Health Habits in Caregivers of Young Children with ASD: Key Factors, Facilitators, and Barriers

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Abstract

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Background. Caregivers of individuals with Autism Spectrum Disorder (ASD) are a highly stressed group and their parenting stress has been linked to increased depression, anxiety, and reduced parenting self-efficacy (Osborne & Reed, 2008; Rezendes & Scarpa, 2011; Weiss & Lunsky, 2011). Given these areas of concern that parents of children with autism experience, there is a need to look more closely at modifiable factors that improve parental well-being. As such, health habit behaviors, including sleep, diet, exercise, and substance use are modifiable factors demonstrated to be causally related to well-being in adults.

The present dissertation consists of two studies that explored how parents' engagement in health habits (sleep, diet, exercise, and substance use) related to their well-being (stress and depression) and explored the possible determinants of health habit engagement. Specifically, how parental characteristics (both psychological and demographic), social support (both relationship-based and resource-related), and child factors (child behavior and demographic variables), relate to parents' engagement in these habits. And, in study two, these exploratory analyses went further by examining how parent's engagement in healthy habits relates to the observed parenting quality.

Methods and Results: Study 1. Study one was a needs assessment completed by mothers and fathers (n=68) of children in an Applied Behavior Analysis (ABA) early intervention program in the northeastern United States, all at-risk for a developmental disability, many of whom were at risk for developing ASD. Parents completed questionnaires that included

questions about their healthy habit engagement adapted from the *Promise Neighborhoods RFA Indicators and the Promise Neighborhoods Research Consortium [PNRC] Measurement System* (Promise Neighborhoods Research Consortium: Measures, 2001) as well as those related to parent, social support, and child characteristics. Parental characteristics included demographic characteristics of caregiver age and education level along with questionnaires on the parent's psychological functioning; a measure of well-being (WHO-5; Topp, Østergaard, Søndergaard, & Bech, 2015), parental stress (PSI-4; Abidin, 2012), and caregiver depressive symptoms (PHQ-9; Kroenke, Spitzer, & Williams, 2001). Questionnaires covering the second domain of social support included a measure of perceived social support (Interpersonal Support Evaluation List (ISEL-12); Cohen & Hoberman, 1983), marital satisfaction (Kansas Marital Satisfaction Scale; Schumm et al., 1986a), household income, and caregiver nativity. Questionnaires covering the third domain of child factors included a measure of child sleep problems (Children's Sleep Habits Questionnaire; Owens, Spirito, & McGuinn, 2000), the ratio of children to adults in the home, child age, and child gender.

Overall, about half of the caregivers reported an insufficient amount of sleep (less than 7 hours on average). A third of caregivers reported they did not exercise at all. Only a third reported eating breakfast every day, half ate only one serving of fruit most days and one serving of vegetables a day, half ate family meals prepared at home almost every day, a third ate fast food regularly, about half were told to lose weight. Most did not smoke or drink alcohol regularly. Additionally, about 30% reported elevated levels of depressive symptoms and elevated levels of parental stress. Significant relationships were found between parental characteristics, social support, child factors, and healthy habit engagement. Of note, caregiver stress, depression, and well-being were related adversely to mother's sleep, diet, and substance use. Perceived

social support was positively related to sleep, marital satisfaction negatively to smoking, household income negatively to diet and alcohol consumption, and nativity positively to sleep, diet, and alcohol consumption. No correlations were found with child factors and healthy habits. Examining a regression model of the facilitators and barriers to healthy habit engagement, caregiver well-being positively related ($t=4.015$, $p<.001$) while child sleep disruptions negatively related to healthy habit engagement ($t=-2.344$, $p=.026$). Additionally, depression was found to mediate the relationship between healthy habit engagement and parental stress using PROCESS (CI= (-1.811, -.324), $R^2=.274$).

Methods and Results: Study 2. Study two aimed to narrow in on a specific population of mothers of preschool-aged children with autism. Participants were 46 mother-child dyads, with children ages 2-6 to 5-6 recruited from a preschool utilizing an Applied Behavior Analysis (ABA) approach to schooling. Children had a classification of ASD, verified by the Autism Diagnostic Observation System – Two (ADOS-2) (Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012). Parenting behaviors, categorized as positive and harsh parenting, were observed across three tasks and coded using the *Psychological Multifactor Care Scale — ASD Adapted Preschool Version* (Brassard, Donnelly, Hart, & Johnson, 2016). Mothers completed the same questionnaires as study one for measures of healthy habit engagement, parental characteristics (excluding the WHO-5), and social support, There were additional child factor measures; however, including the child sleep problems and child externalizing behavior subscales from the CBCL (Achenbach & Rescorla, 2000), child language functioning (Vineland-III Communication subscale; Sparrow, Cicchetti, & Saulnier, 2016), ASD severity (ADOS-2), along with ratio of children to adults in the home, child age, and child gender.

Overall, more than half of the mothers reported an insufficient amount of sleep (less than 7 hours on average). Almost half of mothers reported they did not exercise at all. Almost half reported eating breakfast every day, a third ate only one serving of fruit most days, and half ate one serving of vegetables a day, a third ate family meals prepared at home almost every day, a third ate fast food regularly, and a third were told to lose weight. Most did not smoke. Additionally, 11% of the sample had elevated depressives symptoms and 20% had elevated levels of parental stress. Similar significant relationships were found between parental characteristics, social support, child factors, and healthy habit engagement in study two. Of note, caregiver stress and depression were related negatively to caregiver's sleep, diet, exercise, and being overweight. More perceived social support was related to better diet, household income to not being overweight, and nativity to smoking. Correlations were also found with child factors and healthy habits; child sleep with mother's sleep, externalizing behavior problems with smoking, and high child to adult ratio with mother's sleep. Examining a regression model of the facilitators and barriers to healthy habit engagement, caregiver depressive symptoms related negatively to healthy habit engagement (t=-.380, p=.049). ASD severity (t=-.511, p=.045) and child age (t=-.523, p=.014) came out as negatively related to mother's diet in a similar model analysis. Additionally, mothers sleep directly related to both positive (R^2=.213) and harsh (R^2=.165) observed parenting quality.

Conclusion. The results from study one and study two suggest that sleep, diet, exercise and substance use are important for parent's well-being in both parents of children in early intervention and mothers of preschool-aged children with autism. Furthermore, parental well-being was the most predictive of engagement in healthy habits when examining possible facilitators and barriers. Child sleep was an important potential barrier in parents of children in

early intervention and autism severity and child age were important potential barriers to mother's diet in mothers of preschool-aged children with ASD. Furthermore, in study two, mothers sleep was an important factor not only for well-being but also for an objective measure of parenting quality, further strengthening the importance and value of sleep for a highly stressed population.

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Introduction

The early childhood years are a period of significant growth for children as they increase mobility, gain an increased desire for independence, and begin education. Parents therefore face a variety of challenges and increases in stress as their children are demanding a higher level of attention. Parents of young children with a disability feel significantly more burden as these children require more time devoted to care, greater financial resources, and more energy to increase their well-being.

Children with autism spectrum disorder (ASD) require a high level of support and investment of time from parents. Children with ASD struggle with social communication, including back and forth conversation, reduced sharing of interest, emotions, and affect, and failure to respond to social interactions as well as restricted interests, rigidity, and stereotyped motor movements, and high comorbidity with intellectual deficits (American Psychiatric Association [DSM-V], 2013). These behaviors can be difficult to manage and there are increased financial burdens and loss of social support for parents of children with ASD. Therefore, parents of children with ASD demonstrate significantly higher levels of stress, anxiety, depression, and divorce when compared to parents of children with other psychiatric conditions and developmental disabilities except for ADHD (Eisenhower, Baker, & Blacher, 2005; Hartley et al., 2010; Harley et al., 2012; Hayes & Watson, 2013; Reed & Osborne, 2016; Rezendes & Scarpa, 2011; Weiss & Lunsky, 2011).

Given the high levels of stress, depression, divorce, low self-competence and other areas of concern that parents of children with autism experience, there is a need to look more closely at modifiable factors that improve parental well-being. As such, health habit behaviors, including

sleep, diet, exercise, and substance use are modifiable factors demonstrated to be causally related to well-being in adults. Specifically, quality and amount of sleep impacts adult's ability to function in daily life including their stress levels and memory. Parents of children with disabilities (including ASD); however, report worse sleep quality (Gallagher, Phillips, & Carroll, 2010; Giallo et al., 2013; Giallo, Rose, & Vittorino, 2011; Hoffman et al., 2008; Lopez-Wagner et al., 2008; Potkin & Bunney, 2012; Vanderkerchkhove & Clyudts, 2010; Walker, 2009). Healthy diet has also been demonstrated to be causally linked to depression and well-being (Firth et al., 2019; Jacka et al., 2017; Lai et al., 2014; O'Neil et al., 2014; Sánchez-Villegas et al., 2013). Experimental research has similarly demonstrated causal links between exercise and depression and anxiety, though mothers often perceive barriers to exercising (Fox, 1999; Norman et al. 2010; Penedo & Dahn, 2005; Verhoef & Love, 1992). This dissertation also includes measures of substance use (smoking and alcohol) and being overweight. Overall, smokers have more instances of negative outcomes across levels of functioning than nonsmokers, including worse mental health and worse quality of life (Lyvers, Hall, & Bahr, 2009; Parrott, 2006; Schmitz, Kruse, & Kugler, 2003). Individuals who have higher levels of alcohol consumption demonstrate health problems (for example, greater than 1 drink per day) and worse mental health (Boden & Fergusson, 2010; Corrao, Bagnardi, Zambon, & Arico, 1999; Ronksley, Brien, Turner, Mukamal, & Ghali, 2011). Furthermore, being overweight is significantly related to increased health risks and increased mental illness (Avila et. al, 2015; Devlin, Yanovski, & Wilson, 2000).

While it is known that engagement in healthy habits is important for well-being, the present dissertation seeks to explore the possible determinants of healthy habit engagement in two different study samples. Specifically, how do parental characteristics (both psychological and demographic), social support (both relationship-based and resource-related), and child

factors (child behavior and demographic variables), relate to parents' engagement in these habits. There has been some research demonstrating links between parent characteristics, social support, child factors and parental well-being generally and individuals health behaviors more specifically; however, there has been limited to no research on these links in a population of caregivers of children with developmental disabilities or ASD specifically (Derguy et al., 2016; Dimidjian et al., 2014; Giallo, Rose, & Vittorino, 2011; Hiza et al., 2013; Hoffman et al., 2008; Lee et al., 2009; Lopez-Wagner et al., 2008).

The literature therefore demonstrates that healthy habits are important for well-being. The present dissertation further hypothesized and explores how these healthy habits are related to other parent characteristics, social support, and child factors. And, in study two, the present dissertation seeks to take these exploratory analyses further by examining how parents' engagement in healthy habits relates to the parents' observed parenting quality.

Parenting in general is influenced by multiple variables such as genetic and sociocultural factors as well as individual attachment style, which interact to determine parenting behaviors which subsequently impact the child. Belsky (1984) created a widely-cited theoretical model of parenting that proposes three domains of determinants that contribute both to parenting and child outcomes: (1) individual parental personality and psychological resources, such as their own experiences growing up or attachment patterns and existence of mental illness (such as depression and anxiety) (2) the child's individual characteristics, such as temperament and presence of a disability, and (3) external sources of stress and support, including social support, the marital relationship, employment, and socioeconomic status. Belsky argues that the personal psychological resources of the parent is the most influential determinant of parenting not only through its direct effect on parental functioning but also because of the role it likely plays on

recruiting support. The present dissertation postulates that parents healthy habit engagement, an aspect of a parent's characteristics, also impacts parenting. Johnson (2019), using the same data as study two in this proposed dissertation, found that engagement in healthy habits predicted depression and parental stress which predicted observed parenting quality. Furthermore, there has been research linking parent's sleep to observed parenting quality (Bai, Corey, & Teti, 2020; Cooklin, Giallo, and Rose, 2011; Giallo, Rose, and Vittorino, 2011; McQuillan, et. al, 2019).

Overall, the present dissertation took an exploratory approach to understanding the importance of health habits as they relate to both internal parent characteristics and external environmental and child characteristics. Study one was a needs assessment completed by mothers and fathers of children in a CABAS® style of Applied Behavior Analysis (ABA) early intervention program in the northeastern United States, all at-risk for a developmental disability. Study one seeks to examine health habits (mainly sleep, diet, and exercise but also weight, smoking, and alcohol) and how each of these variables relate to other parental characteristics, social support, and child factors. Guided by research linking these three domains to parental well-being and health behaviors, parental characteristics (including parental level of education, parental age, and parental well-being), social support (including perceived social support, marital satisfaction, family income, and caregiver nativity), and child-related variables (including child age, child gender, child sleep disruption, and ratio of children to adults in the home), are examined in study one to explore factors that might facilitate and hinder caregivers from engaging in healthy habits. Furthermore, study one examines the relationship between healthy habits, caregiver depressive symptoms, and parental stress, hypothesizing that depression acts as a mediator between health habits and stress.

To narrow in on a specific parent population and include an objective measure of observed parenting quality, study two aims to explore similar relationships but in mother-child dyads of a sample of preschool-aged children diagnosed with ASD, all attending a CABAS® style of ABA preschool program in the northeastern United States. Study two also includes a measure of observed parenting quality, allowing for examination of the relationships between engagement in healthy habits, caregiver parental characteristics, external social environmental factors, child factors, and parenting quality. Furthermore, study two also examines the possible barriers and facilitators to engaging in healthy habits including parental characteristics, aspects of social support, and child factors (included additional variables of child externalizing behavior, ASD symptom severity, and child language functioning).

Parents of individuals with ASD are a uniquely stressed population of caregivers; therefore, there is a need to further research the needs of this population and identify possible interventions. Both studies in this dissertation are designed to provide information on what to focus on specifically when designing an intervention to improve well-being for parents of young children with ASD or at risk for ASD.

Chapter 1: Literature Review

1.1 Parenting Children with Autism

Autism Spectrum Disorder (ASD) is a developmental disorder characterized by a persistent impairment in reciprocal social communication and social interaction as well as engagement in restricted, repetitive patterns of behavior, interests, or activities (Diagnostic Statistical Manual, DSM-5, 2013). ASD is a heterogeneous disorder where individuals vary in expression of symptoms depending on the severity level, developmental level, and age of the child. Based on the most recent data from the CDC, about 1 in every 59 children in the United

States have been identified with ASD (Centers for Disease Control and Prevention, 2018). ASD is prevalent across all racial, ethnic, and socioeconomic groups although it is about four times more common among boys than girls.

As explained in the DSM-5, ASD is characterized by deficits in two domains; (1) deficits in social communication and social interaction and (2) expression of restricted, repetitive patterns of behavior, interests, or activities. The symptoms must be present in the early developmental period and are not better explained by an intellectual disability (intellectual developmental disorder) or global developmental delay. Furthermore, individuals are categorized based on severity level with a Level 3 "requiring very substantial support," Level 2 "requiring substantial support," or Level 1 "requiring support."

The first domain, as specified in the DSM-5, includes deficits in social-emotional reciprocity including abnormal social approach, failure to have normal back-and-forth conversations (i.e., reduced conversational units), reduced sharing of interests, emotions, or affect, and/or failure to initiate or respond to social interactions. Individuals with ASD may also have deficits in nonverbal communication including abnormal eye contact and body language, difficulty understanding and using gestures, or a total lack of facial expressions and nonverbal communication. They may also have deficits in developing, maintaining, and understanding relationships including difficulties adjusting behavior to match various social contexts, difficulties sharing in imaginative play, or difficulty making friends or having no friends at all. The second domain of repetitive patterns of behavior, interests, or activities include the presence of stereotyped or repetitive motor movements, use of objects, or speech (i.e., lining up toys, echolalia, and idiosyncratic phrases). Individuals with ASD may also display an insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal

behavior. They may also have highly restricted, fixated interests that are abnormal in intensity or focus or may also have hyper-or hypo reactivity to sensory input or unusual interest in sensory aspects of the environment (American Psychiatric Association [DSM-V], 2013).

ASD is considered to be a life-long disability. Longitudinal research has demonstrated that a diagnosis of ASD remains relatively stable into adulthood with 75-85% maintaining their diagnosis into adulthood. Furthermore, social functioning, cognitive ability, and language skills remain relatively stable or deteriorate into adulthood for individuals with ASD (Magiati, Tay, Howlin, 2014; Russell et al., 2012). Additionally, adults with ASD are disadvantaged regarding employment, social relationships, physical and mental health, and quality of life, and they have a higher mortality rate than the general population (Gillberg et al., 2010; Howlin & Moss, 2012). Research has also demonstrated that individuals with ASD remain very dependent on support services into adulthood with few living alone, few with close friends, or with permanent employment (Howlin et al., 2004). Families of individuals with ASD often have increased physical and emotional stress, higher financial demands, and lower quality of life due to the life-long care required for their offspring (Howlin & Moss, 2012). Siblings have been shown to have considerable anxiety about what will happen when their parents pass, leaving them responsible for their sibling with autism. Caregivers have similarly been shown to fear the future for their child including who would look out for his/her welfare after they pass (Howlin & Moss, 2012).

Due to the lifelong diagnosis of ASD, along with the social and behavioral deficits tied to the diagnosis, parenting an individual with ASD is uniquely challenging and impacts caregivers' well-being. Parents of individuals with ASD demonstrate higher parenting stress compared to parents of typically developing children and/or children with other disabilities (Abbeduto et al., 2004; Eisenhower, Baker & Blacher, 2005; Hayes & Watson, 2012) Specifically, mothers of

children with ASD have shown lower psychological well-being and coping compared to mothers of children with Down Syndrome, Fragile X, and cerebral palsy (Abbeduto et al., 2004; Blacher & McIntyre, 2006; Eisenhower, Baker, & Blacher, 2005; Kasari & Sigman, 1997). Researchers have suggested that the core deficits associated with ASD including impairments in social communication or restricted/repetitive behaviors are the most stressful for parents (Hayes & Watson, 2012). Estes et. al (2009) notes that impairments in social relatedness may be emotionally difficult for parents. They further highlight that stereotyped speech and odd and ritualistic behaviors exhibited by individuals with ASD may be difficult for parents when they occur in public as the behavior may be misunderstood or misinterpreted by others. Impairments in adaptive functioning and problem behaviors such as self-injury, exhibited by many individuals with ASD may also increase stress in caregivers (Estes et. al, 2009).

Caregivers of individuals with ASD are therefore a highly stressed group and their parenting stress has been linked to increased depression, anxiety, and decreased parenting self-efficacy (Osborne & Reed, 2008; Rezendes & Scarpa, 2011; Weiss & Lunsky, 2011). Mothers of individuals with ASD also perceive lower levels of social support which is related to depression symptoms and overall well-being (Benson, 2010). The day-to-day experiences of mothers of individuals with autism also include more time providing childcare and doing chores, higher fatigue, more arguments, and more stressful life events compared to mothers of children without disabilities (Smith et al., 2010). Therefore, the present dissertation explores the modifiable factor of healthy habits which can reduce stress and improve well-being for a population of caregivers in need.

Below are figures depicting the conceptual frameworks for study one and for study two (See Figure 1 and Figure 2). It is important to note that both studies are entirely correlational

designs and therefore, directionality cannot be deduced (displayed with bidirectional arrows in figures). Furthermore, healthy habits and psychological well-being, including stress and depression, are all interrelated and are examined as such across hypotheses in both studies.

Figure 1. Conceptual Model for Study One

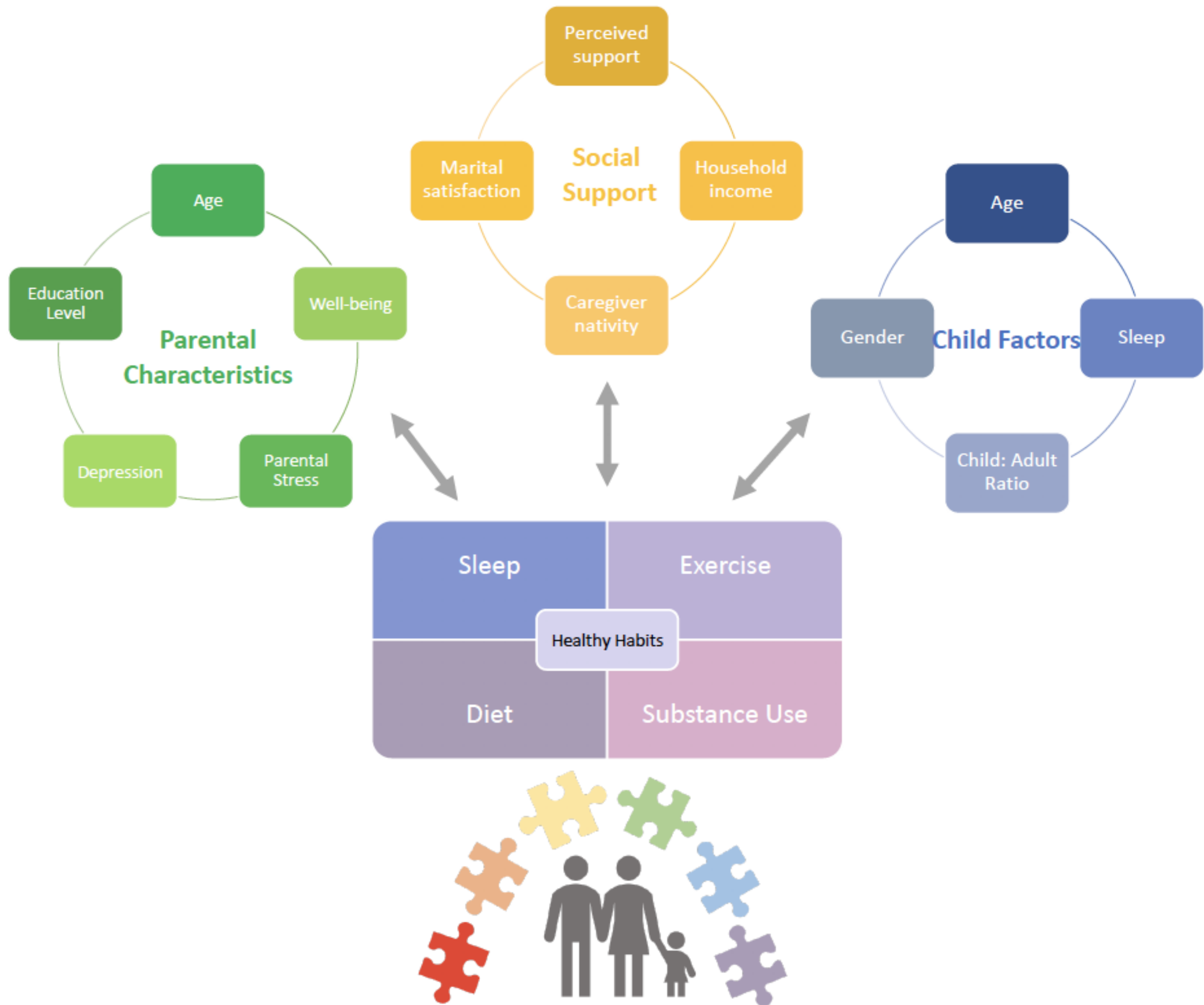
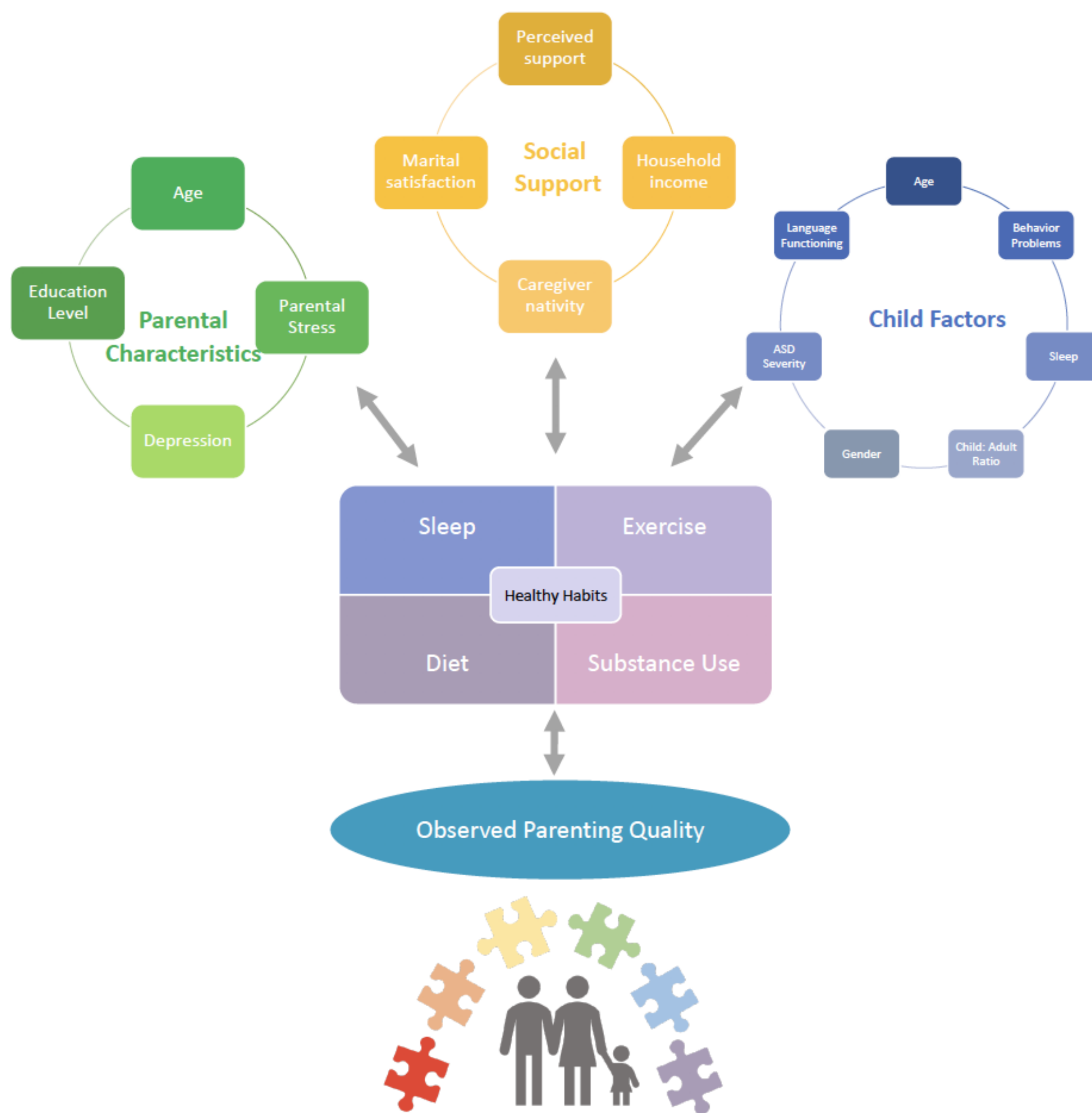


Figure 2. Conceptual Model for Study Two



1.2 Healthy Habits in Parents of Children with Autism

Due to the challenges that come along with parenting a child with autism that sometimes lead to high levels of stress, depression, and perception of low-self competence, it is important to determine the methods that parents use to cope with these challenges. Engagement in healthy habits is one major area to examine as it is a modifiable factor highly related to well-being. Healthy habits in the present dissertation includes a healthy diet and weight, regular exercise, adequate sleep, no smoking, and moderate to no alcohol consumption. Healthy habits are important to protecting one's own well-being and happiness, in particular during periods of stress. In parents, this can be further defined as the ability to protect one’s well-being to be able to continue the often stressful job of parenting.

In parents of children with autism, taking care of oneself is often put aside for other priorities as there is a high demand for parental resources in this population. In a qualitative focus-group study surveying parents of children and adults with disabilities, parents reported negative health outcomes (physical pain, chronic fatigue, sleep deprivation) along with negative emotional outcomes; however, shared that they have little to no time at the end of the day to invest in themselves, ranking their own health needs as the lowest priority (Murphy, Christian, Caplin, & Young, 2007).

Parents who engage in low levels of self-care and are focused solely on parenting their child will likely have less energy, less strength, and a lower commitment to parenting based on Cavell (2000)’s framework for understanding the importance of self-care for parents. Cavell (2000) also proposes that individuals who have multiple and diverse sources of satisfaction, support, and accomplishment are less likely to be exhausted and stressed. Therefore, due to the benefits of healthy habits, and the high stress experienced in this population, it is important to explore the relationships between aspects of healthy habits and other parent, social support, and

child variables and determine the facilitators and barriers to engaging in these habits for parents of young children with ASD (including at-risk for ASD).

1.2.1 Physical Activity. One aspect of health habits to examine is physical activity or exercise. The Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention, 2018) report that physically active individuals sleep better, feel better, and function better. This includes improvements in executive functioning, reduction in risk of clinical depression and depressive symptoms, reduction in symptoms of anxiety, improvements in perceived quality of life, and improvements in general physical functioning. The report recommends 150 to 300 minutes a week of moderate-intensity physical activity but indicates that major improvements in health are possible from even a modest increase in regular physical activity (Centers for Disease Control and Prevention, 2018). Physical activity has been widely demonstrated to be associated with reduced risk of cardiovascular disease, cancers, diabetes, depression, anxiety, as well as associated with enhanced cognitive functioning (Basch, 2011).

Research using experimental designs has demonstrated that physical activity directly improves aspects of cognition. In a literature review looking at the effects of exercise on cognitive functioning in elderly individuals, the authors found that exercise (i.e., biking, walking, stretching, aerobic workouts) promoted improved cognitive functioning as measured by memory, mathematical, and IQ tests (Van Sickle et al., 1996). Additionally, a meta-analysis for a wider-age range (ages 6 to 90) found that exercise interventions (both short and long-term aerobic and anaerobic exercise) improved cognitive functioning (as measured on IQ, motor skills, verbal comprehension, line matching, and the Stroop tests) with the largest effect size on motor skills performance. This meta-analysis also found that chronic exercise interventions were stronger than acute interventions (Etnier et al., 1997). Similar results were found in 8th grade students

where an 8-week aerobic exercise program compared to regular physical education class showed higher creativity scores pre-post treatment (Hinkle et al., 1993). Positive effects of exercise have also been demonstrated in younger children, ages 7-11, specifically on planning abilities (including cognitive control, utilization of processes and knowledge, intentionality, and self-regulation) pre-post a 10–15-week 40-minute exercise intervention compared to 20 minutes, and a no-exercise control group (Davis et al., 2007).

Neuroimaging studies have shown differences in cognitive functioning that are related to physical activity. A literature review on the benefits of exercise on the brain and cognition report links between physical activity and aspects of cognitive functioning through EEG and fMRI studies (Hillman et al., 2008). Hillman et al. (2005) conducted an EEG study looking at response time on a visual discrimination task for low and high physically fit children and young adults. They found that, while slower than young adults, high-fit children had significantly faster response times and faster cognitive processing than less-fit children. MRI studies have also shown that higher levels of fitness and fitness improvements were related to larger volumes of the prefrontal and temporal grey matter and anterior white matter, which have been shown to predict performance in older adults (Hillman et al., 2008). Therefore, cognitive benefits of exercise have been demonstrated in a wide age range of individuals, improving processing speed, planning, motor skills, and creativity.

Physical exercise has also been shown to have positive effects on mental health through experimental-design research. In a review of the benefits of exercise on well-being, the finding that individuals diagnosed with major depression showed significant reductions in depressive symptoms after an aerobic-exercise intervention comparable to individuals receiving psychotropic treatment was reported. Additionally, participants in the exercise intervention group

had significantly lower relapse rates (Penedo & Dahn, 2005). Physical activity has also been shown to decrease the risk of developing clinical depression (Fox, 1999). Research has shown that there are moderate effects for reductions in anxiety immediately post exercise and post several weeks of an exercise program in addition to positive effects on mood (Fox, 1999). Non-traditional exercise programs have also been shown to be beneficial. Penedo and Dahn (2005) reported that individuals who were randomized to either a Hatha yoga or African dance class, reported significant reductions in perceived stress and negative affect compared to controls.

While mothers often see the benefit of exercise, they often perceive more barriers to exercise and exercise less than women who are not mothers (Verhoef & Love, 1992). Exercise has been shown to benefit the well-being of new mothers. Norman et al. (2010) found that new mothers (mothers ready to be discharged from hospital) who received an 8-week program that included specialized exercise instruction in addition to parenting education compared to mothers who received just parenting education showed significant improvements in well- being scores and depressive symptoms, which was maintained 4 weeks after completion of the program.

Furthermore, Halliday et al. (2017) conducted a longitudinal pilot study for parents of children with cancer (a different highly stressed population of parents) testing the effect of increased step counts (tracked through a pedometer) for 12 weeks on parent's mood, depression, and anxiety. The researchers found that after 12 weeks, parents reported decreases in negative mood, stress, and depression. Therefore, physical exercise has been shown to cause positive changes in cognitive functioning and mental health generally and for mothers and highly stressed parents specifically. Exercise is consequently vital for caregiver well-being, especially for a highly stressed population of parents.

1.2.2 Diet. Healthy diet is another major component of healthy habits. According to the dietary guidelines set by the CDC, a healthy diet consists of a focus on fruits, vegetables, and whole grains in addition to lean meats, poultry, fish, beans, eggs and nuts (Centers for Disease Control and Prevention, 2020). Research has demonstrated causal links between diet and mental health. There have been multiple randomized control trials covering over 45,000 participants that demonstrate that dietary interventions significantly reduced depressive symptoms (Firth et al., 2019). Healthy diet, specifically a high intake of fruit, vegetables, fish, and whole grains, has been linked to reduced odds of depression in adults (Lai et al., 2014) and better mental health in children and adolescents (19 years or younger) (O'Neil et al., 2014). Healthy diet has therefore been used as a form of treatment for and prevention of depression in randomized trials (Jacka et al., 2017; Reynolds III et al., 2014; Sánchez-Villegas et al., 2013). In a randomized-control trial comparing an intervention of 7 sessions of nutritional consulting compared to a social support group for individuals with moderate to severe depression, individuals in the diet group demonstrated significantly greater improvements in depressive symptoms compared to the support group (Jacka et al., 2017). In another randomized trial, participants assigned to a Mediterranean diet (consumption of healthy fats like olive oil, fruits, vegetables, legumes, and fish with lowered meat consumption) supplemented with nuts versus those assigned to a low-fat diet (reduced fat intake from both animal and vegetable sources) demonstrated statistically significant lower rates of depression in a population of adults (ages 55-80) (Sánchez-Villegas et al., 2013).

There has also been a causal link between micronutrients and diagnosis-related symptoms in a sample of individuals with Attention Deficit Hyperactivity Disorder (ADHD). Rucklidge et al. (2014) found that adults with ADHD that were prescribed a capsule formula consisting of

vitamins and minerals compared to those receiving a placebo in a double-blind randomized control trial demonstrated improved ADHD symptoms based on blind clinician ratings. Additionally, these researchers found that participants who also had moderate/severe depression at baseline showed improved mood on a clinician-administered depression rating scale after taking the micronutrient capsule (Rucklidge et al., 2014).

Healthy diet has been linked to cognitive health in adults through MRI research. Jacka et al. (2015) examined MRI data in adults (ages 60-64), looking specifically at the hippocampus, an area of the brain associated with learning, memory, and mood regulation. In addition, the hippocampus is one of the main areas of the brain where adult neurogenesis occurs. The researchers found that every standard deviation increase in healthy dietary pattern (nutrient-dense foods) was associated with larger left hippocampal volume, while a higher consumption of an unhealthy diet was associated with a smaller left hippocampal volume independent of age, gender, education, work status, depressive symptoms, medication, physical activity, smoking, hypertension and diabetes. This suggests an important impact of diet on brain structure.

When looking more closely at diet quality, research has examined the relationship between breakfast consumption, consumption of fruits and vegetables, and the impact of fast food on mental health and well-being. Breakfast is a particularly important meal of the day as it is consumed after a short fast during sleep which has implications for how the body and the brain responds to what is eaten (Basch, 2011). Eating breakfast has been associated with better performance and well-being. In a review of the literature, researchers found that habitual breakfast had a positive effect on classroom behavior and academic performance in adolescents (Adolphus, Lawton, & Dye, 2013). Smith (1998) found that adults who consumed breakfast, specifically a cereal breakfast, each day were less depressed, less emotionally distressed, and had

lower levels of perceived stress than individuals who did not eat breakfast every day. Additionally, Lee et al. (2017) found that from survey data collected on a community sample of over 200,000 participants 20 years and older, participants who rated having breakfast 'seldom' or 'sometimes' had higher depressive symptoms (questionnaire rating) than those who rated having breakfast 'always'.

The consumption of fast food has been linked to a higher risk of depression in correlational research (Sanchez-Villegas et al., 2012). Specifically, Sanchez-Villegas et al. (2012) looked at fast food consumption and commercial baked goods consumption's relationship to depression (indicated by self-reported diagnosis and/or habitual use of antidepressant drugs) in a longitudinal study (median follow-up of 6 years). The researchers found that more fast-food consumption at baseline was associated with a higher risk of depression at follow-up.

Fruit and vegetable consumption have similarly been linked to well-being. In a within-subjects design study where young adults kept a daily diary reporting their consumption of five specific foods daily in addition to a report of their positive and negative affect, White, Horwath, and Conner (2013) found that on days when young adults experienced greater positive affect, they reported eating more servings of fruit and vegetables (with 7-8 servings showing meaningful change). Additionally, fruit and vegetable consumption predicted improvements in positive affect the following day, suggesting that eating habits drives mood experiences. In a similarly designed study looking at longitudinal food diaries over 2007, 2009, and 2013 for over 12,000 Australian adults, results indicated that longitudinal increases in fruit and vegetable consumption (ranging from 1 to 8 portions) were predictive of a survey report of increased happiness, life satisfaction, and well-being over time (Mujcic & Oswald, 2016). Stranges et al. (2014) similarly found that fruit and vegetable intake (based on daily intake portions ranging

from five or more to less than one portion) was associated with reduced odds of low well-being in both male and female adults in the UK.

The link between diet and mental health is therefore evident. Furthermore, researchers have explained this link through an understanding of the nutritional components of diet. Rao et al. (2008) summarized the links between various nutrients and their impact on mood and behavior. For example, the researchers report that diets low in carbohydrates tend to trigger depression because the brain chemicals, such as serotonin and tryptophan, that promote the feeling of well-being, are triggered by foods that are carbohydrate rich, specifically foods with a low glycemic index (i.e., whole grains, fruits, vegetables). Similarly, protein rich foods (i.e., meat, cheese, eggs, beans) contain essential amino acids including those associated with dopamine and serotonin (both related to mood). The authors further highlight the benefits of omega-3 fatty acids (found in fish), vitamins such as vitamin B-12 and folate, and minerals such as calcium and iron, and their links to depression, mood, and behavior. For example, iron deficiency is associated with disturbances in the development of cognitive functions in addition to depression (especially in childbearing age women who are often iron deficient at this stage (Rao et al., 2008). Bodnar and Wisner (2005) similarly discuss various nutrients and their link to depression in child-bearing age women who are often nutrient deficient due to pregnancy and lactation. Bodnar and Wisner (2005) discuss the importance of essential fatty acids, folate, vitamin B-12, antioxidants, Iron, etc. and highlight that many of these nutrients are less prevalent in typical Western diets, especially for low-income individuals with less access to nutritious foods. Therefore, when breaking down food into its nutrients, it is clear how a nutrient rich, healthy diet impacts mental health and how deficiencies in certain nutrients contribute to mental illness.

