AN ABSTRACT OF THE THESIS OF

Megan E. Pritchard for the degree of Master of Science in Human Development and Family Studies presented on June 2, 2010.
Title: Parenting Style and Practice: Predictors of Behavioral Regulation in Preschool.

Abstract approved:

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Increasing numbers of children are entering kindergarten without the behavioral skills needed to cope with the demands of the classroom environment. Moreover, a number of studies have documented that young children’s behavioral regulation (including attention, working memory, and inhibitory control skills) plays an important role in later academic achievement (McClelland, Cameron, Connor, et al., 2007; McClelland, Acock, & Morrison, 2006). Thus, it is important to examine how variables such as parenting predict the development of behavioral regulation in preschool. This study aimed to explore possible parental predictors of behavioral regulation in young children and focused on aspects of parenting style (warmth and responsiveness) and parenting practice (quality of the family learning environment). Using a path analysis, this study examined direct influences of parenting on a child’s fall and spring behavioral regulation, as measured by the Head-To-Toes Task. An indirect pathway of parenting influence was also examined. The results found that the quality of the learning environment predicted children’s behavioral regulation. Furthermore, parental warmth and responsiveness predicted children’s behavioral regulation through the quality of the family learning
environment. By identifying specific direct and indirect pathways of parenting that influence children’s behavioral regulation development, these results provide important empirical evidence that can inform future research and parenting interventions.
Parenting Style and Practice:
Predictors of Behavioral Regulation in Preschool

by
Megan E. Pritchard

A THESIS

submitted to
Oregon State University

In partial fulfillment of
the requirements for the
degree of

Master of Science

Presented June 2, 2010
Commencement June 2011
Master of Science thesis of Megan E. Pritchard presented on June 2, 2010.

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Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

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Megan E. Pritchard, Author
ACKNOWLEDGEMENTS

It is my pleasure to acknowledge those who made the completion of this thesis possible. First, I am grateful to my major professor, Dr. Megan McClelland, who has provided endless support and guidance. Thank you for allowing me to explore new ideas, while keeping me focused on the task at hand. I would not have been able to do it without you. Second, I would like to thank Dr. Alan Acock and Dr. Kate MacTavish for sharing their knowledge and insights on the development of the manuscript. Additionally, I would like to thank my fiancé, Jake, who has provided endless patience and care throughout this process. Finally, thank you to my family and friends for your encouragement and support.
CONTRIBUTION OF AUTHORS

Dr. Megan McClelland was involved with the design, writing, and editing of the manuscript. Dr. Alan Acock assisted with the statistical analyses and interpretation of results. Dr. Katherine MacTavish contributed to the design and editing of the manuscript.
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Parenting Style and Practice: Predictors of Behavioral Regulation in Preschool

Introduction

School Readiness

Many children are transitioning from preschool to kindergarten without the behavioral skills necessary to navigate the demands of the classroom (Rimm-Kaufman, Pianta, & Cox, 2000). As evidence of this, kindergarten teachers report that the social and self-regulatory aspects of school readiness are more important than academics for young children entering kindergarten (Lin, Lawrence, Gorrell, 2003; Rimm-Kaufman, Pianta, & Cox, 2000). Kindergarten teachers’ concerns with children’s self-regulation may be because children who lack the skills required for effective classroom functioning are unable to benefit from the structured classroom settings and the academically focused curricula characteristic of formal schooling (Howse, Lange, Farran, & Boyles, 2003; McClelland, Morrison, & Holmes, 2000). Accumulating research suggests that young children’s self-regulation is critical in helping children succeed in school. As such, by taking a closer look at children’s early socializing contexts, we can shed light on the contextual variables that are important in facilitating self-regulatory development. The present study focused on relations between two aspects of parenting and the behavioral aspects of children’s self-regulation over the prekindergarten year.

