosis, family life adjustment, navigating the system, parental empowerment, and moving forward, which reflect both positive and negative experiences faced by parents of children with ASD. Similar findings have also been identified in large-scale quantitative analyses, with mothers of children with ASD more likely to report a closer relationship with their child compared with mothers of children without ASD (Montes & Halterman, 2007).

Taken together, there is a clear need for future research in at least three areas related to developing a comprehensive conceptual model. First, there is a need to evaluate a wide range of parental cognitions and emotions among large and diverse samples for which structural equation modeling techniques would be feasible. This research would be able to more conclusively determine relationships among specific cognitions and emotions, situate relationships within broader contextual factors, and identify mediating and moderating variables. Second, there is a need to compare and contrast parental cognitions and emotions among families of children with ASD with families of children experiencing other risk factors for development. This investigation would elucidate the distinct needs of parents of children with ASD compared to parents of children with other risk factors who participate in other programs that engage parents as active participants (e.g., Early Head Start). Finally, the scope of the current research could be expanded by evaluating
cognitions and emotions among fathers to understand if additional familial characteristics serve as risk or protective factors for maternal psychosocial functioning among families of children with ASD.

**Does participation in a responsiveness-based parent-mediated for families of children with ASD demonstrate collateral effects on parental cognitions and emotions?**

The linchpin of the current dissertation is the demonstrated treatment effects from FPI on a range of parental cognitions and emotions, specifically maternal insightfulness, but also perceived sense of competence and understanding of child development. FPI has previously demonstrated efficacy in improving responsive communication, children’s observed attachment-related behaviors, and maternal perception of child attachment among families of children with ASD. The current research adds to the existing research by demonstrating that FPI yields collateral effects on maternal insightfulness and other parental cognitions and emotions. This was the first randomized clinical trial to demonstrate treatment effects on maternal insightfulness among parents of children with ASD.

Although the original intention of FPI was to facilitate gains in responsive parental behaviors, the intervention effectively exerted collateral effects on maternal insightfulness. These findings indicate that treatment-related behavioral gains from parent-mediated interventions likely correspond with changes in the ways in which parents think about their roles as parents, their children, and the parent-child relationship. This research elaborates on the existing body of research on parent-mediated interventions to demonstrate that outcomes may be more extensive than are often measured in the context of the research evaluating these programs.
The finding that mothers allocated to the experimental group demonstrated a greater rate of growth in insightfulness than mothers allocated to the control group implicates at least three future studies. First, research should be conducted to advance the long-term goal of identifying the range of outcomes influenced by parent-mediated interventions. Program evaluation studies should broaden measures to include a range of variables relevant for families’ everyday lives, including parental cognitions and emotions. Generally speaking, research should be expanded to evaluate parent-mediated interventions with a diverse range of intervention structures, areas of focus, and teaching approaches to investigate the types of programs, and potentially the active program ingredients, that exert collateral effects on parental cognitions and emotions. For example, it would be of interest to test whether video feedback approaches that require parents to reflect on their interactions with their child (as in FPI) are more likely to increase insightfulness than more conventional intervention approaches. Second, it is yet to be known whether changes in maternal insightfulness corresponded to maintenance of treatment effects in parental responsiveness over time or the extent of the relationship between insightfulness and child development. Thus, future research should track intervention outcomes over a longer period of time to understand the longitudinal implications of our findings and investigate long-term associations between children’s developmental behavioral gains and parent outcomes. Third, due to the fact that a measure of treatment engagement was not obtained for the current study, the current research does not afford us the opportunity to link treatment-related gains in maternal insightfulness with increased parental engagement with the intervention. Thus, there is a need to replicate and extend the current findings to understand the utility of gains in parental cognitions and emotions in the context of parent-mediated interventions.
In addition, findings relate to our knowledge of change trajectories in parental cognitions and emotions more generally. Specifically, the research presented in the context of this dissertation does not support the assumption that insightfulness reflects a generalized personality characteristic. Rather, the current research suggests that insightfulness demonstrates change, even over short periods of time, in the context of an intervention program. There are two limitations related to this finding that should be addressed in future research. First, the current research was only able to determine predictors of the rate of change of insightfulness among mothers who entered the study as non-insightful. Future research should continue to evaluate parents’ trajectories in parental cognitions and emotions based on baseline status and attempt to delineate more nuanced trajectories for diverse groups of parents. Second, among those mothers who entered the study as non-insightful, very few actually demonstrated shifts in their IA classifications. While this speaks to the utility of our continuous composite in detecting a higher degree of detail in change over time in the IA, it also speaks to the fact that increases in the subscales over time may not have been substantial enough to warrant a change in classification. Thus, while insightfulness may change over time, the current research does not support that large-scale changes in the quality of the narratives should be anticipated. Researchers of parental cognitions and emotions should continue to employ multiple measurement techniques for each construct to investigate the extent to which change is clinically meaningful.