In addition to diet quality, the social aspect of eating, specifically family meal time, has been examined in relation to well-being. Research has shown that frequent family meals have a positive impact on child well-being including reduced disordered eating, alcohol and substance use, violent behavior, feelings of depression, and higher self-esteem and school success (Harrison et al, 2015; Skeer & Ballard, 2013). Parents themselves similarly benefit from frequent family meals. From a population-based survey of parents in the US, Utter et al. (2018) found that parent report of frequent family meals was associated with higher levels of family functioning, greater self-esteem, and lower levels of depressive symptoms and stress for both mothers and fathers.

Overall healthy diet is shown to be causally related to mental health and cognitive functioning. Furthermore, there are significant relationships between aspects of diet quality and the social aspects of eating, including consumption of fruits and vegetables and eating family meals at home, and overall well-being for adults and children.

1.2.3 Sleep. Quality and quantity of sleep is another aspect of health-habits important for overall health and well-being. The National Institute of Health (NIH) recommends that adults should obtain between 7-9 hours of sleep a night. Sleep plays an important role in emotion and cognition. From a review of the literature, Vanderkerchkhove and Clyudts (2010) have demonstrated that quality and amount of sleep impacts the way individuals react to events in daily life as well as their general well-being. Deprivation of sleep makes individuals more sensitive to emotional and stressful stimuli and events while adequate sleep is restorative in daily functioning. Additionally, daytime emotional stress has an effect on sleep physiology, and therefore, stress and sleep deprivation have a cyclical relationship (Vanderkerchkhove & Clyudts, 2010). The effect of sleep deprivation on negative mood has been demonstrated in

adolescents as well. In a within-subject randomized crossover design comparing a sleep restriction condition to a healthy sleep duration condition, when in the restricted sleep condition, adolescents reported feeling significantly more tense/anxious, angry/hostile, confused, fatigued, and less vigorous (Baum et al., 2014).

In addition to its impact on emotion regulation, sleep has been demonstrated to impact cognition and memory. In a review of the literature on the role of sleep on cognition, Walker (2009) reports the role of sleep on memory, specifically that during sleep, memory items are consolidated into a schema of general knowledge. Additionally, sleep influences declarative memory (or memory of facts and events), as demonstrated through experimental studies comparing memory retention of sleep deprived individuals to controls in adults and adolescents (Potkin & Bunney, 2012; Walker, 2009).

Research has demonstrated that parents of children with disabilities have significant sleep disruptions. Compared to parents of typically developing children, parents of children with a disability report poorer sleep quality, with stress as the most significant predictor of poor sleep (Gallagher, Phillips, & Carroll, 2010). In addition to stress, poorer sleep quality in this population of parents is also due to their need to provide night-time care (Bourke-Taylor et al., 2013; Meltzer & Mindell, 2008). Bourke-Taylor et al. (2013) indicate that parents of school-aged children with a disability reported sleep interruptions more than 4 nights/week, especially mothers of children with the highest care needs. Additionally, these mothers with the highest sleep disruptions reported poorer mental health and less capacity to participate in health-promoting activities (i.e., leisure activities, time spent with supportive individuals, etc.). Mothers of young children with autism (ages 2-5) compared to mothers with typically developing children also report higher levels of fatigue associated with poor sleep quality, high need for

social support, and poor quality of physical activity (Giallo et al., 2013). High fatigue was also associated with stress, depression, and lower parenting efficacy and satisfaction, further demonstrating the importance of quality sleep on well-being (Giallo et al., 2013; Giallo, Rose, & Vittorino, 2011).

Sleep has therefore similarly been shown to have a causal impact on well-being. Additionally, looking at parents specifically, including parents of children with ASD, relationships have been found between parent sleep quality and parental mental health.

1.2.4 Weight. Being overweight is another important factor related not only to physical health but also to mental health. Obesity is linked to increased mortality and morbidity due to associated health risks like hypertension, diabetes, heart disease, sleep apnea, and certain types of cancer (Devlin, Yanovski, &Wilson, 2000). Furthermore, research has demonstrated links between obesity and mental illness, highlighting a well-established bidirectional relationship. Avila et. al (2015) reviewed the literature on the link between obesity and mental illness and demonstrate several key findings. Individuals with a mental illness have a two-to-three-fold increased risk of obesity and the risk of mental illness in individuals with obesity ranges from 30-70%. Specifically, obesity has been associated with mood disorders, anxiety, personality disorders, ADHD, binge eating disorder, trauma, and schizophrenia. When focusing on mood disorders (i.e., depression, anxiety, bipolar disorder) specifically, dysregulated cortisol levels is a major factor in both mood and weight regulation. Obesity is also a side effect of many drugs used to treat mental illness (Avila et. al, 2015). Therefore, healthy weight is an important facet of mental health and well-being.

1.2.5 Substance Use. Other areas of health habits which have shown negative impacts on both physical health and psychological well-being include use of substances such as cigarettes

and alcohol. The negative effects of smoking on physical health are widely known. Smokers have been shown in multiple studies to have poorer psychological health, including higher levels of anxiety and stress. Examining smoking status and major depression, research has demonstrated the highest prevalence of major depression in smokers and has further suggested causal links between nicotine dependence and increased risk of depression (Boden, Fergusson, & Horwood, 2010, Khaled, et al., 2009). Smokers also demonstrate significant sleep disturbances (McNamara, et al., 2014). Overall, smokers have more instances of negative outcomes across levels of functioning than nonsmokers. Individuals who are experiencing co-morbid anxiety and depression also demonstrate less likelihood of quitting smoking (Grant, Hasin, Chou, Stinson, & Dawson, 004; Lyvers, Hall, & Bahr, 2009; Parrott, 2006; Schmitz, Kruse, & Kugler, 2003; Schumann, Hapke, Meyer, Rumpf, & Ulrich, 2004).

The abuse or overuse of other substances such as alcohol can also have negative effects on an individual's well-being. Individuals who have higher levels of alcohol consumption (for example, greater than 1 drink per day) demonstrate more health problems including more cardiovascular problems, liver cirrhosis, and various types of cancer, as well as psychological personality traits such as low conscientiousness (noted for any alcohol consumption), low agreeableness (noted for any alcohol consumption), and high neuroticism (specifically for alcohol dependence group) (Corrao, Bagnardi, Zambon, & Arico, 1999; Malouff, Thorsteinsson, Rooke, & Schutte, 2007; Ronksley, Brien, Turner, Mukamal, & Ghali, 2011). Furthermore, alcohol dependence disorders are highly correlated with depression such that the presence of one disorder doubled the risk of the second (Boden & Fergusson, 2010).

1.3 Determinants of Healthy Habit Engagement

Healthy habits have been demonstrated to be causally linked to health and well-being. Research has shown that parents, including parents of children with disabilities (including ASD). struggle to engage in healthy habits. They do not prioritize their own health needs such as engaging in exercise and getting enough sleep. The present dissertation seeks to explore potential barriers and facilitators to engaging in healthy habits, hypothesizing the certain factors that may influence these health behaviors in parents. These factors were divided into three domains; parental characteristics (including both demographic and psychological factors), social support (including both measures of resources and relationship-based support), and child factors (including both child demographic characteristics and measures of behaviors/functioning) as potential facilitators and barriers to caregivers engagement in healthy habits.

These three domains were guided by Belsky (1984) three-domain structure to the determinants of parenting. This model was chosen as a framework for understanding factors that may influence health habit behaviors as the present dissertation (specifically in study two) explores how mother's engagement in healthy habits relates to parenting quality. Therefore, it is hypothesized that the factors that Belsky argues impact parenting, may also relate to parent's health habit behaviors.

Belsky (1984) created a widely-cited theoretical model of parenting that proposes three domains of determinants that contribute both to parenting and child outcomes: (1) individual parental personality and psychological resources, such as their own experiences growing up or attachment patterns and existence of mental illness (such as depression) (2) the child's individual characteristics, such as temperament and presence of a disability, and (3) external sources of stress and support, including social support, the marital relationship, employment, and

socioeconomic status. The present dissertation uses Belsky's three domains as a framework for also understanding possible facilitators and barriers to caregivers' engagement in healthy habits.

Belsky argues that the personal psychological resources of the parent are more effective in buffering the parent-child relationship from stress than are the contextual sources of support. Specifically, Belsky postulates that a parent's personal psychological resources (i.e., parent psychopathology, education level, attachment style) are most influential as they likely also impact the type of external support receive (i.e., better at establishing friendships, selecting a spouse, getting a quality job, etc.). Child individual characteristics are argued to be the easiest to overcome.

1.3.1 Parental Characteristics. The present dissertation examines the parental characteristics of stress, depression, well-being, education level, and age, including both caregiver psychological resources and demographic factors.

Parents of individuals with ASD demonstrate higher parenting stress compared to parents of typically developing children and/or children with other disabilities and this stress has been linked to increased depression, anxiety, and decreased parenting self-efficacy and well-being. Mothers of children with ASD report stress relating to not having time for their own activities and needs and report difficulty giving themselves permission for these needs, demonstrating how increased parental stress can act as a barrier to efforts to take care of oneself by getting a balanced diet, sufficient sleep, and time to exercise (Phetrasuwan & Miles, 2009).

It is evident that sleep, diet, exercise, and substance use are causally related to depression, stress, and general well-being from the review on healthy habits above. These relationships are likely interchangeable. From the diagnostic criteria of depression alone, the DSM-5 specifies a change in appetite (either weight loss or weight gain), trouble sleeping or sleeping too much, and

loss of energy or increased fatigue, highlighting direct links between health habits and depression. Additionally, it is widely known that behavioral activation, including being active, socializing with peers, engaging in activities one enjoys, is an empirically supported approach to treating depression (Dimidjian et al., 2014). It is thus evident how psychopathology can negatively influence caregivers' ability to engage in healthy habits and how important engaging in these habits are for well-being.

Education level and age also relate to well-being and healthy habit engagement. Mothers of children with ASD with less education were found to report higher overall parenting stress than those with more education (Phetrasuwan & Miles, 2009; Rivard et al., 2014). Researchers hypothesize that the relationship between stress and less education may be related to less access to support or resources (Phetrasuwan & Miles, 2009). Additionally, less education in general is associated with more sleep complaints and worse diet quality (measured by percentage of nutrient intake) (Grandner et al., 2010; Hiza et al., 2013). Hiza et al. (2013) hypothesized that education may be associated with increased nutrition knowledge as well as the ability to make smarter dietary choices by being able to translate nutrition knowledge. Examining age as a variable, younger caregivers of children with autism (ages 3-10) report higher parental stress (Derguy et al., 2016) than older caregivers. Additionally, diet quality improves as adults get older, possibly due to an increased need to focus on health (Hiza et al., 2013).

1.3.2 Social Support. The present dissertation examines social support factors including perceived social support, satisfaction with the marital relationship, caregiver nativity (if caregiver was born in the United States or not), and household income. These variables are hypothesized to be facilitators to engagement in healthy habits in the present dissertation due to their links to positive well-being and health behaviors.

Use of social support is another important aspect of parental well-being that can facilitate parents' engagement in healthy habits. Parents of children with autism; however, struggle to maintain support (Bonis, & Sawin, 2016). Social support refers to the perception that a person "is cared for and loved, valued and esteemed, and is important in a network of mutual obligation and communication'' (Cobb, 1976). Support for parents can come in the form of taking on childcare responsibilities, giving parenting advice, offering encouragement, and acting as a person to turn to for emotional aid (Balaji et al., 2007).

Research has demonstrated the benefits of social support for parents of children with autism. Specifically, social support is associated with less reported physical health complaints, lower stress/anxiety, lower depression, and lower levels of negative affect (Balaji et al., 2007; Dunn et.al, 2001; Ekas, Lickenbrock, & Whitman, 2010; Gill & Harris, 1991; Lovell, Moss, & Wetherell, 2012; Siklos & Kerns, 2006). Informal support, such as support from friends, is associated with higher life satisfaction and psychological well-being and support from family is similarly associated with higher psychological well-being and with increased optimism (Ekas, Lickenbrock, & Whitman, 2010). Additionally, high perceived social support in this population of families is associated with more cohesive families (Altiere & von Kluge, 2008). Social support has even been shown to moderate the relationship between parental mental illness and children's behavioral problems (Khan, Hanif, & Tariq, 2014).

Interventions that incorporate support are also beneficial to parents of children with a disability. Ainbinder et al. (1998) qualitatively examined parents of children with special needs experience receiving parent-to-parent support and found that parents reported finding this type of support especially helpful as they gain a feeling of normalcy, tips on how to manage day-to-day challenges, feel less isolated, feel empowered, and benefit from providing support to others as

well. Social support in the form of child care assistance (including babysitting, discussing child rearing problems) or respite care services is positively linked to the quality of mother-child interactions and to reductions in parental stress as it gives parents some time away from parenting (Chan & Sigafoos, 2001).

Beyond the effects of social support on well-being, there is an abundance of literature linked to physical health outcomes including influencing individuals' health behaviors (substance use, diet, exercise, and sleep) (Berkman, Glass, Brissette, & Seeman, 2000). The quality of social relationships has been linked to sleep quality, perceived support has been linked to exercise frequency, and diet (Darlow & Xu, 2011; Kent et al., 2015; Laiou et al., 2020). For example, Laiou et al. (2020) found that perceived social support was significantly associated with Mediterranean diet adherence. Uchino (2009) proposes a lifespan pathway that links early family environment (parental affection, support, familial conflict) to personality characteristics, general perceived support, social skills, self-esteem and to more effective coping, and better health behaviors subsequently linked to physical health including disease development and susceptibility. Additionally, Giallo, Rose, and Vittorino (2011) found that a lack of social support was a significant predictor of fatigue in parents of children aged 0-4.

Despite the benefits of social support, due to the high demands of this population, parents of children with autism are more likely to struggle maintaining social support than parents of typically developing children. Bromley et al. (2004) interviewed mothers of children with ASD and found that their significant psychological distress was associated with low levels of family support. Additionally, several factors were associated with lower levels of support including being a single parent, living in poor housing, and having a boy with ASD. In a review of the literature, Bonis and Sawin (2016) reported a variety of reasons that parents of children with

autism lose social support. The researchers indicated that family relationships are threatened due to negative attitudes expressed toward the parent and child such as embarrassment about being seen in public with the child, negative remarks about parenting, and negative judgments about the child with ASD. Furthermore, the researchers reported that friendships and involvement in community groups (such as church) are also jeopardized due to the child's behavior as parents of typically developing children are often uncomfortable with the awkward and sometimes inappropriate behavior of a child with ASD. Parents also struggle to find time to socialize with friends, further jeopardizing these friendships (Bonis & Sawin, 2016).

The marital relationship, another aspect of social support, can also be influential in parenting and child and parent well-being (Morrill et. al., 2010). Research has linked marital satisfaction with adult health behaviors. Higher ratings on marital satisfaction have been linked to nights of more hours of sleep (Maranges & McNulty, 2016). Additionally, from a review of the literature, researchers Troxel et al. (2007) hypothesize that positive and negative aspects of marital relationship functioning are linked to sleep through its influence on psychological well-being, noting that a negative relationship can be a major source of stress. More generally, they argue that spouses are a powerful influence on healthy behaviors including healthy sleep habits, engaging in physical activity, and at the other end, can also influence alcohol or substance use if the relationship is stressful (Troxel et al., 2007).

While the quality of a marital relationship, when good, is beneficial when parenting a child with autism, it can be negatively impacted by the presence of a child with ASD in the family. Bonis and Sawin (2016) reviewed the literature on the family structure and functioning and discussed the changes that occur to the family and parenting dynamic. Specifically, parental roles often change with fathers more likely focusing on work and mothers more focused on

managing care of the family. This divide in responsibility has contributed to mothers reporting higher levels of stress, anxiety, and depression than fathers from management of the child daily. Additionally, the marital relationship is jeopardized as parents may have conflicting attitudes towards the autism diagnosis, poor communication, different styles of discipline, and high divorce rates, 6% higher than a typical population (Bonis & Sawin, 2016). Furthermore, research has demonstrated that compared to parents of a child without a disability, parents of children with autism report less time with their partner, lower partner closeness, and fewer positive couple interactions. These couple experiences were associated with more negative affect in parents of children with autism (Hartley, DaWalt, & Shultz, 2018). Additionally, Weitlauf et al. (2012) found that marital relationship quality buffered the effect of parenting stress on depression in mothers of children with autism.

Household income was another variable in the present dissertation labeled as an aspect of social support. In parents of children with autism, higher income was associated with better mental health (Lee et al., 2009). Income is associated with access to resources such as access to healthy foods and access to a gym or ability to pay for childcare for time to exercise (Meltzer & Jena, 2010; Wolfson et al., 2019). Household income has also been negatively linked to depression, and mortality (Marmot, 2002). Furthermore, having a low-income status can increase stress due to increased worries about finances, impacting general health and sleep quality. Philip et al. (2002) found that the effects of income on both mental and physical health were mediated by sleep quality and quantity, demonstrating the relationships between income, sleep, and well-being.

Caregiver nativity, if the parent was born in the US or not, was also categorized as an aspect of social support. The present dissertation hypothesized that being born in the US can

increase access to social support (i.e., having more family and friends around, increased awareness of available services in the US) and can also positively impact healthy habit engagement. Additionally, interactions between race and nativity were found in studies examining sleep with an overall finding indicating shorter sleep duration in foreign-born adults (Cunningham et al., 2015). Immigrant status has also been related to exercise frequency in adults with non-immigrants exercising more frequently than immigrants (Tremblay et al., 2006). Therefore, research has demonstrated positive links between demographic and relationship-based aspects of social support and general well-being and health behaviors. However, diet may be an exception. In a review of the literature, Popovic-Lipovac and Strasser (2013) highlight how individuals who migrate to the US typically acculturate to worse dietary patterns of consuming foods with high saturated fat and cholesterol, noting that this relationship increases with time spent in the US.

1.3.3 Child Factors. The present dissertation examines child factors including child sleep problems, child externalizing behavior, autism severity, language functioning, child age, child gender, and ratio of children to adults in the home. These variables are hypothesized to be potential barriers to engagement in healthy habits in the present dissertation as they place more demands on the parent (i.e., more behavior problems to manage, difficulties communicating with child, etc.).

Research has demonstrated that child externalizing behavior problems are significantly related to parenting stress in parents of children with autism, including preschool-aged children with autism specifically and children with developmental disabilities more generally (Estes et. al, 2009; McStay et. al, 2014; Plant & Sanders, 2007). Children's adaptive functioning including their language functioning (using the same measure used in study two of the present dissertation,

the Vineland Adaptive Behavior Scales), and child's autism symptom severity, are also associated with parental stress and depression in parents of children with autism (Hall & Graff, 2011; Ingersoll & Hambrick, 2011). Additionally, mothers of preschool-aged children in general and parents of preschool-aged children with a disability report greater stress levels the more children they have (Dabrowska & Pisula, 2010; Skreden, et. al, 2012).

Regarding child age, Tehee et al. (2009) found that parenting stress increases with child's age from 3 to 18 years in parents of children with autism. In reference to child gender, females with ASD are perceived to be more sociable, exhibit less significant repetitive behaviors, and less externalizing behaviors (Halladay, et. al, 2015; Lundin et. al, 2020). It is hypothesized that these differences in presentation might contribute to parents of boys engaging in less healthy behaviors due to the possible greater demands that come with having a boy with ASD or at-risk for ASD.

There is limited research examining child characteristics as they relate to parent health habits. However, there has been research that links child sleep problems to parent sleep problems. Children's sleep disruptions have been demonstrated to significantly relate to maternal sleep quality and maternal functioning. Specifically, children with significant sleep disruptions had mothers with more depressive symptoms, fatigue, and daytime sleepiness (Meltzer, 2008). Furthermore, parents of children with autism experience more sleep problems than parents of typically developing children as these parents report higher levels of sleep problems in their children (Hoffman et al., 2008; Lopez-Wagner et al., 2008). Children's sleep problems, in a sample of children with autism, also predicted maternal stress (Hoffman et al., 2008). Additionally, Cooklin, Giallo, and Rose (2012) found that parents of children aged 0-5 who had

more than one child reported more symptoms of fatigue than parents with only one child, indicating a relationship between number of children in the home and parents' sleep.

The present study therefore takes an exploratory approach to examine if and what child factors hinder parent's engagement in healthy habits, guided by research that has demonstrated links between worse child behavior, lower child language, greater autism severity, poor child sleep, higher number of children, older child age, and having a boy with greater parental stress.

Chapter 2: Study One Hypotheses

A needs assessment was sent to parents (including both mothers and fathers) of children enrolled in an Applied Behavior Analysis early intervention program. Study one examines the relationship between aspects of healthy habits (sleep, diet, exercise, substance use), parental characteristics (caregiver age, education level, well-being, parenting stress, depression), social support (marital satisfaction, income, perceived social support, nativity), and child factors (child age, child gender, child sleep disturbances, and ratio of children to adults in the home) in two ways. First it explores the relationships between these variables in general (research question one) and then examines the potential facilitators and barriers to engaging in healthy habits using parental characteristics (hypothesized facilitator), social support (hypothesized facilitator), and child factors (hypothesized barrier) as a three model framework (hypothesis one). Then, this study seeks to determine the relationship between healthy habits, depression, and parenting stress, hypothesizing that depression mediates this relationship (hypothesis two).

2.1 Research Questions:

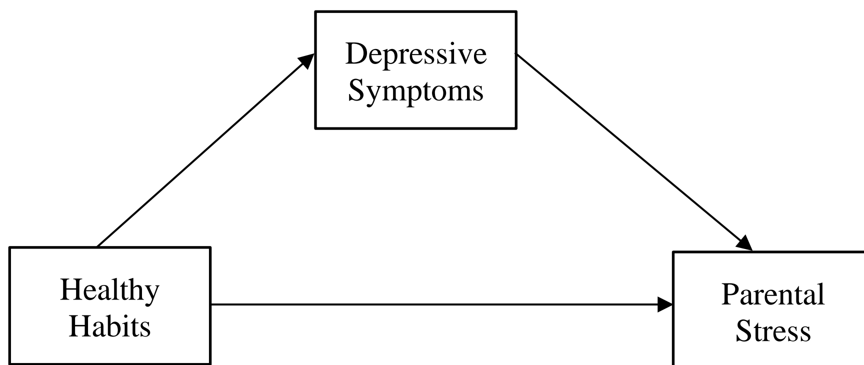
1. What aspects of parental characteristics, social support, and child factors are related to:
    a. Caregivers' sleep
    b. Caregivers' diet

c. Caregivers’ exercise

d. Caregivers’ substance use

2.2 Hypothesis 1: The first hypothesis examines the potential barriers and facilitators to engaging in healthy habits. It is hypothesized that the parental characteristics (including education level, age, well-being) and social support (perceived social support, marital satisfaction, household income, and native status) variables will be significantly positively related to total healthy habit engagement while the child factors variables (child gender (higher indicating child is male), child age, child sleep disruptions, and ratio of children to adults in the home) will be significantly negatively related to total healthy habit engagement. This hypothesis is based on research demonstrating the positive relationships between demographic and psychological parent characteristics and resource and relationship based aspects of social supports and negative relationships between demographic and behavior/functioning child factors with individuals engagement in healthy habits (Ainbinder et al., 1998; Balaji et al., 2007; Benson, 2010; Bonis & Sawin, 2016; Darlow & Xu, 2011; Dimidjian et al., 2014; Dunn et.al, 2001; Lopez-Wagner et al., 2008; Phetrasuwan & Miles, 2009). Furthermore, this hypothesized three-domain model is guided by Belsky (1984)’s three domain model of parenting (parental characteristics, external sources of stress and support, and child characteristics).

2.3 Hypothesis 2:



The relationship between total engagement in healthy habits and parenting stress will be mediated, partially or fully, by parents' level of depressive symptoms. Caregivers reporting more healthy habit engagement will be more likely to report fewer depressive symptoms and less parenting stress. This hypothesis is based on research which has shown that healthy habits, individually and collectively, are causally related to parental stress and depression (Cavell, 2000; Lai et al., 2014; Penedo & Dahn, 2005; Vandekerchkhove & Clyudts, 2010). Furthermore, caregiver depression is argued to be the most influential psychological disturbance for parenting quality in Belsky (1984). The primacy of depression is further supported by Johnson's (2019) finding in a sample of mothers of preschool-aged children with ASD that health habits predicted depressive symptoms which predicted parental stress, which then predicted parenting quality.

Chapter 3: Study One Methods

3.1 Participants

Participants were 68 caregivers recruited from the early intervention (EI) classrooms of three schools using a CABAS® Applied Behavior Analysis educational framework located in suburbs of a large city in the northeastern United States. See Table 1.

196 surveys were sent out (two per household), 78 surveys were returned and represent about one survey per household; however, 10 surveys had only a minimal portion of the questionnaire completed (less than three of primary study measures) so these 10 participants were excluded from the study. Thus, the study had a 79% response rate by household. Inclusion criteria were that: a) Participant is a primary caregiver to child (includes biological parents, step-parents, adoptive parents, foster parents, guardians, etc.), b) Subject is fluent in English and is able to consent to participation, read the survey, and complete it independently, and c) Subject lives with the child (spends at least 5 days/nights with child) and is familiar with daily routines

of the child. The children of the participants in the study were all neuro-divergent/neuro-atypical or developmentally delayed and had been recently identified as at-risk for a developmental disability by a pediatrician in order to be enrolled in the early intervention classroom.

Participants were 68 caregivers, primarily mothers (73.5%) ranging in age from 22 to 64, mean 36.2 years). The participants represent an ethnically diverse group (38.2% Caucasian; 29.4% Hispanic/Latina; 23. 5% Black; 2.9% Asian; 4.4% Other), and 50% were born outside of the US. Participants born outside the U.S. were originally from a range of countries with the Dominican Republic and Ecuador being the most common foreign backgrounds (about 8% from each) followed by the Ukraine (4%), Mexico (3%), Zambia (3%), and Jamaica (3%). The majority reported being married or in a committed partnership at the time of the study (77.9%) and about half (54.4%) reported that they were employed full time with the rest employed part-time or unemployed. There was a wide range in highest education achieved and household income. Caregivers reported that the target child in EI was predominantly male (80%), ages 17-39 months of age (mean of 29.3 months), Caregivers reported having a range of children living in the household ranging from 1 child (n=25, 36.8%) to 4 children (n=3, 4.4%).

Table 1.
*Study One: Demographic Characteristics of Participating Caregivers (*N = 68*)*

Characteristic	*n*	%
Informant (n=68)		
Mother	50	73.5
Father	12	17.6
Other: Grandparent	3	4.4
Other: Foster parent	3	4.4
Caregiver age (n=65)		
22-32	20	30.8
33-43	37	56.9
44-59	6	9.2
60-64	2	3.1
Highest Education Received (n=68)		
No schooling completed	1	1.5
Some High School	9	13.2
High School or Equivalent	10	14.7
Some college or Associate's Degree	19	27.9

Bachelor's degree (e.g., BA, BS)	16	23.5
Master's, professional or doctoral degree	11	16.2
Household Income (n=67)		
Less than $10,000	8	11.9
$10,000 to $24,999	8	11.9
$25,000 to $34,999	11	16.4
$35,000 to $49,999	5	7.5
$50,000 to $99,999	14	20.8
$100,000 to $199,999	12	17.9
$200,000+	9	13.2
Race/Ethnicity (n=68)		
White	26	38.2
Hispanic/Latino/Spanish Origin	20	29.4
Black	16	23.5
Asian or Pacific Islander	2	2.9
Other	3	4.4
Marital Status (n=66)		
Currently Married/Committed Partnership	53	77.9
Currently Co-parenting	4	5.9
Widowed	1	1.5
Divorced/Separated	4	5.9
Never married/partnered	4	5.9

3.2 Procedure

Institutional Review Board (IRB) approval for this study was obtained and data collection began in October 2019 and was completed in March 2020. Participants were recruited by the school's parent coordinator and an administrator, who sent home recruitment flyers and an email notice (see recruitment letter in Appendix A). The survey was provided in online form through Qualtrics and in paper form (see Appendix B). The paper version of the survey was sent home in child backpacks with one for each parent. Most caregivers filled out the paper form (70.5% of participants).

The questionnaire was a needs assessment for parents of an early intervention population including questions about family demographics, child behaviors, parental well-being, health-habits, and interests in possible interventions. As an incentive, participants were entered into a raffle to receive a month's worth of diapers, a high need item for this population, with 4 parents out of 68 winning the raffle (6/100 chances of winning) (see Appendix C).

3.3 Measures

3.3.1 Demographic Variables. Caregivers answered questions regarding demographic and family characteristics including caregiver and child age and caregiver level of education, marital status, ethnicity, country of origin, and family income. Caregivers also answered questions about the number of adults in the home and the number of children in the home.

3.3.2 Caregiver Healthy Habits. Health habits such as exercise, diet, and sleep habits were examined through modifications to the Promise Neighborhoods RFA Indicators and the Promise Neighborhoods Research Consortium [PNRC] Measurement System (Promise Neighborhoods Research Consortium: Measures). In addition, the Pittsburgh Sleep Quality Index (PSQI) sleep disturbance subscale was administered (Buysse et al., 1989). For all variables, high scores indicate healthier habits.

Healthy Eating Habits. Questions on this measure were; "During the **past 7 days**, how many times did **you** eat breakfast?", "During the **past 7 days**, how often did **you** eat fruits (do not include fruit juice)?" "During the **past 7 days**, how often did **you** eat vegetables (including green salad, broccoli, and carrots)?", and "During the **past month (30 days)**, how often did you "**You** have a meal from a fast-food restaurant?" (which was reverse scored), and how often did "**Your family** have a meal together that was prepared at home?". Response options addressed frequencies ranging from never to almost every day. These Z-scored items were averaged to create a diet subscale. Internal consistency for these items was low (α=.43). The low internal consistency for the diet subscale may not be indicative of low validity. It is very likely that an individual's breakfast consumption may be different from their fast-food consumption, different from their fruit and vegetable consumption, different from their family meals prepared at home.

Other diet subscales reliability has varied from alphas of .13 to .89 (Andrade, et. al, 2014; Bikret & Boulet, 1995; Dehghan, Asghari-Jafarabadi, & Salekzamani, 2015; Turconi et. al, 2003) demonstrating a pattern of inconsistent response patterns within diet subscales.

Healthy Weight. This was assessed with a single question, "Has a medical professional ever told you to lose weight?", answered as yes, no, or not sure. "Not sure" and "yes" were scored as being or having been overweight. The item was scored a 1 for overweight and a 2 for not having been told to lose weight.

Caregiver Sleep Quality. This was assessed in three ways: a) a one-item rating of sleep quality overall ("During the **past month**, how would you rate your sleep quality overall?", b) a one-item question asking for average hours of sleep per night? ("How many hours of actual sleep do you get at night? (this may be different than the number of hours you spend in bed)") and an average score from the 5-item PSQI sleep disturbance scale. The PSQI items asked participants to rate the frequency over the last 30 days (rated from 1 (not during the past month) to 4 (three or more times per week) that they had trouble sleeping because they; "cannot get to sleep within 30 minutes", "wake up in the middle of the night or early morning", "have to get up to use the bathroom", "cannot breathe comfortably", and "other reason(s)". These five items were reversed to reflect a higher score demonstrating better sleep (less disturbances), z-scored, and then averaged to create a sleep disturbances score. All three items (hours sleep, quality sleep, and sleep disturbances) were z-scored and then averaged to create a sleep measure (with higher scores being better sleep). This sleep scale had high internal consistency within the sample (α=.83).

Exercise. Participants were asked "Over the last 30 days, how many times per week **did you** engage in some form of exercise that gets you perspiring (even minimally)?"

Smoking. Caregivers were asked, "During the past month (30 days), on how many days did **you** smoke cigarettes?" Because caregivers either smoked or didn't smoke this was scored a 1 for smoking and a 2 for not smoking.

Alcohol Use. Participants were asked "During the **past month** (30 days), on **how many days** did you drink alcohol?" Response options ranged from 0 to 30 days with participants clustering in three categories of never, rarely (1-9 days), and regularly (10-29 days). A high score indicates less alcohol consumption.

The healthy habits composite score had an internal consistency of (α=.55). The low internal consistency, including low internal consistency on the diet subscale, may be due to the diverse sample who may have eating habits, different from their sleep habits, different from their exercise habits. While low reliability usually raises concern about validity, this is not always the case. A well-known example is the Conflict Tactics Scale, a highly valid measure of parent-child and intimate partner psychological and physical aggression (see Lorber & Slep, 2018). The physical aggression scale has an alpha of .50 to .55 across international studies conducted over the past 50 years. Given the wealth of high-quality data tying each of the health habits assessed causally with better health outcomes, the composite score was used with confidence. Individual items were examined as well. The healthy habits composite score was significantly correlated with parental stress ($r=-.39$, $p=.001$), parental well-being ($r=.49$, $p<.001$), and parental depressive symptoms ($r=-.45$, $p<.001$) in the predicted direction, indicating good convergent validity in this sample.

3.3.3 Social Support. Parents' level of social support was measured in four ways: caregiver nativity (if born in US or not), household income, marital satisfaction, and perceived social support.

Perceived Social Support. The Interpersonal Support Evaluation List (ISEL-12; Cohen, Mermelstein, Karmack, & Hoberman, 1985) examines a caregiver's perception of social support in three domains: appraisal (advice or guidance), belonging (empathy, acceptance, or concern), and tangible (material aide). The measures ask participants to respond to items regarding a list of statements which may or may not be true, rating truthfulness from "definitely true" to "definitely false." An example is "There is someone I can turn to for advice about handling problems with my family." The ISEL-12 demonstrates good reliability with high internal consistency (α=.86) and analysis of convergent and divergent validity indicate strong psychometric properties (Cohen, 2008). Within this sample, internal consistency was (α=.87) and the ISEL-12 was significantly negatively correlated with parental stress (r=-.52, p<.001) and depressive symptoms (r=.-37, p<.001).

Marital Satisfaction. Measured with a one item Likert scale (1 to 7) question about how satisfied rater is with their marriage from the *Kansas Marital Satisfaction Scale* (Schumm et al., 1986a).

3.3.4 Parental Characteristics. Parental characteristics were measured in five ways; parental stress, caregiver depressive symptoms, caregiver well-being, caregiver age, and highest education received.

Parenting Stress. Parenting stress was measured using the *Parenting Stress Index-Fourth Edition, Short Form* (PSI-4: SF; Abidin, 2012). The measure consists of 36 items that assess for

parental stress across three subdomains: parental distress, parent-child dysfunctional interaction, and difficult child. Responses are completed on a 5-point Likert scale with items such as: “I feel trapped by my responsibilities as a parent.” The PSI has excellent internal consistency as reported by the authors (α=0.95) and as found within this study’s sample (α=0.95). Within the present study’s sample, total parenting stress was significantly negatively related to social support (r= -.52, p<.001), and positively related to depressive symptoms (r=.48, p <.01).

Caregiver Depressive Symptoms. Caregiver depressive symptoms were measured by the Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 is a reliable and well-validated short item measure used to screen for severity of depression with patients demonstrating few to no depressive symptoms, mild depression, moderate depression, moderately severe depression, or severe depression. Internal consistency for this measure was high (α=.85-.90), and analysis of convergent and divergent validity indicate strong psychometric properties (Kroenke, Spitzer, & Williams, 2001). The present study’s sample had high internal consistency (α = 0.91) and caregiver depressive symptoms was correlated with social support (r=.-45, p<.001), total health habits (r=-.45, p<.001), and parenting stress (r=0.48, p <.001).

Caregiver Well-Being. Caregiver well-being was measured using the World Health Organization Five Well-Being Index (WHO-5). The WHO-5 is a reliable, well-validated, and widely used measure of subjective psychological well-being (Topp, Ostergaard, Sondergaard, & Bech, 2015). In this sample the measure had high internal consistency (α = 0.91) and was correlated with social support (r=.50, p<.001), total healthy habits (r=.49, p<.001), parental depressive symptoms (r=-.76, p<.001), and parenting stress (r=-0.61, p <.001).

3.3.5 Child Factors. Child factors were measured in four ways: child gender, child age, the child to adult ratio, and poor child sleep habits.

Child Sleep Problems. The Children's Sleep Habits Questionnaire (Owens, Spirito, & McGuinn, 2000) Sleep Disturbances subscale was used to measure child sleep. Caregiver's were asked to rate how frequently within a typical week, ranging from Usually (5-7 days), Sometimes (2-4 days), to Rarely (0-1 day) their child; "goes to bed at the same time at night", "falls asleep in own bed", "falls asleep within 20 minutes after going to bed", "wakes up by him/herself" and "sleeps by self throughout the entire night". Internal consistency of this subscale was good within the present study sample (α=0.82). A high score indicates more sleep disruptions.

Chapter 4: Study One Results

4.1 Data Preparation

4.1.1 Mean Imputations. Raw data from questionnaires was examined to identify the scope of missing data. There were 98% of total responses provided across measures, thus multiple mean imputation was not used. When at least 80% of the participants responses were available on a scale, missing items were imputed using the mean score of other items on the scale. This method allows for imputed scores to be consistent with the participant's pattern of responses to similar items when an adequate number of actual responses were available.

For the healthy habits scale, all participants had greater than 80% of items completed so no mean imputations were done. For this dissertation, healthy habits were analyzed as a total score with a total mean score (using z-scores) and was also analyzed on an individual item and grouped-item level. All five of the z-scored diet-related items were grouped and averaged to create a diet subscale. Additionally, the three z-scored sleep measures were grouped and averaged to create a sleep subscale as described above.

4.1.2 Testing Assumptions. The dataset was evaluated to determine whether the variables were normally distributed. A skewness or kurtosis statistic between -1 and 1 typically indicates a reasonably normal distribution (Klein ,1998). According to Klein's (1998) recommendation, cut-offs of z-scores for skew (skewness/standard error) greater than 3.0 and kurtosis (kurtosis/standard error) greater than 10 were used in this dissertation. Values of skewness greater than 3 and kurtosis greater than 10 are considered extreme.

A summary of skewness and kurtosis tests can be found in Table 2, which presents descriptive statistics for the primary study variables. For all study variables the skewness and kurtosis were within the acceptable range (see Table 2).