Defining Behavioral Regulation

Self-regulation is a multidimensional construct, broadly defined as an individual’s
ability to control behaviors, emotions, and cognitions (Shonkoff & Phillips, 2000). More specifically, the present study focused on behavioral regulation, defined as the application of executive functioning to behaviors, which includes attention, working memory, and inhibitory control (McClelland, Cameron, Wanless, & Murray, 2007). A growing body of literature suggests that behavioral regulation is important for successful classroom functioning and learning (McClelland, Cameron, Connor, et al., 2007; Ponitz et al., 2008; Ponitz, McClelland, Matthews, & Morrison, 2009). The three components of behavioral regulation, including attention, working memory, and inhibitory control, are integral to successful overall self-regulation. The first component, attention, includes the ability to maintain focus and shift attention when necessary (McClelland et al., 2007). In the classroom, attention helps children stay focused when completing a challenging task and allows children to shift focus when it is time for a classroom transition. The second component, working memory, consists of remembering old information while processing new information (Adams, Bourke, & Willis, 1999). For example, working memory is used to remember sequential, multi-step instructions when completing a complicated task. The third component, inhibitory control, refers to the ability to deliberately resist a dominant response for a more adaptive behavior (McClelland et al., 2007). An example of this is quietly raising a hand and waiting to be called on, rather than shouting out a response, during a group activity. Although each component of behavioral regulation is individually
important, children need to integrate all three of these three skills to successfully function in classroom settings. Thus, researchers have focused on behavioral regulation as a single construct rather than three independent aspects of functioning (McClelland et al., 2007). Together, these three components of behavioral regulation have consistently predicted both academic achievement and social outcomes in school settings (Blair, 2002; Ponitz et al., 2008; Shonkoff & Phillips, 2000).

**Behavioral Regulation and Academic Achievement**

A number of studies have found that young children’s ability to regulate their behaviors significantly predicted academic achievement during the transition from preschool to kindergarten, and throughout formal schooling. For example, one study found that gains in behavioral regulation over the prekindergarten year predicted concurrent gains in early reading, vocabulary, and math skills (McClelland et al., 2007). Similarly, children’s learning-related skills (including behavioral regulation and social competence) have significantly predicted gains in reading and math skills between kindergarten and sixth grade, as well as growth in reading and math between kindergarten and second grade (McClelland, Acock, & Morrison, 2006; McClelland et al., 2000). An additional study found that children’s preschool attention predicted high school completion (Vitaro, Brendgen, Larose, & Tremblay, 2005). Finally, a recent study found that children’s attention at age four predicted: reading achievement at age 7; predicted math achievement at ages 7, 12, 16,
and 21; and predicted the odds of college completion by age 25 (McClelland, Piccinin, & Stallings, 2010). Taken together, these studies suggest that early behavioral regulation is important for academic success throughout formal schooling. Furthermore, this research suggests that behavioral the early childhood years are a critical time to develop these regulatory skills.

**Head-To-Toes Task as a Direct Measure of Behavioral Regulation**

Although behavioral regulation has been established as an important predictor of academic success, the measurement of these skills has relied mainly on teacher or parent-report. Although these measures are important sources of information, they can also be subject to observer bias. Recently, researchers have focused on developing direct-observational measures of behavioral regulation for use with young children. For instance, the Head-To-Toes Task is an observational measure developed to assess children’s behavioral regulation during the prekindergarten year (McClelland et al., 2007; Ponitz et al., 2008). This task requires a child to habituate a set of responses to a trained researcher’s verbal instructions. The researcher then asks child to do the opposite of what was asked. The Head-To-Toes Task requires behavioral regulation, as the child must pay attention, remember instructions, and demonstrate inhibitory control. The validity of the task has been established through significant relations with both parent and teacher reports of children’s behavioral regulation (Ponitz et al., 2008). In addition, children’s performance on
the task significantly predicted academic achievement in preschool and kindergarten (McClelland et al., 2007; Ponitz et al., 2008). Overall, the Head-To-Toes Task provides a reliable and ecologically-valid measure of behavioral regulation that mimics the demands of the classroom environment.