Finally, while the primary aim of this research was to investigate the rate of growth of maternal insightfulness, the fact that FPI also yielded significant treatment effects on concepts of development and perceived sense of competence is illuminating. This finding suggests at least two next steps for future research. First, this finding suggests FPI to not only influence a singular measure of parental cognitions and emotions, but also maternal psychosocial functioning more
broadly, which suggests these findings to be clinically meaningful. Indeed, baseline measures of insightfulness, perceived sense of competence, and concepts of development were concurrently associated, although there is a need for future research to evaluate the extent to which these constructs co-vary over time to further elucidate these relationships. Second, stress and insightfulness were concurrently associated at baseline, but FPI failed to yield treatment effects on stress. Given the salience of stress of parents of children with ASD, researchers should include measures of stress in their efforts to longitudinally investigate parental cognitions and emotions in this population to better understand the extent to which stress is associated with other measures of psychosocial functioning over time.

Do child characteristics, family demographics, and other treatment-related variables predict the rate of change of maternal insightfulness?

In addition to change in response to treatment group allocation, the current research identified the rate of change of insightfulness to be predicted by contextual determinants of socioeconomic status and characteristics of the intervention context. Specifically, this research investigated the rate of change of maternal insightfulness in response to two sets of contextual factors (i.e., family demographics, and treatment-related variables). Findings revealed that in addition to treatment group allocation, working alliance between mothers and interventionists and family annual income predicted the rate of growth of maternal insightfulness over the course of the study.

First, this research identified that working alliance between parents and interventionists appears to be important in facilitating insightfulness in the intervention context. This finding suggests that researchers of parent-mediated interventions should pay particular heed to ensuring
that the relationship between interventionists and families is supportive. Indeed, Steiner (2012) provides a number of recommendations to enhance the working alliance between parents and interventionists in the context of parent education programs for children with ASD. These recommendations relate to designing or implementing intervention content (i.e., prioritizing the individualization of the program and providing concrete and positive feedback to parents); the structure of the intervention (e.g., providing immediate feedback, rather than waiting until the end of the session); and teaching approach (e.g., demonstrating a responsive and collaborative teaching style). As a next step, researchers should continue to identify the essential components of an effective working alliance between participants and interventionists in order to promote optimal outcomes among diverse families.

Second, this research found that family annual income predicted the rate of growth of insightfulness over the course of the intervention. This finding suggests that, generally speaking, researchers should caution against developing a “one size fits all” intervention approach, specifically in the context of diverse samples. Researchers may consider developing parent-mediated interventions specifically for low-income families or developing intervention programs with tiered levels of support based on socioeconomic status or access to resources. Such interventions may offer additional resources that may be limiting families from succeeding in current approaches to interventions, treatments, and services. These interventions should be evaluated with consideration of a broad range of child and parent outcomes that are relevant for families of children with ASD.
Conclusion

The findings from the current dissertation support a *developmental perspective* on parental cognitions and emotions, which 1) acknowledges the extent to which parental cognitions and emotions are embedded within the broader context of parental psychosocial functioning and the impact of macro-level social factors inextricable from family well-being; and 2) acknowledges that evaluating change over time necessitates investigating developmental patterns within and between individuals over time. The current dissertation enhances our understanding of parental cognitions and emotions among parents of children with ASD and advances theoretical and methodological considerations for parent-mediated interventions.
References