4.2 Descriptive Statistics of Primary Study Variables

Table 2 summarizes descriptive statistics for consequent study variables:

Table 2.
Study One: Descriptive Statistics for Study Variables

Variables	*N*	*M*	*SD*	Min.	Max.	Skewness[a]	Skew z-score [c]	Kurtosis[b]	Kurtosis z-score [c]
Healthy Habits (z-score)	67	-.02	4.64	-10.77	8.05	1.24	3.54	2.45	3.50
Sleep Subscale	68	.03	.77	-1.65	1.46	-.53	-1.51	-.63	-.90
Diet Subscale	68	.01	.56	-1.23	1.27	.14	.40	-.51	-.73
Drink Alcohol	67	.00	1.00	-2.45	.71	-1.12	-3.20	.20	.29
Smoke Cigarettes	66	.00	1.00	-2.67	.37	-2.38	-6.80	3.76	5.37
Told to Lose Weight	67	.00	1.00	-1.17	.84	-.34	-.97	-1.94	-2.77
Exercise Frequency	63	.00	1.00	-1.21	1.10	-.09	-.26	-1.69	-2.41
Depressive Sx. (PHQ-9)	67	5.70	5.86	0	22.0	1.10	3.14	.63	.90
Parental Stress (PSI-4)	68	82.18	26.08	38	137.0	.20	.57	-.82	-1.17
Well-Being (WHO-5)	66	13.15	6.18	1.0	25.0	-.02	-.07	-.80	-.1.14
Caregiver Age (years)	65	36.20	8.32	22	64	.87	2.49	1.64	2.34
Highest Education Level	66	5.98	5.98	1.0	10.0	-.44	-1.26	-1.28	-1.83
Caregiver Born in US (Y/N)	67	1.54	.50	1.0	2.0	-.15	-.43	-2.04	-2.91
Social Support (ISEL-12)	66	36.68	7.98	15.0	48	-.51	-1.46	-.51	-.73
Marital Satisfaction	53	5.42	1.79	1.0	7.0	-1.14	-3.26	.35	.50
Family Income	67	5.67	2.94	1.10	10.0	-.06	-.02	.29	.41
Child Age (months)	62	29.34	4.94	17	39	-.24	-.69	-.54	-.77
Child Gender (1=M, 2=F)	67	1.18	.39	1	2	1.71	4.89	.96	1.37
Child Sleep Disruptions	67	7.85	2.86	5.0	15.0	.92	2.63	-.20	-.29
Child: Adult Ratio	67	1.0	.51	.33	3.0	1.24	3.54	2.45	3.5

[a] Standard error of skewness = .35
[b] Standard error of kurtosis = .70
[c] Z-statistic to determine cutoffs for skewness and kurtosis is determined by dividing the produced statistic by standard error

On the healthy habits scale, which was z-scored, the scores ranged from -10.77 to 8.05, with a mean of -.02, and a standard deviation of 4.64. A little less than half of the caregivers reported an insufficient amount of sleep (42.4% of caregivers slept less than 7 hours on average), and 57.6% slept 7 hours or more. Also, almost half reported fairly good sleep quality (46.3%) while 28.4% reported fairly poor sleep, 6% very poor sleep, and 19.4% reported very good sleep. These two items, as z-scores, were averaged with an average of the five z-scored items from the PSQI Sleep Disruption Scale, creating a sleep subscale score. The scores ranged from -1.65 to 1.46 with a mean of .03 and a standard deviation of .77.

Caregiver's eating habits varied with about half eating family meals prepared at home almost every day (51.5%), about a third eating breakfast every day (38.2%), over a half only eating one serving of fruit most/every day (57.4%) and having only one serving of vegetables a day (61.8%). Sixty-nine percent of caregivers reported eating at fast food restaurants never to a few times a month. These five items were averaged to create a diet subscale. Scores ranged from -1.23 to 1.27 with a mean of .01 and a standard deviation of .56. A majority of caregivers had not been told to lose weight (57.4%), most did not smoke (85.3%), and most never drink alcohol (61.8%). Lastly, caregivers reported a range of exercise frequency with 36.8% reported regularly exercising (3+ times per week), 23.5% sometimes (1-2 times per week), and 32.4% reported never exercising. (see Table 3).

Table 3.
Study One: Health Habit Variables (N=68)

	n	%
Overall Sleep Quality (n=67)		
Poor Sleep	23	33.8
Good Sleep	44	64.7
Average Hours of Sleep per Night (n=67)		
4-5 hours	14	20.6
6.0 hours	14	20.6
7-9 hours	38	55.9
Frequency of Family Meal at Home (n=67)		
Never to a Few Times a Month	12	17.6
Every Week	7	10.3
Several Times a Week	13	19.1
Almost Every Day	35	51.5
How Many Times Eat Breakfast (n=67)		
Did Not Eat Breakfast	7	10.3
1 to 3 Times Per Week	22	32.4
4 to 6 Times Per Week	12	17.6
Every Day	26	38.2
Frequency of Meal from Fast Food Restaurant (n=65)		
Several Times a Week to Everyday	5	7.4
Ever Week	13	19.1
A Few Times a Month to Never	47	69.1
Frequency of Self to Eat Fruit (n=67)		
Never	9	13.2
One Serving Most Days or Everyday	39	57.4
Two Servings Per Day	10	14.7
Three or More Servings Per Day	9	13.2
Frequency of Self to Eat Vegetables (n=66)		
Never	6	8.8
Usually One Serving Per Day or Everyday	42	61.8
Two Servings Per Day	7	10.3
Three or More Servings Per Day	11	16.2
Told to Lose Weight (n=67)		
Yes	28	41.2
No	39	57.4
Smoke (n=66)		
Yes	8	11.8
No	58	85.3
Frequency Drink Alcohol in Past Month (n=67)		
Regularly (10-29 days)	5	7.4
Rarely (1-9 days)	20	29.4
Never (0 days)	42	61.8
Frequency Exercise Per Week (n=63)		
Never (0)	22	32.4
Sometimes (1-2 times)	16	23.5
Regularly (3+times)	25	36.8

4.2.1 Parental Characteristics. Caregiver depressive symptoms on the PHQ-9 were found to have scores ranging from 0 to 22, with a mean of 5.70 and a standard deviation of 5.85. Individuals who receive a score of 0-4 are considered in the “minimal level of depressive

severity", 5-9 is "mild depression", 10-14 is "moderate depression", 15-19 is "moderately severe", and 20-27 is in the "severe depression range." In this sample, 40 of the 67 participants (59.7%) were found at or above a "mild" level of depression; 19 participants demonstrated mild depression severity, 8 demonstrated moderate depression severity, 4 moderately severe depression, and 3 participants demonstrated severe depression. Studies on the PHQ-9 have shown a prevalence of major depression ranging from 5% to 9% (using a cut point of 9 or above, such that scores of 10 to 27 indicate moderate to severe depression) (Chin, Wan, Choi, Chan, & Lam, 2016; Kroenke et al., 2001; Martin, Rief, Klaiberg, & Braehler, 2006). Comparably, 28% of caregivers in this sample had a cut point of 9 or above on the PHQ-9.

In this sample, total parenting stress raw scores were found to have a mean score of 82.18. Based on a cutoff T-score of 60, nineteen caregivers reported significantly elevated levels of parenting stress (27.94% of the sample). A meta-analysis compared studies of parenting stress for parents of children with ASD and a typically developing group (Hayes & Watson, 2013). Two of the included studies measured stress using the PSI-SF and found total parenting stress means for the ASD and typically developing groups, respectively, to be 101.71 and 66.00 (Brobst et al., 2009 in Hayes & Watson, 2013) and 91.52 and 60.71 (Lee et al., 2009 in Hayes & Watson, 2013). The level of parenting stress in the present sample is higher than parents of typically developing children, and slightly lower than other samples of ASD.

Total scores for caregiver well-being on the WHO-5 ranged from 1 to 25 in this sample (possible scores range from 0 to 25) with higher scores indicating better self-reported well-being. The mean of the sample was 13.15 with a standard deviation of 6.17 indicating a medium level of reported well-being in the sample. A systematic review on studies using the WHO-5, the mean score of the general population in European countries ranged from 13.43 to 17.53 (higher well-

being than the present sample) (Topp et al., 2015). Additionally, in a study examining a parenting intervention for parents of children 0-4 months, parents' mean WHO-5 score at baseline was 15.65 (SD=4.18) (also higher than the present sample) (Pontoppidan, Klest, & Sandoy, 2016).

In regard to caregiver demographic characteristics, caregivers ranged in age from 22 to 64 with a mean age of 36.68 and a standard deviation of 7.98. Caregivers had a range in highest education completed (ranging from no schooling to a professional degree) with 13.2% completing some high school, 14.7% completing high school, 23.5% having a Bachelor's Degree, and 16.2% having a masters or professional degree. The mean education completed was 5.98 (5=less than one year of college credit, 6=1 or more years of college credit) with a standard deviation of 2.60.

4.2.2 Social Support. Total scores for social support on ISEL-12 were found to range from 15 to 48, with a mean of 36.68 and a standard deviation of 7.98. The lowest possible score a participant could have is 12 (there are 12 items total) and highest is 48. Scores are interpreted continuously with higher scores indicating higher perceived social support. The mean of the sample indicates an overall higher level of perceived social support though there is a wide range of scores.

Social support was also measured through a question looking at marital satisfaction. This was one item ranging from 0 to 7 (with 7 being extremely satisfied with marriage). In this sample the mean score was 5.41 with a standard deviation of 1.79 demonstrating a medium to high level of marriage satisfaction across the sample of participants who are married (77.9% of the sample).

Household income and caregiver nativity were also examined as measures of social support. Families had a range in income from less than $10,000 to $200,000 or more. Mean

income was 5.67 (5=35,000 to 49,999, 6= 50,000 to $74,999) with a standard deviation of 2.94. Lastly, 45.6% of caregivers were born in the US (1=yes, 2=no) (52.9% born outside of US) (mean=1.54, SD= .50).

4.2.3 Child Factors. Children ranged in age from 17 to 39 months with a mean of 29.34 months and standard deviation of .52. Furthermore, 80.9% of the sample had a boy in early intervention and 17.6% had a girl. For the child sleep disruptions scale, scores ranged from 5 to 15 with a higher score indicating more sleep disruptions. The mean of the sample was 7.85 with a standard deviation of 2.86 indicating an overall medium level of parent reported child sleep disruptions. More specifically this mean indicates parents reported about two to three areas of sleep disruptions on average per week. For the ratio of children to adults in the home, the average ratio was 1.0 with a standard deviation of .51 which is a 1 to 1 ratio of children to adults in the home. There was a range of 1 child to 3 adults to a ratio of 3 children to 1 adult.

4.3 Hypothesis Testing

4.3.1 Research Question 1: Correlations of Study Variables.

Preliminary analyses of main study variables were done to examine relationships that existed between specific healthy habits with other caregiver characteristics, social support, and child factors. See Table 4. Pearson correlations were conducted for continuous and interval variables while Point-Biserial Pearson correlations were conducted for dummy-coded dichotomous variables.

Parental Characteristics. Significant correlations were found between healthy habits and parental characteristics. Specifically, parental stress was significantly negatively correlated with total healthy habit engagement scores (r=-.393, p=.001), caregiver sleep subscale (r=-.364, p=.002), caregiver diet subscale (r=-.261, p=.031), and frequency parent drinks alcohol (more

stress, more alcohol consumption) (r=-.336, p=.005). Caregiver depressive symptoms was similarly negatively correlated with total healthy habits (r=-.446, p=<.001), caregiver sleep subscale (r=-.610, p=<.001), caregiver diet subscale (p=-.446, p<.001), and frequency parent drinks alcohol[1] (higher depressive symptoms, more alcohol) (r=-.302, p=.014). Caregiver well-being (as measured by the WHO-5) was positively correlated with total healthy habits (r=.488, p<.001), the caregiver sleep subscale (r=.618, p= <.001), frequency parent drinks alcohol (higher well-being, less alcohol) (r=.362, p=.003), and if the parent smokes or not (higher well-being, parent doesn't smoke) (r=.287, p=.020). As the WHO-5 (well-being) and PSI-4 (parental stress) (p=-.610) and the WHO-5 and the PHQ-9 (depressive symptoms) (p=-.764) were significantly correlated, partial correlations were run examining the relationship between parental stress, depressive symptoms and health habit behaviors, controlling for well-being. When well-being was controlled for, no significant correlations were found between parental stress, caregiver depressive symptoms, and healthy habits.

Additionally, caregivers' highest education received was significantly positively correlated with the caregiver sleep subscale (r=.265, p=.031) and negatively correlated with frequency of drinking alcohol (higher education, more alcohol consumption) (r=-.246, p=.048). Caregiver age was positively correlated with frequency caregiver exercises per week (r=.325, p=.011). Therefore, caregiver sleep, diet, and alcohol consumption appear to be important aspects of health in their relationship to parental characteristics for caregivers of early-intervention children (See Table 4).

[1] Note: to be consistent with higher scores representing a more positive outcome, a higher score on alcohol consumption is equivalent to no alcohol consumption while a lower score indicates more alcohol consumption

Social Support. Significant correlations were found between healthy habits and parent social support variables. Specifically, perceived social support was positively correlated with the caregiver sleep subscale ($r=.261$, $p=.034$). Marital satisfaction was positively correlated with if the parent smokes or not (more satisfaction, parent does not smoke) ($r=.278$, $p=.046$). Regarding household income and healthy habits, household income was negatively correlated with caregiver total healthy habit engagement ($r=-.351$, $p= .004$), caregiver diet subscale ($r=-.433$, $p<.001$), and frequency parent drinks alcohol (higher income, more alcohol) ($r=-.420$, $p<.001$). Caregivers' nativity (born in US=1, not born in US=2) was positively correlated with total healthy habit engagement ($r=.420$, $p<.001$), caregiver sleep subscale ($r=.338$, $p=.005$), caregiver diet subscale ($r=.348$, $p=.004$), and frequency drinks alcohol (less alcohol, not born in US) ($r=.284$, $p=.021$). Therefore, caregivers perceived social support, income, and nativity appear to be important for caregiver's engagement in healthy habits.

Child Factors. There were no relationships between parent engagement in healthy habits, child sleep disruptions, ratio of children to adults in the home, child's age, or child's gender. From this, it seems that parent-reported child sleep problems and ratio of children to adults in the home are not related to parent engagement in healthy habits in this sample.

Table 4.

Study One: Intercorrelations of Study Variables

Measure	1[b]	2[b]	3[b]	4[b]	5[c]	6[c]	7[b]	8[b]	9[b]	10[b]	11[b]	12[b]	13[b]	14[b]	15[b]	16	17[b]	18[b]	19[b]
1. Total Healthy Habits	--																		
2. Sleep Subscale	.516**	--																	
3. Diet Subscale	.783**	.270*	--																
4. Avg. Hours Exercise	.205	-.105	.010	--															
5. Told Lose Weight	.218	.046	.061	.011	--														
6. Smoke (Y/N)	.421**	.082	.120	.070	-.215	--													
7. Freq. Drink Alcohol	.646**	.265*	.414**	.069	-.026	.321**	--												
8. Parental Stress	-.393**	-.348**	-.261*	.093	-.049	-.199	-.336**	--											
9. Caregiver depressive symptoms (PHQ-9)	-.446**	-.650**	-.268*	.082	-.104	-.129	-.302*	.474**	--										
10. Well-Being (WHO-5)	.488**	.621**	.216	-.049	.081	.287*	.362**	-.610**	-.764**	--									
11. Caregiver Age	-.059	-.218	-.060	.325*	-.075	.076	-.130	.194	.268*	-.253*	--								
12. Highest Education	-.040	.285*	-.207	-.093	.156	.067	-.246*	-.197	-.212	.293*	-.025	--							
13. Social Support	-.043	.347**	-.102	-.099	.092	-.074	-.143	-.517**	-.452**	.496**	-.301*	.485**	--						

14. Marriage Satisfaction	.229	.150	.119	.148	-.109	.278*	.266	-.494**	-.383**	.403**	-.167	.145	.223	--					
15. Household Income	-.351**	-.029	-.433**	.182	.111	-.133	-.420**	.135	.094	-.045	.160	.576**	.423**	-.200	--				
16. Born in US (Y/N)	.420**	.361**	.348**	-.002	.143	.123	.284*	-.015	-.279*	.201	-.007	-.241	-.183	-.086	-.258*	--			
17. Child Sleep Disruption	.007	-.082	.042	.107	-.190	.034	.128	.120	-.143	.067	-.180	-.240	-.233	.212	-.338**	.207	--		
18. Child:Adult Ratio	-.092	-.274*	-.089	.237	-.025	.013	-.082	.145	.033	-.227	.134	-.230	-.190	-.019	-.051	.024	.332**	--	
19. Child Age	-.032	-.049	.030	-.082	.019	.086	-.185	.004	.104	-.174	-.102	.141	.046	-.082	.254*	.188	-.121	.039	--
20. Child Gender (1M, 2F)	.204	.032	.163	-.018	.153	.058	.215	-.292*	-.193	.434**	-.046	.171	.330**	.190	.058	.050	.019	-.250*	-.147

[b] Pearson Correlation

[c] Point-biserial Pearson's correlation

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

4.3.2 Hypothesis 1: Facilitators and Barriers

Hypothesis one examined the facilitators and barriers to caregivers' engagement in healthy habits through a linear hierarchical regression analysis. Three models were tested first examining the relationships between parental characteristics (specifically, caregiver age, highest education received, and caregiver well-being) and healthy habit engagement. Caregiver well-being as measured by the WHO-5, was chosen as it is highly correlated with parental stress and caregiver depressive symptoms. As can be seen in Table 5, this model (model 1) is significant $F(3,39)=12.508$, ($p<.001$). Examining the coefficients in Table 6, well-being alone acts as a facilitator to engagement in healthy habits ($t=5.696$, $p<.001$). The second model includes parental characteristics and measures of social support (perceived social support, marital satisfaction, household income, and nativity). This model (model 2) is significant as well $F(7,35)=6.193$, ($p<.001$). Lastly, model three includes parental characteristics, measures of social support, and child factors (child sleep disturbances, ratio of children to adults in the home, child age, and child gender). This model is significant as well $F(11,31)=4.806$, ($p<.001$).

Table 5.
ANOVA Model Summary for Facilitators and Barriers to Healthy Habit Engagement

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	478.932	3	159.644	12.508	.000[b]
	Residual	497.766	39	12.763		
	Total	976.697	42			
2	Regression	540.396	7	77.199	6.193	.000[c]
	Residual	436.301	35	12.466		
	Total	976.697	42			
3	Regression	615.696	11	55.972	4.806	.000[d]
	Residual	361.002	31	11.645		
	Total	976.697	42			

a. Dependent Variable: Total Healthy Habit Engagement.
b. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age.
c. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income.
d. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income. Child Sleep Disturbances, Ratio of Children to Adults in the Home, Child Age, Child Gender.

Table 6.
Hierarchical Regression Analysis Summary for Facilitators and Barriers to Total Healthy Habit Engagement

Predictor Variables.	Model 1	Model 2	Model 3
Parental Characteristics			
Caregiver Well-Being	.702**	.627**	.683**
	(5.696)	(3.892)	(4.015)
	[<.001]	[<.001]	[<.001]
Caregiver Education	-.044	.143	.070
	(-.356)	(.930)	(.441)
	[.724]	[.359]	[.662]
Caregiver Age	-.021	-.002	.033
	(-.164)	(-.018)	(.237)
	[.871]	[-1.559]	[.814]
Social Support			
Perceived Social Support		-.062	-.078
		(-.383)	(-.466)
		[.704]	[.644]
Household Income		-.268	-.273
		(-1.559)	(-1.594)
		[.128]	[.121]
Marital Satisfaction		-.025	.026
		(-.182)	(.185)
		[.857]	[.854]
Caregiver Nativity		.055	.095
		(.407)	(.678)
		[.687]	[.503]
Child Factors			
Child Sleep Disruptions			-.293*
			(-2.344)
			[.026]
Child: Adult Ratio			-.001
			(.011)
			[.992]
Child Age			.008
			(.061)
			[.951]
Child Gender			-.021
			(-.161)
			[.873]

Examining the coefficients in Table 6, the parental characteristic of caregiver well-being (measured by the WHO-5) was the most predictive of caregiver's engagement in healthy habits with a significant positive relationship across all models (model 1: t=5.696, model 2: t= 3.892, model 3: t=4.015, p<.001). Social support factors do not appear to be significant in the model. Looking at model 3 with child factors, child sleep disturbances is the only factor significant in the model (t=-2,344, p=026) with child sleep disturbances acting as negatively related to total healthy habit engagement.

4.3.3 Hypothesis 2: Mediation Model

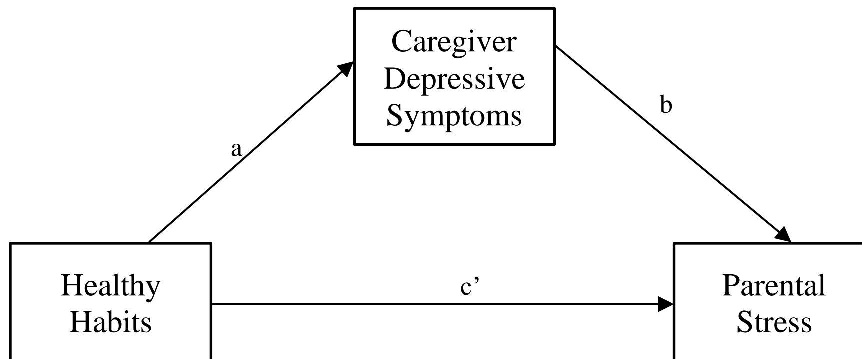


Figure 3. Projected Model Hypothesis 2

Regression analysis was used to investigate the hypothesis that parent's engagement in healthy habits and levels of parenting stress will be mediated by depressive symptoms. Two separate regression analyses were conducted to investigate the hypothesis that depressive symptoms mediates the relationship between engagement in healthy habits and parenting stress. The mediation model was tested using PROCESS Model 4.

Table 7.
Regression Analysis Summary for Healthy Habits, Caregiver Depressive Symptoms, and Parental Stress.

		Consequent						
		M (Caregiver Depressive Symptoms)				Y (Parental Stress)		
Antecedent		Coeff.	*SE*	*p*		Coeff.	*SE*	*p*
X (Total Healthy Habits)	a	-.560	.140	.000	c'	-1.241	.678	.072
M (Caregiver Depressive Symptoms)		--	--	--	b	1.742	.540	.002
Constant	i_m	5.766	.651	.000	i_y	71.975	4.199	.000
		R^2=.199 F (1,64)=15.911, p=.0002				R^2=.274 F (2,63)=11.872, p<.001		

Through a mediation analysis conducted using ordinary least squares path analysis, total healthy habit engagement indirectly influenced parental stress through its effects on caregiver depressive symptoms (R^2=.274). As can be seen in Table 7, individuals with high levels of healthy habit engagement was linked to lower levels of caregiver depressive symptoms (a=-.560), which was linked to less parental stress (b=1.742). A bootstrap confidence interval was significant based on 5,000 bootstrap samples. The significant indirect effect (ab=-.976) was entirely above zero (-1.811, -.324) for the path of healthy habits related to caregiver depressive symptoms which was linked to parental stress. There was no evidence that healthy habits influenced parental stress independent of its effect on caregiver depressive symptoms (c'=-1.241, p=.072).

4.4 Exploratory Analyses

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

4.4.1 Facilitators and Barriers: Follow-up Analyses.

Further exploration sought out an expanded understanding of the possible facilitators and barriers to caregiver's engagement in healthy habits, starting with an analysis of caregiver

depressive symptoms (PHQ-9) as a parental characteristic instead of well-being (WHO-5). These analyses were done to determine if similar relationships emerge when analyzing the possible facilitators and barriers to caregiver's engagement in healthy habits.

Three models were tested examining the relationships between parental characteristics, social support factors, child factors, and healthy habit engagement.

Table 8.
ANOVA Model Summary for Facilitators and Barriers to Healthy Habit Engagement

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	384.440	3	128.147	8.438	.000[b]
	Residual	592.257	39	15.186		
	Total	976.697	42			
2	Regression	459.655	7	65.665	4.445	.001[c]
	Residual	517.042	35	14.773		
	Total	976.697	42			
3	Regression	530.482	11	48.226	3.350	.004[d]
	Residual	446.215	31	14.394		
	Total	976.697	42			

a. Dependent Variable: Total Healthy habit Engagement.
b. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age.
c. Predictors: (Constant), Caregiver Depressive Symptoms(PHQ-9), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income.
d. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income. Child Sleep Disturbances, Ratio of Children to Adults in the Home, Child Age, Child Gender.

The parental characteristics model (model 1) is significant $F(3,39) = 8.438$, ($p < .001$) (See Table 8). Examining the coefficients in Table 9, caregiver depressive symptoms alone acts as a barrier to engagement in healthy habits ($t = -4.587$, $p < .001$). Model 2 included parental characteristics and measures of social support (perceived social support, marital satisfaction, household income, and nativity). This model (model 2) was significant as well $F(7,35) = 4.445$, ($p = .001$). Lastly, model 3 included parental characteristics, measures of social support, and child factors (child sleep disturbances, ratio of children to adults in the home, child age, and child gender). This model was significant as well $F(11,31) = 3.350$, ($p = .004$). However, only caregiver

depressive symptoms related to healthy habit engagement across models (M1: t=-.608, M2: t=-.442, M3: t=-.459, p<.05) (See Table 9).

Table 9.
Hierarchical Regression Analysis Summary for Facilitators and Barriers to Total Healthy Habit Engagement

Predictor Variables.	Model 1	Model 2	Model 3
Parental Characteristics			
Caregiver Depressive Symptoms	-.608 ** (-4.587) [<.001]	-.442** (-2.704) [.010]	-.459* (-2.669) [.012]
Caregiver Education	-.005 (-.034) [.973]	.157 (.926) [.361]	.038 (.208) [.836]
Caregiver Age	-.075 (-.553) [.584]	-.012 (-.082) [.935]	.063 (.408) [.686]
Social Support			
Perceived Social Support		.051 (.296) [.769]	.055 (.314) [.756]
Household Income		-.299 (-1.578) [.124]	-.316 (-1.662) [.107]
Marital Satisfaction		.050 (.335) [.739]	.101 (.670) [.508]
Caregiver Nativity		.134 (.937) [.355]	.149 (.963) [.343]
Child Factors			
Child Sleep Disruptions			-.249 (-1.792) [.083]
Child:Adult Ratio			-.068 (-.499) [.622]
Child Age			.069 (.459) [.650]

Child Gender	.107 (.768) [.448]

As a follow-up to analyzing the facilitators and barriers to caregiver's engagement in healthy habits, additional analyses were conducted by breaking down healthy habits into sleep, diet, and exercise (using the sleep and diet subscales and single exercise frequency item).

A hierarchical linear regression was run examining the possible facilitators and barriers of caregiver's sleep (using sleep subscale). All three models were significant including parental characteristics, social support factors, and child factors (p<.001). See Table 10.

Table 10.
ANOVA Model Summary for Facilitators and Barriers to Caregiver's Sleep

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.094	3	3.698	12.246	.000[b]
	Residual	11.777	39	.302		
	Total	22.870	42			
2	Regression	13.579	7	1.940	7.308	.000[c]
	Residual	9.291	35	.265		
	Total	22.870	42			
3	Regression	15.432	11	1.403	5.846	.000[d]
	Residual	7.439	31	.240		
	Total	22.870	42			

a. Dependent Variable: Caregiver's Sleep (mean score).
b. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age.
c. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income.
d. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income. Child Sleep Disturbances, Ratio of Children to Adults in the Home, Child Age, Child Gender.

When examining the specific variables (see Table 11), there were two variables that came out as significant. In models 1, 2, and 3, caregiver well-being positively related to caregiver's sleep (M1: t=4.931, p<.001; M2: t=3.430, p=.002; M3: t=3.748, p=.001). In model 2 and 3, in addition to caregiver well-being, another parental characteristic was significant. Specifically, caregiver's education level was positively related to caregiver's sleep (M2: t=2.486, p=.018; M3: t=2.702, p=.011). Caregiver's nativity was trending towards significance (if not born in US, better sleep) (t=2.022, p=.052).

Table 11.
Hierarchical Regression Analysis Summary for Facilitators and Barriers to Caregiver Sleep (subscale)

Predictor Variables.	Model 1	Model 2	Model 3
Parental Characteristics			
Caregiver Well-Being	.611** (4.931) [<.001]	.527** (3.430) [.002]	.598** (3.748) [.001]
Caregiver Education	.148 (1.183) [.244]	.366* (2.486) [.018]	.402* (2.702) [.011]
Caregiver Age	-.146 (-1.151) [.257]	-.141 (-1.092) [.282]	-.186 (1.423) [.165]
Social Support			
Perceived Social Support		-.005 (-.030) [.976]	-.006 (-.035) [.972]
Household Income		-.235 (-1.437) [.160]	-.174 (-1.081) [.288]
Marital Satisfaction		-.146 (-1.093) [.282]	-.144 (-1.112) [.275]
Caregiver Nativity		.220 (1.701) [.098]	.265 (2.022) [.052]
Child Factors			
Child Sleep Disruptions			-.132 (-1.129) [.268]
Child:Adult Ratio			-.073 (-.630) [.533]
Child Age			-.202 (-1.653) [.108]
Child Gender			-.235 (-1.913) [.065]

A hierarchical linear regression was also run examining the possible predictors to caregiver's diet (using diet subscale). All three models were not significant including parental characteristics, social support factors, and child factors ($p>.05$).

Lastly, a hierarchical linear regression was run examining the predictors to caregiver's exercise frequency. Only model two (which included parental characteristics and social support) was significant ($F(7,33) = 2.330$, $p=.048$). (See Table 12).

Table 12.
ANOVA Model Summary for Facilitators and Barriers to Caregiver's Exercise Frequency

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.295	3	1.432	1.617	.202[b]
	Residual	32.754	37	.885		
	Total	37.049	40			
2	Regression	12.254	7	1.751	2.330	.048[c]
	Residual	24.795	33	.751		
	Total	37.049	40			
3	Regression	12.611	11	1.146	1.361	.243[d]
	Residual	24.437	29	.843		
	Total	37.049	40			

a. Dependent Variable: Caregiver's Exercise Frequency.
b. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age.
c. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income.
d. Predictors: (Constant), Caregiver Well-Being (WHO-5), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income. Child Sleep Disturbances, Ratio of Children to Adults in the Home, Child Age, Child Gender.

When examining the specific variables (see Table 13), several parental characteristics were significant in model 2. Specifically, caregiver education negatively related to caregiver's exercise frequency ($t=-2.473$, $p=.019$). Caregiver age positively related to exercise ($t=2.380$, $p=.023$). A social support factor was also significant in model 2. Specifically, marital satisfaction positively related to caregiver exercise frequency ($t=2.255$, $p=.031$). No child factors were significant in this analysis.

Table 13.
Hierarchical Regression Analysis Summary for Facilitators and Barriers to Caregiver Exercise Frequency

Predictor Variables.	Model 1	Model 2	Model 3
Parental Characteristics			
Caregiver Well-Being	.011 (.066) [.948]	-.085 (-.410) [.685]	-.044 (-.180) [.858]
Caregiver Education	-.165 (-.958) [.344]	-.486* (-2.473) [.019]	-.509* (-2.098) [.045]
Caregiver Age	.355* (2.054) [.047]	.405* (2.380) [.023]	.426 (2.098) [.045]
Social Support			
Perceived Social Support		.195 (.954) [.347]	.224 (.982) [.334]
Household Income		.298 (1.380) [.177]	.292 (1.232) [.228]
Marital Satisfaction		394* (2.255) [.031]	.388* (2.061) [.048]
Caregiver Nativity		-.047 (-.282) [.780]	-.064 (-.337) [.738]
Child Factors			
Child Sleep Disruptions			-.012 (-.066) [.948]
Child:Adult Ratio			-.064 (-.372) [.713]
Child Age			.019 (.099) [.921]
Child Gender			-.089 (-.490) [.628]

4.4.2 Well-Being Mediation Model.

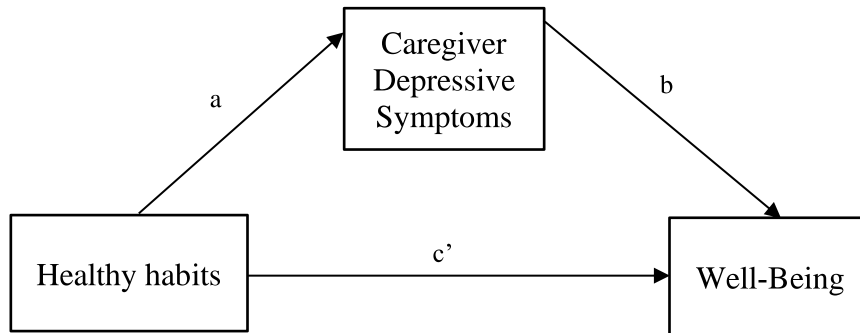


Figure 4. Proposed Pathway WHO-5 Mediation Analysis

Results from hypothesis testing guided follow up questions that were examined on a post hoc basis as exploratory analyses. As well-being (measured by the WHO-5) was highly correlated with parental stress and depressive symptoms and highly related to engagement in healthy habits, regression analysis was used to investigate if parent's engagement in healthy habits and levels of parental well-being will similarly be mediated by depressive symptoms. Two separate regression analyses were conducted to investigate the hypothesis that depressive symptoms mediates the relationship between engagement in healthy habits and parental well-being. The mediation model was tested using PROCESS Model 4.

Table 14.
Regression Analysis Summary for Healthy Habits, Caregiver Depressive Symptoms, and Parental Stress.

	Consequent							
	M (Caregiver Depressive Symptoms)				Y (Parental Well-Being (WHO5))			
Antecedent		Coeff.	*SE*	*P*		Coeff.	*SE*	*p*
X (Total Healthy Habits)	a	-.560	.140	.000	c'	.242	.116	.041
M (Caregiver Depressive Symptoms)		--	--	--	b	-.718	.093	.000
Constant	i_m	5.766	.651	.000	i_y	17.319	.720	.000
	R^2=.199 F (1,64)=15.911, p=.0002				R^2=.610 F (2,63)=49.325, p<.001			

Through a mediation analysis conducted using ordinary least squares path analysis, total healthy habit engagement indirectly influenced parental stress through its effects on caregiver depressive

symptoms (R^2=.610). As can be seen in Table 14, individuals with high levels of healthy habit engagement related to lower levels of caregiver depressive symptoms (a=-.560), which related to better parental well-being (b=-.718). A bootstrap confidence interval was significant based on 5,000 bootstrap samples. The significant indirect effect (ab=.402) was entirely above zero (.213, .571) for the path of healthy habits related to caregiver depressive symptoms which related to parental stress. There was evidence of a direct relationship demonstrating that healthy habits also influenced caregiver well-being independent of its effect on caregiver depressive symptoms (c'=.242, p=.041).

4.5 Summary

In study one, a sample of caregivers of an early intervention population of children at-risk for autism, various relationships were examined between study variables and healthy habit engagement[2]. Starting with parental characteristics, the more stress parents reported, the worse sleep, the worse diet, and the more alcohol they consume. Similar relationships were found with caregiver depressive symptoms and caregiver well-being (measured by the WHO-5). Caregivers who do not smoke also reported higher well-being. Furthermore, the more education caregivers' have, the better they sleep, and interestingly, the more alcohol they drink. Lastly, the older the caregiver, the more frequently they exercise.

Examining social support factors and healthy habit engagement, various relationships were found. Specifically, the more social support perceived by caregivers, the better their sleep. The higher marital satisfaction reported, the less likely caregivers smoke. The higher the household income, the worse their diet, and the more alcohol they drink. Lastly, caregivers born

[2] Note: Across all correlations, directionality cannot be assumed and therefore, relationships can exist in either direction.

in the US reported worse sleep, worse diet, and more alcohol consumption. Examining the child factor variables, child's sleep, child's age, child's gender, and ratio of children to adults in the home were not related to caregiver's healthy habit-engagement in this sample.

For hypothesis one, the parental characteristics, social support factors, and child factors were all examined in a prediction model to determine the possible facilitators and barriers to caregivers' engagement in healthy habits. Only two factors emerged as significant. Specifically, caregiver well-being (WHO-5) was found to be a possible facilitator to healthy habit engagement while child sleep disruptions was found to be a barrier. When examining caregiver depressive symptoms in the model as a parental characteristic, depressive symptoms were found to be a possible barrier to healthy habit engagement. When breaking down healthy habits into their specific factors, caregiver well-being and caregiver education were found to be possible facilitators to caregivers' sleep. No social support or child factors were related to caregivers' sleep. When examining diet on its own, no prediction models were significant. Lastly, when examining exercise frequency, caregiver education was negatively related to exercise, caregiver age and marital satisfaction were positively linked to exercise.

Looking at the results of hypothesis two, study one sought to explore the relationship between healthy habits, depressive symptoms, and parental stress. It was hypothesized that depressive symptoms would be a mediator based on the Belsky's (1984) theory that depression is most influential psychological disturbance for parenting and Johnson's (2019) finding that healthy habits predicted caregiver depressive symptoms, which predicted parental stress, which in turn predicted parenting quality. The analysis demonstrated that healthy habit engagement was linked to caregiver depressive symptoms, which was related to parental stress, indicating that caregiver depressive symptoms mediated the relationship between parental stress and healthy

habit engagement. The same model was tested using caregiver well-being on the WHO-5. This analysis demonstrated that caregiver depressive symptoms partially mediated the relationship between healthy habit engagement and parental stress as there was also a direct relationship between healthy habit engagement and caregiver well-being.

Chapter 5: Study Two Introduction

Study two seeks to narrow in on a specific population of mothers of preschool-aged children with a gold-standard diagnosis of ASD and expand upon the analyses done in study one to also include an objective measure of observed parenting quality. Below is a review of the literature on healthy habit engagement and parenting.

5.1 Healthy Habit Engagement and Parenting

The literature demonstrates that healthy habits are important for well-being. Furthermore, the present dissertation hypothesized that healthy habits (i.e., sleep, diet, exercise, and substance use) are related to other parent characteristics, social support, and child factors based on literature linking these three domains to parental well-being and more specifically health habit behaviors. Study two, in the present dissertation, seeks to also examine how parent's engagement in healthy habits relates to the parent's observed parenting quality (including both positive and harsh parenting).

Observed parenting quality, which includes both positive and harsh parenting behaviors, is examined in study two of this dissertation during both structured and unstructured observational tasks. The population for the study is a community sample, not an at-risk clinical sample, and therefore, levels of harsh parenting are likely lower than a sample specifically at risk for maltreatment. Additionally, all the parents in study two's sample have their young child in an all-day school specialized for children with autism, and for that reason, this sample of parents

may experience less stress because of more support through this school, potentially impacting their parenting quality.

5.1.1 Dimensions and Determinants of Parenting. Research has demonstrated that parenting is determined by multiple factors including the parent's genetic and psychological resources, the child's characteristics, and contextual sources of stress and support (Belsky, 1984). The biological and evolutionary basis of parenting has been demonstrated through research on prenatal hormones in expectant parents. Specifically, expectant mothers showed large prenatal increases in salivary testosterone, cortisol, estradiol, and progesterone and expectant fathers showed significant decreases in testosterone and estradiol (Edelstein et al., 2015). Both mothers and fathers additionally show changes in neuronal activation through neuroimaging studies in response to infant cues which was related to time parents spent caring for their child (Abraham et al., 2014). Therefore, there are physiological, hormonal adaptations associated with parenting, demonstrating a biological response to parenting. Additionally, hormonal changes within mothers have been linked to infant outcomes post-birth including later cognitive development (Davis and Sandman, 2010). Rilling and Young (2014) further highlight the biological basis of parenting, stating that specific neural pathways are activated to motivate parents to nurture, protect, and bond with their children. Thus, parenting then shapes neural development in the offspring. Overall, starting prenatally and continuing post-birth, caregivers show hormonal and neurological changes in response to their child which impacts parenting and that parenting subsequently impacts the child's future cognitive and social development.