**The Preschool Years and the Development of Behavioral Regulation**

The preschool years are considered a critical period of development because of the rapid physical development and unique social experiences typical of the period. Physiologically, during the preschool years, rapid brain maturation occurs in the prefrontal cortex, leading to an increased ability to control and plan actions (Blair, 2002). Socially, preschool provides many children their first exposure to the school environment, characterized by increased opportunities for peer interaction and structured learning. This first exposure to the preschool environment can be said to set the stage for children’s future academic experiences (Jewkes & Morrison, 2007; Shonkoff & Phillips, 2000). Moreover, preschool children are growing increasingly aware of social standards and what behaviors are deemed appropriate for a given context (Ruff & Rothbart, 1996). Because preschool children tend to exhibit great variation in self-regulatory and other school readiness skills, it is important to examine individual differences in these skills. For these reasons, using a direct measure to assess behavioral regulation during the preschool years examines these skills during an important phase of behavior regulation development.
**Socialization Process through Parenting Variables**

Considering the predictive importance of early childhood behavioral regulation on concurrent and later academic achievement, it is important to examine children’s socialization processes, specifically the role of parenting and the family learning environment. Aspects of parenting have some of the strongest contextual influences on children’s development during the early years (Hart & Risley, 1995; Jewkes & Morrison, 2007; Ruff & Rothbart, 1996; Shonkoff & Phillips, 2000). As mental and physical competencies develop through infancy and early childhood, children rely on their close relationships with primary caregivers to learn how to interpret and react to daily experiences; eventually internalizing the demands of their environments and controlling their behaviors on their own (Ruff & Rothbart, 1996; Shonkoff & Phillips, 2000). Although aspects of behavioral regulation are often conceptualized as stemming from a child’s temperament (e.g., Rothbart, Posner, & Kieras, 2006), parenting and the family environment are also important facilitators of child’s behavioral regulation development (Kochanska, Murray, & Harlan, 2000; Morrison & Cooney, 2002; Morrison, Bachman, & Connor, 2005).

The progression from external to internal regulation during early childhood can be attributed to both cognitive maturation and experiences (Shonkoff & Phillips, 2000; Kopp, 1982). Children internalize self-regulatory skills through a sequence of phases (Kopp,
1982). Young children gradually transition from compliance with caregiver’s external regulation to increasing internalization, resulting in independent control of behaviors (Kopp, 1982). Between the ages of two to three, children’s regulation moves from external control to more internally-regulated control. Around the age of three, self-control becomes flexible and applicable to a diverse set of environmental demands (Kopp, 1982). A better understanding of what aspects of parenting facilitates a child’s behavioral regulation development can inform early interventions and programs aimed at promoting children’s self-regulatory development.

Approaching this study from a bioecological framework, considering a child’s development within a nested set of contextual systems, we can examine the influence of parenting behaviors on a child’s development (Bronfenbrenner & Morris, 2006). This framework acknowledges the dynamic relationship between children’s individual characteristics and both proximal and distal contextual influences, such as parenting and family income, that all work together to impact a child’s developmental trajectory (Bronfenbrenner & Morris, 2006). The present study is focused on the proximal influence of parenting which as been theorized to play a substantive role in a child’s shift from external to internal regulation of behavior during the early childhood years (Kopp, 1982).
Specific Parenting Dimensions

The conceptualization of *parenting* in child development research has evolved over time. Currently, researchers acknowledge parenting as a complex construct composed of an array of skills and beliefs that can potentially shape a child's outcomes through both direct and indirect pathways (McClelland, Kessenich, & Morrison, 2003; Morrison & Cooney, 2002; Darling & Steinberg, 1993). Early conceptualizations of parenting focused on broad-scoped parenting typologies characterized by varying degrees of warmth and control (Baumrind, 1971). These broad typologies were followed by researchers determining more specific distinctions amongst indulgent and neglectful types of permissive parenting (Maccoby & Martin, 1983). More recently, research has moved towards distinguishing the influences of distinct aspects of parenting on specific child outcomes, along with greater sensitivity towards cultural variations (Darling & Steinberg, 1993). For example, Darling and Steinberg (1993) identified three distinct aspects of parenting relevant to an array of child outcomes including: parental goals/beliefs, parental practices, and parental styles.

Recently, distinct parenting domains have predicted a variety of specific social and academic outcomes. Some of the strongest contextual correlates with social and academic competence outcomes are daily aspects of parenting, including parental responsiveness and the quality of the home environment (McClelland et al., 2003; Morrison & Cooney, 2002; NICHD Early Childhood Research Network [NICHD], 2003). For example, in a
national longitudinal study, family factors including maternal sensitivity, quality of the home environment, and family income were the most consistent predictors of a range of socio-emotional and cognitive child outcomes through age three (NICHD, 2003). In another study, a child’s early home experiences, as measured by intensive home observations, predicted both academic outcomes and vocabulary growth in elementary school (Hart & Risley, 1995). Considering the predictability of distinct parenting domains on other child outcomes, the present study focused on how a distinct aspect of parenting style (specifically, parental warmth and responsiveness) and parenting practice (specifically, the family learning environment) predicted children’s behavioral regulation in preschool.

**Parental Warmth and Responsiveness and Behavioral Regulation**

Parental warmth and responsiveness is an important aspect of parenting style because it reflects the emotional climate of the parent-child relationship and sets the foundation for a supportive socialization context (Darling & Steinberg, 1993; Morrison & Cooney, 2002). Parental warmth and responsiveness is commonly understood as various level of warmth, sensitivity, and emotional responsivity as measured by positive, affectionate, responsive and nonintrusive behaviors of parents toward their children (McClelland et al., 2003). Consistent parental responsiveness during the preschool years is important for social development because it encourages the internalization of social values (Landry, Smith, Swank, Assel, & Vellet, 2001). Research on parental warmth and
responsiveness has detected positive effects of this aspect of parenting style on both subsequent achievement outcomes (Hart & Risley, 1992; Olson, Bates, & Bayles, 1984; Weizman & Snow, 2001) and broadly defined social outcomes (Landry et al., 2000).

However, less attention has been given to the possible relation between parental warmth and responsiveness and children's behavioral regulation development. Additionally, the studies examining the link between parental warmth and responsiveness and behavioral regulation have shown mixed results. For example, a few studies have found that parental warmth significantly influences aspects of child's behavioral regulation (NICHD, 2003; Dunham & Dunham, 1993). In a recent longitudinal study, optimal maternal responsiveness was consistently related to concurrent and later attention in early childhood (NICHD, 2003). In a separate study, responsive caregiving, defined as a caregiver following an infant's attention during a play session instead of leading it, promoted increased language development (Dunham & Dunham, 1993). Although a few studies support the link between parental warmth and responsiveness and aspects of behavioral regulation, other research has found less consistent evidence of a substantive relationship (Karreman van Tuijl, van Aken, Dekovic, 2006; Lengua, 2009; Bernier, Carlson, Whipple, 2010; Grolnick & Ryan, 1989). For example, in a meta-analysis, Karreman et al. (2006) found that parental warmth and responsivity did not consistently predict self-regulation in preschoolers. In another study, despite evidence of a correlational relationship between
parental involvement (an aspect of parental warmth and responsiveness) and children’s self-regulation, the overall effects on children’s self-regulation were nonsignificant (Grodnick & Ryan, 1989). Taken together, these mixed findings suggest the need to further examine the possibility of a predictable link between parental warmth and responsiveness and behavioral regulation during the prekindergarten year.

**Family Learning Environment and Behavioral Regulation**

In addition to the contribution of parental warmth and responsiveness on child development, multiple studies have found that the quality of the family environment predicts a variety of early children’s outcomes, including academic achievement and behavioral regulation (Bradley & Caldwell, 1984; Dubow & Ippolito, 1994; Morrison & Cooney, 2002; Payne, Whitehurst, & Angell, 1994). The quality of a child’s family learning environment consists of the availability of learning enrichment materials and cognitive stimulation through enriching interactions with family members (Morrison & Cooney, 2002). A large body of research has shown the quality of the family learning environment predicts children’s achievement (Bradley & Caldwell, 1984; Bradley, Caldwell, & Rock, 1988; Dubow & Ippolito, 1994; Morrison & Cooney, 2002; Payne, Whitehurst, & Angell, 1994). For example, research has established that children’s home literacy environments predicted academic skills in kindergarten and early elementary school (Christian, Morrison, & Bryant, 1998; Morrison & Cooney, 2002). Less research has focused on
relations between the quality of the home environment and a child’s behavioral regulation. In one study, the home environment was predictive of both child attention and child impulsivity, which, in turn, partially mediated the relationship between home environment and academic and social school readiness outcomes (NICHD, 2003). In another study of elementary school aged children, maternal ratings of behavioral adjustment (including antisocial behavior, hyperactivity, anxiety, and peer conflict), were uniquely predicted by the quality of the home environment (Dubow & Ippolito, 1994). Although the research in this area is somewhat sparse, these studies suggest the quality of the home learning environment may be an important predictor of a children’s behavioral regulation development.