Beyond biology, parenting is also learned from the environment and societal factors. Specifically, culture, or shared distinctive patterns of behaviors and beliefs, shapes parenting and research has shown that different cultures demonstrate unique child-rearing behaviors (Bornstein

& Putnick, 2012; Ferrari, 2002). For example, a mother's country of origin has been shown to influence her teaching behaviors and child development expectations more than the socioeconomic status, birth order, or gender of the child (Goodnow, Cashmore, Cotton, & Knight, 1984). Additionally, culture has been shown to relate to differing beliefs about the use of corporal punishment (Lansford & Dodge, 2008). An individual's experience of being parented also impacts his/her own parenting beliefs and behaviors (attachment theory and attachment style provides a method of understanding this relationship; however, a full review of the attachment literature is beyond the scope of this dissertation; see Bowlby, 1973; Bretherton, Biringen, Ridgeway, Maslin, & Sherman, 1989; Wallin, 2007; Wilson, Rholes, Simpson, & Tran, 2007). Biological and sociocultural factors therefore interact with other variables to shape parenting behaviors.

Research has categorized parental behavior into three universal dimensions: (1) instruction, which consists of the parent's quality of instruction, use of scaffolding or shaping, maintaining the child's involvement (i.e., through prompting and reinforcing for engagement), providing guidance, limit setting, and overall facilitation of age appropriate social and cognitive development (absence is social/cognitive neglect) (2) emotional support, such as exhibiting warmth and affection towards the child, providing a comforting and protecting presence, and sharing mutual pleasure with the child through reciprocal positive social interactions (absence is emotional neglect) and (3) harsh parenting, which includes the presence of psychological aggression and emotional abuse, consisting of behaviors such as spurning, corrupting/exploiting, terrorizing, coercion, as well as physical and sexual abuse and neglect (Baumrind,1967, 1996, 2005; Brassard et. al 1993; Britto & Ulkuer, 2012; Lansford & Deater-Deckard, 2012). Research has solidified the two domains of parenting and harsh parenting/maltreatment as the determinants

of parenting, though other terms may be used (Belsky, 1984; Brassard, Hart, and Hardy, 1993; Clark; 1999; Verhoeven et. al., 2007). Within these dimensions of parenting, research has shown that parents who are able to provide emotional support and warmth, use scaffolding and instruction (i.e., shaping or successive approximation) to assist with children's learning, and demonstrate few harsh parenting tactics, are most likely to have children who demonstrate the greatest long-term well-being (Baumrind, 1996, 2005; Canetti et al., 1997; Dix, 1991). These dimensions of parenting are influenced by multiple internal parent characteristics and external social support and child factors, including engagement in healthy habits (a parent characteristic likely shaped by their personality and external environment) which study two will examine.

5.1.2 Parenting Risk and Protective Factors. It is necessary to examine harsh parenting in the context of study two as parents of children with a disability are highly stressed, increasing the risk for maladaptive parenting (Blacher, Baker, & Kaladjian, 2013). Harsh parenting, when particularly chronic or intense, moves from poor parenting into child maltreatment. Research has demonstrated that psychological maltreatment (also known as emotional abuse and neglect; PM) is harmful for a child's well-being, leading to social-emotional, behavioral, and learning difficulties, poor physical health, and negative life events (Brassard, 2020; Brassard & Donovan, 2006; Collishaw, Dunn, O'Connor, Golding, 2007; Maguire, Williams, Naughton, Cowley, Tempest, Mann., . . . Kemp, 2015; Norman, Byambaa, De, Butchart, Scott, & Vos, 2012).

PM consists of six types of caregiver acts that occur repetitively: 1) spurning (e.g., degrading, rejecting, or belittling the child); 2) terrorizing (e.g., threatening physical harm or violence or putting the child in scary situations); 3) isolating (e.g., socially or physically confining the child); 4) exploiting/corrupting (e.g., actively teach negative behaviors, use child in ways to serve the adult, intrusiveness and other forms of violating a child's boundaries), (5)

denying emotional responsiveness (e.g., ignoring or failing to convey affection toward the child); (6) neglect of health and education (e.g., failing to provide necessary medical and educational services to a child). A repeated pattern of these acts tells the child that he/she is worthless, unloved, and unwanted, negatively affecting the child's sense of self and long-term well-being (Hart et al, 2017).

Individuals with disabilities are at a significantly higher risk for violence than those without disabilities. A meta-analysis covering over 14,000 participants examined the presence of physical, sexual, and emotional violence and neglect towards individuals with and without disabilities and found a higher prevalence towards individuals with disabilities (Jones et al., 2012). Individuals with disabilities were four times as likely to experience emotional abuse and neglect. This may be due to the need for increased care and a lack of resources and social support to aid caregivers. Individuals with disabilities also may be more vulnerable to the effect of poor parenting and child maltreatment due to communication, intellectual, and behavioral difficulties.

Blacher, Baker, and Kaladjian (2013) looked at positive and negative parenting specifically in a sample of children between the ages of 3 to 5 with and without disabilities. Negative parenting was defined as behaviors including maternal negativity and intrusiveness. The researchers found that negative parenting was significantly higher in the group of young children with disabilities during structured and unstructured parent-child interactions than the typically developing children group. Therefore, it is necessary to examine harsh parenting as part of observed parenting quality in this dissertation as children with disabilities are more vulnerable to harsh or negative parenting.

Risk Factors for Harsh Parenting. There are multiple factors that can interact to increase vulnerability to harsh parenting tactics. Having a child with a disability, including ASD, is one

such vulnerability factor as it increases parental stress including a higher need for caregiver and financial commitment and resources and a need for specialty schooling, therapeutic interventions, and possibly specialized equipment (Hartley et al., 2010; Seltzer et al., 2001; Smith, et al., 2010; Weiss & Lunsky, 2011). Research has demonstrated that for parents of children with autism, stress significantly predicts use of psychological aggression (Chan & Lam, 2016; Hayes & Watson, 2013). Parents of individuals with ASD may also be more vulnerable to engaging in harsh parenting if they perceive their child as a burden and/or experience discrimination based on their child's diagnosis (Chan & Lam, 2016; Holmes & Carr, 1991).

Protective Factors against Harsh Parenting. While there are multiple risk factors for harsh parenting, there are also several protective factors, reducing stress and the likelihood of engaging in harsh parenting. Researcher has shown that investing in relationships that provide resources including strong friendships, family relationships and community groups, are important protective factors for parents for reducing stress. Social support and marital satisfaction have also been shown to improve well-being and reduce stress in parents of children with autism (Gouin, Estrela, Desmarais, & Barker, 2016; Hibbard & Desch, 2007; Liu & Wang, 2015; Tehee, Honan, & Hevey, 2009). A higher level of education was also found to be a protective factor for parents, specifically because it related to the likelihood of seeking professional help for child care (Bonis & Sawin, 2016). Other variables including use of mindful parent training, caregiver quality of life and positive parenting experiences with her/his child, parental self-efficacy, and feelings of parental empowerment are additional protective factors (Bluth et al., 2013; Conner & White, 2014; Ferraioli & Harris, 2013; Khoury-Kassabri, Attar-Schwartz, & Zur, 2014; Weiss & Lunsky, 2011).

Study two focuses on engagement in healthy habits and how it relates to other aspects of parental well-being including parental stress and depressive symptoms, and further explores how health habits relate to the quality of observed parenting. Additionally, parents of children with disabilities, specifically ASD, tend to have more risk factors than protective factors for self-management of parental stress (Bonis & Sawin, 2016). These risk factors include, but are not limited to, more challenging behaviors to manage, child sleep problems, and difficult transition periods. Protective factors include social support in terms of family relationships (including marriage quality) and friendships, higher parental education, and family income. There is therefore a need to explore modifiable variables in this high-risk group.

5.1.3 Healthy Habits and Parenting. There has been little to no research on the link between parent's health habit behaviors and their parenting quality. Using the data from study two, Johnson (2019) demonstrated that in mothers of preschool-aged children with autism, engagement in healthy habits predicted parental stress and depressive symptoms which subsequently predicted observed positive and harsh parenting quality. There therefore appears to be a link between healthy habit engagement, parent well-being, and observed parenting quality in this specific population of parents. The present dissertation seeks to expand upon this finding and explore the relationship between parenting quality and health habits, broken down into its components of sleep, diet, exercise, and substance use. From a review of the literature, there were two areas that had some literature linking health habits to parenting quality; parents' sleep and substance use. No research was found linking parent's diet or physical activity to parenting quality.

There have been several studies showing links between parental sleep and parenting quality (though none in an ASD population specifically). Bai, Corey, & Teti (2020) collected

mother's daily hours of sleep and examined its relationship with observed emotional availability during the first 6 months of infants bedtime. Results indicated that mothers with irregular sleep patterns, including later average fall asleep times and greater average variability in sleep across 1 months, 3 months, and 6 months, demonstrated poorer parenting quality with infants at bedtime than other mothers. This finding was especially evident as the infant got older (at the 6-month range) demonstrating the importance of mothers' sleep for parenting quality (or emotional availability) of infants.

Giallo, Rose, and Vittorino (2011) used a subjective self-report measure of parenting quality including questions on parental hostility, parental warmth, and parental involvement, and found that parental fatigue was associated with low parenting warmth and involvement and high parenting hostility in mothers of children aged 0-4. Cooklin, Giallo, and Rose (2011) similarly found that higher fatigue was associated with less parental warmth, more parental irritability, and less parental involvement on a subjective measure of parenting quality in parents of children aged 0-5. McQuillan, et. al (2019) used a measure of observed parenting including measures of responsivity and parental involvement as well as a self-report measure on dysfunctional parenting (questions on discipline behaviors) and found that mothers of toddlers who experienced poor and insufficient sleep had less observed positive parenting. Additionally, mothers who required longer to fall asleep reported more dysfunctional parenting. Therefore, parents' sleep quality and quantity appears to be an important factor for parenting quality in parents of young children.

In regard to research between substance use and parenting quality, there has been research demonstrating strong links between parental substance abuse and increased risk for child abuse and neglect (Kelleher et al. 1994; Magura & Laudet 1996). It is widely known that

an abuse of substances can impact parent's well-being and their functioning with their children. Research has demonstrated that parental substance abuse is associated with insecure and disorganized attachment in the child's first three years of life (Barnard and McKeganey, 2004; Beeghly et al., 2003; Pajulo et al., 2006). Therefore, parents use of substances are an important factor to explore in relation to their observed parenting quality as it may have harmful effects.

Overall, there has been limited research on the link between healthy habit engagement and parenting quality, especially in a population of parents of children with autism. Therefore, the present dissertation examines this relationship in study two to further explore this modifiable factor that could positively impact parents' well-being and potentially impact their quality of parenting.

Chapter 6: Study Two Hypotheses

Similar to study one, study two seeks to break down the total healthy habits measure into specific health habits (diet, sleep, exercise, substance use) and explore the relationships between aspects of healthy habits and parental characteristics, social support, and child factors (research question 1). Furthermore, this study also aims to explore how diet, sleep, exercise, and substance use relate to observed parenting quality, and if there is a relationship, if the relationship is mediated by depressive symptoms (research question 2). Study two also examines the facilitators (parental characteristics and social support) and barriers (child factors) to engaging in healthy habits (hypothesis one) using additional child factors not available in study one.

6.1 Research Questions:

1. What aspects of parental characteristics, social support, and child factors are related to
    a. Mothers' sleep
    b. Mothers' diet

    c. Mothers' exercise
    d. Mothers' substance use
2. How are mothers' sleep, diet, exercise, and substance use related to observed positive and harsh parenting quality? If there is a significant relationship, is it mediated by depressive symptoms?

6.2 Hypothesis 1: The first hypothesis examines the potential barriers and facilitators to engaging in healthy habits. It is hypothesized that the parental characteristics (including education level, age, and caregiver depressive symptoms) and social support (perceived social support, marital satisfaction, household income, and native status) variables will be significantly positively related to total healthy habit engagement (except for caregiver depressive symptoms which will be negatively related) while the child factors variables (child gender (higher indicating child is male), child age, child sleep problems, child externalizing behavior, ASD severity, child language functioning, and ratio of children to adults in the home) will be significantly negatively related to total healthy habit engagement. This hypothesis is based on research demonstrating the positive relationships between demographic and psychological parent characteristics and resource and relationship based aspects of social supports and negative relationships between demographic and behavior/functioning child factors with individuals engagement in healthy habits (Ainbinder et al., 1998; Balaji et al., 2007; Benson, 2010; Bonis & Sawin, 2016; Darlow & Xu, 2011; Dimidjian et al., 2014; Dunn et.al, 2001; Lopez-Wagner et al., 2008; Phetrasuwan & Miles, 2009). Furthermore, this hypothesis three-domain model is guided by Belsky (1984)'s three domain model of parenting (parental characteristics, external sources of stress and support, and child characteristics).

Chapter 7: Study Two Methods

7.1 Participants

Forty-nine[3] mother-child dyads participated in a research study, Teachers College IRB #16-310. The approved IRB protocol for this dissertation's use of the data is IRB #17-100. All 49 participating dyads included children who attended a CABAS® Applied Behavior Analysis school in a suburb of a large city in the northeastern United States. Inclusion criteria were that: a) children had to have either an Individual Education Program (IEP) classifying them as a Preschool Student with a Disability or an Individualized Family Service Plan (IFSP) for children in the early intervention program, b) children were between the ages of 30 months to 5 years and 11 months, and c) mothers had to state that they could speak and read English fluently.

Of the 49 dyads that participated in data collection, 46 were included in this dissertation. The three excluded dyads included one who voluntarily dropped out of the study and two dyads where the child did not meet diagnostic criteria for ASD on the ADOS-2. Four dyads whose interaction video files were corrupted, rendering them unusable for analysis of mother-child interactions, were not used in hypotheses concerning quality of observed parenting.

Figure 5 provides a chain illustrating the final number of participants included in this dissertation.

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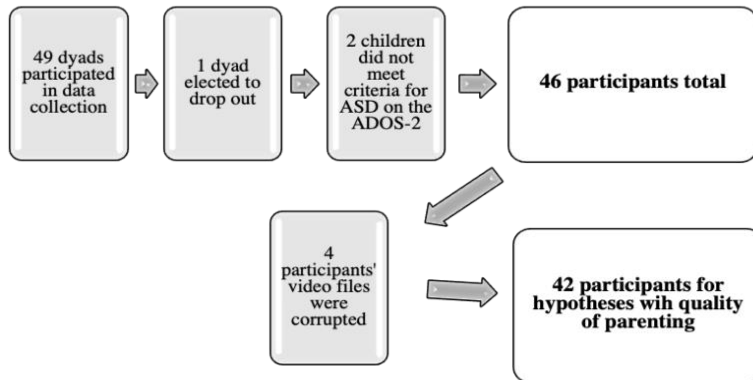
[3] Three of the 49 mothers were the participants of the pilot study. As few changes occurred between the pilot and the actual study, but did not affect the analyses of this dissertation.

Figure 5. Study Two Flow Chart of Participants in Data Collection



Participating caregivers were all biological mothers of their child (parent, family and child demographic data are presented in greater detail below in Table 15). Mothers' ages ranged from 27 to 47, with a mean age of 36.9. Most mothers were well educated, attaining a bachelor's degree or higher (n=33; 76.7%). Most mothers identified as either White (n=19; 44%) or Hispanic/Latina (n=12; 28%). The vast majority of mothers reported being married or in a committed partnership at the time of the study (n=37, 80%), with several others reporting no prior marriage or partnership (n=6, 14%) or a status of divorced/separated (n=4, 4%). Mothers reported a range of household income level, with a bimodal distribution: one mode was the $75,000 to $99,999 range (n=10, 24%) and another was reported income above $200,000 (n=10, 24%).

Table 15.
*Study Two: Demographic Characteristics of Participating Mothers (*N *= 46)*

Characteristic	*N*	%
Maternal Age (n=46)		
27-34	13	28.26
35-39	21	45.65
40-47	12	26.09
Highest Education Received (n=45)		
High School or Equivalent	2	4.7
Some college or Associate's Degree	7	18.7
Bachelor's degree (e.g., BA, BS)	17	39.5
Master's, professional or doctoral degree	16	37.2
Household Income (n=43)		
Less than $25,000	4	9.8

$25,000 to $74,999	6	14.6
$75,000 to $99,999	10	24.4
$100,000 to $149,999	5	11.4
$150,000 to $199,999	5	11.4
$200,000+	10	24.4
Race/Ethnicity (n=45)		
White	19	44.2
Hispanic/Latino/Spanish Origin	12	27.9
Black	8	18.6
Asian or Pacific Islander	4	9.3
Marital Status (n=46)		
Currently Married/Committed Partnership	37	80.4
Divorced/Separated	4	8.6
Never married/partnered	5	10.9

Of the children in the sample, approximately 80% are male. The high ratio of males to females is fairly consistent with the literature indicating greater prevalence of ASD in males, where best estimates indicate a male-to-female ratio of 3:1 (Loomes, Hull, & Mandy, 2017). Children's ages ranged from two years and six months to five years and six months, capturing a rich range of early childhood development. Sixteen children (36%) had a previously documented diagnosis of ASD given by a primary care physician or a psychologist, as reported in their IEPs or IFSPs. To verify all participating children's diagnosis and to document the level of ASD severity, 47 participating children were administered Autism Diagnostic Observation Scale-Second Edition (ADOS-2; Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012) by research reliable PhD students in the school psychology and ID/autism programs at Teachers College. Research level reliability was attained prior to administering ADOS-2's. The examiners achieved on-site reliability with a research reliable individual with a PhD in Applied Behavior Analysis, who had been trained by ADOS-2 trainers and obtained 80% reliability with these trainers. Reliability is defined as greater than or equal to 80% on two consecutive administrations for each module. Of the children administered the ADOS-2, all but two met criteria for ASD at the following levels of severity: low (n=4, 8.9%), moderate (n=14, 34.1%), high (n=22, 53.7%). Two participants who had moved away after participating in the first portion of the study were

not administered the ADOS-2. Instead, an administrator, with a PhD in Applied Behavior Analysis, at the school familiar with all of the children completed the Childhood Autism Rating Scales –Second Edition (CARS-2) with input from the child's classroom teacher. Of those, 46 children met criteria (including the 2 individuals who were administered the CARS-2).

7.2 Procedure

Institutional Review Board (IRB) approval for the pilot study was obtained from the Fred S. Keller School and from the Teachers College, Columbia IRB. The pilot study was conducted in June 2016 and the protocol was revised, as described below. Data collection began in July 2016 and was completed in June 2017. Participants were recruited by the school's parent coordinator and an administrator, who sent home recruitment letters with eligible students and spoke to parents during school pick up (see recruitment letter in Appendix D).

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

In the teaching task, the dyad was instructed to build a block house together, using developmentally-appropriate materials (e.g., Legos, Duplos, or large blocks) for five minutes. This task was demanding enough for the child in order to elicit the mother's instruction and guidance. The dyad then was provided with additional toys for the five-minute free play task, including cars, a toy phone, a doll family, Magna Doodle, crayons with coloring pages, a ball, and the remaining blocks. After free play, the experimenter entered the room and handed the mother a sheet of paper stating, "When I leave the room, please tell your child to cleanup. Do not cleanup by yourself." The cleanup task lasted for two minutes, or until the dyad finished cleaning up – whichever happened first.

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

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

7.3 Measures

7.3.1 Demographic Variables. Mothers answered questions regarding demographic and family characteristics including maternal age and education, marital status, ethnicity, nativity, and family income — variables that are often found to be significantly related to child outcomes due to the direct effect on access to services and support, for example. Questions on the number of children and number of adults in the home were asked as well.

7.3.2 Healthy Habits. Data analysis examines parents' use of various health habit behaviors through individual questions identified by the researchers and development of a total "healthy habits" measure. This measure was very similar to study one but had a few less items. Specifically, there was no item about alcohol and the sleep items were limited to two items (no PSQI); "During the past month (30 days), how would you rate your sleep quality overall" and "on average, how many hours a night did **you** sleep?". In order to calculate a mean score for healthy habits, the sample was standardized as z-scores with a mean of 0 and a standard deviation of 1. An overall mean of healthy habits was determined through these scores. Internal consistency for a healthy habits scale was adequate, $\alpha = 0.74$. In this sample total healthy habits as correlated with social-support (r=.38, p=.01), parenting stress (r= -.46, p=.002), and caregiver depressive symptoms (r=-.59, p<.01).

To analyze specific health habits on their own, the two sleep items and five healthy diet items were grouped and an average z-score was obtained. There was an adequate level of internal consistency for each of these subscales with sleep at $\alpha = 0.67$ and diet also at $\alpha = 0.67$.

7.3.3 Parental Characteristics. Parental characteristics were measured in four ways; parental stress, caregiver depressive symptoms, caregiver age, and caregiver highest education received.

Parenting Stress. Parenting stress was measured using the *Parenting Stress Index-Fourth Edition, Short Form* (PSI-4: SF; Abidin, 2012), same as in study one. Within the present study's sample, the scale was internally consistent (alpha = .92) and total parenting stress was significantly negatively related to social support (r= -.48, p<.01) and healthy habits (r= -.46, p<.01), and positively correlated with caregiver depressive symptoms (r=0.66, p <.01).

Caregiver Depressive Symptoms. Maternal depressive symptoms were measured by the Patient Health Questionnaire-9 (PHQ-9), same as in study one. The present study's sample had an adequate level of internal consistency (α = 0.80). In this sample the PHQ-9 measure of maternal depressive symptoms was correlated with social support (r=.-37, p=.01), healthy habits (r=-.52, p<.001), number of adults in the home (r=.38, p=.01) and levels of parenting stress (r=0.55, p <.001).

7.3.4 Social Support. Social support was measured in four ways, same as study one; perceived social support, marital satisfaction, caregiver nativity, and household income.

Perceived Social Support. Parent's level of social support was measured by the Interpersonal Support Evaluation List-12 (ISEL-12; Cohen, Mermelstein, Karmack, & Hoberman, 1985), same as in study. Within this study's sample, there was a high level of internal consistency on the ISEL-12 (α=.92). Social support was significantly negatively correlated with parental stress (r=-.48, p<.01) and caregiver depressive symptoms (r=.-35, p=.02) and positively correlated with healthy habits (r=.38, p<.01).

Marital Satisfaction. Participants completed one question taken from the *Kansas Marital Satisfaction Scale* (Schumm et al., 1983), a Likert scale (1-7) item assessing satisfaction with the marital relationship.

7.3.5 Child Factors. Child factors were measured in seven ways; child gender, child age, ratio of children to adults in the home, child sleep problems, child externalizing problems, child communication skills, and autism symptom severity.

Child-Sleep. As part of the Preschool Scale of the *Child Behavior Checklist* (CBCL; Achenbach & Rescorla, 2000), parents completed questions on their perception of their child's sleep problems. There were 7 items that covered problems like sleeping alone, trouble getting to sleep, sleeps less than other kids, and waking up on their own. Test-retest reliability across scales of the CBCL mostly falls within the .8 to .9 range indicating high reliability. The CBCL has been shown to discriminate significantly between referred and non-referred children in multiple countries, demonstrating content validity. Within this study's sample, there was a high level of internal consistency on the CBCL Sleep scale, $\alpha = 0.83$.

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

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

VABS-III standard scores have a mean of 100 and standard deviation of 15. In this study's sample, VABS-III Communication standard scores range from 44 to 105, with a mean of 75.76 and standard deviation of 14.81, indicating an overall sample of lower functioning children compared to typically developing peers. The VABS-III Communication scale is normed to be used with children from age three years and above. Given the lower range of child age in this sample, four children fell below the age three cutoff. VABS-III rating forms were still completed by the child's classroom teacher, but raw scores could not be converted to standard scores. VABS-III Communication standard scores were estimated using the conversion norms for age three for children from ages two years, ten months and above. This estimate applied to one participant; three other participants ranging from ages two years and six to eight months could

not have reliable VABS-III Communication standard scores computed, and therefore were excluded from analyses with VABS-III ratings.

Autism Symptom Severity. Forty-three of the participating children's diagnoses of ASD were confirmed using the Autism Diagnostic Observation Schedule – Second Edition (ADOS-2: Lord et al., 2000). Three participants were unable to complete the ADOS-2 and were therefore excluded from analysis with ADOS symptom severity ratings.

The ADOS-2 is considered one of the gold standard measures for assessing ASD and has been shown to have high inter-rater reliability, high inter-item correlation, (Lord, Rutter, DiLavore, Risi, Gotham & Bishop, 2012) and high validity (Gotham, Risi, Pickles, & Lord, 2007). It is a widely used tool for the diagnostic assessment of ASD in both clinical and research settings. The ADOS-2 was administered by research-reliable PhD students in the school psychology and ID/Autism programs at Teachers College. These evaluators had achieved on-site reliability with a research-reliable individual with a PhD in Applied Behavior Analysis, who had been trained by ADOS-2 trainers and obtained 80% reliability with these trainers. Reliability is defined as greater than or equal to 80% on two consecutive administrations for each module.

The ADOS-2 generates two scores: Social Affect, which is comprised of Communication and Reciprocal Social Interaction behaviors, and Repetitive Behavior Scores. The Social Affect Score and Repetitive Behavior Scores are combined to create the Total Score. During administration, the researcher engaged the child in a variety of tasks intended to measure the communication, social aptitude, and stereotyped or repetitive behaviors. Tasks are specifically designed to elicit social responses such as requesting, joint attention, symbolic play, and gesturing. The ADOS-2 is not a measure of intelligence or language ability. There are five different Module options in the ADOS-2 that are based upon the participant's language ability

and age, and these aforementioned tasks vary based on the module given. Modules 1, 2 and 3 were used in the current study; neither the Toddler Module or Module 4 was administered. When administering Module 1 or 2, the child's mother or member of the child's classroom instructional team (head teacher, teacher's aide) sat in the room during administration.

Behaviors are coded based on the researcher's observations and notes. They are then transferred to a three- or four-point scale (0 to 2 or 3, depending on the item), where 0 represents the absence of an atypical behavior or the presence of a typical behavior, so that lower scores represent more developmentally typical behaviors. Individual items are next added to a diagnostic algorithm, which creates subscales for Social Affect and Repetitive Behaviors. These subscales are combined to reach a Total Score, which is then converted to an Autism Classification and Conversion Score. The scores align to symptom severity scores as follows: scores of 1-2 represents little to no evidence of Autism Spectrum Disorder, 3-4 represents low levels of Autism Spectrum related symptoms, 5-7 represents moderate levels of Autism Spectrum related symptoms, and 8-10 represents high levels of Autism Spectrum related symptoms. This score allows for standardized comparison of symptoms across all modules utilized. In the present dissertation, the ADOS severity scores were used for analyses.

7.3.6 Measure of Parenting.

Observed Quality of Parenting. Videos of the parent-child interaction were coded based on observed nonverbal and verbal behavior that reflect the degree of parental emotional support (Quality of Emotional Support), the quality of the parents' instruction and scaffolding (Facilitation of Social/Cognitive Development), and the degree to which parents are critical or punitive of their child (Psychological Abuse, or Harsh Parenting). The coding system used, the *Psychological Multifactor Care Scale* (formerly known as the *Psychological Maltreatment*

Rating Scale; Brassard, Hart, & Hardy, 1993), has been validly modified for use in an ASD sample and was adapted for use in this preschool sample (*Psychological Multifactor Care Scale — ASD Adapted Version*; Donnelly, 2015; Donnelly, Brassard & Hart, 2014; *Psychological Multifactor Care Scale — ASD Adapted Preschool Version,* Brassard, Donnelly, Hart, & Johnson, 2016). The original PMRS scale was developed as an observational measure of emotional maltreatment in an child protection population and a matched classroom control sample; the measure included positive (Emotional Support and Quality of Instruction) and harsh behaviors (spurning, terrorizing, isolating, denying emotional responsiveness, and corrupting/exploiting) in order to capture a full range of parenting behaviors validated by the literature (Binggeli et al., 2001; Brassard & Donovan, 2006; Hart & Brassard, 1995; Hart, Brassard, Baker, & Chiel, 2017; Hart & Glaser, 2011; Trickett et al., 2009). Based on the original evaluation of the PMRS, the scale reliably distinguished between maltreating and non-maltreating families (Brassard, Hart, & Hardy, 1993), and test-retest reliability was established with a sample of middle-class mother-child dyads two weeks apart.

Modifications for the ASD adaptation of the PMCS included truncating the range of ratings for most scales given the relative lack of nuance in parent-child interaction with ASD preschoolers and school-aged children, modification of scales to fit free play and cleanup tasks. In Donnelly (2015), the PMCS-ASD was used with three types of tasks: a teaching, free play and cleanup task. Observed Quality of Parenting was measured as Positive and Harsh Parenting. Positive parenting behaviors are those from the initially conceptualized Quality of Emotional Support and Facilitation of Social/Cognitive Development domains and harsh parenting from the Psychological Abuse Scale and the Parental Intrusiveness Scale (Ispa, Fine, Halgunseth, et al., 2004). Variables were rated based on Likert scales, with ordinal ranges from 1 to 3, 1 to 4, 0 to 3,

and 1 to 5. To maintain consistency and comparability of measurement across all variables, final codes were standardized to z-scores in IBM SPSS Statistics. Observed positive and harsh parenting are a mean z-score of the totals from all tasks after standardizing all scales so they ranged from 1 to 3, for both positive and harsh observed parenting. A low score on positive and harsh parenting scales indicates the absence of positive or harsh parenting behaviors, respectively, whereas a high score on the scales reflects a high presence of positive or harsh parenting behaviors.

The parent-child task was videotaped, transcribed (with 100% verification by a second reviewer), and then coded by trained research assistants who had both the transcript and the video available for making coding decisions (See Appendix H for breakdown of coding). All coders were blind to the hypotheses of the study and were not given any identifiable information regarding the participants. They were then trained until they reached an acceptable level of reliability on each item (80% agreement or greater following procedures established for the ADOS-2; Lord et al., 2012). One research assistant was assigned to code each of the three tasks: Teaching, Free-Play, and Cleanup. Seventeen videos (38.64%) were double-coded by the doctoral-level trainer to calculate inter-rater reliability of each task. When there was a disagreement on coded items, differences in ratings were discussed among both raters and a consensus score was obtained which was used in future analyses. No more than three items disagreed on between raters for any individual scale.

Reliability statistics were considered acceptable when there was a Cohen's kappa of .40 (moderate) or .60 (good), (Cicchetti, Bronen, Spencer, Haut, Berg, & Oliver, 2006, Fleiss, Levin, & Paik, 2003). Cohen's kappa was .45 to 1.0 (median = .76) for 8 positive parenting items. If a Cohen's kappa could not be calculated, a percent agreement of 80% or better was deemed

acceptable (following procedures established for the ADOS-2; Lord et al., 2012). Research suggests observational assessment of relevant clinical items with restriction in range (i.e., on harsh parenting tasks when ratings were restricted to mostly 0's on the scale) can create problems in calculating reliability statistics (Hallgren, 2012). Therefore, when reliability could not be calculated due too little to no variability across coders, percent agreement between raters was used (Dixon & Brown, 1979). This occurred for 3 items on positive parenting (82.4-100% agreement, median =94.1%) and all 6 harsh parenting items (88.2–100% agreement, median=94.1%). (See Table 16).

Table 16.
Inter-rater Reliability for Psychological Multifactor Care Scale – Autism Spectrum Disorder Adapted Version

Positive Parenting Variables (Cohen's Kappa)	Teaching Task	Free Play Task	Clean-Up Task
Mother's Supportive Presence	82.4%*	1.00	1.00
Mutual Pleasure	.86	.85	.55
Body Harmonics	.86	.61	.64
Mother's Mental Status	1.00	100%*	94.1%*
Mother's Emotional Response to Task and Situation	.85	.82	N/A
Quality of Instruction	.56	.63	.62
Respect for Child's Autonomy	.70	N/A	N/A
Strategies for Child's Task Involvement	.56	.45	0.86

Harsh Parenting Variables (Percent Agreement)	Teaching Task	Free Play Task	Clean-Up Task
Denying Emotional Responsiveness	94.1	100.00	100
Intrusiveness	100	82.4	N/A
Spurning	88.2	100	88.2
Terrorizing	94.1	100	100
Isolating	94.1	94.10	100
Corrupting/ Exploiting	94.1	94.10	100

Notes. Inter-rater reliability was calculated for 17 videos (38.6%) for all three tasks. * indicates percent agreement between raters on Positive Parenting tasks. Percent agreement was used when the statistic could not be calculated because one or both comparison variables was a constant (at least one rater gave all participants the same code for a variable). Percent agreement was used for all harsh parenting variables. N/A indicates this aspect of parent-child

relationships could not be adequately evaluated with an ASD population in this sample on a specific task and does not apply.

Chapter 8: Study Two Results

8.1 Data Preparation

8.1.1 Mean Imputations. Raw data from questionnaires was examined to identify the scope of missing data. Less than 1% of total scores on measures used in this study were missing so multiple imputation was not used. For those few scales affected by missing data, a score on the scale was calculated if at least 80% of the participants responses were available by using the mean score of other items on the scale to replace the missing item(s). For participants who had more than 80% items missing on a scale they were dropped from any analysis that included the affected scale. A total score on a scale was used in analyses.

8.1.2 Testing Assumptions. The dataset was evaluated to determine whether the variables were normally distributed. A skewness or kurtosis statistic between -1 and 1 typically indicates a reasonably normal distribution (Klein, 1998). According to Klein's (1998) recommendation, cut-offs of z-scores for skew (skewness/standard error) greater than 3.0 and kurtosis (kurtosis/standard error) greater than 10 were used in this dissertation. Values of skewness greater than 3 and kurtosis greater than 10 are considered extreme. However, regression analyses tend to be robust to skew; therefore, skewness is reported as a descriptive feature of the sample.

A summary of skewness and kurtosis tests can be found in Table 17, which reviews all descriptive statistics for the main study variables. For all dependent variables the skewness and kurtosis were within the acceptable range (see Table 17) except for child to caregiver ratio. The positive skew for child to caregiver ratio is attributed to an outlier in the sample who had 8 adults

in the home. Descriptive statistics were calculated for ratio of children to adults in the home without the outlier and skewness was .116 and kurtosis was .538.

8.2 Descriptive Statistics of Primary Study Variables

Table 17 summarizes descriptive statistics for consequent study variables.

Table 17.
Study Two: Descriptive Statistics for Study Variables

Variables	*N*	*M*	*SD*	Min.	Max.	Skewness[a]	Skew z-score [c]	Kurtosis[b]	Kurtosis z-score [c]
Healthy Habits (z-scores)	45	-.02	5.25	-11.09	9.78	-.19	-.54	-.69	-.99
Sleep Subscale	45	.04	.88	-1.84	1.59	-.16	-.46	-.73	-1.04
Diet Subscale	46	-.01	.66	-1.51	1.20	-.20	-.57	-.34	-.49
Smoke Cigarettes	45	-.01	1.02	-3.24	.30	-2.99	-8.54	7.26	10.37
Told to Lose Weight	45	.01	.99	-1.38	.71	-.73	-2.09	-1.54	-2.2
Avg. Hours Exercise	46	.01	1.01	-.88	2.99	1.05	3.0	.63	.90
Depressive Sx. (PHQ-9)	45	3.29	3.51	0	13.0	1.18	3.37	.72	1.03
Parental Stress (PSI-4)	45	85.57	20.26	37.0	122.0	-.75	-2.14	.14	.20
Observed Positive Parenting (z)	42	-.09	3.75	-10.39	4.29	-1.18	-3.37	.66	.94
Observed Harsh Parenting (z)	42	.05	2.07	-1.89	6.09	1.43	4.09	1.25	1.79
Caregiver Age (years)	46	36.93	4.25	27	47	.31	.89	.18	.26
Highest Education Level	45	8.91	1.87	2.0	12.0	-1.46	-4.17	3.69	5.27
Caregiver Born in US (Y/N)	46	1.48	.51	1.0	2.0	.09	.26	-2.01	-2.87
Social Support (ISEL-12)	45	37.47	8.15	16.0	48.0	-.57	-1.63	-.24	-.34
Marital Satisfaction	42	4.31	2.28	0	7.0	-.90	-2.57	-.41	-.59
Household Income	43	7.33	2.44	1.0	10.0	-.92	-2.63	.25	.36
Child Age (years)	46	4.12	.81	2.52	5.56	-.08	-.23	-.90	-1.29
Child Gender (0=M, 1=F)	46	.20	.40	0	1	1.59	4.54	.54	.77
Child Sleep Problems	43	55.37	8.01	50.0	82.0	1.58	4.51	1.78	2.54
Child Externalizing Behavior	36	54.56	10.00	32.0	83.0	.13	.37	1.07	1.53
ASD Severity	43	7.49	1.99	3	10	-.63	-1.80	-.43	-.61
Child Language Functioning	43	74.65	14.69	44.0	105.0	-.24	-.69	-.48	-.69
Child: Adult Ratio	44	.98	.59	.25	4.0	3.20	9.14	14.98	21.4

[a] Standard error of skewness = .35
[b] Standard error of kurtosis = .70
[c] Z-statistic to determine cutoffs for skewness and kurtosis is determined by dividing the produced statistic by standard error

Descriptive data for all measures is presented in Table 17. On the healthy habits scale, z-scored, the scores ranged from -11.09 to 9.78, with a mean of -.02, and a standard deviation of 5.25. More than half of the mothers reported an insufficient amount of sleep (50% of mothers slept less than 7 hours on average), and 43% slept 7 hours or more. Also, half reported fairly

good sleep quality (50%) while 28.3% reported poor sleep and 19.6% reported very good sleep. These two items, as z-scores were averaged and a sleep subscale score was created. The scores ranged from -1.84 to 1.59 with a mean of .04 and a standard deviation of .88.

Mother's eating habits varied with only one third of mothers eating meals prepared at home almost every day (37%), almost half eating breakfast every day (45.2%), eating two servings of fruits (41.3%) and having one serving of vegetables a day (45.7%). Sixty-three percent of mothers reported eating at fast food restaurants at least once a month. The food items as z-scores were also averaged to create a diet subscale. The scores ranged from -1.51 to 1.20 with a mean of -.01 and a standard deviation of .66. Most mothers had not been told to lose weight (65.2%) and most did not smoke (87%). Lastly, mothers reported a range of exercise frequency with the most reporting no exercise in the week (41.3%) and the next most frequent reporting two hours a week of exercise (10.9%). (see Table 18).

Table 18.
Study Two: Health Habit Variables (N=45)

	n	%
Overall Sleep Quality (n=45)		
Poor Sleep	13	28.3
Fairly Good Sleep	23	50.0
Very Good Sleep	9	19.6
Average Hours of Sleep per Night (n=43)		
3.5 to 5.0	7	15.2
>5.0 to 6.5	16	34.8
>6.5 to 8	20	43.5
Frequency of Family Meal at Home (n=44)		
Never to a Few Times a Month	7	15.2
Every Week	9	19.6
Several Times a Week	11	23.9
Almost Every Day	17	37.0
How Many Times Eat Breakfast (n=41)		
Did Not Eat Breakfast	2	4.8
1 to 3 Times Per Week	14	33.3
4 to 6 Times Per Week	6	14.3
Every Day	19	45.2
Frequency of Meal from Fast Food Restaurant (n=45)		
At Least Once a Week	13	28.3
At Least Once a Month	29	63.0
Never	3	6.5

Frequency of Self to Eat Fruit (n=46)		
One Serving Most Days	2	4.3
One Serving Every Day	14	30.4
Two Servings Per Day	19	41.3
Three or More Servings Per Day	6	13.0
Five or More Servings Per Day	5	10.9
Frequency of Self to Eat Vegetables (n=46)		
Never	5	10.9
Usually One Serving Per Day	21	45.7
Two Servings Per Day	12	26.1
Three or More Servings Per Day	8	17.4
Told to Lose Weight (n=45)		
Yes	15	32.6
No	30	65.2
Smoke (n=45)		
Yes	4	8.70
No	41	89.1
Average Hours of Exercise Per Week (n=46)		
0.00	19	41.3
30min-2.0hours	12	26.1
>2.0 hours	15	32.7

8.2.1 Parental Characteristics. Caregiver depressive symptoms on the PHQ-9 were found to have scores ranging from 0 to 13, with a mean of 3.22 and a standard deviation of 3.50. Individuals who receive a score of 0-4 are considered in the "minimal level of depressive severity", 5-9 is "mild depression", 10-14 is "moderate depression", 15-19 is "moderately severe" and 20-27 is in the "severe depression range." In this sample, 12 of the 46 participants (26%) were found at or above a "mild" level of depression; 9 participants demonstrated mild depression severity and 3 demonstrated moderate depression severity. Studies on the PHQ-9 have shown a prevalence of major depression ranging from 5% to 9% (cut point of 9 or above) (Chin, Wan, Choi, Chan, & Lam, 2016; Kroenke et al., 2001; Martin, Rief, Klaiberg, & Braehler, 2006). Comparably, 11.11% of the present sample have scores at cut points of 9 or above.