**Indirect Pathways of Parenting Influence and Behavioral Regulation**

Although research has documented direct relations between aspects of parenting and child outcomes, it is also possible that some aspects of parental influence contribute to children’s development through indirect pathways (Jewkes & Morrison, 2007; Morrison & Cooney, 2002; Davis & Kean, 2006; Linver, Brooks-Gunn, Kohen, 2002; Lengua, 2009). Considering a greater emphasis on the need to understand the *proximal processes*, or the dynamic exchanges between children and their immediate environments, the influence of parents on child outcomes may be complex (Bronfenbrenner & Morris, 2006). Thus, to better understand the possible mechanisms through which parental warmth and
responsiveness may influence children’s regulatory development, it is important to investigate possible indirect pathways. Considering the conceptualization of specific aspects of parenting (Darling & Steinberg, 1993), it is possible that parenting style, focused on the general affective climate of the parent-child relationship, may function through parenting practice to predict a child’s behavioral regulation.

Based on research finding inconsistent direct relations between parental warmth and responsiveness on behavioral regulation, it is possible that warmth and responsiveness may not directly predict behavioral regulation, but instead influence behavioral regulation indirectly through daily parenting practice. In the present study, we predicted that parental warmth and responsiveness would indirectly influence a child’s prekindergarten behavioral regulation through the quality of the family learning environment. Despite limited and mixed research in this area, it was reasonable to expect that parents with warm and responsive styles would provide a higher quality family learning environments for their children, consequently, promoting their children’s behavioral regulation development.

Goals of the Present Study

It is clear that parenting plays an integral role in children’s early development, but less is known about what the most salient aspects of parenting are and what the pathways are that impact specific developmental outcomes, such as behavioral regulation. The
present study focused on how two aspects of parenting: parenting practice (quality of family learning environment) and parenting style (parental warmth and responsiveness) are directly and indirectly related to a child's behavioral regulation over the pre-kindergarten year. Three research questions were proposed.

Research Question #1: Does parental warmth and responsiveness predict fall and spring behavioral regulation, as measured by the Head-To-Toes Task, during the pre-kindergarten year?

Based on research showing that parental warmth may predict aspects of children's behavioral regulation (NICHD, 2003), we expected that parental warmth and responsiveness would significantly predict fall and spring performance on the Head-To-Toes Task in the prekindergarten year, while controlling for important background variables. In other words, we anticipated that higher levels of parental warmth and responsiveness would predict stronger behavioral regulation skills in preschool children.

Research Question #2: Does the quality of the family learning environment predict fall and spring behavioral regulation, as measured by the Head-To-Toes Task, during the pre-kindergarten year?

Second, we hypothesized that the quality of family learning environment would significantly predict fall and spring performance on the Head-To-Toes Task in the prekindergarten year, while controlling for important background variables. In other
words, we expected that higher quality family learning environments would predict stronger behavioral regulation in preschool children. Although few studies have focused on relations between the family learning environment and children’s behavioral regulation, some research suggests that higher quality family environments may predict stronger behavioral regulation in children (e.g., NICHD, 2003).

Research Question #3: Does parental warmth and responsiveness indirectly predict behavioral regulation in the fall and spring, through the quality of the family learning environment?

Third, we hypothesized that parental warmth and responsiveness (i.e., parenting style) would indirectly influence children’s Head-To-Toes Task performance over the pre-kindergarten year through the quality of the family learning environment (i.e., parenting practice). This hypothesis suggests that parents who have a warm and responsive parenting styles are more likely to provide their children with higher quality learning environments (i.e., providing enriching materials, books, and interactions), which would predict stronger behavior regulation over the prekindergarten year. If supported, this pathway would provide evidence of complex pathways of parenting on children’s development (Bronfenbrenner & Morris, 2006).

To answer these three research questions, we also controlled for children’s age, gender, and income level (as indicated by Head Start status). Previous research has
indicated that these background variables are important predictors of children’s behavioral regulation. For example, research has shown that older children have stronger behavioral regulation than younger children and that boys have weaker behavioral regulation than girls (Ponitz, et al., 2008; Matthews, Ponitz, & Morrison, 2009). In addition, accumulating research demonstrates that disadvantaged children have more difficulty with behavioral regulation compared to more advantaged children (Evans & Rosenbaum, 2008; Wanless, McClelland, Tominey, & Acock, 2010). Furthermore, income has also been an important predictor of the quality of the family learning environment (Linver et al., 2002; Davis-Kean, 2005) and significantly related to parental responsiveness (Dubow & Ippolito, 1994).

Methods

Participants

The present study consisted of 93 four-year old children and their families, recruited from five Head Start and NAEYC-accredited preschools in a small city in Oregon. A total of 93 children (48 girls) participated in the fall and 84 children participated in the spring of the preschool year. Thirty-six of the participants were enrolled in Head Start preschools and 57 were enrolled in community center-based preschools.

Parents also participated by completing two questionnaires. The parent response rate was about 86% (N = 80). Even though slightly fewer Head Start parents returned the questionnaires compared to the general sample, a logistic regression suggested Head Start
status did not significantly explain missingness on the parenting variables. In addition, mothers completed the majority of the questionnaires \( n = 57, 71\% \), followed by both parents \( n = 15 \), and fathers \( n = 6 \). No significant differences in child’s gender, head-start status, age, or race, were detected as a function of which parent(s) completed the questionnaire.

Considering the diversity of the sample, the families were 48% Caucasian and 25% Latino/a, including 19 primarily Spanish-Speaking families. The remaining sample was 19% Asian and 8% other ethnic groups. Head Start status was significantly correlated with race, \( r = .26, p < 0.05 \). The majority of the Head Start families were Latino (64%) and the majority of the non-Head Start families were mainly White (66%). The average age of children at time 1 was 55 months, and 62 months at time 2. Additionally, the average parent education level was an associate degree \( M = 14.6 \text{ years}; S.D. = 3.9 \).

**Procedure**

Parents and children were recruited through their preschools at the beginning of the preschool year. In the fall, parents were asked to complete background and parenting questionnaires. During both the fall and spring time points, each child was administered a battery of assessments, including the Head-To-Toes Task. Child assessments took about 10 to 15 minutes to complete and were conducted by a trained research assistant in a quiet area of the preschool classroom or hallway.
Measures

*Parent Demographic Questionnaire.* Parents were asked background questions including items such as child’s age, child’s gender, family ethnicity, and parent education level. Head Start status data was acquired from the participating preschools. Considering the high correlation of parent education and Head Start status, $r = .79$, $p < .05$, only Head Start status was included in the analyses because this variable had less missing data compared to the parent education level variable. Considering the high correlation between the parental education and income variables, the Head Start status variable may be interpreted as a rough indicator of both parent education and a measure of income level.

*Parenting Questionnaire.* In addition to the background questionnaire, parents were asked to complete Morrison and Cooney’s (2002) Parenting Questionnaire. This questionnaire measured four dimensions of parenting, including: parental warmth and responsiveness, parent control and discipline strategies, parent beliefs, and the quality of the family learning environment. The 48-item measure was originally developed to examine the relative impacts of specific parenting domains on early literacy and social skills in early elementary school (Morrison & Cooney, 2002). The focus of this study is on the influence of two subscales reflecting parenting style and practice: parental warmth and responsiveness and the quality of the family learning environment.
The parental warmth and responsiveness scale, addressing an aspect of parenting style, is comprised of seven positively worded statements for the responding parent to mark their level of agreement using a likert-scale ranging from 1 – 5 (strongly agree to strongly disagree). The scale addresses the frequency of intimate moments with child, involvement in child’s activities, and encouragement and acceptance of child’s opinions. This scale has shown reasonable reliability in a previous study ($\alpha = .81$; Morrison & Cooney, 2002) as well as with this sample ($\alpha = .75$).