In this sample, total parenting stress raw scores were found to have a mean score of 85.57. Based on a cutoff T-score of 60, nine mothers reported significantly elevated levels of parenting stress (20% of the sample). A meta-analysis compared studies of parenting stress for parents of children with ASD and a typically developing group (Hayes & Watson, 2013). Two

of the included studies measured stress using the PSI-SF and found total parenting stress means for the ASD and typically developing groups, respectively, to be 101.71 and 66.00 (Brobst et al., 2009 in Hayes & Watson, 2013) and 91.52 and 60.71 (Lee et al., 2009 in Hayes & Watson, 2013). The level of parenting stress in the present sample is higher than parents of typically developing children, and comparable or slightly lower than other samples of ASD.

8.2.2 Social Support. Total scores for social support on ISEL-12 were found to range from 16 to 48, with a mean of 37.47 and a standard deviation of 8.15. The lowest possible score a participant could have is 12 (there are 12 items total) and highest is 48. Scores are interpreted continuously with higher scores indicating higher perceived social support. The mean of the sample indicates an overall higher level of perceived social support though there is a wide range of scores.

Social support was also measured through a question looking at marital satisfaction. This was one item ranging from 0 to 7 (with 7 being extremely satisfied with marriage). In this sample the mean score was 4.3 with a standard deviation of 2.28 demonstrating a medium level of marriage satisfaction across the sample. Furthermore, household income ranged from less than $10,000 to $200,000 or more with a mean of 7.33 (7=$75,000 to $99,9999) and standard deviation of 1.993). Lastly, caregiver nativity was examined as an aspect of social support. 52.2% of mothers were born in the US and 47.8% were not (mean of 1.48, standard deviation of .505).

8.2.3 Child Factors. For the CBCL Sleep Problems subscale, T-scores ranged from 50 to 82 with a mean of 55.37 and a standard deviation of 8.01. Of the participants for whom standardized T-scores could be computed, a cut-off score of 60 was used to identify significantly elevated problem areas. For CBCL Sleep Problems, 43 participants had available T-scores, 9 of

whom demonstrated significantly elevated sleep problems (20%). Mean sleep problems on the CBCL was 55.37, p=8.02. For the CBCL Externalizing subscale, T-scores ranged from 32 to 69, with a mean of 53.33 and standard deviation of 8.92. Of the participants for whom standardized T-scores could be computed, a cut-off score of 60 was used to identify significantly elevated problem areas. For CBCL Externalizing Problems, 33 participants had available T-scores, 9 of whom demonstrated significantly elevated externalizing problems (27%).

Vineland Communication standard scores ranged from 44 to 105, with a mean of 74.65 and standard deviation of 14.69. As expected, the children participating in this study tend to demonstrate lower levels of functioning, as measured by teacher-reported communication skills, than other same-aged peers across a normative sample. ADOS-2 scores ranged from 3 to 10, with a mean of 7.40 and standard deviation of 2.01. Of the 40 participants who received an ADOS-2 during this study, 55% (n=22) were in the high range of severity, 35% (n=14) were in the moderate range, and 10% were in the low range (n=4).

For the ratio of children to adults in the home, the average ratio was .98 with a standard deviation of .59 which is about a 1 to 1 ratio of children to adults in the home. There was a range of 1 child to 4 adults (one participant reported having 2 children in the home to 8 adults) to a ratio of 4 children to 1 adult. Lastly, children ranged in age from 2.52 years to 5.56 years with a mean of 4.12 years and standard deviation of .81. Also, 80.4% of the sample of mothers had a male child at Keller.

8.2.4 Parenting Quality. Observed Positive Parenting, z-scored, was found to have a mean of -.09, standard deviation of 3.75, and a range of -10.39 to 4.29. Observed Harsh Parenting, z-scored, was found to have a mean of .05, standard deviation of 2.07, and a range of -1.89 to 6.09.

8.3 Hypothesis Testing

8.3.1 Research Questions 1: Correlations of Study Variables.

Preliminary analyses of main study variables were done to examine relationships that exist between specific healthy habits with other parental characteristics (i.e., stress, depressive symptoms, caregiver age, and caregiver level of education), social support (perceived social support, marital satisfaction, household income, and caregiver nativity), and child factors (child sleep, child externalizing behaviors, ASD severity, child language functioning, ratio of children to adults in the home, child age, and child gender). Pearson correlations were conducted for continuous and interval variables while Point-Biserial Pearson correlations were conducted for dummy-coded dichotomous variables. See Table 19.

Parental Characteristics. Significant correlations were found between healthy habits and other parental characteristics. Specifically, parental stress was significantly negatively correlated with total healthy habits (r=-.462, p=.002), parent sleep subscale (r=-.440, p=.003), and average hours of exercise (r=-.310, p=.038). Caregiver depressive symptoms was similarly negatively correlated with total healthy habits (r=-.522, p=<.001), parent sleep subscale (r=-.432, p=.003), the diet subscale (r=-.320, p=.032), and average hours of exercise (r=-.317, p=.034). Caregiver depressive symptoms was also negatively correlated with a doctor telling the parent to lose weight (more depressive symptoms, told to lose weight) (r=-.325, p=.031).

Examining demographic parental characteristics, highest education received was positively correlated with smoking (more education, parent does not smoke) (r=.37, p=.013) and there were no relationships between healthy habits and mother's age. Therefore, in this sample parent sleep, diet, exercise, and being overweight appear to be important aspects of healthy habit engagement in their relationship to parental characteristics of mothers of preschool-aged children with autism. (See Table 19).

Social Support. Significant correlations were found between healthy habits and parent social support variables. Specifically, perceived social support was positively correlated with total healthy habits ($r=.377$, $p=.012$), and parent's diet subscale ($r=.437$, $p=.003$). Household income was also positively correlated with a doctor telling the parent to lose weight (higher income, not told to lose weight) ($r=.302$, $p=.049$). Lastly, regarding mother's nativity, smoking was positively related to if the mother was born in the US (no smoking, not born in US) ($r=.305$, $p=.041$). There were no relationships between caregiver healthy habits and marital satisfaction. From these results, it is evident that parent's eating habits are significantly related to social support.

Child Factors. Regarding the relationships between parent healthy habits and child sleep, there were some significant correlations of note. Child sleep problems (measured on the CBCL) was negatively correlated with total healthy habit engagement ($r=-.320$, $p=.039$), and the caregiver sleep subscale ($r=-.522$, $p<.001$). Child externalizing behavior problems (measured on the CBCL) was negatively correlated with smoking (more behavior problems, parent smokes) ($r=-.310$, $p=.038$). The ratio of children to adults in the home was also negatively correlated with parents' sleep subscale ($r=-.323$, $p=.032$). Child's age was negatively correlated with the caregiver diet subscale ($r=-.389$, $p=.008$) and if the caregiver smokes (older the child, caregiver smokes) ($r=-.318$, $p=.033$). Autism severity and child language functioning were not related to any caregiver health habit variables. From this, it seems that parent-reported child sleep problems and ratio of children to adults in the home are important variables in parent's sleep and child's age is important for parent's diet in this sample.

8.3.2 Research Questions 2: Parenting Quality.

Parenting Quality. Observed positive parenting quality was positively correlated with parent's sleep subscale (r=.462, p=.002). Observed harsh parenting quality was negatively correlated with parent's sleep subscale (r=-.378, p=.015).

As parent's sleep came out as significantly related to parenting quality, a follow-up mediation analysis was done to examine the relationship between caregiver sleep, depressive symptoms, and observed parenting quality. Two separate regression analyses were conducted to investigate if depressive symptoms mediates the relationship between caregiver's sleep and observed positive parenting quality. The mediation model was tested using PROCESS Model 4.

Table 20.
Regression Analysis Summary for Caregiver Sleep, Depressive Symptoms, and Positive Parenting Quality.

	Consequent							
	M (Caregiver Depressive Symptoms)				Y (Positive Parenting)			
Antecedent		Coeff.	*SE*	*P*		Coeff.	*SE*	*p*
X (Caregiver Sleep)	a	-.1.75	.582	.005	c'	1.99	.695	.007
M (Caregiver Depressive Symptoms)		--	--	--	b	.008	.174	.044
Constant	i_m	3.16	.511	.000	i_y	-.176	.777	.822
	R^2=.193 F (1,38)=9.079, p=.005				R^2=.213 F (2,37)=5.016, p=.012			

Through a mediation analysis conducted using ordinary least squares path analysis, caregiver sleep indirectly influenced observed positive parenting through its effects on caregiver depressive symptoms (R^2=.212). As can be seen in Table 20, individuals with better sleep related to lower levels of caregiver depressive symptoms (a=-.1.75), which was linked to more observed positive parenting quality (b=.008). A bootstrap confidence interval was significant based on 5,000 bootstrap samples. The significant indirect effect (ab=-.013) was entirely above zero (-.825, .686) for the path of caregiver sleep related to caregiver depressive symptoms which was linked to observed positive parenting quality. There was evidence of a direct relationship

demonstrating that caregiver sleep also influenced observed positive parenting quality independent of its effect on caregiver depressive symptoms (c'=.1.99, p=.007).

Two separate regression analyses were also conducted to investigate if depressive symptoms mediates the relationship between caregiver's sleep and observed harsh parenting. The mediation model was tested using PROCESS Model 4.

Table 21.
Regression Analysis Summary for Caregiver Sleep, Depression, and Harsh Parenting Quality.

	Consequent							
	M (Caregiver Depressive Symptoms)				Y (Harsh Parenting)			
Antecedent		Coeff.	*SE*	*P*		Coeff.	*SE*	*p*
X (Caregiver Sleep)	a	-.1.75	.582	.005	c'	-1.06	.394	.011
M (Caregiver Depressive Symptoms)		--	--	--	b	-.097	.099	.330
Constant	i_m	3.16	.511	.000	i_y	.419	.440	.347
	R^2=.193 F (1,38)=9.079, p=.005				R^2=.165 F (2,37)=3.651, p=.036			

Through a mediation analysis conducted using ordinary least squares path analysis, caregiver sleep directly influenced observed harsh parenting (R^2=.165). As can be seen in Table 21, individuals with better sleep related to lower levels of caregiver depressive symptoms (a=-.1.75). lower levels of depression however did not significantly relate to more observed harsh parenting quality (b=.-.097). There was therefore no evidence of an indirect relationship between caregiver sleep and harsh parenting through depressive symptoms. There was evidence; however, of a direct relationship demonstrating that caregiver sleep influenced observed harsh parenting quality independent of its effect on caregiver depressive symptoms (c'=-1.06, p=.011).

Table 19.

Study Two: Intercorrelations of Study Variables

Measure	1[b]	2[b]	3[b]	4[b]	5[c]	6[c]	7[b]	8[b]	9[b]	10[b]	11[b]	12[b]	13[b]	14[b]	15[b]	16[c]	17[b]
1. Total Healthy Habits	--																
2. Sleep Subscale	.537**	--															
3. Diet Subscale	.854**	.148	--														
4. Avg. Hrs. Exercise	.547**	.216	.325*	--													
5. Told to Lose Weight	.403**	.392**	.118	.190	--												
6. Smoke (Y/N)	.526**	.056	.431**	.283	-.061	--											
7. Parental Stress	-.462**	-.440**	-.289	-.310*	-.143	-.221	--										
8. Caregiver Depressive Symptoms (PHQ-9)	-.522**	-.432**	-.320*	-.317*	-.325*	-.113	.560**	--									
9. Observed Positive Parenting	.130	.462**	-.050	-.147	.168	.093	-.378*	-.151	--								
10. Observed Harsh Parenting	-.014	-.378*	.176	.160	-.382*	.158	.257	.000	-.786**	--							
11. Maternal Age	.105	.094	.062	.002	.271	-.086	.034	-.183	-.152	.104	--						
12. Highest Education	.309*	.206	.211	.128	.108	.370*	-.046	-.088	.081	.013	.087	--					
13. Social Support	.377*	.175	.437**	.139	.239	-.148	-.480**	-.387**	.242	-.194	-.046	.004	--				
14. Marriage Satisfaction	.158	.113	.134	-.024	.027	.214	-.038	.028	.045	.104	-.230	.073	-.056	--			
15. Household Income	-.025	.172	-.188	-.197	.302*	.119	.047	-.018	.395*	-.327*	.219	.426**	-.009	.305	--		
16. Born in US (Y/N)	.178	-.118	.199	.127	.094	.305*	-.083	-.309*	-.114	.153	.046	-.027	.010	-.040	-.101	--	
17. CBCL Sleep Problems	-.320*	-.522**	-.153	.188	-.032	-.249	.357*	.416**	-.357*	.168	-.065	-.255	-.096	-.181	-.351*	.103	--
18. CBCL Externalizing	-.176	-.077	-.123	-.074	.192	-.367*	.603**	.297	-.262	-.083	-.110	-.213	-.072	-.079	-.015	-.285	.546**

19. ASD Severity (ADOS)	-.185	.146	-.152	-.171	-.215	-.259	.201	.221	-.074	.109	-.433**	.021	.132	.069	-.092	-.089	-.079
20. Child Language	-.016	-.106	.022	-.182	-.196	.182	-.074	-.106	.031	-.092	.081	.094	-.225	-.074	-.036	.112	-.303
21. Child:Adult Ratio	-.081	-.323*	.031	.192	-.140	.013	.156	.062	-.478**	.430**	.244	-.148	-.270	-.037	-.411**	.337*	.349*
22. Child Age	-.247	.272	-.389**	-.215	.178	-.318*	-.069	-.092	.181	-.237	.146	.250	-.046	-.120	.203	-.165	-.198
23. Child Gender (1M, 2F)	.133	.028	.113	.082	.000	.156	-.154	.087	.003	-.044	-.319*	.054	.061	.263	-.070	-.143	-.039

Table 19 (continued).

Study Two: Intercorrelations of Study Variables (continued)

	18 [b]	19 [b]	20 [b]	21 [c]	22 [b]	23 [c]
18. CBCL Externalizing	--					
19. ASD Severity (ADOS)	.308	--				
20. Vineland Communication	-.190	-.280	--			
21. Child:Adult Ratio	-.354*	-.265	.144	--		
22. Child Age	-.132	.175	-.315*	-.096	--	
23. Child Gender (1M, 2F)	.058	.192	-.174	-.153	-.092	--

[b] Pearson Correlation

[c] Point-biserial Pearson's correlation

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

8.3.3 Hypothesis 1: Facilitators and Barriers.

Hypothesis one examined the possible facilitators and barriers to caregivers' engagement in healthy habits through a linear hierarchical regression analysis. Three models were tested first examining the relationships between parental characteristics (specifically caregiver age, highest education received, and caregiver depressive symptoms) and healthy habit engagement. Only Model 1, with parental characteristics alone, was significant (F(3,23)=3.292, p=.039). See Table 22.

Table 22.
ANOVA Model Summary for Facilitators and Barriers to Total Healthy Habit Engagement

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	209.554	3	69.851	3.292	.039[b]
	Residual	488.058	23	21.220		
	Total	697.613	26			
2	Regression	319.214	7	45.602	2.290	.072[c]
	Residual	378.398	19	19.916		
	Total	697.613	26			
3	Regression	490.503	14	35.036	2.030	.113[d]
	Residual	207.110	12	17.259		
	Total	697.613	26			

a. Dependent Variable: Total Healthy Habit Engagement.
b. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age.
c. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income.
d. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income. Child Sleep Problems, Child Externalizing Behavior, Autism Severity (ADOS), Child Language Functioning, Ratio of Children to Adults in the Home, Child Age, Child Gender.

Table 23.
Hierarchical Regression Analysis Summary for Facilitators and Barriers to Total Healthy Habit Engagement

Predictor Variables.	Model 1	Model 2	Model 3
Parental Characteristics			
Caregiver Depressive Symptoms	-.380* (-2.081) [.049]	-.188 (-.840) [.441]	-.077 (-.339) [.741]
Caregiver Education	.340 (1.933) [.066]	.430* (2.392) [.027]	.531* (2.379) [.035]
Caregiver Age	.033 (.181)	.103 (.515)	.077 (.370)

	[.858]	[.613]	[.718]
Social Support			
Perceived Social Support		.343	.329
		(1.816)	(1.282)
		[.085]	[.224]
Household Income		-.290	-.512
		(-1.340)	(-2.019)
		[.196]	[.066]
Marital Satisfaction		.059	.198
		(.257)	(.698)
		[.800]	[.499]
Caregiver Nativity		.014	.114
		(.071)	(.536)
		[.944]	[.602]
Child Factors			
Child Sleep Problems			-.305
			(-1.087)
			[.298]
Child Externalizing Behavior			.219
			(.948)
			[.362]
Autism Severity (ADOS)			-.433
			(1.712)
			[.113]
Child Language Functioning			-.333
			(-1.497)
			[.160]
Child: Adult Ratio			-.019
			(-.060)
			[.953]
Child Age			-.432
			(-2.147)
			[.053]
Child Gender			.121
			(.632)
			[.539]

Examining the coefficients in Table 23, in model 1, caregiver depressive symptoms was a significant potential barrier to engagement in healthy habits in this sample (more healthy habits, less depressive symptoms or vice/versa) (t=-2.081, p=.049). No social support factors or child

factors were found to significantly related to caregiver's engagement in healthy habits in this sample.

8.4 Exploratory Analyses

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

8.4.1 Facilitators and Barriers: Follow-up Analyses.

As a follow-up to analyzing the facilitators and barriers to caregiver's engagement in healthy habits, additional analyses were conducted breaking down healthy habits into sleep, diet, and exercise (using the sleep and diet subscales and single exercise frequency item).

A hierarchical linear regression was run examining the predictors to caregiver's sleep (using sleep subscale). None of the models were significant ($p>.05$).

A hierarchical linear regression was also run examining the predictors to caregiver's diet (using diet subscale). Only model 3 (which included parental characteristics, social support factors, and child factors, was significant ($F(14, 12)=2.686$, ($p=.047$)). See Table 24.

Table 24.
ANOVA Model Summary for Facilitators and Barriers to Caregivers' Diet

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.701	3	.567	1.239	.318[b]
	Residual	10.522	23	.457		
	Total	12.223	26			
2	Regression	4.770	7	.681	1.737	.160[c]
	Residual	7.453	19	.392		
	Total	12.223	26			
3	Regression	9.266	14	.662	2.686	.047[d]
	Residual	2.957	12	.246		
	Total	12.223	26			

a. Dependent Variable: Caregivers' Diet Subscale.
b. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age.
c. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income.
d. Predictors: (Constant), Caregiver Depressive Symptoms (PHQ-9), Caregiver Education, Caregiver Age, Caregiver Nativity, Marital Satisfaction, Perceived Social Support, Household Income. Child Sleep Problems, Child Externalizing Behavior, Autism Severity (ADOS), Child Language Functioning, Ratio of Children to Adults in the Home, Child Age, Child Gender.

When examining the specific variables (see Table 25), caregiver education came out as significant in model 3, (t=2.531, p=.026). One social support factor was trending towards significance, specifically household income (t=-2.157, p=.052). Additionally, two child factors were significant; specifically, ASD severity (from ADOS) (t=-2.239, p=.045), and child age (t=-2.880, p=.014).

Table 25.
Hierarchical Regression Analysis Summary for Facilitators and Barriers to Caregiver's Diet

Predictor Variables.	Model 1	Model 2	Model 3
Parental Characteristics			
Caregiver Depressive Symptoms	-.225 (-1.109) [.279]	.094 (.397) [.696]	.250 (1.215) [.248]
Caregiver Education	.259 (1.327) [.197]	.375 (1.968) [.064]	.510* (2.531) [.026]
Caregiver Age	.042 (.208) [.837]	.119 (.564) [.579]	.040 (.211) [.836]
Social Support			
Perceived Social Support		.417 (2.083) [.051]	.453 (1.955) [.074]
Household Income		-.260 (-1.135) [.270]	-.494 (-2.157) [.052]
Marital Satisfaction		-.033 (-.137) [.893]	.129 (.505) [.623]
Caregiver Nativity		.187 (.874) [.393]	.332 (1.731) [.109]
Child Factors			
Child Sleep Problems			-.440 (-1.734) [.108]
Child Externalizing Behavior			.318 (1.528) [.153]

Autism Severity (ADOS)	-.511* (-2.239) [.045]
Child Language Functioning	-.351 (-1.749) [.106]
Child:Adult Ratio	.048 (.169) [.868]
Child Age	-.523* (-2.880) [.014]
Child Gender	.031 (.179) [.861]

Lastly, a hierarchical linear regression was run examining the predictors to caregiver's exercise frequency. None of the models were significant ($p>.05$).

Chapter 9: Discussion

9.1 Summary of Findings

As caregivers of young children with autism are a uniquely stressed population, the present dissertation examined the modifiable variable of caregivers' engagement in healthy habits (i.e., sleep, diet, exercise, and substance use) to explore targets for parent well-being-focused interventions. There has been strong evidence in the literature to demonstrate that sleep, diet, and exercise are causally related to well-being. Furthermore, there has been evidence that demonstrates that parent characteristics (both psychopathology and demographic characteristics), social support variables, and child factors are influential in caregivers' well-being and their health habit behaviors. Guided by Belsky's (1984) model of parenting, the present dissertation broke down the relationship between caregivers' engagement in healthy habits with parental characteristics, social support factors, and child factors. And in study two, the present

dissertation explored the relationship between healthy habit engagement and observed parenting quality.

The present dissertation therefore explored the relationships between aspects of healthy habit engagement and other parental, social support, and child factors in two separate populations of caregivers. Study one was a needs assessment sent to all parents (both mothers and fathers) of children at risk for a developmental disability in an early intervention program. Study one included a diverse sample of caregivers from a range of ethnicities, education and income levels. Study two narrowed in on a specific population of mothers and their preschool-aged children with a gold-standard diagnosis of ASD and included a measure of observed parenting quality along with a questionnaire. Across both studies parents had their children enrolled in specialized ABA education programs, either early intervention or preschool.

Beginning with study one, a sample of caregivers of an early intervention population, about half of the caregivers reported an insufficient amount of sleep (less than 7 hours on average). A third of caregivers reported they did not exercise at all. Only a third reported eating breakfast every day, half ate only one serving of fruit most days and one serving of vegetables a day, half ate family meals prepared at home almost every day, a third ate fast food regularly, about half were told to lose weight. Most did not smoke or drink alcohol regularly. Therefore, these caregivers have variable diet and exercise patterns, insufficient sleep, and appropriate substance use.

In study two, a sample of mothers with a preschool-aged child with autism, more than half of the mothers reported an insufficient amount of sleep (less than 7 hours on average). Almost half of caregivers reported they did not exercise at all. Almost half reported eating breakfast every day, a third ate only one serving of fruit most days, and half ate one serving of

vegetables a day, a third ate family meals prepared at home almost every day, a third ate fast food regularly, and a third were told to lose weight. Most did not smoke. Therefore, these caregivers have variable diet, insufficient exercise patterns, insufficient sleep, and appropriate substance use.

For study one, various relationships were examined between study variables and healthy habit engagement[4] (research question one). Starting with parental characteristics, the more stress parents' reported, the worse sleep, the worse diet, and the more frequent alcohol consumption. Similar relationships were found with caregiver depressive symptoms and caregiver well-being (measured by the WHO-5). Caregivers who did not smoke also reported higher well-being. Furthermore, the more education caregivers' had, the better their sleep, and interestingly, the more frequent alcohol consumption. Lastly, the older the caregiver, the more frequently they exercised.

Similar relationships were found between healthy habit engagement and parental characteristics in study two. Specifically, the more stress mothers reported, the worse sleep, and the less hours of exercise they engaged in. Similarly, the more depressed the mothers were, the worse sleep, the worse diet, the less exercise, and the greater likelihood of being told to lose weight by a doctor. Furthermore, the more education mothers had, the less likely they smoked.

Therefore, across both samples, healthy habit engagement (consistently sleep, diet, and exercise) is an important factor for caregiver well-being, including stress and depression. This is consistent with the literature that demonstrates causal links between sleep, diet, exercise, substance use and well-being (including stress and depression). As there has been limited

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[4] Note: Across all correlations, directionality cannot be assumed and therefore, relationships can exist in either direction.

research looking at health habit engagement and parental well-being in parents of children with or at-risk for autism, the present dissertation demonstrates the importance of healthy diet, sleep, and exercise, and reduced substance use in this specific parent population. Additionally, especially when looking at caregivers of an early intervention population, caregiver education and age are related to healthy habit engagement. These findings are similarly consistent with the literature that showed that less education was associated with more stress, more sleep complaints, and worse diet quality in adults. There was limited research on the impact of caregiver age on stress and healthy habit engagement, though there was some literature to suggest that the older the caregiver in a sample of parents of children with ASD ages 3-10 (older than early intervention sample), the less stress (Derguy et. al, 2016). The finding in study one that the older the caregiver, the more exercise they engaged in, therefore adds to the literature on the impact of caregiver age on healthy habit engagement. It is possible that the older the caregiver in the sample, the more likely they felt they needed to focus on their health.

Examining social support factors and healthy habit engagement, in study one, various relationships were found. Specifically, the more social support perceived by caregivers, the better their sleep. The higher marital satisfaction reported, the less likely caregivers smoked. The higher the household income, the worse their diet and the more frequently they drank alcohol. Lastly, caregivers born in the US (about 50% of the sample) reported worse sleep, worse diet, and more alcohol consumption. In study two, additional relationships were found. Specifically, the more social support mothers perceived, the better their diet. The higher the household income, the less likely they were told to lose weight. Lastly, if mothers were born in the US, the more likely they smoked.

Therefore, perceived social support was important for sleep in an early intervention sample of parents and important for diet in parents of a preschool-aged ASD sample. The literature has similarly demonstrated the importance of social support for well-being in parents of children with autism including positive impacts for sleep, diet, and exercise for adults in general (Balaji et al., 2007; Darlow & Xu, 2011; Kent et al., 2015; Laiou et al., 2020; Uchino, 2009). Regarding household income, interestingly in a sample of parents of children in early intervention, higher income negatively related to aspects of healthy habit engagement, particularly diet and alcohol consumption, inconsistent with the literature (Meltzer & Jena, 2010; Wolfson et al., 2019). In this sample, income ranged from less than $10,000 (11% of participants) to more than $200,000 (13.2% of participants) with the mean around $35,000 to $74,9999, representing a full range of household income. It is possible that this sample of parents of a higher income class are ordering food more or eating out more, contributing to worse diet quality.

Caregiver nativity also stood out in the early intervention sample with the finding that parents not born in the U.S. (about 50% of the sample) reported better healthy habit engagement (better sleep, diet, and less alcohol consumption). In mothers of preschool-aged children with autism, the only difference for parents not born in the U.S. was that they smoked less. Overall the findings on nativity contradict the present dissertation's hypothesis that being born in the U.S. acts as a facilitator of health habit engagement through increased connections to the community (Cunningham et al., 2015; Popovic-Lipovac & Strasser, 2013). There are mixed findings in the literature on nativity and healthy habit engagement. The finding that being born in the US was associated with worse sleep is inconsistent with the literature highlighting less sleep in foreign-born adults (Cunningham et al., 2015). Past research on diet and nativity highlights

that caregivers born outside the U.S. acculturate to worse diet, indicating worse dietary patterns in the U.S., which could explain the finding that non-native caregivers reported better diet habits (Popovic-Lipovac and Strasser, 2013). Overall, more research is needed to elucidate these findings on nativity and healthy habits.

A few relationships were found examining child factors and healthy habit engagement. In study one, child's sleep, child's age, child's gender, and ratio of children to adults in the home were not related to healthy habit-engagement in this sample of early intervention parents. In study two, the more reported child sleep problems, the worse mother's sleep. This finding is consistent with the literature that shows a link between child sleep problems and parent sleep problems in parents of children with autism. Additionally, the more reported child externalizing behavior problems, the more likely mothers smoked. The higher the ratio of children to adults in the home, the worse mother's reported sleep. This finding was consistent with research linking higher fatigue in parents who had more than one child (Cooklin, Giallo, Rose, 2012). The older the child, the worse diet quality reported, and the more likely mothers smoked. Autism severity, child language functioning, and child gender were not important for caregiver's healthy habit engagement in this sample. This is a promising finding as these child factors are less modifiable. There is limited research on the links between parents' healthy habit engagement and child characteristics. Therefore, the present findings provide preliminary insight into the relationships between child factors and parents' healthy habit engagement in parents of young children with ASD or at-risk for ASD. In parents of preschool-aged children with ASD, child sleep, behavior problems, number of children, and child age do seem to be related to healthy habit engagement. The difference in findings between study one and study two may be indicative of the demands on caregivers increasing as a child with ASD gets older.

9.1.1 Healthy Habits and Parenting Quality. Study two demonstrated that the better mothers' sleep, the higher the observed positive parenting quality in this sample (the same opposite relationship existed for more observed harsh parenting quality) (research question two). Additionally, using a mediation model analysis, parents' sleep had both an indirect relationship (mediated by depressive symptoms), and direct relationship with observed positive parenting (R^2=.213), and a direct relationship to observed harsh parenting (R^2=.165). Parents' sleep therefore, beyond its relationship with caregiver depressive symptoms, appears to be especially important for parenting quality in this population of mother-child dyads. There has been limited research on the impact of parent's sleep on parenting in an ASD population; however, this finding is consistent with the literature more generally demonstrating a relationship between mother's sleep problems and observed positive parenting in mothers of toddlers (McQuillan, et. al, 2019).

9.1.2 Facilitators and Barriers to Healthy Habit Engagement. The parental characteristics, social support factors, and child factors were all examined in a prediction model to determine the possible facilitators and barriers to caregivers' engagement in healthy habits (hypothesis one). In study one, only two factors emerged as significant. Specifically, caregiver well-being (WHO-5) was found to be a potential facilitator to healthy habit engagement while child sleep disruptions was found to be a potential barrier, as hypothesized. When examining caregiver depressive symptoms in the model as a parental characteristic, depressive symptoms was found to be a potential barrier to healthy habit engagement. This finding make sense in the context of the literature as sleep, diet, and exercise are causally related to depression and well-being both in the way that treatment for stress and depression includes targets on sleep, diet, and exercise and in the way that when individuals are depressed, their symptoms include disruptions

in sleep, diet, and activity. When breaking down healthy habits into their specific factors, caregiver well-being and caregiver education were found to be related to caregiver's sleep. No social support or child factors were related to caregiver's sleep. When examining diet on its own, no prediction models were significant. Lastly, when examining exercise frequency, caregiver education was negatively related to exercise, caregiver age and marital satisfaction were positively related to exercise.

In study two, when examining total healthy habit engagement, caregiver depressive symptoms was a potential barrier to engagement in healthy habits (same as study one). When looking at caregiver diet on its own, caregiver education was found to be a potential facilitator to caregivers' diet, and autism severity and child age were found to be potential barriers. Diet therefore may be related to child factors more in a sample of parents of preschool-aged children with ASD compared to those in early intervention. When examining sleep on its own or exercise frequency on its own, none of the prediction models were significant. The difference in findings from study one to study two on sleep and exercise frequency is unclear. It is possible that study two had too many variables examining a small sample size of participants contributing to a lack of findings in this analysis structure. It is also possible that this difference in finding is due to a comparison of a group of mothers and fathers (and a few foster parents and grandparents) to a group of just mothers.

Overall, parental characteristics were found to be most predictive of engagement in healthy habits, including when broken down by sleep, diet and exercise. This finding is interesting in the context of Belsky's (1984) model of parenting where he stated that parental characteristics are the most influential on parenting quality, highlighting the general importance of a parent's psychological and demographic characteristics on well-being and subsequently

parenting. Most social support factors were not predictive of healthy habit engagement. Therefore, while exploratory correlational analyses demonstrated the importance of a variety of aspects of social support for healthy habit engagement with several relationships found between the variables, these variables mostly did not come out as related to healthy habit engagement. Only marital satisfaction was a significant facilitator for caregivers' exercise frequency in caregivers of an early intervention population. This finding suggests a positive influence that the quality of a marital relationship can have on parent's ability to take care of themselves in an early intervention parent population. This is consistent with the literature highlighting the power that spouses can have in terms of positive influences on health habits when the marital relationship is strong (Troxel et al., 2007).

Some child factors were found to be potential barriers for healthy habit engagement, specifically child sleep in a sample of caregivers of an early intervention population, and autism symptom severity and child age in a sample of mothers of preschool-aged children with autism. Child sleep therefore seems to be an important target for young children in early intervention, as it is related to caregiver's ability to engage in healthy habits important for their well-being.

Beyond the importance of child sleep problems on parent's sleep demonstrated in the literature, there has been literature demonstrating a link between autism severity and parental stress and depression. The finding that autism severity was related to caregivers' diet quality is a unique contribution to the literature as there has not been research examining these variables together. It is possible that in this sample of mothers of preschool-aged children with ASD, more severe autism symptom severity is associated with more burden on the mothers taking away time/energy devoted to healthy diet decisions. It could also be that autism severity is associated with picky eating, restricting what food mother's serve the family and eat themselves. Picky

eating is a significant concern for parents of children with ASD (Mari-Bauset, et. al, 2014). Parents also have reported that children's picky eating has a negative impact on family meals, increasing parents' stress and impacts meal preparation (Trofholz, Schulte, & Berge, 2017). More research is needed, however, to understand this finding.

9.1.3 Depression as a Mediator. The present study wanted to explore the primacy of depression in the relationship between healthy habits and parental stress. Furthermore, Johnson (2019), using the same sample as study two, found that healthy habit engagement, predicted caregiver depressive symptoms, which predicted parental stress, which subsequently predicted observed positive and harsh parenting quality (indicating that depression and stress mediated the relationship between healthy habits and parenting quality), the present dissertation sought to determine if a similar mediation model was present in study one (without observed parenting quality) (hypothesis two). As hypothesized, the data from study one similarly demonstrated that healthy habit engagement related to caregiver depressive symptoms, which was linked to parental stress (R^2=.274), indicating that caregiver depressive symptoms mediates the relationship between parental stress and healthy habit engagement. This finding demonstrates the primacy of depression on the relationship between healthy habits and stress, consistent with Belsky's (1984) argument that depression is the most significant psychological disturbance for parenting. The same model was tested using caregiver well-being on the WHO-5. This analysis demonstrated that caregiver depressive symptoms partially mediates the relationship between healthy habit engagement and parental stress as there was also a direct relationship between healthy habit engagement and caregiver well-being (R^2=.610). This finding further reiterates that importance of healthy habit engagement in parents of children in early intervention for parent's

well-being. Furthermore, these findings further highlight the intertwined relationships between healthy habit engagement and psychological well-being (including stress and depression).

9.2 Strengths of the Study

The present study contributes to the limited research on the importance of health habit behaviors in a highly stressed population of caregivers, parents of young children at-risk for autism and mothers of preschool-aged children with autism. With a wealth of variables and two different study samples, the present dissertation offers exploratory information on the relationships between caregiver sleep, diet, exercise, substance use and other parental characteristics, social support variables, and child factors to gain unique information on how best to support these families. Study two further expands on the literature of observational studies of parent-child interactions for mothers of children with ASD and includes the ADOS-2, a gold standard diagnostic system, which confirmed the diagnoses of ASD for each of the participating children. Furthermore, study two provides a greater understanding of the impact of healthy habit engagement and observed parenting quality, further highlighting the extensive impact that parents' sleep can have not only on parents' well-being but also on their parenting quality.

Additionally, characteristics of the recruited samples reduce the amount of variance between families that would otherwise need to be controlled for. First, all participating children are in a specialized full day school program for children with a disability (early intervention program) or more specifically ASD (preschool program), where they receive a high level of intervention and support services targeted toward their specific areas of difficulties and diagnoses utilizing ABA-style therapies. Due to the attendance at school, each of the parents also receive several hours a day of time away from this child with a disability (studies occurred pre-COVID-19 pandemic). Second, families have access to a school social worker and on-site parent

coordinator who have extensive training and experience in children with disabilities including ASD. Although these factors may limit the generalizability to other populations who do not have these services, they provide strong control over potential variance between families.

9.3 Limitations of the Study

One limitation of study one was that it only included subjective measures of parent ratings on their own depression, stress, perceived social support, healthy habit engagement, and their child's sleep. Future research could incorporate additional measures of these variables such as observer ratings of stress and depression and objective measures of social support and health habit behaviors. Additionally, in study one, the reliability for the diet scale and the total healthy habits scale was low. While this may not necessarily be indicative of the validity of these items, it is important to keep in mind. A limitation of study two was that many variables were examined in a small sample size of 46 participants. This study was meant to be exploratory with the aim of getting a breadth of understanding of the relationships between healthy habits, parent characteristics, social support, child factors, and observed parenting quality.

Across both studies, many of the questions asked were exploratory. While there is an abundance of research on the benefits of healthy habit behaviors for adults in general, there is limited research on healthy habit engagement in parents of children with disabilities in general or more specifically parents of children with ASD. Furthermore, there is also limited research on the potential barriers and facilitators to healthy habit engagement in general and in parents specifically, and on the link between health habit behaviors and parenting quality. These studies also narrowly defined healthy habits into a few items on sleep, a few items on diet, an item on exercise frequency, one item on weight, and an item or two on substance use. Further research could use full questionnaires on each of these health behaviors and could also provide more

objective measures such as the use of a fitness tracker during the day and at night to measure activity or movement both for exercise quantity and sleep quality (actigraphy). These measurements would provide quantitative, non-subjective data on exercise frequency and sleep quality, for example. Additionally, one of the items assessed if parents were ever told to lose weight to obtain a measure of being overweight. Future research could instead calculate BMI for a more accurate measure.

Another limitation of these studies is generalizability of the sample. Participants for both studies were parents of children who were identified as having a disability at an early age and subsequently getting high quality intervention. This alone may be a factor in reducing stress for parents in that their child is getting quality instruction and support and they are part of a community of parents going through similar experiences, compared to parents of children with undiagnosed disabilities or parents with less intervention support. Additionally, across both studies, most of the parents were parents of boys (80% of both samples). While these percentages are consistent with the prevalence of ASD (four times more common in boys), results may be different if the sample included a larger sample of caregivers of girls. It is also important to note that there is no comparison sample to parents of typically developing children. Some of the associations found across both studies may be different in parents of typically developing young children. Furthermore, in the comparison from study one to study two, a possible limitation is that study one includes both mothers and fathers (in addition to some other caregivers) compared to study two which just has mothers. However, post hoc analyses comparing the results of just the mothers from study one to the mothers in study two showed very similar relationships.