The quality of the family learning environment, as defined by Morrison and Cooney (2002), consists of the elements in the home environment that foster literacy or numeracy skills, including activities, materials, and child and parental habits that both foster and interfere with learning (i.e., television and computer usage). The measure consists of 16 literacy indicators including items such as: parent’s frequency of library card use, number of magazine and newspaper subscriptions, how often child is read to, and how often the parents read to themselves. Three numeracy items were added to the scale to create a broader learning environment measure, including the frequency of math-related activities and number games played in the home. In previous research, this scale has significantly predicted literacy development and academic achievement (Morrison & Cooney, 2002), and predicted aspects of behavioral regulation in young children (McClelland et al., 2003).
The measure has shown reasonable reliability in previous studies \( (\alpha = .75; \text{Morrison \\& Cooney, 2002}) \) as well as in the current study \( (\alpha = .76) \).

*Direct measure of behavioral regulation.* The Head-To-Toes Task is a direct-observational assessment developed to tap three main aspects of behavioral regulation (attention, inhibitory control, and working memory) through gross-motor movements. In the fall and spring of the prekindergarten year trained research assistants individually administered the five-minute task to each child. The children were asked to play a game where they were told do the opposite of what was instructed. For example, if a child was told to touch their head, the child was supposed to touch their toes. After two trials to check for understanding, the children were given four practice tests and the instructions were repeated up to three times. Then, ten test commands were given in random order, without feedback from the researcher. Test items were scored as: two points for a correct gross-motor response, one point for a self-correct (any discernable motion towards the incorrect response, but correcting, and ending with the correct response), and zero points for an incorrect response. Scores were summed with a total possible score of 20. The task was completed in English unless the child was primarily Spanish speaking, in which case a Spanish speaker administered the task.

Previous research has supported the reliability and validity of the task as a measure of behavioral regulation. In one study, construct validity, reliability, and substantial
variability were established among children tested (Ponitz et al., 2008). Children’s scores on the task also significantly predicted early achievement gains in prekindergarten (McClelland et al., 2007) and kindergarten (Ponitz et al., 2009). Additionally, construct validity was supported, as the teacher ratings of behavioral regulation were positively correlated with scores on the task (McClelland et al., 2007). Overall, the Head-To-Toes Task has been shown to be a valid and reliable measure of a child’s prekindergarten behavioral regulation.

**Results**

The present study examined the direct and indirect influences of parental warmth and responsiveness and the quality of the family learning environment on children’s fall and spring behavioral regulation, as measured by the Head-To-Toes Task.

**Analytic Strategy**

To answer the proposed research questions, first, descriptive statistics and correlations were examined, followed by a path analysis model was analyzed using MPlus. MPlus’s structural equation modeling (SEM) is a large-sample procedure, following a “rule of thumb” of 10:1 ratio of cases to parameters for consistent, reliable results (Kline, 2005). This relatively small sample (N = 93) could threaten the stability of parameter estimates (Schreiber, Stage, King, Nora, & Barlow, 2006). Therefore, a path analysis (instead of a traditional latent-variable model) was conducted to increase the model’s predictive power.
In addition, the control variables were selected for inclusion in the analysis model depending on the statistical relations to the independent and dependent variables (see descriptive statistics section). Control variables showing nonsignificant relationships were assumed to be unrelated to the study variables. Full Information Maximum Likelihood (FIML) was used to deal with the missing data and improve the model’s power to detect meaningful relationships. Auxiliary variables were considered using logistic regressions to examine predictability of missingness on study variables. To increase statistical power and parsimony, nonsignificant paths were trimmed from the final model.