9.4 Future Directions

Findings from this dissertation call for additional research to improve understanding of both the impact of healthy habit engagement on parent well-being and observed parenting quality as well as the facilitators and barriers to engaging in these habits in parents of children with ASD. While study one provided a comparison for study two (preschool-aged children with ASD compared to children in early intervention with a disability and possibly at-risk for ASD), interpretation of these results would be strengthened with a comparison to other groups of children and parents such as a typically developing preschoolers group, using the design of study two that includes observed parenting quality. Additionally, while study one had both mothers and fathers, another important direction is to include both mothers and fathers, using study two's design, to assess the relationship between healthy habit engagement, parental well-being, and parenting quality, also including an examination of the facilitators and barriers to engaging in these habits, compared between mothers and fathers.

Future research should also explore the relationship between parents' diet quality and children's diet in an ASD parent population as picky eating or sensory issues with food is reported by 67-84% of parents (Mari-Bauset, et. al, 2014). It would be interesting to explore if child's picky eating or mealtime difficulties is a barrier to parents' diet quality in parents of young children with ASD or at-risk for ASD.

Additionally, while both studies demonstrated the importance of healthy habit engagement, highlighting sleep especially, future research could transition into designing an intervention to support parents of young children with ASD. These interventions could aid in determining directionality between healthy habit engagement, well-being, and parenting quality.

It would be interesting to design an intervention that could be tailored to the unique needs of each individual parent. While healthy diet, quality sleep, and engagement in exercise are

likely related, each individual may struggle more with one area over another. Additionally, each individual may have unique facilitators and barriers to engaging in these healthy habits. This study could be targeted either to parents of children in early intervention or parents of young children with ASD diagnosed. The intervention could be designed as a wait-list control and start with a thorough evaluation of the parent's mental health (depression, parental stress, well-being (WHO-5)), an evaluation of their sleep, diet, and exercise habits on a weekly basis, and what they perceive as the barriers/facilitators to engaging in these habits. Then, depending on parent's responses, the intervention could include training in proper sleep hygiene, basic recommendations for healthy diet recommended by the CDC (intake of fruits and vegetables, eating breakfast daily, limited fast food, etc.), and/or basic recommendations for exercise frequency (an average of 20-40 minutes of moderate intensity exercise per day). Parents could be asked daily via smartphone questionnaires brief questions on their sleep, diet, and exercise for a span of 8 weeks with biweekly check-ins with a provider for accountability checks for engagement in these habits and problem-solving for what is getting in the way of engaging in these habits. After the 8 weeks and 4 weeks follow-up, parents' mental health could be assessed again and maintenance of these habits could additionally be assessed at follow-up.

Another more structured intervention could be designed examining a specific area of healthy habit engagement. While diet and exercise were also found to be important for parent's well-being, parents' sleep in study two, was not only related to depression and stress but also, was directly related to both positive and harsh observed parenting quality. Therefore, it would be interesting to design an intervention to specifically target improving parent's sleep. This intervention could be a randomized waitlist control design that provides mothers of preschool-aged children with ASD with a sleep intervention. This study could include a thorough pre-post

assessment of parents' sleep problems as well as measures on well-being, depression, parental stress, diet, exercise, substance use, and observed parenting quality. Research has shown promising results for cognitive behavioral therapy for insomnia (CBT-I) (Sharma & Andrade, 2012). This intervention, including weekly sessions for 6 to 8 weeks, includes psychoeducation, behavioral strategies, cognitive restructuring, and relaxation training. A follow-up to this study could include seeing how targeting child's sleep impacts parent's sleep, impacts parenting quality. There has also been promising findings on the use of parent training in standard extinctions as interventions for sleep problems in children with ASD, specifically children with bedtime disturbances, co-sleeping, and night waking (Vriend et. al, 2011).

9.5 Clinical Implications

Individuals are taught from a young age that getting quality sleep, having a healthy diet, exercising regularly, and limiting substances is important. However, as the demands of life increase, such as having a job, supporting a family, raising children (and even more children with special needs), taking care of oneself becomes more difficult and these health habits are overlooked. The findings in the present dissertation therefore highlight the implications that engaging in these habits can have on two highly stressed groups (demonstrated in findings of high levels of parental stress and depressive symptoms across both samples) of parents of young children with or at-risk for ASD. There are consistent relationships between sleep, diet, exercise, and substance use (particularly alcohol consumption) and parental well-being (stress and depressive symptoms) both in parents of children in early intervention and mothers of preschool-aged children with autism. As data from these studies were conducted in a specialized ABA early intervention program and specialized ABA-style preschool for children with disabilities, this dissertation is uniquely situated to inform interventions for the participating populations.

This dissertation also provided information on the relationships between parental characteristics, social support factors, and child factors with caregiver's engagement in healthy habits. Therefore, beyond further highlighting the importance of health habits for well-being, the present dissertation offers unique exploratory information on how these habits relate to other important factors contributing to parental well-being and parenting in general. While there has been some research linking parental characteristics, social support, and child factors to well-being and health habit behaviors, this dissertation provides a unique contribution to the limited literature on these three domains, especially in parents of children with developmental disabilities and ASD more specifically. One unique finding across both studies, though primarily in study one, was that there were positive relationships between healthy habit behaviors and parents not born in the U.S., demonstrating a possible impact that caregiver nativity can have on health habit behaviors in parents of young children in early intervention.

The present dissertation found that parental well-being was the most predictive of engagement in healthy habits. This finding illustrates the intertwined nature of well-being and health habit behaviors and further emphasizes the importance of finding ways to reduce stress and treat depressive symptoms. Child factors, including child sleep in parents of children in early intervention, and autism severity and age in mothers of preschool-aged children with autism were found to be barriers to engaging in healthy habits (specifically healthy diet in the preschool sample). Therefore, this parent population may benefit from interventions designed to improve their child's sleep, for example, as it may facilitate parent's ability to take care of themselves. Moreover, in study two, mothers' sleep was an important factor not only for well-being but also for an objective measure of parenting quality, further strengthening the importance and value of sleep for a highly stressed population.

There has been little to no research demonstrating the relationship between healthy habit behaviors and quality of observed parenting in parents of children with disabilities or ASD more specifically, beyond Johnson (2019). There has been some research showing a link between parents' sleep and parenting quality for parents of young children in general; however. The present dissertation therefore expands the preexisting literature to demonstrate this same link in mothers of preschool-aged children with autism. Therefore, parents of young children with ASD may benefit from interventions specifically targeting their sleep to not only reduce depressive symptoms (as depressive symptoms partially mediated this relationship), but also potentially impact their parenting quality. There have been promising findings on sleep interventions to treat depression (specifically Cognitive Behavioral Therapy for Insomnia), which could be explored specifically for parents of children with disabilities experiencing sleep problems and concurrent depressive symptoms (Cunningham & Shapiro, 2018).

9.6 Conclusion

As the rates of children diagnosed with ASD have risen, there has also been a significant increase in research on education and behavior management for these children. Furthermore, there has been a significant increased focus on the well-being of these parents due to the high levels of stress that having a child with a disability has been demonstrated to have. However, there has been little to no research exploring the modifiable variable of healthy habit engagement (sleep, diet, exercise, substance use) as it relates to well-being and observed parenting quality in this population of parents. This dissertation extends the literature by, in two study samples, exploring the relationships between parent's engagement in healthy habits (broken down into sleep, diet, exercise, and substance use), parental characteristics (including psychological well-being and demographic characteristics), social support (both relationship-based and resource-

based), and child factors (both demographic and child behavior/functioning). And in study two, this dissertation extends the literature by focusing on a specific disability parent population, and further explores the relationship between healthy habits and parenting quality as observed through parent-child interactions. Across both parents of children in early intervention and mothers of preschool-aged children with ASD, healthy sleep, diet, exercise, and limited substance use are important for caregiver well-being. And in mothers of preschool-aged children with ASD, sleep is important, not only for depression, but also directly for parenting quality. Across both samples, higher parental well-being and lower levels of depressive symptoms can act as a facilitator to engaging in healthy habits while certain child factors can act as a barrier. Taken together the results suggest that health habit behaviors, especially sleep, is a promising target for intervention to address the high levels of stress and depressive symptoms in both parents of children in early intervention and mothers of preschool-aged children with ASD.

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Appendix A

Keller School Survey For Parents

Dear Keller Parents,

Attached are two copies of a survey from researchers at Teachers College, Columbia University. They are looking to understand the unique needs of the parents and caregivers at the Fred S Keller School. Your participation in this survey will help us to create programs to address parenting needs for families at our school. If there are two primary caregivers, both caregivers are encouraged to complete the survey separately.

Your answers are completely anonymous, and information is protected according to IRB standards for data security. The survey will take approximately 20 minutes to complete.

After the completing the survey you may enter your name or email address into a raffle prize; 4 participants will win a 1-month supply of free diapers for their child. Your odds of winning are 4/184. If your name is randomly selected to receive the prize, you will be notified via email or telephone. You can enter into a raffle prize by writing your name, email address, or phone number on the sheet labelled “raffle prize” and placing this sheet in the attached unmarked envelope.

Please place the surveys in the attached envelopes labelled parent #1 and parent #2. DO NOT WRITE YOUR NAME OR YOUR CHILD’S NAME ON ANY OF THE ENVELOPES in order to secure anonymity of survey responses. ALL ENVELOPES SHOULD BE SEALED and put back into your child’s backpack. One of your child’s teachers will collect the unmarked envelopes and place them in a box in the main office of the school to be collected later by the researchers.

We strongly encourage you to participate in this opportunity and please reach out with any questions you have. Thank you for your continued support.

If you would like to contact study personnel to discuss this research, please email Lin Du (phone: (914) 965-1154 Ext. 224; Email: dulinsuper@gmail.com). If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678- 4105 or email IRB@tc.edu or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

Sincerely,

Researchers at Teachers College, Columbia University

Appendix B

Welcome to the Keller School Parent Survey!

Parenting a young child can be stressful and enhancing parental wellbeing helps everyone in the family. We would like to get a clearer picture of specific areas that impact your well-being in order to identify resources and interventions that would be most helpful to you and your family. The following questions are about child behaviors that many parents find challenging, some about your family's background and daily life including your self-care activities like sleep, diet, exercise, and others are about your perceptions, thoughts and feelings. A few of these questions may seem sensitive and may result in some emotional discomfort. If this is the case and you would like to talk about your reactions to a qualified professional following the session today, we can refer you to the Keller social worker or to another resource as needed.

By completing this survey, you have the chance to receive one month's supply of diapers for your participation. The survey should take you around 20 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact study personnel to discuss this research, please email Lin Du (phone: (914) 965-1154 Ext. 224; Email: dulinsuper@gmail.com). If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

This study is anonymous and none of your responses will be linked to your email address. Our team only has access to de-identified questionnaires. You may receive an automatic email reminding you to complete the survey. If you want to be in the lottery for a month's supply of diapers, your email address will be sequestered by Qualtrics and kept separate from your questionnaire.

1) Consent:

By checking that you consent, you acknowledge that your participation in the study is voluntary, you are 18 years of age, you have a child enrolled in the Early Intervention Program at the Keller School, and that you are aware that you may choose to terminate your participation in the study at any time and for any reason.

o I consent, begin the study
o I do not consent, I do not wish to participate

Appendix C

Keller School Survey For Parents:

Raffle Prize

Instructions: Please provide your name and email address if you would like to enter the raffle to win $50 worth of diapers (180 diapers) to be used either at home or at school. Please place this sheet in the attached envelope marked "Raffle." SEAL THE ENVELOPE and then put the envelope in your child's backpack in order to be collected by school personnel.

DO NOT PUT YOUR NAME ON THE OUTSIDE OF THE ENVELOPE.

If you would like to contact study personnel to discuss this research, please email Lin Du (phone: (914) 965-1154 Ext. 224; Email: dulinsuper@gmail.com). If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

Name: ____

Email Address: ____

Phone Number: ____

Thank you!

Appendix D

Recruitment Letter

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

Who is eligible to participate?

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

What is involved?

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

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

Are there benefits to taking part in the study?

There are no benefits to participation.

Will I be paid for my participation?

We will pay you $35 for your time.

Please consider participating in this study. If you have any questions about the study, please contact co-investigators, Marla Brassard, PhD, at 212 678 3368 or Laudan Jahromi, PhD at 212 678 3821.

Appendix E

INFORMED CONSENT

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

DESCRIPTION OF THE RESEARCH:

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

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

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

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

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

RISKS AND BENEFITS:

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

PAYMENTS:

We will pay you $35 for your time.

DATA STORAGE TO PROTECT CONFIDENTIALITY:

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

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

TIME INVOLVEMENT:

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

HOW WILL RESULTS BE USED:

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

ROLE OF THE PRINCIPAL INVESTIGATORS:

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

PARTICIPANT'S RIGHTS

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

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

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

- My participation in research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements.
- The researcher may withdraw me from the research at his/her professional discretion.

- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- For questions about the study, I can contact the Co-principal investigators Laudan Jahromi, PhD, 212 678-3821 and Marla Brassard, PhD, 212 678-3368 at any time.
- If at any time I have comments, or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Teachers College, Columbia University Institutional Review Board /IRB.
- The phone number for the IRB is (212) 678-4105. Or, I can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY, 10027, Box 151.
- I should receive a copy of the Research Description and this Participant's Rights document.

- If video and/or audio taping is part of this research, I
  ( ) consent to be audio/video taped.
  ( ) do NOT consent to being video/audio taped. The written, video and/or audio taped materials will be viewed only by the principal investigator and members of the research team.

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

- ( ) I agree to be contacted for possible participation in an hour-long parent-child interaction at FSK within the next year for which I will be offered additional payment and child care
  ( ) I do NOT agree to be contacted for possible participation in an additional parent-child interaction.

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

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

Name: ________________________________
If necessary:

Guardian's Signature/consent: ____________________________________

Date:____/____/____

Name: ____________________________________

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

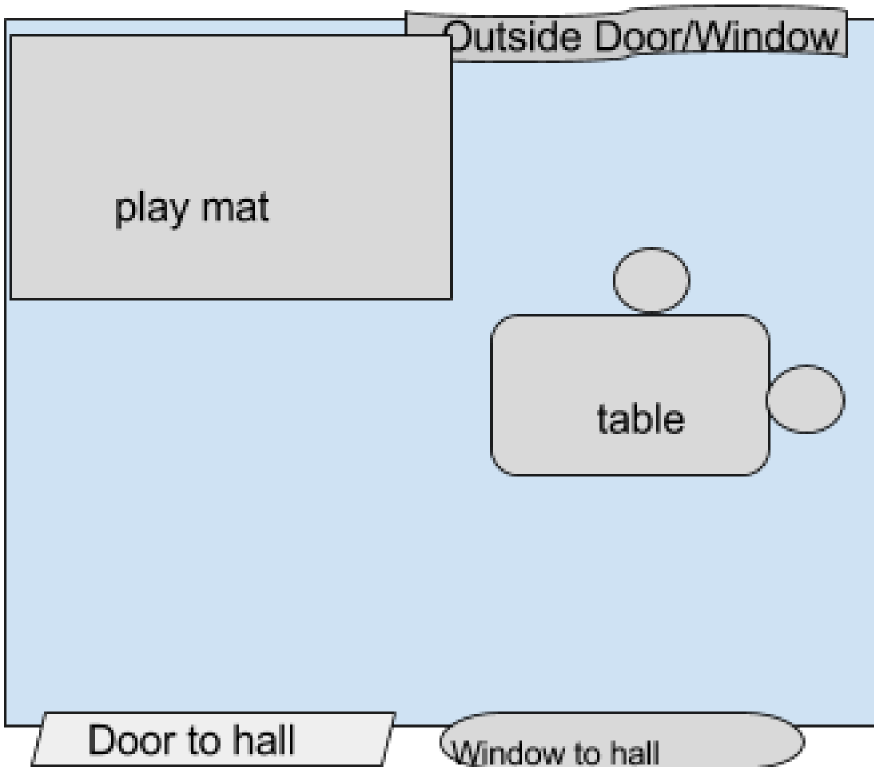
I am the parent /legal guardian of
____and I voluntarily approve of his /her participation and I agree to participate myself.

Guardian's Signature/consent: ____________________________________Date:____/____/____

Name: ____________________________________

Appendix F

Room layout for parent-child interaction procedure. Not drawn to scale.



Appendix G

Script for Parent-Child Interaction & Video Feedback Tasks

Procedure and Instructions

CONSENT MEETING

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

PARENT-CHILD INTERACTION

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

1) **Start recording video**.
2) **Parent Instructions.** The parent, child, and interviewer are seated at a small (child-sized) table. The interviewer has an iPad from which he/she reads the script. While opening up the script on iPad say, **"Ok, let's get started. What did we ever do before iPads? I have all my work saved on this one! ".** Next, tell the parent about the tasks. "**First you two will build something together. Which type of blocks are best for your child: wooden blocks, Duplos, or Legos?"** [Bring a Ziploc with the three block examples. Be sure to take it out with you when you leave the room for Competing Demands]. **"Then, I will bring in some toys and ask you guys to play for a while. After that, I will come back and hand you this sheet** [show parent the laminated clean-up sheet] **to remind you to ask your child to clean up. When I hand you this sheet, please wait until I leave the room, then ask your child to clean up.** [Hold up the sheet for the mom to read it. Point to the sentence about not cleaning up herself to highlight it for her]. **Finally, please do not use last names on the video"**.
3) **Competing Demands Task (5 minutes).** Tell the child, **"Ok, I'm going to go get some blocks. Your mom really needs to finish filling out these papers before I come back. I'll be right back!"** Hand the clipboard with the demographic questionnaire [including the question about the child's favorite prize for frustration task] to the parent and say, **"It would be really great if you could try to finish this form before I get back".** Leave an iPad on the table with a "work" document (Word or Excel file) open.
4) Go into observation room, start timer, & make notes regarding interactions that may be difficult to see on the camera. Return to the room after 5 minutes of Competing Demands.

5) **Structured Task (5 minutes).** Bring out the appropriate structured task [We will confirm items via piloting; ultimately we want three bins that each contain appropriate blocks and model picture]:
   a. Nonverbal children/very low functioning children and children with fine motor difficulties – use basic (non-interlocking) blocks
   b. Children 5-6 with disabilities? – Use Duplo's
   c. Children 3-5 typically developing and high functioning ASD? – Use Legos

6) **"Now I'd like you and your mom to build something together. Mom, please teach [child's name] how to build this [picture]. Here are the blocks and a picture of the model".** [Leave out the correct number of blocks to complete the model plus 10-15 additional blocks; <u>no</u> instruction book will be provided].

7) Go into observation room and continue to make notes about interactions that may be difficult to see on camera. If you see that the chosen blocks are not working for the dyad (too easy, too hard), go back into room with the appropriate alternative and say "Now, we're going to try these blocks instead" and take away the inappropriate block set. After 5 minutes of structured task go in the room. Congratulate child on a job well done (**"You did a nice job building!"**).

8) **<u>Free Play Task (5 minutes).</u>** Move the blocks to the floor during free play. Set up toys for free play [We will confirm items via piloting]:
   a. Small basketball
   b. Magna Tiles
   c. Papers and crayons
   d. Brio trains or cars
   e. Make-believe play (dr. kit, for younger children use doll house doll props,)

9) Instructions for free play – **"OK, let's move to the floor now. Try to face this way, if possible. Here are some toys I'd like you to play with for a little while".** Name each toy as you take it out of the bin, **"We have a basketball, some magna tiles, some paper and crayons, trains and cars, a doctor's kit…"**. Be sure to <u>take all individual pieces out</u> ; spill all the (8) crayons out, all the pieces of the doctor kit, all the magna tiles. Make sure the dyad is sitting facing the camera before you leave.

10) Go into observation room and continue to make notes about interactions that may be difficult to see on camera

11) After 5 minutes, enter the room and say, "**Hey guys, I forgot to give this to your mom**". Hand the parent the laminated sheet indicating that the clean-up session is to start when you leave the room [Wording on sheet: "Please tell your child to clean up. Please don't clean up by yourself"]. When the interviewer closes the door, this marks the beginning of Clean-Up task.

12) **<u>Clean-Up Task (2 minutes).</u>** After the child has fully cleaned up the toys (or 2 minutes of clean-up task, whichever comes first), re-enter the room. If the child has not finished cleaning up, quickly help them finish the clean-up.

13) Next, the interviewer enthusiastically tells the child **"You did such a great job today! I'm going to get you a prize!"** When the interviewer returns with the prizes, this marks the beginning of the frustration task.

14) **<u>Frustration Task (3 minutes).</u>** The interviewer enters the room (leaving the door open so that the second interviewer can enter quickly) and presents the child with a small bag of their favorite food snack item (e.g., goldfish, chips) saying, **"Thanks for doing such a**

15) **great job! For doing such great work, I have some [goldfish] for you! I know how much you love [goldfish]!"** The interviewer hands the item to the child, immediately heads for the door, and as he/she exits, the second experimenter enters, announcing to the first interviewer "**Wait, you can't give him/her that**". The second interviewer takes the snack from the child, and says directly to the child, **"I'm so sorry, but you can't have that".** The interviewer looks apologetically at both the child and parent and leaves the child and parent in the room for **3 minutes**. Go into observation room and continue to make notes about interactions that may be difficult to see on camera. If mom asks Interviewer 2 what she should be doing next, he/she will say **"Let me go check where [Interviewer 1] went".**

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

Appendix H

Psychological Multifactor Care Scale-ASD Preschool Version (Brassard, Donnelly, Hart, & Johnson, 2016; formerly PMRS; Hart & Brassard, 1986; Brassard, Hart & Hardy, 1993; PMCS-ASD version, Donnelly, Brassard, & Hart, 2014)

Teaching Scoring Sheet (revised 1.9.17)

Participant Code: ______________________________

Rater: ____

Date: _______________________

Codes

Quality of Emotional Support

1. **Mother's Supportive Presence**
   1 2 3
   Comments:

2. **Mutual Pleasure**
   1 2 3
   Comments:

3. **Body Harmonics**
   1 2 3 4

   Comments:

4. **Mother's Mental Status**
   1 2 3 4

   Comments:

5. **Mother's Emotional Response to Task and Situation**
   1 2 3 4

   Comments:

6. **Parental Touching (circle all that occur)**

0 1 2 3 4 5 6 7

Comments:

7. **Denying Emotional Responsiveness**

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Facilitation of Social/Cognitive Development

8. **Quality of Instruction/Structure**

1 2 3

Comments:

9. **Respect for Child's Autonomy**

1 2 3 4 5

Comments:

10. **Strategies for Maintaining Child's Task Involvement**

1 2 3 4 5

Comments:

11. **Parental Intrusiveness**

1 2 3

Comments:

Psychological Abuse

12. **Spurning**

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

13. Terrorizing
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

14. Isolating
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

15. Corrupting/Exploiting
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Child Codes

16. Child Negativity Toward Caregiver
1 2 3

Comments:

17. Child Experience of the Session
1 2 3

Comments:

18. Child's Level of Engagement

1 2 3 4

Comments:

19. Child's Engagement of Mother

1 2 3 4 4

Comments:

20. Child Aggression Tally

Physical –
Verbal –
Comments:

<u>Code Explanations</u>

Quality of Emotional Support

1. Mother's Supportive Presence (summary code)

A Mother scoring *high* on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated task the child is doing (e.g., building a house of blocks), encouraging the child with positive emotional regard (e.g., "you're really good at this," "you got another one right") and various other ways of letting the child know that he/she has her support and confidence to do well in the setting. If the child is having difficulty on the task, the mother is reassuring and calm, providing an affectively positive "secure base" for the child, perhaps leaning closer to the child to give a physical sense of support.

A mother scoring *low* on this scale fails to provide supportive cues. She might be passive, uninvolved, aloof, or otherwise unavailable to the child. She may also appear impatient, as if she feels like the activity is a waste of her time and she rather be doing something else. Such a mother also might give observers the impression that she is more concerned about her own adequacy and how she is presenting to the camera, rather than displaying concern about the child's emotional needs.

A *potential difficulty in scoring this scale* is to discount messages of mothers that seemingly are supportive in verbal content but are contradicted by other aspects of communication (e.g., the mother seems to be performing a supportive role for the camera and not really engaged in what the child is doing or feeling). Signs of such questionable support are: improper timing of support, mismatch of verbal and bodily cues, and failure to have the child's attention in delivering the message. These types of supportive messages would not be weighted highly because such features suggest that the mother's supportive presence is not a 'sincere' aspect of their interaction outside the laboratory setting.

Conversely, the mother may seem more supportive than she appears in this situation because she has approached this task as a test of the child's achievement and has not used as much support as she might have. Yet, the qualitative features of her support would merit a high score.

Codes:

1. *Low* – Mother provides little or no emotional support to the child. The mother may be aloof and/or unavailable. She may also be hostile towards a child who shows he/she is in need of support. If support is displayed, it is minimal and not timed well, either being given when the child does not really need it, or only after the child has become upset. The consistency of this support may be uneven, so as to make the mother unreliable as a supportive presence.
2. *Moderate* – This mother does an adequate job of being available when her child needs support. She may lean closer as the child shows small signs of frustration and praise the child's efforts to show that she is available and supportive, but inconsistency in this style makes her support unreliable as a supportive presence to the child. Additionally, she may have failed to provide support at crucial times in the session (i.e., when support was needed by the child).
3. *High* – Mother skillfully provides support throughout the majority of the session. She establishes herself as supportive and encouraging toward the child and provides support when the child needs it. As the child experiences more difficulty, her support increases in commensurate fashion. If the child is having difficulty, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. She may have minor lapses, but for the most part, she is emotionally supportive and reinforces the child's successes.

2. Mutual Pleasure (summary code)

Dyad's emotional connectedness and shared experience of mutual pleasure.

Codes:

1. *Minimal* – The dyad shows no/minimal signs of a positive emotional connection. There are no shared smiles and there may be no mutual eye contact. Mother and child seem to be hesitant to share positive emotions or seem to be restricting positive emotional expression for some reason (e.g., silently angry). The mother and child show no signs of having fun together.
2. *Moderate* – The dyad shows some signs of positive emotional connection; however, the frequency and degree of positiveness is no more than moderate. Sharing of positive affect occurs, however, it is occasional in frequency, restricted in tone and/or duration, or a combination of these, and/or mother and/or child shows some restriction or hesitancy in sharing emotion. [Code "2" if the dyad is emotionally connected, but one or both members are not having fun; also Code "2" if there are a number of instances where one or both members of the dyad experience discomfort, boredom or frustration]
3. *High* – The dyad shows clear signs of a positive emotional connection, which are positive and enthusiastic in tone and occur regularly throughout the session. The dyad may show frequent mutual eye contact or the dyad may show positive, enthusiastic sharing of positive emotions (e.g., "four-eyed" smiles). Neither the mother nor child shows signs of

restricting emotional communication with each other. The mother and child seem to be having fun together. Also, code 3 if both mother and child express interest and seem content, and no negativity, discomfort, boredom, or frustration is evident.

3. Body Harmonics (predominant mode)

Rate the predominant mode; rate body orientation, degree of "in-synctness" between the parent and child

*Note: For some tasks parents may be sitting next to or just behind their child, typically in order to both be oriented towards a toy/task, but are engaged in the same task. If this occurs as the predominant mode, code "4".

Codes:
1. Neither mom nor child oriented to the other (similar to parallel play)
2. Child oriented to mom; mom not orientated to child
3. Mom oriented to the child, child not to mom
4. Both oriented towards each other – mom oriented to the child, child to the mom

4. Mother's Mental Status (summary code)

*Note: A code of "2" or "3"does not indicate that the parent is at-risk of a mental illness; a code of "2" indicates that the parent is displaying one or more of the behaviors listed under a "2" or"3."

Do not consider an overall mode of "angry" or "impatience" if mother is using appropriate, firm limit setting in response to a child's inappropriate behaviors (e.g., throwing a toy, breaking a toy, and/or hitting a parent). However, if a parent uses a harsh tone, threatening voice, or threatening words while attempting to discipline/set limits, this *should* be coded here.

Codes:
1. Mother exhibits clear signs of mental distress and/or mental health problems (e.g., depression, hyperactivity, psychotic behavior, mania, etc.)
2. Mother's mood and/or behavior may angry or impatient, but shows no overt signs of mental illness
3. Mother's mood and/or behavior may appear anxious or distressed but shows no overt signs of mental illness
4. No mental distress or psychiatric impairment obvious to the observer

5. Mother's Emotional Response to Task and Situation (summary code)

Codes:
1. *Negative Response* - Overt negative response: bored, irritable, impatient (e.g., Mother says, "this stinks")

2. *Passive Response/Lack of Interest*- Passive or resigned (e.g., "OK, we have to do this"). Clearly no interest or enthusiasm but no overt negativity
3. *Business like* OR *mix of a positive and negative response* – Actively involved, but no positive or negative emotion displayed OR parent displays a mix of positive (e.g., expresses interest) and negative (e.g., signs of frustration or impatience) emotions.
4. *Positive* - Participates with interest and enthusiasm, and demonstrates occasional pleasure or enjoyment of the toys/task. Positive emotions can include expression of empathy and concern, not just pleasure and personal enjoyment.

6. Touching (<u>circle ANY that apply as present or absent</u>)

Code parental touch, not child touch – Specifically, if the child reaches out to touch the parent (in a hostile OR affectionate way), this is NOT coded. However, if the parent reciprocates/responds in any way, this should be coded. Tally the frequency of each type of touch.

Codes:
1. No touch/inadvertent touch (e.g., fingers brush as both reach in to get a toy)
2. Hostile touch (pinching, hitting, slapping, tightly gripping)
3. Touching to control (e.g., hold down, direct, lift physically into a chair, hold down to control an out of control child, hold to control child's movement; if for example the child began hitting themselves, and the parent held both of the child's arms down at their sides to keep them from hurting themselves)
4. Touching to encourage or appropriately prompt/direct child's attention (e.g., tap on shoulder before pointing to an object)
5. Touching to make child attend (e.g., including moving the child's face or putting "blinders" on the child to direct them to make eye contact)
6. Touching to direct by using hand over hand (e.g., parent puts their hand on top of their child's hand and moves the child's hand)
7. Affectionate touch (no seductive overtures; e.g., giving a hug, touching child's hair)
8. Other touch (if you see any other type of touch, code 7 and note what you saw)

7. Denying Emotional Responsiveness (code based on amount of incidents observed)

Coding judgments regarding negative acts by parent/caregiver (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):
1. Non occurrence
2. One to two mild-moderate acts
3. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
4. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than extreme)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

*Note: Body posturing is included in this code.

If child makes explicit-direct-overt demands/requests (including affective, cognitive and motor demands and/or requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

If child makes implicit-indirect-covert needs/requests (including affective, cognitive, and motor needs/requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

Additionally, unavailable posturing of parent would discourage a child from seeking a response and would also be considered denying emotional responsiveness.

Examples of this are listed below:
Mild –

- Child says "this is fun" or "this is hard" and Mom shows no response
- Child seems worried (frown, body posture, nervous behaviors) and mother shows little to no response
- Mom attending to child – eye contact and posture – is at low level under conditions where more would be expected
- Mom attending to child, but arms crossed (e.g., if mom crosses her arms in response to child during a critical period or sustained arm crossing or consistently displays this posture throughout the interaction)

Moderate –

- Child says "how do you do this?" or "I don't understand" and must repeat it several times to get a response or takes a while for the parent to respond (i.e., prolonged time before response)
- Child appears very elated/excited or worried/depressed about what she/he's just done or will do next and mother shows little to no response (e.g., Child is very excited about the toys/task and the parent shows little to no response)
- Mom tends *not* to look, touch, or talk to child unless child presses strongly for attention

Strong –

- Child makes requests or asks for help and mom does not respond at all or lets child know child is on his/her own by saying "go on working" or " you figure it out"
- Mom doesn't respond to child's reasonable but non-task oriented requests – "I'm thirsty" or "I want a drink"

- Child visibly shows very strong reaction to situation (e.g., cries, shakes, throws materials down) and mother does not respond
- Mom maintains body orientation and posture away from child's position in an unusual or awkward way that doesn't fit – and other options are available (e.g., Mother actively turns her whole body away or keeps face averted)

Facilitation of Social/Cognitive Development
8. Quality of Instruction/Structure (summary code; structured)

The important feature of this rating are how well the mother structures the situation so that the child knows what the task objectives are and receives hints or corrections while attempting to build a home. These hints or corrections are: a) timely to his/her current focus, b) paced at a rate that allows comprehension and use of each approach/cue, c) graded in logical steps that the child can understand, and d) stated clearly without unnecessary digressions to unrelated phenomena or aspects of the task that might only confuse the child. The mother's approach suggests that she has some sort of plan for how her instructions/structure will help the child. Yet, she is also flexible in her approach and uses alternative strategies or rephrases suggestions when a particular cue is not working, and she coordinates her suggestions to the effort that the child is making to solve the task. Lastly, she keeps the child focused and helps them to attend to the task. If the child begins to go off task (begins to build a car) she helps to bring the child back to the task at hand (building a house).

Codes:
1. *Low- Lack of/poor instructions/structure*. Minimal instructions/structure is given. Most attempts (if any) are ineffective. Child may not understand what to do or what is expected of him/her due to lack of instructions. And/or the mother's attempt to structure the child's environment/instructions are uniformly of poor quality (i.e., poor timing/pace, incomprehensible, no scaffolding, etc.). She is either totally uninvolved or fails to structure the tasks effectively.
2. *Moderate – Adequate instructions/structure*. Mother provides adequate structure and instruction for the child to work on the tasks during much of the session, but overall, her structure/instruction is lacking at several points in the session. Alternatively, the mother may approach the tasks in a way that is very structured, but requires the child to attend primarily to her directives and allows little opportunity for the child to engage the task/toys directly. She may also provide a mix of good and bad instructions/structure (some sufficient instructions/structure (e.g., suggestions when the child is having difficulty) with poor instructions/structure (e.g., giving very fast paced directives) as well.
3. *High – Effective, continuous, and appropriate instructions/structure*. Mother demonstrates most characteristics of effective instruction/structure consistently throughout the session. The tasks are sufficiently structured so that the child understands the objectives and can attempt to solve the problems directly. Mother's assistance is coordinated to the child's activity and needs for assistance. For the most part, the mother keeps the child's attention and focus on task.

9. Mother's Respect for Child's Autonomy

This scale reflects the degree to which the mother acted in a way that recognized and respected the validity of the child's individuality, motives, and perspectives in the session.

A mother scoring *low* on this scale would be very intrusive in her interventions with the child, exerting her expectations on the child in a way that makes the child a satellite or servant of the mother rather than a mutually negotiated relationship, or implicitly defining her interactions in terms of a win-lose power struggle in which compliance by the child makes the mother the winner and the child submissive. Mothers may intrude either harshly or with affection; in either case, her actions do not acknowledge the child's intentions as real or valid and communicate that it is better and safer to depend on her for direction than to attempt individuality.

In contrast, a mother scoring *high* on this scale acknowledges the child's perspectives and desires as a valid part of the child's individual identity. A mother scoring very high does this explicitly by negotiating rules with the child, verbalizing her acknowledgement of the child's intentions, does not deny the child's right to those desires, and models her own identity and the validity of her own desires in the way she expects the child to respect her individuality, too. Note: Mother can get a low score just by denying the child's individuality strongly (e.g., interrupting the child, doing things before the child can on his/her own, etc.) even though it is not interrupting the child's behavior.

Codes:

1. *Very Low* – Mother completely denies the child's individuality in the techniques she uses. Mother may be intrusive, physical, and forceful in controlling the child.
2. *Low* – Mother may deny the child's individuality, but there are a few opportunities for the child to experience autonomy, whether by variation in mother's approach or simply by occasional absence of maternal controls over the child. Mostly, however, this mother's style denies the child's autonomy and mother is intrusive.
3. *Moderate* – Mother is moderately intrusive. Although mother does not deny the child's separate identity, she does very little to support the validity of the child's individuality. She might communicate doubts to the child about the appropriateness of having his/her intentions, or intrude abruptly on the child several times.
4. *Moderately High* – Mother does allow the child some autonomy of intentions, but she does not actively support and reinforce this perspective in the child. She may reflect the child's intentions and ideas by engaging the child, but she also exerts her will at times over the child in a way that shifts the child's perspective.
5. *High* – Mother very clearly interacts with the child in a way that acknowledges the validity of the child's perspective, encourages the child to take the lead/participate

10. Strategies for Maintaining the Child's Task Involvement (predominant mode):
This scale reflects the methods used by the mother to encourage and maintain task involvement on the part of the child. The parent's use of verbal reinforcement (positive and negative) is paramount in this item. Parents are rated *higher* when they involve the child in the task and in the enjoyment of the process of working together. They are rated *higher* for more specific praise versus nonspecific praise. They are rated *higher* for using praise versus bribes or threats to engage the child. Parents who have a child who is noncompliant are not automatically rated

lower if they respond appropriately by trying other strategies until the child cooperates or they decide that the task cannot be continued.

Rule: If are between 2 codes and you have seen signs of threats, manipulation or coercion in order to promote the child's involvement, code the lower of the 2 codes (even if some positive methods are used).

Codes:

1. *Lack of effort/Threatening* - Parents may receive the lowest score in 2 ways: either little or no effort is made to involve the child in the task OR Physical and verbal threats are used to promote the child's involvement in the task as in, "Do this or else!" Punitiveness is the major strategy for control – the child is coerced to act to avoid unpleasant behaviors by the adult.
2. *Manipulation/Coercion* - Parental bribery or whining the primary strategies used to promote the child's involvement. Rewards not associated directly with the task are given or promised to get the child to participate. Examples: "You'll (We'll) get ice cream if we can finish this game, job, etc.," or parent nags and/or whines until the child complies (e.g., in a whining voice says, "Come on, help me, I want to do this well"). **Note, the parent may use other ineffective strategies, such as intrusive questions or directives, as well, but those are not the only strategies used.
3. *Directives only* - Clarifying, giving information, and directing the task are the methods used to enlist child involvement. No praise, no threats, and no bribes are used. For example, a parent may give step-by-step instructions to a low functioning child, and not threaten or praise either.
4. *Information and non-specific praise* - Clarifying structure and giving information about the task process are used to prompt and enlist the child's involvement, such as, "this goes next," "it's your turn," "look here." Additionally, the parent may use non-specific praise and global feedback to promote the child's involvement in addition to verbal prompts and structuring information. "Good girl," "nice building," and "perfect" are examples of non-specific praise. Alternatively, the parent may demonstrate clear interest (e.g., paying attention to the child, commenting, asking non-intrusive questions, saying "Ohhh" and "Ahhh"), but not give praise. If parent demonstrates clear interest without giving praise, also code this here. In addition, the parent may also ask the child questions or make statements to help maintain their involvement. This item encompasses a parent who uses a variety of different strategies, but no coercive, manipulative, or threatening strategies.
5. *Specific praise* – At *least* one instance of specific praise is observed. The parent provides specific, positive, and well-timed references to the child's effort and effectiveness are used to get and maintain the involvement of the child. The parent primarily highlights special task qualities of intrinsic interest to the child to stimulate the child's involvement. Mother also provides some verbal prompts and structuring information. Examples for the structured task include: "Very good, I like how you are placing the pieces so carefully so the house does not fall," "Good girl- that's a great placement for the door," and "you're working hard – we've got a good chance of finishing this soon" are examples for the structured task.

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14. Parental Intrusiveness Modified for ASD sample Keller Study one2.22.16 for teaching and Free Play, not for Cleanup

This scale reflects the degree to which the parent exerts control over the child rather than acting in a way that recognizes and respects the validity of the child's perspective. Intrusive interactions are clearly adult-centered rather than the child-centered. Extreme intrusiveness can be seen as over-control to the point where the child's autonomy is at stake. When unsure whether a behavior is intrusive or not, focus on the *perspective of the child*.

Intrusive behaviors involve imposing the parent’s agenda on the child despite signals that a different activity, level or pace of interaction is needed. High arousal, vigorous physical interaction or a rapid pace are not in and of themselves indicative of intrusive over-stimulation - if the child responds positively and is not engaging in defensive behaviors. It is when the child averts his/her gaze, turns away, or expresses negative affect *and the parent continues or escalates* that the behavior is intrusive. Intrusiveness is also apparent when the parent persists in demonstrating a toy to the child long after the child’s interest has been gained and the child clearly wants to manipulate the toy him/herself. These parents appear unable to relinquish control of the interaction in order to facilitate the child’s exploration or regulation of the activity. Intrusiveness may also be displayed by overwhelming the child with a rapid succession of toys or suggestions, without allowing the child time to react to one before another occurs.

In contrast, a parent scoring low on this scale acknowledges the child's perspective. This parent allows the interaction to be the child-centered rather than adult-centered. The parent modulates her/his behavior in response to the child's interest and enjoyment and allows the child to explore and play at his/her own pace.

Keep in mind that a parent can become involved in the child's play without denying his/her autonomy or being intrusive. In addition, parental actions which are clearly in the child's best interest, such as removing the child from danger are not considered intrusive. Likewise, parental behaviors that are in accordance with protocol instructions, such as bringing the child back to the mat or turning the child toward the camera, will not be judged as intrusive unless the child is handled in a rough or perfunctory manner.

Indicators of Intrusiveness:

- Persisting with an action that clearly does not interest the child (e.g., parent continues with a behavior that makes the child turn away, act defensive, or express negative affect)
- Offering a continuous barrage of stimulation or toys
- Not allowing the child to influence the focus or pace of play
- Not allowing the child to handle toys that he/she reaches for
- Grabbing toys away even though the child is still interested
- Not allowing the child a turn or an opportunity to respond at his/her own pace
- Not allowing the child to make choices
- Poking the child with toys, fingers, or other object(s)

Ratings on this scale should be based on both *quantity* and *quality* of parental behavior.

Parental Intrusiveness Scale:

1. **Low** Intrusiveness. Parent displays no or almost no signs of intrusive behavior. If a few instances of intrusive behavior are observed they are brief and do not unreasonably shift the child's perspective (e.g., slightly abrupt transition from one task to another, briefly taking a toy, or brief magna doodle conflict). Child does not respond defensively in any way to parental behavior.

2. **Moderately** Intrusiveness. Parent displays some intrusiveness. Parent may initiate some interactions with child or offer suggestions to child which are not welcome (e.g., abruptly introducing a new activity/toy when the child is clearly enjoying a different activity/toy), evidenced by child protesting or responding defensively to parent. Or, parent may continue her/his activity after child responds defensively, but parent does not *escalate* the activity (e.g., the parent continues to stir with spoon after the child has pushed the parent's hand away; *NOTE*: *escalating* the behavior would be insisting that the child stir with spoon or *increasing* demands that the child engage in a behavior).

3. **High** Intrusiveness. Parent displays intrusiveness more often than not throughout the session. Parent intrudes abruptly on the child or show intrusiveness at several points in the interaction. The child has few, if any, opportunities to experience autonomy, whether by variation in the parent's approach or simply by occasional absence of parental control.

Psychological Abuse

FOR ALL CODES IN THIS CATEGORY:

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

12. Spurning (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Active rejecting and/or degrading through words, gestures, and/or other behaviors. Spurning includes, belittling, degrading, and other nonphysical or overly hostile/rejecting treatments used towards a child. Shaming and/or ridiculing a child are also included in this code. Score mother's contempt towards the child here. Do not score appropriate limit setting here (for example, if child is throwing toys or hitting and the parent tells them to calm down or stop their behavior).

Examples:

Mild –

- "Are you frustrated already?"
- "This will be hard for you" (unjustified by situation)
- "I'd better do this part for you" (unjustified by situation)
- Frowning at child's efforts while allowing him/her to continue.
- Mild shaming (publicly teasing). For example, "Make sure you make a room for all the messy toys and clothes" (while child builds a house)
- Parent may tell the child to stop crying
- Parent may say, "Put a smile on it, honey" when the child looks upset
- Continuing to talk over a child as they try to express an idea (even if the parent is not being mean towards the child). Another way to conceptualize this is to think of the parent "rejecting" their child's idea by not letting the child express their idea.

Moderate –

- "Let me do it, you'll mess it up"
- Makes facial expression of disbelief for child to see as reaction to child's attempt
- Parent tells a child that they are not experiencing a specific emotion (e.g., mother says, "no, you're not sad")

Strong –

- "Keep your hands off – you'll screw it up!"
- "You just watch – we want to do it right"
- "Come on stupid – can't you get it?
- "You're a real loser, aren't you?"
- Laughs mockingly at child's error or attempt
- Shaming. For example, making fun of the child's bedwetting problem

- Parent firmly and repeatedly tells a child to cease displaying a specific emotion
- Parent makes fun of a child for displaying a specific emotion

13. Terrorizing (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

*Note: Voice quality is included in this code

Key concept: Judge act(s) in regard to its threat or danger to the average child of the target child's development level in the mainstream culture.

Threaten child with violence.
Threatening violence against child's loved ones (other family members) or objects (comfort toys or favorite toys).
Physical attack on/act of violence directed toward child.
Place child in an unpredictable, chaotic, or frightening situation (at the extreme, placing the child in a recognizably dangerous situation).
Examples:

Mild –

- "You'd better behave"
- Abrupt – harsh voice quality *(not to be confused with a firm loud "No" in a non-harsh tone to stop inappropriate behavior that needs to be terminated right away such as coloring with a crayon on Magna Doodle, throwing toys)*
- In a harsh voice says, "put that back!"

Moderate –

- "You know what will happen to you if you don't straighten up"
- Tightens body posture and facial expression in threatening and observable manner for child
- Thrusting/pointing index finger toward child to influence behavior

Strong –

- Slams fist down on table
- Menacing gestures made toward child – facial expression, growl, fist shaking
- Grabs child physically and exerts physical pressure in a manner that is too rough and overly controlling

- Threats of physical harm at child such as “I’m going to whip you in a minute.”

14. Isolating (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Physically isolate/confine (confining child or placing unreasonable limitation on freedom of movement)
Socially isolate/confine (placing unreasonable limitations/restrictions on social interactions with peers or adults – this may be done verbally in the session)
Actively terminate communication.
Examples:

Mild –

- Preoccupied with keeping child in seat
- Very little conversation initiated by mother

Moderate –

- Lack of initiation or response - Mom doesn’t initiate talk and only talks to child when child initiates conversation (including gestures, tapping, or sound)
- Tries to keep child from communicating with others present (e.g., examiner)
- Tries to keep child from normal movement in his seat while on task

Strong –

- Says “stop talking” or “don’t talk while you’re working” when the child initiates or attempts to make social contact
- Refuses to allow child freedom to get drink or go to toilet when request/need is expressed with no acceptable rationale given
- Mom is in parallel play mode throughout most of process with little to no interaction or mutually facilitating behavior shown
- Keeps child from contact with others when they enter the room by using own body as shield, by dominating all interactions
- Context seems to demand conversation, and none occurs

15. Corrupting/Exploiting (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

1. Non occurrence
2. One to two mild-moderate acts
3. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
4. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Key Concept: Code based on observations of the parent leading the child away and astray from the task.

Using a child in ways serving the adult, and not the child, or meeting own needs in ways directly interfering with child's attempts to meet his/her needs encouraging or coercing abandonment of developmentally appropriate autonomy, and/or extreme over-involvement
Actively encouraging/teaching anti-social, self-harming, or developmentally inappropriate behavior
Modeling/demonstrating behavior, which is anti-social, self-harming, or developmentally incorrect/inappropriate
Allowing child behavior, which is anti-social, self-harming, or incorrect/inappropriate
Restricting or interfering with the child's cognitive development.
Examples:

Mild –
- Doesn't instruct child – simply lets child watch and participate in way unlikely to be understood
- Says, "it doesn't matter how we do this, just so we get it done"

Moderate –
- Plays with/manipulates materials in a manner interfering with the child's opportunity to participate or move forward on task.
- Models/demonstrates inefficient or incorrect procedure for handling task
- Shows little to no interest in having the child learn throughout the session.
- Seems only interested in getting it over and getting the task done
- Gives child role of "mom's assistant" below child's competency or level of potential for learning by trying
- Allows child (without corrective follow-up) to use foul language or make statements degrading self or others
- Parent takes over and directs the child's activities (e.g., the parent tells the child exactly what to do)
- The parent does not allow the child to come up with his/her own ideas of how to tackle the task at hand (e.g., the parent may fire questions/directives at the child in a way that does not allow child to come up with his/her own ideas)
- Limits child's participation to holding tools/parts for mother and mother only allows child to take responsibility for lowest level of task.

Strong –

- Says “this is stupid – let’s get it over with”
- Uses strong language that degrades others
- Encourages child to use foul language, make degrading statements, or engage in other inappropriate behavior (e.g., by smiling or laughing)
- Mother demands a shift in attention to her own topics in a way that hinders the child’s development (takes child away from the task) and persists in this shift in attention (e.g., mother insists that the child discuss their babysitter’s cell phone habits as the child builds a house).
- Parent interferes with the child’s learning and child’s experience of the session by interrupting the child and asking/making task-irrelevant questions/comments to the point that it’s difficult for the child to think (e.g., as the child is determining where to put a window in their toy house, the parent asks off-topic questions that make it difficult for the child to think)
- Pulls building materials from child’s grasp and places in her work area

Child Codes

16. Child Negativity (summary code)

*** Remember, this is child negativity directed at the *caregiver***

Degree to which the child shows anger, dislike, or hostility toward the mother. At the high end, the child is repeatedly and overtly angry during the session and/or at the mother (e.g., forcefully rejecting her ideas, showing angry and resistant expression, pouting, or being unreasonably demanding or critical of her). At the low end, there are neither overt nor covert signs of such anger. Expressions are essentially positive toward mother/within the session whether or not the child is compliant or much involved with the mother.

Rule: If it is unclear if the child is acting negative towards the mother or the task, do not code the behavior here.

Codes:

1. *Positive* (i.e., no signs of negativist towards mother)- Child shows no signs of negativism towards the mother. She/he shows through consistently positive interactions toward the mother that she/he has a truly positive relationship toward the mother/within the session and feels no abiding anger toward the mother/within the session. [Code here if there are no clear negative signs towards the mother, even if no clear positive interactions are evident.]
2. *Mix of negative and positive* - Child shows a mix of negativism and positivism towards the mother. Neither negativism nor positivism is predominant in the interaction; there is a mix of both negative and positive interactions.
3. *Negative towards mother*- Child’s anger and negativism are predominant in the interaction between the child and mother. The child is repeatedly and overtly angry and resistant during the interaction. The degree of anger seems so strong that the child cannot disguise it in subtler ways for long, but it repeatedly appears in his/her interactions.

17. Child's Experience of the Session (summary code)

This scale reflects the degree to which the child's experience in the session probably resulted in feelings of success and competence on the tasks and confidence in having a good relationship with his/her mother. This scale reflects a variety of contributions in the child and mother's behavior, which might contribute to the child's experience of session. A child scoring low on this scale might have had many conflicts with his/her mother or might have been dominated or been rejected by the mother in ways that would affect the child's experience of success in the session. A child scoring high on this scale would have been able to work well with the mother *and* to do the tasks successfully with some sense of autonomy in problem-solving through appropriate maternal assistance in the session.

1. *Low* - Child had a very negative experience which probably contributed to lower expectations of his/her own competence, anger at self or mother, rejection by the mother, or intense resistance between mother and child. There was very little in the session to compensate for these negative events. Almost no good or only one good instance of positive experiences in the session.
2. *Moderate* - A mix of positive and negative instances throughout the session. The session may be a moderately negative experience for the child, but overall, neither a success nor a failure experience of the child; *OR* The child seemed to get through the session with success and basically have positive interactions with his/her mother, but there might have been some minor aspects in which the child or mother's contributions may have been deficient in helping the child feel success. For example, the child may have success in the task, but not display a good relationship with their mother, or vice versa.
3. *High* - The child has a very positive experience of doing well on the tasks and having a good relationship with his/her mother. There were very positive interactions between the mother and child, and the child was able to do the tasks with enough help and enough autonomy to experience competence in doing the tasks. Although minor problems in the session might have occurred, the overall effect of the mother and child's interactions was very positive in terms of the child's experience of success and confidence in the relationship. [A child who seems content/happy throughout the session regardless of interactions with their parent (e.g., a child who works independently and does not seem to care if the parent participates), should get coded here.]

18. Child's Level of Engagement in the Task *(Use stopwatch to calculate percentage of time off task relative to total time counted from exit of Experimenter to return of Experimenter)*

This scale reflects the degree to which the child is engaged in either the task or participating with the mother on the task during the session. Code for child's actual level of engagement with the task not the mother's efforts to keep the child engaged.

1. *No Engagement* - Child shows little or no interest in engaging in the teaching task with the mother and this is consistent throughout the session (less than 25% of the time).
2. *Low Engagement* - Child shows some interest in participating in the task but it's not consistent and child is unengaged or resistant for over half of the time (25-49% of the time).

3. *Moderate Engagement* - Child is engaged in the task for more than half but not all of the session. There are clear moments of disengagement demonstrated by the child (50 to 75% of the time).
4. *High Engagement* - Child is almost continuously engaged in the task – there may be moments where attention wanders but they are brief and intermittent (more than 75% of the time.).

19. Child Engagement of Parent (12/22/16)

This scale reflects the extent to which the child (a) shows, initiates, and/or maintains interaction with the parent and (b) communicates positive regard and/or positive affect to the parent.
At the higher end of the scale, the child expresses sustained positive affect toward parent (i.e., a big smile, laughter, etc.), and frequently looks at and attempts to interact with the parent.

Indicators of Child Engagement:

- Approaching or orienting toward parent
- Looking at, establishing, and/or maintaining eye contact with the parent
- Positively responding to parent's play initiations or suggestions (e.g., imitating parent, accepting toy from parent, following parent=s direction)
- Directing or (at a higher level) sharing positive expressions with parent
- Engaging parent in play or sustaining play initiated by parent (e.g. offering an object, requesting help, turn-taking)

Indicators of Child Disengagement:

- No sharing of affect with parent
- Overt rejection of parents play overtures
- Pushing offered objects away
- Positioning or orienting away from the parent
- Engaging in self-occupied play which excludes the parent
- Ignoring suggestions from parent

The focus of this scale is on the *quantity* (frequency) of occurrences in which the child shares positive affect with parent (i.e., looking at parent, making eye contact and smiling, and other “approach” behaviors) and or percentage of timer engaged cooperatively with the parent. When scoring this scale, keep in mind that the *quality* (intensity) of expression is secondary to the *quantity* of occurrences.

Child Engagement Scale:

1. **Very Low** Engagement. The child clearly does not attempt to share experiences with parent. Failure to make eye contact with parent when expressing happiness, directing expressions of happiness to the experimenter rather than to the parent, and similar behaviors can be used as evidence that the child attempts little sharing of feelings with parent.

2. **Low** Engagement. The child has very minor incidents which seem expressive of positive regard toward parent and from which one might infer that some positive feelings are expressed toward her. However, the child largely shows no positive regard toward parent and rarely

responds to parent or attempts to engage or sustain play (or cleanup or task involvement) with him/her.

3. **Moderate** Engagement. The child shares some positive regard/happy expressions with parent and/or makes some attempt to engage or sustain play (or cleanup or task involvement) with parent, but these few and only minor elements of interaction and are not sustained by the child for more than a moment at a time. Likewise, the child may include parent in play (offer a toy, imitate pretend, etc.) or cleanup or the teaching task, but the engagement is not sustained for very long.

4. **Moderately High** Engagement. The child has one or more periods in which s/he engages the parent by expressing positive regard, sharing happy expressions or by sustaining play (or cleanup or task involvement) with the parent or engaged in sustained cooperative interaction with the parent. The child expresses positive affect toward and engagement of the parent for at least one portion of the interaction.

5. **High** Engagement. The child demonstrates a very positive, engaging and sharing relationship toward the parent for a substantial period of the session. Sustained play (or cleanup or task involvement) is accompanied by positive regard toward the parent. The child is consistently engaging of parent and the child's relationship with parent seems very warm and positive for a major portion of the session. There is no ambivalence in the child's expression of feelings toward the parent.

20. Child Aggression Tally (code based on amount of incidents observed)

Tally if the child displayed any verbal or physical aggression.

No symbolic aggression (e.g., eye rolls) will be coded.

Verbal aggression includes yelling at parent or verbal threats (e.g., "I hate you").

Physical aggression includes hitting, pinching, or kicking the parent. Physical aggression also includes throwing objects, throwing objects at the parent, breaking or destroying toys/equipment or using an object to hit the parent. Physical aggression also includes attempts at aggression (for example, if the child attempts to hit their parent, but misses).

Please also note what type of aggression was observed by listing exactly what was seen (i.e., child hit parent with Legos).

NOTES (ANY TIME YOU HAVE A HARD TIME CODING, MAKE A NOTE WHY):

____

____

____

Free Play Scoring Sheet (revised 1.9.17)

Participant Code: ______________________________

Rater: ____

Date: _______________________

Codes

Quality of Emotional Support

11. Mother's Supportive Presence
1 2 3
Comments:

12. Mutual Pleasure
1 2 3
Comments:

13. Body Harmonics
1 2 3 4

Comments:

14. Mother's Mental Status
1 2 3 4

Comments:

15. Mother's Emotional Response to Task and Situation
1 2 3 4

Comments:

16. Parental Touching (circle all that occur and tally total for each type of touch)

0 1 2 3 4 5 6 7

Comments:

17. Denying Emotional Responsiveness
0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Facilitation of Social/Cognitive Development

18. Quality of Instruction/Structure
1 2 3

Comments:

19. Respect for Child's Autonomy
1 2 3 4 5

Comments:

20. Strategies for Maintaining Child's Task Involvement
1 2 3 4 5

Comments:

21. Parental Intrusiveness

1 2 3

Comments:

Psychological Abuse

22. Spurning

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

23. Terrorizing

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

24. Isolating

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

25. Corrupting/Exploiting

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Child Codes

26. Child Negativity Toward Caregiver
1 2 3

Comments:

27. Child Experience of the Session
1 2 3

Comments:

28. Child's Level of Engagement
1 2 3 4

Comments:

29. Child's Engagement of the Mother
1 2 3 4 5

Comments:

30. Child Aggression Tally

Physical –
Verbal –
Comments:

Code Explanations

Quality of Emotional Support

5. Mother's Supportive Presence (summary code)

A Mother scoring *high* on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated task the child is doing (e.g., coloring a picture), encouraging the child with positive emotional regard (e.g., "you're really good at this," "you got another one right") and various other ways of letting the child know that he/she has her support and confidence to do well in the setting. If the child is having difficulty on the task, the mother is reassuring and calm, providing an affectively positive "secure base" for the child, perhaps leaning closer to the child to give a physical sense of support.

A mother scoring *low* on this scale fails to provide supportive cues. She might be passive, uninvolved, aloof, or otherwise unavailable to the child. She may also appear impatient, as if she feels like the activity is a waste of her time and she rather be doing something else. Such a mother also might give observers the impression that she is more concerned about her own

adequacy and how she is presenting to the camera, rather than displaying concern about the child's emotional needs.

A *potential difficulty in scoring this scale* is to discount messages of mothers that seemingly are supportive in verbal content but are contradicted by other aspects of communication (e.g., the mother seems to be performing a supportive role for the camera and not really engaged in what the child is doing or feeling). Signs of such questionable support are: improper timing of support, mismatch of verbal and bodily cues, and failure to have the child's attention in delivering the message. These types of supportive messages would not be weighted highly because such features suggest that the mother's supportive presence is not a 'sincere' aspect of their interaction outside the laboratory setting.

Conversely, the mother may seem more supportive than she appears in this situation because she has approached this task as a test of the child's achievement and has not used as much support as she might have. Yet, the qualitative features of her support would merit a high score.

Codes:

4. *Low* – Mother provides little or no emotional support to the child. The mother may be aloof and/or unavailable. She may also be hostile towards a child who shows he/she is in need of support. If support is displayed, it is minimal and not timed well, either being given when the child does not really need it, or only after the child has become upset. The consistency of this support may be uneven, so as to make the mother unreliable as a supportive presence.
5. *Moderate* – This mother does an adequate job of being available when her child needs support. She may lean closer as the child shows small signs of frustration and praise the child's efforts to show that she is available and supportive, but inconsistency in this style makes her support unreliable as a supportive presence to the child. Additionally, she may have failed to provide support at crucial times in the session (i.e., when support was needed by the child).
6. *High* – Mother skillfully provides support throughout the majority of the session. She establishes herself as supportive and encouraging toward the child and provides support when the child needs it. As the child experiences more difficulty, her support increases in commensurate fashion. If the child is having difficulty, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. She may have minor lapses, but for the most part, she is emotionally supportive and reinforces the child's successes.

6. Mutual Pleasure (summary code)

Dyad's emotional connectedness and shared experience of mutual pleasure.

Codes:

4. *Minimal* – The dyad shows no/minimal signs of a positive emotional connection. There are no shared smiles and there may be no mutual eye contact. Mother and child seem to be hesitant to share positive emotions or seem to be restricting positive emotional expression for some reason (e.g., silently angry). The mother and child show no signs of having fun together.

5. *Moderate* – The dyad shows some signs of positive emotional connection; however, the frequency and degree of positiveness is no more than moderate. Sharing of positive affect occurs, however, it is occasional in frequency, restricted in tone and/or duration, or a combination of these, and/or mother and/or child shows some restriction or hesitancy in sharing emotion. [Code "2" if the dyad is emotionally connected, but one or both members are not having fun; also Code "2" if there are a number of instances where one or both members of the dyad experience discomfort, boredom or frustration]
6. *High* – The dyad shows clear signs of a positive emotional connection, which are positive and enthusiastic in tone and occur regularly throughout the session. The dyad may show frequent mutual eye contact or the dyad may show positive, enthusiastic sharing of positive emotions (e.g., "four-eyed" smiles). Neither the mother nor child shows signs of restricting emotional communication with each other. The mother and child seem to be having fun together. Also code 3 if both mother and child express interest and seem content, and no negativity, discomfort, boredom, or frustration is evident.

7. Body Harmonics (predominant mode)

Rate the predominant mode; rate body orientation, degree of "insynctness" between the parent and child

*Note: For some tasks (e.g., Magna Doodle) parents may be sitting next to or just behind their child, typically in order to both be oriented towards a toy/task, but are engaged in the same task. If this occurs as the predominant mode, code "4".

Codes:

5. Neither mom nor child oriented to the other (similar to parallel play)
6. Child oriented to mom, mom not orientated to child
7. Mom oriented to the child, child not to mom
8. Both oriented towards each other – mom oriented to the child, child to the mom

8. Mother's Mental Status (summary code)

*Note: A code of "2" or "3" does not indicate that the parent is at-risk of a mental illness; a code of "2" indicates that the parent is displaying one or more of the behaviors listed under a "2" or"3."

Do not consider an overall mode of "angry" or "impatience" if mother is using appropriate, firm limit setting in response to a child's inappropriate behaviors (e.g., throwing a toy, breaking a toy, and/or hitting a parent). However, if a parent uses a harsh tone, threatening voice, or threatening words while attempting to discipline/set limits, this *should* be coded here.

Codes:

5. Mother exhibits clear signs of mental distress and/or mental health problems (e.g., depression, hyperactivity, psychotic behavior, mania, etc.)
6. Mother's mood and/or behavior may angry or impatient, but shows no overt signs of mental illness

7. Mother's mood and/or behavior may appear anxious or distressed but shows no overt signs of mental illness
8. No mental distress or psychiatric impairment obvious to the observer

5. Mother's Emotional Response to Task and Situation (summary code)

Codes:

5. *Negative Response* - Overt negative response: bored, irritable, impatient (e.g., Mother says, "this stinks")
6. *Passive Response/Lack of Interest*- Passive or resigned (e.g., "OK, we have to do this"). Clearly no interest or enthusiasm but no overt negativity
7. *Business like* OR *mix of a positive and negative response* – Actively involved, but no positive or negative emotion displayed OR parent displays a mix of positive (e.g., expresses interest) and negative (e.g., signs of frustration or impatience) emotions.
8. *Positive* - Participates with interest and enthusiasm, and demonstrates occasional pleasure or enjoyment of the toys/task. Positive emotions can include expression of empathy and concern, not just pleasure and personal enjoyment.

6. Touching (circle ANY that apply)

Code parental touch, not child touch – Specifically, if the child reaches out to touch the parent (in a hostile OR affectionate way), this is NOT coded. However, if the parent reciprocates/responds in any way, this should be coded. Tally the frequency of each type of touch.

Codes:

9. No touch/inadvertent touch (e.g., fingers brush as both reach in to get a toy)
10. Hostile touch (pinching, hitting, slapping, tightly gripping)
11. Touching to control (e.g., hold down, direct, lift into a chair, hold down to control an out of control child, hold to control child's movement; if for example the child began hitting themselves, and the parent held both of the child's arms down at their sides to keep them from hurting themselves)
12. Touching to encourage or appropriately prompt/direct child's attention (e.g., tap on shoulder before pointing to an object)
13. Touching to make child attend (e.g., including moving the child's face or putting "blinders" on the child to direct them to make eye contact)
14. Touching to direct by using hand over hand (e.g., parent puts their hand on top of their child's hand and moves the child's hand)
15. Affectionate touch (no seductive overtures; e.g., giving a hug, touching child's hair)
16. Other touch (if you see any other type of touch, code 7 and note what you saw)

7. Denying Emotional Responsiveness (code based on amount of incidents observed)

Coding judgments regarding negative acts by parent/caregiver (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than extreme)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

*Note: Body posturing is included in this code.

If child makes explicit-direct-overt demands/requests (including affective, cognitive and motor demands and/or requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

If child makes implicit-indirect-covert needs/requests (including affective, cognitive, and motor needs/requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

Additionally, unavailable posturing of parent would discourage a child from seeking a response and would also be considered denying emotional responsiveness.

Examples of this are listed below:
Mild –

- Child says "this is fun" or "this is hard" and Mom shows no response
- Child seems worried (frown, body posture, nervous behaviors) and mother shows little to no response
- Mom attending to child – eye contact and posture – is at low level under conditions where more would be expected
- Mom attending to child, but arms crossed (e.g., if mom crosses her arms in response to child during a critical period or sustained arm crossing or consistently displays this posture throughout the interaction)

Moderate –

- Child says "how do you do this?" or "I don't understand" and must repeat it several times to get a response or takes a while for the parent to respond (i.e., prolonged time before response)

- Child appears very elated/excited or worried/depressed about what she/he's just done or will do next and mother shows little to no response (e.g., Child is very excited about the toys/task and the parent shows little to no response)
- Mom tends *not* to look, touch, or talk to child unless child presses strongly for attention

Strong –
- Child makes requests or asks for help and mom does not respond at all or lets child know child is on his/her own by saying "go on working" or " you figure it out"
- Mom doesn't respond to child's reasonable but non-task oriented requests – "I'm thirsty" or "I want a drink"
- Child visibly shows very strong reaction to situation (e.g., cries, shakes, throws materials down) and mother does not respond
- Mom maintains body orientation and posture away from child's position in an unusual or awkward way that doesn't fit – and other options are available (e.g., Mother actively turns her whole body away or keeps face averted)

Facilitation of Social/Cognitive Development
8. Quality of Instruction/Structure (summary code)

During the free play portion of the session, the mothers scoring *high* on this scale provides support to the child and structure when needed. If the child has difficulties with one of the toys, she provides instructions in a graded, logical, and timely manner. She uses vocabulary that is at the child's level and makes helpful comments when the child is in need. She stimulates the child's educational environment by making comments and elaborations on what the child is doing or feeling (e.g., if the child says, "it's a car" the mom says "yes, it's a blue car").

Codes:
1. *Low- Lack of/poor instructions/structure*. Mother fails to provide adequate structure/instructions. Mother may try to help the child once, but is ineffective and unsuccessful in giving instructions and/or structuring the session. Child may not understand what to do or what is expected of him/her due to lack of instructions/structure. The mother's attempt to structure the child's environment/instructions are uniformly of poor quality. She may be totally uninvolved and/or she may set-up the environment in a poor manner that makes it difficult for the child to successfully play with the toys at hand.
2. *Moderate – Mostly Adequate instructions/structure*. Mother provides adequate structure and instruction during much of the session, but overall, her structure/instruction is not sufficient. Alternatively, the mother may approach the tasks in a way that is very directed/structured, but requires the child to attend primarily to her directives and allows little opportunity for the child to engage the toys. She may provide a mix of good and bad instructions/structure (e.g., attempting to help the child decide what toy to play with while then setting up a game in a way that makes it difficult for the child to have any success).
3. *High – Effective, continuous, and appropriate instructions/structure.* Mother demonstrates characteristics of effective instruction/structure. The tasks are sufficiently structured so that the child understands the objectives and can attempt to solve the

problems directly. Mother's assistance is coordinated to the child's activity and needs for assistance. The mother may not need to structure the session or give many instructions if the child understands what is expected of them, but the mother mostly keeps the child's attention and focus on the chosen task and stimulates their educational environment. (e.g., the mother may help the child pick a toy to play with and then help to guide the child through using the toy).

10. **Mother's Respect for Child's Autonomy**

This scale reflects the degree to which the mother acted in a way that recognized and respected the validity of the child's individuality, motives, and perspectives in the session.

A mother scoring *low* on this scale would be very intrusive in her interventions with the child, exerting her expectations on the child in a way that makes the child a satellite or servant of the mother rather than a mutually negotiated relationship, or implicitly defining her interactions in terms of a win-lose power struggle in which compliance by the child makes the mother the winner and the child submissive. Mothers may intrude either harshly or with affection; in either case, her actions do not acknowledge the child's intentions as real or valid and communicate that it is better and safer to depend on her for direction than to attempt individuality.

In contrast, a mother scoring *high* on this scale acknowledges the child's perspectives and desires as a valid part of the child's individual identity. A mother scoring very high does this explicitly by negotiating rules with the child, verbalizing her acknowledgement of the child's intentions, does not deny the child's right to those desires, and models her own identity and the validity of her own desires in the way she expects the child to respect her individuality, too. Note: Mother can get a low score just by denying the child's individuality strongly (e.g., interrupting the child, doing things before the child can on his/her own, etc.) even though it is not interrupting the child's behavior.

Codes:

6. *Very Low* – Mother completely denies the child's individuality in the techniques she uses. Mother may be intrusive, physical, and forceful in controlling the child.
7. *Low* – Mother may deny the child's individuality, but there are a few opportunities for the child to experience autonomy, whether by variation in mother's approach or simply by occasional absence of maternal controls over the child. Mostly, however, this mother's style denies the child's autonomy and mother is intrusive.
8. *Moderate* – Mother is moderately intrusive. Although mother does not deny the child's separate identity, she does very little to support the validity of the child's individuality. She might communicate doubts to the child about the appropriateness of having his/her intentions, or intrude abruptly on the child several times.
9. *Moderately High* – Mother does allow the child some autonomy of intentions, but she does not actively support and reinforce this perspective in the child. She may reflect the child's intentions and ideas by engaging the child, but she also exerts her will at times over the child in a way that shifts the child's perspective.
10. *High* – Mother very clearly interacts with the child in a way that acknowledges the validity of the child's perspective, encourages the child to take the lead/participate

10. Strategies for Maintaining the Child's Task Involvement (predominant mode):
This scale reflects the methods used by the mother to encourage and maintain task involvement on the part of the child. The parent's use of verbal reinforcement (positive and negative) is paramount in this item. Parents are rated *higher* when they involve the child in the task and in the enjoyment of the process of working together. They are rated *higher* for more specific praise versus nonspecific praise. They are rated *higher* for using praise versus bribes or threats to engage the child. Parents who have a child who is noncompliant are not automatically rated lower if they respond appropriately by trying other strategies until the child cooperates or they decide that the task cannot be continued.

Rule: If are between 2 codes and you have seen signs of threats, manipulation or coercion in order to promote the child's involvement, code the lower of the 2 codes (even if some positive methods are used).

Codes:

3. *Lack of effort/Threatening* - Parents may receive the lowest score in 2 ways: either little or no effort is made to involve the child in the task OR Physical and verbal threats are used to promote the child's involvement in the task as in, "Do this or else!". Punitiveness is the major strategy for control – the child is coerced to act to avoid unpleasant behaviors by the adult.
4. *Manipulation/Coercion* - Parental bribery or whining the primary strategies used to promote the child's involvement. Rewards not associated directly with the task are given or promised to get the child to participate. Examples: "You'll (We'll) get ice cream if we can finish this game, job, etc.," or parent nags and/or whines until the child complies (e.g., in a whining voice says, "Come on, help me, I want to do this well"). **Note, the parent may use other ineffective strategies, such as intrusive questions or directives, as well, but those are not the only strategies used.
3. *Directives only* - Clarifying, giving information, and directing the task are the methods used to enlist child involvement. No praise, no threats, and no bribes are used. For example, a parent may give step-by-step instructions to a low functioning child, and not threaten or praise either.
4. *Information and non-specific praise* - Clarifying structure and giving information about the task process are used to prompt and enlist the child's involvement, such as, "this goes next," "it's your turn," "look here." Additionally, the parent may use non-specific praise and global feedback to promote the child's involvement in addition to verbal prompts and structuring information. "Good girl," "nice car," and "perfect" are examples of non-specific praise. Alternatively, the parent may demonstrate clear interest (e.g., paying attention to the child, commenting, asking non-intrusive questions, saying "Ohhh" and "Ahhh"), but not give praise. If parent demonstrates clear interest without giving praise, also code this here. In addition, the parent may also ask the child questions or make statements to help maintain their involvement. This item encompasses a parent who uses a variety of different strategies, but no coercive, manipulative, or threatening strategies.
5. *Specific praise* – At *least* one instance of specific praise is observed. The parent provides specific, positive, and well-timed references to the child's effort and effectiveness are used to get and maintain the involvement of the child. The parent primarily highlights

special task qualities of intrinsic interest to the child to stimulate the child's involvement. Mother also provides some verbal prompts and structuring information. Examples include: "Wow, that's so creative to draw a road for the skateboard on the Magna Doodle" or "You are doing such a good job of aiming the ball carefully before you throw the ball to me."

11: Parental Intrusiveness

This scale reflects the degree to which the parent exerts control over the child rather than acting in a way that recognizes and respects the validity of the child's perspective. Intrusive interactions are clearly adult-centered rather than the child-centered. Extreme intrusiveness can be seen as over-control to the point where the child's autonomy is at stake. When unsure whether a behavior is intrusive or not, focus on the *perspective of the child*.

Intrusive behaviors involve imposing the parent's agenda on the child despite signals that a different activity, level or pace of interaction is needed. High arousal, vigorous physical interaction or a rapid pace are not in and of themselves indicative of intrusive over-stimulation - if the child responds positively and is not engaging in defensive behaviors. It is when the child averts his/her gaze, turns away, or expresses negative affect *and the parent continues or escalates* that the behavior is intrusive. Intrusiveness is also apparent when the parent persists in demonstrating a toy to the child long after the child's interest has been gained and the child clearly wants to manipulate the toy him/herself. These parents appear unable to relinquish control of the interaction in order to facilitate the child's exploration or regulation of the activity. Intrusiveness may also be displayed by overwhelming the child with a rapid succession of toys or suggestions, without allowing the child time to react to one before another occurs.

In contrast, a parent scoring low on this scale acknowledges the child's perspective. This parent allows the interaction to be the child-centered rather than adult-centered. The parent modulates her/his behavior in response to the child's interest and enjoyment and allows the child to explore and play at his/her own pace.

Keep in mind that a parent can become involved in the child's play without denying his/her autonomy or being intrusive. In addition, parental actions which are clearly in the child's best interest, such as removing the child from danger are not considered intrusive. Likewise, parental behaviors that are in accordance with protocol instructions, such as bringing the child back to the mat or turning the child toward the camera, will not be judged as intrusive unless the child is handled in a rough or perfunctory manner.

Indicators of Intrusiveness:

- Persisting with an action that clearly does not interest the child (e.g., parent continues with a behavior that makes the child turn away, act defensive, or express negative affect)
- Offering a continuous barrage of stimulation or toys
- Not allowing the child to influence the focus or pace of play
- Not allowing the child to handle toys that he/she reaches for
- Grabbing toys away even though the child is still interested
- Not allowing the child a turn or an opportunity to respond at his/her own pace

• Not allowing the child to make choices
• Poking the child with toys, fingers, or other object(s)

Ratings on this scale should be based on both *quantity* and *quality* of parental behavior.

Parental Intrusiveness Scale:

1. **Low** Intrusiveness. Parent displays no or almost no signs of intrusive behavior. If a few instances of intrusive behavior are observed they are brief and do not unreasonably shift the child's perspective (e.g., slightly abrupt transition from one task to another, briefly taking a toy, or brief magna doodle conflict). Child does not respond defensively in any way to parental behavior.

2. **Moderately** Intrusiveness. Parent displays some intrusiveness. Parent may initiate some interactions with child or offer suggestions to child which are not welcome (e.g., abruptly introducing a new activity/toy when the child is clearly enjoying a different activity/toy), evidenced by child protesting or responding defensively to parent. Or, parent may continue her/his activity after child responds defensively, but parent does not *escalate* the activity (e.g., the parent continues to stir with spoon after the child has pushed the parent's hand away; *NOTE*: *escalating* the behavior would be insisting that the child stir with spoon or *increasing* demands that the child engage in a behavior).

3. **High** Intrusiveness. Parent displays intrusiveness more often than not throughout the session. Parent intrudes abruptly on the child or show intrusiveness at several points in the interaction. The child has few, if any, opportunities to experience autonomy, whether by variation in the parent's approach or simply by occasional absence of parental control.

Psychological Abuse

FOR ALL CODES IN THIS CATEGORY:

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

12. Spurning (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Active rejecting and/or degrading through words, gestures, and/or other behaviors. Spurning includes, belittling, degrading, and other nonphysical or overly hostile/rejecting treatments used towards a child. Shaming and/or ridiculing a child are also included in this code. Score mother's contempt towards the child here. Do not score appropriate limit setting here (for example, if child is throwing toys or hitting and the parent tells them to calm down or stop their behavior).

Examples:

Mild –

- "Are you frustrated already?"
- "This will be hard for you" (unjustified by situation)
- "I'd better do this part for you" (unjustified by situation)
- Frowning at child's efforts while allowing him/her to continue.
- Mild shaming (publicly teasing). For example, "Make sure you draw all the dirty socks and banana peels you leave in your room" (while child draws on a Magna Doodle)
- Parent may tell the child to stop crying
- Parent may say, "Put a smile on it, honey" when the child looks upset
- Continuing to talk over a child as they try to express an idea (even if the parent is not being mean towards the child). Another way to conceptualize this is to think of the parent "rejecting" their child's idea by not letting the child express their idea.

Moderate –

- "Let me do it, you'll mess it up"
- Makes facial expression of disbelief for child to see as reaction to child's attempt
- Parent tells a child that they are not experiencing a specific emotion (e.g., mother says, "no, you're not sad")

Strong –

- "Keep your hands off – you'll screw it up!"
- "You just watch – we want to do it right"
- "Come on stupid – can't you get it?
- "You're a real loser, aren't you?"
- Laughs mockingly at child's error or attempt

- Shaming. For example, making fun of the child's bedwetting problem
- Parent firmly and repeatedly tells a child to cease displaying a specific emotion
- Parent makes fun of a child for displaying a specific emotion

13. Terrorizing (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
8. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

*Note: Voice quality is included in this code

<u>Key concept</u>: Judge act(s) in regard to its threat or danger to the average child of the target child's development level in the mainstream culture.

Threaten child with violence.
Threatening violence against child's loved ones (other family members) or objects (comfort toys or favorite toys).
Physical attack on/act of violence directed toward child.
Place child in an unpredictable, chaotic, or frightening situation (at the extreme, placing the child in a recognizably dangerous situation).
Examples:

Mild –

- "You'd better behave"
- Abrupt – harsh voice quality (*(not to be confused with a firm loud "No" in a non-harsh tone to stop inappropriate behavior that needs to be terminated right away such as ripping the Lego model , throwing toys)*
- In a harsh voice says, "put that back!"

Moderate –

- "You know what will happen to you if you don't straighten up"
- Tightens body posture and facial expression in threatening and observable manner for child
- Thrusting/pointing index finger toward child to influence behavior

Strong –

- Slams fist down on table
- Menacing gestures made toward child – facial expression, growl, fist shaking

- Grabs child physically and exerts physical pressure in a manner that is too rough and overly controlling
- Threats of physical harm at child such as "I'm going to whip you in a minute."

14. Isolating (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
8. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Physically isolate/confine (confining child or placing unreasonable limitation on freedom of movement)
Socially isolate/confine (placing unreasonable limitations/restrictions on social interactions with peers or adults – this may be done verbally in the session)
Actively terminate communication.
Examples:

Mild –

- Preoccupied with keeping child in seat
- Very little conversation initiated by mother

Moderate –

- Lack of initiation or response - Mom doesn't initiate talk and only talks to child when child initiates conversation (including gestures, tapping, or sound)
- Tries to keep child from communicating with others present (e.g., examiner)
- Tries to keep child from normal movement in his seat while on task

Strong –

- Says "stop talking" or "don't talk while you're working" when the child initiates or attempts to make social contact
- Refuses to allow child freedom to get drink or go to toilet when request/need is expressed with no acceptable rationale given
- Mom is in parallel play mode throughout most of process with little to no interaction or mutually facilitating behavior shown
- Keeps child from contact with others when they enter the room by using own body as shield, by dominating all interactions
- Context seems to demand conversation, and none occurs

15. Corrupting/Exploiting (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

5. Non occurrence
6. One to two mild-moderate acts
7. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
8. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Key Concept: Code based on observations of the parent leading the child away and astray from the task.

Using a child in ways serving the adult, and not the child, or meeting own needs in ways directly interfering with child's attempts to meet his/her needs encouraging or coercing abandonment of developmentally appropriate autonomy, and/or extreme over-involvement
Actively encouraging/teaching anti-social, self-harming, or developmentally inappropriate behavior
Modeling/demonstrating behavior which is anti-social, self-harming, or developmentally incorrect/inappropriate
Allowing child behavior which is anti-social, self-harming, or incorrect/inappropriate
Restricting or interfering with the child's cognitive development.

Examples:

Mild –

- Doesn't help or instruct child if child seems stuck with something (e.g. how to erase the magna doodle).
- Says, "it doesn't matter how we do this, just so we get it done"

Moderate –

- Plays with/manipulates materials in a manner interfering with the child's opportunity to participate or move forward with their play.
- Shows little to no interest in having the child learn throughout the session.
- Seems only interested in getting it over and getting the task done
- Gives child role of "mom's assistant" below child's competency or level of potential for learning by trying
- Allows child (without corrective follow-up) to use foul language or make statements degrading self or others
- Parent takes over and directs the child's activities (e.g., the parent tells the child exactly what to do)
- The parent does not allow the child to come up with his/her own ideas of how to play with the item chosen (e.g., the parent may fire questions/directives at the child in a way that does not allow child to come up with his/her own ideas)
- Limits child's participation to holding tools/parts for mother and mother only allows child to take responsibility for lowest level of task.

Strong –

- Says “this is stupid – let’s get it over with”
- Uses strong language that degrades others
- Does not allow the child to choose what to play with
- Encourages child to use foul language, make degrading statements, or engage in other inappropriate behavior (e.g., by smiling or laughing)
- Mother demands a shift in attention to her own topics in a way that hinders the child’s development (takes child away from the task) and persists in this shift in attention (e.g., mother insists that the child discuss their babysitter’s cell phone habits as the child attempts to play pretend with the toy phone. The mother continues to ask questions and does not allow the child to play with the toy in the way the child wants to)
- Parent interferes with the child’s learning and child’s experience of the session by interrupting the child and asking/making task-irrelevant questions/comments to the point that it’s difficult for the child to think (e.g., as the child is determining where to put a window in their toy house, the parent asks off-topic questions that make it difficult for the child to think)
- Pulls toy/game/material from child’s grasp and places in her work area

Child Codes

16. Child Negativity (summary code)

*** Remember, this is child negativity directed at the *caregiver***

Degree to which the child shows anger, dislike, or hostility toward the mother. At the high end, the child is repeatedly and overtly angry during the session and/or at the mother (e.g., forcefully rejecting her ideas, showing angry and resistant expression, pouting, or being unreasonably demanding or critical of her). At the low end, there are neither overt nor covert signs of such anger. Expressions are essentially positive toward mother/within the session whether or not the child is compliant or much involved with the mother.

Rule: If it is unclear if the child is acting negative towards the mother or the task, do not code the behavior here.

Codes:

4. *Positive* (i.e., no signs of negativist towards mother)- Child shows no signs of negativism towards the mother. She/he shows through consistently positive interactions toward the mother that she/he has a truly positive relationship toward the mother/within the session and feels no abiding anger toward the mother/within the session. [Code here if there are no clear negative signs towards the mother, even if no clear positive interactions are evident.]
5. *Mix of negative and positive* - Child shows a mix of negativism and positivism towards the mother. Neither negativism nor positivism is predominant in the interaction; there is a mix of both negative and positive interactions.

6. *Negative towards mother*- Child's anger and negativism are predominant in the interaction between the child and mother. The child is repeatedly and overtly angry and resistant during the interaction. The degree of anger seems so strong that the child cannot disguise it in subtler ways for long, but it repeatedly appears in his/her interactions.

17. Child's Experience of the Session (summary code)

This scale reflects the degree to which the child's experience in the session probably resulted in feelings of success and competence on the tasks and confidence in having a good relationship with his/her mother. This scale reflects a variety of contributions in the child and mother's behavior, which might contribute to the child's experience of session. A child scoring low on this scale might have had many conflicts with his/her mother or might have been dominated or been rejected by the mother in ways that would affect the child's experience of success in the session. A child scoring high on this scale would have been able to work well with the mother *and* to do the tasks successfully with some sense of autonomy in problem-solving through appropriate maternal assistance in the session.

4. *Low* - Child had a very negative experience which probably contributed to lower expectations of his/her own competence, anger at self or mother, rejection by the mother, or intense resistance between mother and child. There was very little in the session to compensate for these negative events. Almost no good or only one good instance of positive experiences in the session.
5. *Moderate* - A mix of positive and negative instances throughout the session. The session may be a moderately negative experience for the child, but overall, neither a success nor a failure experience of the child; *OR* The child seemed to get through the session with success and basically have positive interactions with his/her mother, but there might have been some minor aspects in which the child or mother's contributions may have been deficient in helping the child feel success. For example, the child may have success in the task, but not display a good relationship with their mother, or vice versa.
6. *High* - The child has a very positive experience of doing well on the tasks and having a good relationship with his/her mother. There were very positive interactions between the mother and child, and the child was able to do the tasks with enough help and enough autonomy to experience competence in doing the tasks. Although minor problems in the session might have occurred, the overall effect of the mother and child's interactions was very positive in terms of the child's experience of success and confidence in the relationship. [A child who seems content/happy throughout the session regardless of interactions with their parent (e.g., a child who works independently and does not seem to care if the parent participates), should get coded here.]

18. Child's Level of Engagement in the Task *(Use stopwatch to calculate percentage of time off task relative to total time counted from exit of Experimenter to return of Experimenter)*

This scale reflects the degree to which the child is engaged in either the task or participating with the mother on the task during the session. Code for child's actual level of engagement with the task not the mother's efforts to keep the child engaged.

5. *No Engagement* - Child shows little or no interest in engaging in the teaching task with the mother and this is consistent throughout the session (less than 25% of the time).
6. *Low Engagement* - Child shows some interest in participating in the task but it's not consistent and child is unengaged or resistant for over half of the time (25-49% of the time).
7. *Moderate Engagement* - Child is engaged in the task for more than half but not all of the session. There are clear moments of disengagement demonstrated by the child (50 to 75% of the time).
8. *High Engagement* - Child is almost continuously engaged in the task – there may be moments where attention wanders but they are brief and intermittent (more than 75% of the time.).

19. Child Engagement of Parent (12/22/16)

This scale reflects the extent to which the child (a) shows, initiates, and/or maintains interaction with the parent and (b) communicates positive regard and/or positive affect to the parent.
At the higher end of the scale, the child expresses sustained positive affect toward parent (i.e., a big smile, laughter, etc.), and frequently looks at and attempts to interact with the parent.

Indicators of Child Engagement:

- Approaching or orienting toward parent
- Looking at, establishing, and/or maintaining eye contact with the parent
- Positively responding to parent's play initiations or suggestions (e.g., imitating parent, accepting toy from parent, following parent=s direction)
- Directing or (at a higher level) sharing positive expressions with parent
- Engaging parent in play or sustaining play initiated by parent (e.g. offering an object, requesting help, turn-taking)

Indicators of Child Disengagement:

- No sharing of affect with parent
- Overt rejection of parents play overtures
- Pushing offered objects away
- Positioning or orienting away from the parent
- Engaging in self-occupied play which excludes the parent
- Ignoring suggestions from parent

The focus of this scale is on the *quantity* (frequency) of occurrences in which the child shares positive affect with parent (i.e., looking at parent, making eye contact and smiling, and other "approach" behaviors) and or percentage of timer engaged cooperatively with the parent. When scoring this scale, keep in mind that the *quality* (intensity) of expression is secondary to the *quantity* of occurrences.

Child Engagement Scale:

1. Very Low Engagement. The child clearly does not attempt to share experiences with parent. Failure to make eye contact with parent when expressing happiness, directing expressions of happiness to the experimenter rather than to the parent, and similar behaviors can be used as evidence that the child attempts little sharing of feelings with parent.

2. Low Engagement. The child has very minor incidents which seem expressive of positive regard toward parent and from which one might infer that some positive feelings are expressed toward her. However, the child largely shows no positive regard toward parent and rarely responds to parent or attempts to engage or sustain play (or cleanup or task involvement) with him/her.

3. Moderate Engagement. The child shares some positive regard/happy expressions with parent and/or makes some attempt to engage or sustain play (or cleanup or task involvement) with parent, but these few and only minor elements of interaction and are not sustained by the child for more than a moment at a time. Likewise, the child may include parent in play (offer a toy, imitate pretend, etc.) or cleanup or the teaching task, but the engagement is not sustained for very long.

4. Moderately High Engagement. The child has one or more periods in which s/he engages the parent by expressing positive regard, sharing happy expressions or by sustaining play (or cleanup or task involvement) with the parent or engaged in sustained cooperative interaction with the parent. The child expresses positive affect toward and engagement of the parent for at least one portion of the interaction.

5. High Engagement. The child demonstrates a very positive, engaging and sharing relationship toward the parent for a substantial period of the session. Sustained play (or cleanup or task involvement) is accompanied by positive regard toward the parent. The child is consistently engaging of parent and the child's relationship with parent seems very warm and positive for a major portion of the session. There is no ambivalence in the child's expression of feelings toward the parent.

20. Child Aggression Tally (code based on amount of incidents observed)

Tally if the child displayed any verbal or physical aggression.

No symbolic aggression (e.g., eye rolls) will be coded.

Verbal aggression includes yelling at parent or verbal threats (e.g., "I hate you").

Physical aggression includes hitting, pinching, or kicking the parent. Physical aggression also includes throwing objects, throwing objects at the parent, breaking or destroying toys/equipment or using an object to hit the parent. Physical aggression also includes attempts at aggression (for example, if the child attempts to hit their parent, but misses).

Please also note what type of aggression was observed by listing exactly what was seen (i.e., child hit parent with Legos).

NOTES (ANY TIME YOU HAVE A HARD TIME CODING, MAKE A NOTE WHY):
____
____

Clean-Up Scoring Sheet (revise 1.9.17)

Participant Code: ______________________________

Rater: ____

Date: _______________________

During Clean-up (check one):
____ child cleaned up
_____mother cleaned up
_____both mother and child cleaned up
_____neither mother or child cleaned up

Codes

Quality of Emotional Support

31. Mother's Supportive Presence
1 2 3
Comments:

32. Mutual Pleasure
1 2 3
Comments:

33. Body Harmonics
1 2 3 4

Comments:

34. Mother's Mental Status
1 2 3 4

Comments:

35. Mother's Emotional Response to Task and Situation

1 2 3 4

Comments:

36. Parental Touching (circle all that occur and tally total for each type of touch)

0 1 2 3 4 5 6 7

Comments:

37. Denying Emotional Responsiveness

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Facilitation of Social/Cognitive Development

38. Quality of Instruction/Structure

1 2 3

Comments:

39. Strategies for Maintaining Child's Task Involvement

1 2 3 4 5

Comments:

Psychological Abuse

40. Spurning

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –

Extreme –

41. Terrorizing

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

42. Isolating

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

43. Corrupting/Exploiting

0 1 2 3

Comments:

Tally: Mild/moderate –
Strong –
Extreme –

Child Codes

44. Child Negativity Toward Caregiver

1 2 3

Comments:

45. Child Experience of the Session

1 2 3

Comments:

46. Child's Level of Engagement

1 2 3 4

Comments:

47. Child Aggression Tally

Physical –
Verbal –

Comments:

Code Explanations

Quality of Emotional Support

9. Mother's Supportive Presence (summary code)

A Mother scoring *high* on this scale expresses positive regard and emotional support to the child. This may occur by acknowledging the child's accomplishments on the task or unrelated task the child is doing (e.g., cleaning up the toys), encouraging the child with positive emotional regard (e.g., "you're really good at this," "you are doing a great job of cleaning up") and various other ways of letting the child know that he/she has her support and confidence to do well in the setting. If the child is having difficulty on the task, the mother is reassuring and calm, providing an affectively positive "secure base" for the child, perhaps leaning closer to the child to give a physical sense of support.

A mother scoring *low* on this scale fails to provide supportive cues. She might be passive, uninvolved, aloof, or otherwise unavailable to the child. She may also appear impatient, as if she feels like the activity is a waste of her time and she rather be doing something else. Such a mother also might give observers the impression that she is more concerned about her own adequacy and how she is presenting to the camera, rather than displaying concern about the child's emotional needs.

A *potential difficulty in scoring this scale* is to discount messages of mothers that seemingly are supportive in verbal content but are contradicted by other aspects of communication (e.g., the mother seems to be performing a supportive role for the camera and not really engaged in what the child is doing or feeling). Signs of such questionable support are: improper timing of support, mismatch of verbal and bodily cues, and failure to have the child's attention in delivering the message. These types of supportive messages would not be weighted highly because such features suggest that the mother's supportive presence is not a 'sincere' aspect of their interaction outside the laboratory setting.

Conversely, the mother may seem more supportive than she appears in this situation because she has approached this task as a test of the child's achievement and has not used as much support as she might have. Yet, the qualitative features of her support would merit a high score.

Codes:

7. *Low* – Mother provides little or no emotional support to the child. The mother may be aloof and/or unavailable. She may also be hostile towards a child who shows he/she is in need of support. If support is displayed, it is minimal and not timed well, either being

given when the child does not really need it, or only after the child has become upset. The consistency of this support may be uneven, so as to make the mother unreliable as a supportive presence.

8. *Moderate* – This mother does an adequate job of being available when her child needs support. She may lean closer as the child shows small signs of frustration and praise the child's efforts to show that she is available and supportive, but inconsistency in this style makes her support unreliable as a supportive presence to the child. Additionally, she may have failed to provide support at crucial times in the session (i.e., when support was needed by the child).
9. *High* – Mother skillfully provides support throughout the majority of the session. She establishes herself as supportive and encouraging toward the child and provides support when the child needs it. As the child experiences more difficulty, her support increases in commensurate fashion. If the child is having difficulty, she finds ways to structure the problem to reward some sort of success by the child and encourage whatever solution the child can make. She may have minor lapses, but for the most part, she is emotionally supportive and reinforces the child's successes.

10. Mutual Pleasure (summary code)

Dyad's emotional connectedness and shared experience of mutual pleasure.

Codes:

7. *Minimal* – The dyad shows no/minimal signs of a positive emotional connection. There are no shared smiles and there may be no mutual eye contact. Mother and child seem to be hesitant to share positive emotions or seem to be restricting positive emotional expression for some reason (e.g., silently angry). The mother and child show no signs of having fun together.
8. *Moderate* – The dyad shows some signs of positive emotional connection, however, the frequency and degree of positiveness is no more than moderate. Sharing of positive affect occurs, however, it is occasional in frequency, restricted in tone and/or duration, or a combination of these, and/or mother and/or child shows some restriction or hesitancy in sharing emotion. [Code "2" if the dyad is emotionally connected, but one or both members are not having fun; also Code "2" if there are a number of instances where one or both members of the dyad experience discomfort, boredom or frustration]
9. *High* – The dyad shows clear signs of a positive emotional connection, which are positive and enthusiastic in tone and occur regularly throughout the session. The dyad may show frequent mutual eye contact or the dyad may show positive, enthusiastic sharing of positive emotions (e.g., "four-eyed" smiles). Neither the mother nor child shows signs of restricting emotional communication with each other. The mother and child seem to be having fun together. Also code 3 if both mother and child express interest and seem content, and no negativity, discomfort, boredom, or frustration is evident.

11. Body Harmonics (predominant mode)

Rate the predominant mode; rate body orientation, degree of "insynctness" between the parent and child

*Note: For some tasks parents may be sitting next to or just behind their child, typically in order to both be oriented towards a task, but are engaged in the same task. If this occurs as the predominant mode, code “4”.

Codes:

9. Neither mom nor child oriented to the other (similar to parallel play)
10. Child oriented to mom, mom not orientated to child
11. Mom oriented to the child, child not to mom
12. Both oriented towards each other – mom oriented to the child, child to the mom

12. Mother’s Mental Status (summary code)

*Note: A code of “2” or “3”does not indicate that the parent is at-risk of a mental illness; a code of “2” indicates that the parent is displaying one or more of the behaviors listed under a “2” or”3.”

Do not consider an overall mode of “angry” or “impatience” if mother is using appropriate, firm limit setting in response to a child’s inappropriate behaviors (e.g., throwing a toy, breaking a toy, and/or hitting a parent). However, if a parent uses a harsh tone, threatening voice, or threatening words while attempting to discipline/set limits, this *should* be coded here.

Codes:

9. Mother exhibits clear signs of mental distress and/or mental health problems (e.g., depression, hyperactivity, psychotic behavior, mania, etc.)
10. Mother’s mood and/or behavior may angry or impatient, but shows no overt signs of mental illness
11. Mother’s mood and/or behavior may appear anxious or distressed but shows no overt signs of mental illness
12. No mental distress or psychiatric impairment obvious to the observer

5. Mother’s Emotional Response to Task and Situation (summary code)

Codes:

9. *Negative Response* - Overt negative response: bored, irritable, impatient (e.g., Mother says, “this stinks”)
10. *Passive Response/Lack of Interest*- Passive or resigned. Putting forth very little effort, not encouraging the child, and not being actively involved (minimal effort put in by parent).
11. *Business like* OR *mix of a positive and negative response* – Parent who is actively involved and keeping the child involved. They may also say “Ok, we have to clean up” or “come on, put the Legos in the bag” but without interest, enthusiasm or pleasure in doing the task with child. Mix will include some positive behaviors mixed in with an impatient or critical tone.

12. *Positive* - Participates with interest and enthusiasm, and demonstrates occasional pleasure or enjoyment of the task. Positive emotions can include expression of empathy and concern, not just pleasure and personal enjoyment.

6. Touching (<u>circle ANY that apply</u>)

Code parental touch, not child touch – Specifically, if the child reaches out to touch the parent (in a hostile OR affectionate way), this is NOT coded. However, if the parent reciprocates/responds in any way, this should be coded. Tally the frequency of each type of touch.

Codes:

17. No touch/inadvertent touch (e.g., fingers brush as both reach in to get a toy)
18. Hostile touch (pinching, hitting, slapping, tightly gripping)
19. Touching to control (e.g., hold down, direct, hold down to control an out of control child, hold to control child's movement; if for example the child began hitting themselves, and the parent held both of the child's arms down at their sides to keep them from hurting themselves)
20. Touching to encourage or appropriately prompt/direct child's attention (e.g., tap on shoulder before pointing to an object)
21. Touching to make child attend (e.g., including moving the child's face or putting "blinders" on the child to direct them to make eye contact)
22. Touching to direct by using hand over hand (e.g., parent puts their hand on top of their child's hand and moves the child's hand)
23. Affectionate touch (no seductive overtures; e.g., giving a hug, touching child's hair)
24. Other touch (if you see any other type of touch, code 7 and note what you saw)

7. Denying Emotional Responsiveness (code based on amount of incidents observed)

Coding judgments regarding negative acts by parent/caregiver (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
12. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than extreme)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

*Note: Body posturing is included in this code.

If child makes explicit-direct-overt demands/requests (including affective, cognitive and motor demands and/or requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

If child makes implicit-indirect-covert needs/requests (including affective, cognitive, and motor needs/requests), a parent who denies emotional responsiveness may respond by ignoring, behaving in detached/uninvolved manner, failing to respond, avoiding interaction, or refusing to interact

Additionally, unavailable posturing of parent would discourage a child from seeking a response and would also be considered denying emotional responsiveness.

Examples of this are listed below:
Mild –

- Child seems worried (frown, body posture, nervous behaviors) and mother shows little to no response
- Mom attending to child – eye contact and posture – is at low level under conditions where more would be expected
- Mom attending to child, but arms crossed (e.g., if mom crosses her arms in response to child during a critical period or sustained arm crossing or consistently displays this posture throughout the interaction)

Moderate –

- Child appears very elated/excited or worried/depressed about what she/he's just done or will do next and mother shows little to no response (e.g., Child is very excited about cleaning up the toys/task and the parent shows little to no response)
- Mom tends *not* to look, touch, or talk to child unless child presses strongly for attention

Strong –

- Child makes requests or asks for help and mom does not respond at all or lets child know child is on his/her own by saying "you do it yourself" or " you figure it out"
- Mom doesn't respond to child's reasonable but non-task oriented requests – "I'm thirsty" or "I want a drink"
- Child visibly shows very strong reaction to situation (e.g., cries, shakes, throws materials down) and mother does not respond
- Mom maintains body orientation and posture away from child's position in an unusual or awkward way that doesn't fit – and other options are available (e.g., Mother actively turns her whole body away or keeps face averted)

Facilitation of Social/Cognitive Development
8. Quality of Instruction/Structure (summary code)

The important features of this rating are how well the mother structures the situation so that the child knows what the task objectives are and receives hints or corrections while attempting to

clean-up. These hints or corrections are: a) timely to his/her current focus, b) paced at a rate that allows comprehension and use of each approach/cue, c) graded in logical steps that the child can understand, and d) stated clearly without unnecessary digressions to unrelated phenomena or aspects of the task that might only confuse the child. The mother's approach suggests that she has some sort of plan for how her instructions/structure will help the child. Yet, she is also flexible in her approach and uses alternative strategies or rephrases suggestions when a particular cue is not working, and she coordinates her suggestions to the effort that the child is making to solve the task. Lastly, she keeps the child focused and helps them to attend to the task. If the child begins to go off task (playing with the toys) she helps to bring the child back to the task at hand (cleaning up).

Codes:

6. *Low- Lack of/poor instructions/structure*. Minimal instructions/structure is given for cleaning up. Most attempts (if any) are ineffective. Child may not understand what to do or what is expected of him/her due to lack of instructions. And/or the mother's attempt to structure the child's environment/instructions are uniformly of poor quality (i.e., poor timing/pace, incomprehensible, no scaffolding, etc.). She is either totally uninvolved or fails to structure the tasks effectively.
7. *Moderate – Adequate instructions/structure*. Mother provides adequate structure and instruction for the child to begin cleaning up, but if a child efforts falter or a child becomes distracted, she either does not provide support for continuous cleaning or provides instructions that are of poor quality (e.g. giving very fast directives).
8. *High – Effective, continuous, and appropriate instructions/structure*. Mother demonstrates most characteristics of effective instruction/structure consistently throughout the session. Her directions are sufficiently structured so that the child understands the objectives and can clean-up the toys. Mother's assistance is coordinated to the child's activity and needs for assistance. For the most part, the mother keeps the child's attention and focus on task.

9. Strategies for Maintaining the Child's Task Involvement (predominant mode):
This scale reflects the methods used by the mother to encourage and maintain task involvement on the part of the child. The parent's use of verbal reinforcement (positive and negative) is paramount in this item. Parents are rated *higher* when they involve the child in the task and in the enjoyment of the process of working together. They are rated *higher* for more specific praise versus nonspecific praise. They are rated *higher* for using praise versus bribes or threats to engage the child. Parents who have a child who is noncompliant are not automatically rated lower if they respond appropriately by trying other strategies until the child cooperates or they decide that the task cannot be continued.

Rule: If are between 2 codes and you have seen signs of threats, manipulation or coercion in order to promote the child's involvement, code the lower of the 2 codes (even if some positive methods are used).

Codes:

5. *Lack of effort/Threatening* - Parents may receive the lowest score in 2 ways: either little or no effort is made to involve the child in the task OR Physical and verbal threats are used to promote the child's involvement in the task as in, "Do this or else!". Punitiveness is the major strategy for control – the child is coerced to act to avoid unpleasant behaviors by the adult.
6. *Manipulation/Coercion* - Parental bribery or whining the primary strategies used to promote the child's involvement. Rewards not associated directly with the task are given or promised to get the child to participate. Examples: "You'll (We'll) get ice cream if we can finish cleaning up.," or parent nags and/or whines until the child complies (e.g., in a whining voice says, "Come on, help me, I want to do this well"). **Note, the parent may use other ineffective strategies, such as intrusive questions or directives, as well, but those are not the only strategies used.
7. *Directives only* - Clarifying, giving information, and directing the task are the methods used to enlist child involvement. No praise, no threats, and no bribes are used. For example, a parent may give step-by-step instructions to a low functioning child, and not threaten or praise either.
8. *Information and non-specific praise* - Clarifying structure and giving information about the task process are used to prompt and enlist the child's involvement, such as, "this goes next," "it's your turn," "look here." Additionally, the parent may use non-specific praise and global feedback to promote the child's involvement in addition to verbal prompts and structuring information. "Good girl," "nice job," and "perfect" are examples of non-specific praise. Alternatively, the parent may demonstrate clear interest (e.g., paying attention to the child, commenting, asking non-intrusive questions, saying "Ohhh" and "Ahhh"), but not give praise. If parent demonstrates clear interest without giving praise, also code this here. In addition, the parent may also ask the child questions or make statements to help maintain their involvement. This item encompasses a parent who uses a variety of different strategies, but no coercive, manipulative, or threatening strategies.
9. *Specific praise* – At *least* one instance of specific praise is observed. The parent provides specific, positive, and well-timed references to the child's effort and effectiveness are used to get and maintain the involvement of the child. The parent primarily highlights special task qualities of intrinsic interest to the child to stimulate the child's involvement. Mother also provides some verbal prompts and structuring information. Examples for clean-up include "You are doing a nice job of putting the Legos back in the bag" or "you're working hard, we'll be done cleaning up soon."

Psychological Abuse

FOR ALL CODES IN THIS CATEGORY:

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act

12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Judge acts, not intentions or consequences. Don't judge on basis of a hypothesis or general point of view you've formed, put down what you see even if there is contradictory evidence (accepting and rejecting behaviors).

Keep tallies for mild/moderate, strong, and extreme behaviors.

10. Spurning (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Active rejecting and/or degrading through words, gestures, and/or other behaviors. Spurning includes, belittling, degrading, and other nonphysical or overly hostile/rejecting treatments used towards a child. Shaming and/or ridiculing a child are also included in this code. Score mother's contempt towards the child here. Do not score appropriate limit setting here (for example, if child is throwing toys or hitting and the parent tells them to calm down or stop their behavior).

Examples:

Mild –

- "Are you frustrated already?"
- "This will be hard for you" (unjustified by situation)
- "I'd better do this part for you" (unjustified by situation)
- Frowning at child's efforts while allowing him/her to continue.
- Mild shaming (publicly teasing). For example, "Make sure we leave this cleaner than your room at home" (while child cleans up)
- Parent may tell the child to stop crying
- Parent may say, "Put a smile on it, honey" when the child looks upset
- Continuing to talk over a child as they try to express an idea (even if the parent is not being mean towards the child). Another way to conceptualize this is to think of the parent "rejecting" their child's idea by not letting the child express their idea.

Moderate –

- "Let me do it, you'll mess it up"
- Makes facial expression of disbelief for child to see as reaction to child's attempt

- Parent tells a child that they are not experiencing a specific emotion (e.g., mother says, "no, you're not sad")

Strong –
- "Keep your hands off – you'll screw it up!"
- "You just watch – we want to do it right"
- "Come on stupid – can't you get it?
- "You're a real loser, aren't you?"
- Laughs mockingly at child's error or attempt
- Shaming. For example, making fun of the child's bedwetting problem
- Parent firmly and repeatedly tells a child to cease displaying a specific emotion
- Parent makes fun of a child for displaying a specific emotion

11. Terrorizing (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
12. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

*Note: Voice quality is included in this code

<u>Key concept</u>: Judge act(s) in regard to its threat or danger to the average child of the target child's development level in the mainstream culture.

Threaten child with violence.
Threatening violence against child's loved ones (other family members) or objects (comfort toys or favorite toys).
Physical attack on/act of violence directed toward child.
Place child in an unpredictable, chaotic, or frightening situation (at the extreme, placing the child in a recognizably dangerous situation).
Examples:

Mild –
- "You'd better behave"
- Abrupt – harsh voice quality
- In a harsh voice says, "put that back!"

Moderate –
- "You know what will happen to you if you don't straighten up"

- Tightens body posture and facial expression in threatening and observable manner for child
- Thrusting/pointing index finger toward child to influence behavior
- Shouts threats of physical harm at child

Strong –
- Slams fist down on table
- Menacing gestures made toward child – facial expression, growl, fist shaking
- Grabs child physically and exerts physical pressure in a manner that is too rough and overly controlling
- Threats of physical harm at child such as "I'm going to whip you in a minute."

12. Isolating (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. <u>Pattern</u> of repeated mild-moderate acts (3 or more instances) or one strong act
12. <u>Pattern</u> of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Physically isolate/confine (confining child or placing unreasonable limitation on freedom of movement)
Socially isolate/confine (placing unreasonable limitations/restrictions on social interactions with peers or adults – this may be done verbally in the session)
Actively terminate communication.
Examples:

Mild –
- Very little conversation initiated by mother

Moderate –
- Lack of initiation or response - Mom doesn't initiate talk and only talks to child when child initiates conversation (including gestures, tapping, or sound)
- Tries to keep child from communicating with others present (e.g., examiner)

Strong –
- Says "stop talking" or "don't talk while you're working" when the child initiates or attempts to make social contact
- Refuses to allow child freedom to get drink or go to toilet when request/need is expressed with no acceptable rationale given

- Mom is in parallel play mode throughout most of process with little to no interaction or mutually facilitating behavior shown
- Keeps child from contact with others when they enter the room by using own body as shield, by dominating all interactions
- Context seems to demand conversation, and none occurs

13. Corrupting/Exploiting (code based on amount of incidents observed)

Coding judgments regarding negative acts by parents/caregivers (an act/instance is considered one interaction/topic. For example, the mother says something, the child replies, and the mother or child says something else on the same topic):

9. Non occurrence
10. One to two mild-moderate acts
11. Pattern of repeated mild-moderate acts (3 or more instances) or one strong act
12. Pattern of repeated strong acts (2 or more instances) or one extreme act (worse than strong)

Key Concept: Code based on observations of the parent leading the child away and astray from the task.

Using a child in ways serving the adult, and not the child, or meeting own needs in ways directly interfering with child's attempts to meet his/her needs encouraging or coercing abandonment of developmentally appropriate autonomy, and/or extreme over-involvement
Actively encouraging/teaching anti-social, self-harming, or developmentally inappropriate behavior
Modeling/demonstrating behavior which is anti-social, self-harming, or developmentally incorrect/inappropriate
Allowing child behavior which is anti-social, self-harming, or incorrect/inappropriate
Restricting or interfering with the child's cognitive development.

Examples:

Mild –

- Says, "it doesn't matter how we do this, just so we get it done"

Moderate –

- Plays with/manipulates materials in a manner interfering with the child's opportunity to clean-up
- Models/demonstrates inefficient or incorrect procedure for cleaning up
- Shows little to no interest in having the child participate in cleanup
- Seems only interested in getting it over and getting the task done
- Allows child (without corrective follow-up) to use foul language or make statements degrading self or others
- The parent does not allow the child to come up with his/her own ideas of how to tackle the task at hand (e.g., the parent may fire questions/directives at the child in a way that does not allow child to come up with his/her own ideas)

Strong –

- Says "this is stupid – let's get it over with"
- Demonstrates/models ways to cheat or avoid responsibility such as encouraging the child to not take responsibility for clean-up saying "just let the teacher clean-up."
-
- Uses strong language that degrades others
- Encourages child to use foul language, make degrading statements, or engage in other inappropriate behavior (e.g., by smiling or laughing)
- Mother demands a shift in attention to her own topics in a way that hinders the child's development (takes child away from the task) and persists in this shift in attention (e.g., mother insists that the child discuss their babysitter's cell phone habits as the child attempts to play pretend with the toy phone. The mother continues to ask questions and does not allow the child clean-up.

Child Codes

14. Child Negativity (summary code)

*** Remember, this is child negativity directed at the *caregiver***

Degree to which the child shows anger, dislike, or hostility toward the mother. At the high end, the child is repeatedly and overtly angry during the session and/or at the mother (e.g., forcefully rejecting her ideas, showing angry and resistant expression, pouting, or being unreasonably demanding or critical of her). At the low end, there are neither overt nor covert signs of such anger. Expressions are essentially positive toward mother/within the session whether or not the child is compliant or much involved with the mother.

Rule: If it is unclear if the child is acting negative towards the mother or the task, do not code the behavior here.

Codes:

7. *Positive* (i.e., no signs of negativist towards mother)- Child shows no signs of negativism towards the mother. She/he shows through consistently positive interactions toward the mother that she/he has a truly positive relationship toward the mother/within the session and feels no abiding anger toward the mother/within the session. [Code here if there are no clear negative signs towards the mother, even if no clear positive interactions are evident.]
8. *Mix of negative and positive* - Child shows a mix of negativism and positivism towards the mother. Neither negativism nor positivism is predominant in the interaction; there is a mix of both negative and positive interactions.
9. *Negative towards mother*- Child's anger and negativism are predominant in the interaction between the child and mother. The child is repeatedly and overtly angry and resistant during the interaction. The degree of anger seems so strong that the child cannot disguise it in subtler ways for long, but it repeatedly appears in his/her interactions.

15. Child's Experience of the Session (summary code)

This scale reflects the degree to which the child's experience in the session probably resulted in feelings of success and competence on the tasks and confidence in having a good relationship with his/her mother. This scale reflects a variety of contributions in the child and mother's behavior, which might contribute to the child's experience of session. A child scoring low on this scale might have had many conflicts with his/her mother or might have been dominated or been rejected by the mother in ways that would affect the child's experience of success in the session. A child scoring high on this scale would have been able to work well with the mother *and* to do the tasks successfully with some sense of autonomy in problem-solving through appropriate maternal assistance in the session.

7. *Low* - Child had a very negative experience which probably contributed to lower expectations of his/her own competence, anger at self or mother, rejection by the mother, or intense resistance between mother and child. There was very little in the session to compensate for these negative events. Almost no good or only one good instance of positive experiences in the session.
8. *Moderate* - A mix of positive and negative instances throughout the session. The session may be a moderately negative experience for the child, but overall, neither a success nor a failure experience of the child; *OR* The child seemed to get through the session with success and basically have positive interactions with his/her mother, but there might have been some minor aspects in which the child or mother's contributions may have been deficient in helping the child feel success. For example, the child may have success in the task, but not display a good relationship with their mother, or vice versa.
9. *High* - The child has a very positive experience of doing well on the tasks and having a good relationship with his/her mother. There were very positive interactions between the mother and child, and the child was able to do the tasks with enough help and enough autonomy to experience competence in doing the tasks. Although minor problems in the session might have occurred, the overall effect of the mother and child's interactions was very positive in terms of the child's experience of success and confidence in the relationship. [A child who seems content/happy throughout the session regardless of interactions with their parent (e.g., a child who works independently and does not seem to care if the parent participates), should get coded here.]

16. Child's Level of Engagement in the Task

This scale reflects the degree to which the child is engaged in either the task or participating with the mother on the task during the session. Code for child's actual level of engagement with the task not the mother's efforts to keep the child engaged.

9. *No Engagement* - Child shows little or no interest in engaging in the clean-up task with the mother and this is consistent throughout the session (less than 25% of the time).
10. *Low Engagement* - Child shows some interest in participating in the task but it's not consistent and child is unengaged or resistant for over half of the time (25-49% of the time).

11. *Moderate Engagement* - Child is engaged in the task for more than half but not all of the session. There are clear moments of disengagement demonstrated by the child (50 to 75% of the time).
12. *High Engagement* - Child is almost continuously engaged in the task – there may be moments where attention wanders but they are brief and intermittent (more than 75% of the time.).

17. Child Aggression Tally (code based on amount of incidents observed)

Tally if the child displayed any verbal or physical aggression.

No symbolic aggression (e.g., eye rolls) will be coded.

Verbal aggression includes yelling at parent or verbal threats (e.g., "I hate you").

Physical aggression includes hitting, pinching, or kicking the parent. Physical aggression also includes throwing objects, throwing objects at the parent, breaking or destroying toys/equipment or using an object to hit the parent. Physical aggression also includes attempts at aggression (for example, if the child attempts to hit their parent, but misses).

Please also note what type of aggression was observed by listing exactly what was seen (i.e., child hit parent with Legos).

NOTES (ANY TIME YOU HAVE A HARD TIME CODING, MAKE A NOTE WHY)