**Descriptive Statistics**

Descriptive statistics and correlations among behavioral regulation, background characteristics, and parenting variables are provided in Table 1. As expected, children’s fall Head-To-Toes scores were most strongly related to spring Head-To-Toes scores, indicating the gains in behavioral regulation the children made over the year, $r = .54$, $p < .001$. The quality of the family learning environment was more strongly and significantly associated with fall and spring behavioral regulation outcomes, $r = .44$, $p < .001$; $r = .38$, $p < .001$, than parental warmth and responsiveness, $r = .11$, $ns$; $r = -.03$, $ns$. Furthermore, parental warmth and responsiveness was significantly correlated with the quality of the family learning environment, $r = .40$, $p < .001$. In other words, higher ratings of parental warmth and responsiveness were associated with higher quality family learning environments. As for
the background characteristics, age was slightly correlated with fall Head-To-Toes scores, \( r = .18, p < .10 \), suggesting younger children were less successful with the task than older pre-kindergarteners in the fall. Head Start status was strongly negatively related to the quality of the family learning environment, \( r = -.56, p < .001 \), and moderately negatively related to fall and spring Head-To-Toes scores, \( r = -.28, p < .10 \). Parents of children enrolled in Head Start tended to report lower quality of the family learning environment compared to their wealthier counterparts, \( r = -.19, p < .10 \). Finally, child's gender was significantly correlated with the quality of the family learning environment, \( r = -.28, p < .05 \), with boys appearing more likely to come from families reporting lower quality family learning environments than girls.

To increase power within a relatively small sample (\( N = 93 \)), selective control variables were considered and included if they had significant associations and significant comparison relationships (as indicated by t-tests) with independent and dependent variables. If we had included all possible control variables, the stability of the parameter estimates would have been greatly threatened. Control variables that were not statistically related to the study variables were assumed to be unrelated, and therefore not included in the final analysis model. T-tests supported existing relations between Head Start status and the quality of the family learning environment, \( t(78) = 5.9, p < .001 \), suggesting low-income families, on average, had a lower quality of learning environment. Head Start status
was also significantly related to fall and spring Head-To-Toes scores, suggesting that, on average, low-income families scored lower on the task, \( t(90) = 1.81, p < .01, t(82) = 3.31, p < .01 \), respectively. Additionally, child’s gender was significantly related to the quality of the family learning environment, \( t(78) = 2.24, p < .05 \), suggesting that, on average, parents of boys reported a lower quality learning environment than girls. Lastly, child age was moderately correlated to fall Head-To-Toes scores, \( r = .08, p < 0.05 \), but not spring Head-To-Toes scores. Because age is a continuous variable, a t-test was not run. None of the proposed control variables (Head Start status, gender, and child age) were significantly associated with parental warmth and responsiveness. Thus, none of the proposed control variables were included as controls for parental warmth and responsiveness variable. All significantly related background variables (as indicated by correlations and t-tests) were included in the path model as control variables on the respective independent and dependent variables.

Because full information likelihood procedures (FIML) were used to deal with missingness, missing data were evaluated to determine if they supported the missing at random (MAR) assumption. Including auxiliary variables in analyses that may explain missingness is one way to account for this assumption in MPlus analyses. Thus, logistic regressions tested the following auxiliary variables: parent education level, Latino status, and single motherhood. None of these variables significantly predicted missingness on the
other variables in the study. These nonsignificant findings suggest that neither parent education, Latino status, nor single motherhood, systematically accounted for the missing data patterns. Thus, although there is no definitive way to test the MAR assumption, it is reasonable to assume that data from this study were MAR.

The negative association of Head Start status with fall and spring behavioral regulation was eliminated when controlling for the other variables in the model \((r = -.18, p < .10; r = -.34, p < .01, \text{respectively})\). In the original model, Head Start status was not significantly related to fall and spring Head-To-Toes scores, after controlling for the quality of the family learning environment, parental warmth and responsiveness, and age, \(\beta = -.01, ns; \beta = -.17, ns, \text{respectively}\). Thus, to increase overall power, the insignificant paths controlling for Head Start status on the Head-To-Toes Task were trimmed from the final model.

**RQ1. Is Parental Warmth and Responsiveness Related to Behavioral Regulation?**

In terms of our first research question, parental warmth and responsiveness did not significantly predict children’s behavioral regulation (fall Head-To-Toes, \(\beta = -.09, ns\); spring Head-To-Toes, \(\beta = -.18, ns\)). Because the pathways from parental warmth and responsiveness to behavioral regulation failed to reach significance, these paths were subsequently trimmed from the final model (see Figure 1 for final model).
RQ2. Is the Quality of the Family Learning Environment Related to Behavioral Regulation?

We did, however, find that the quality of the family learning environment significantly predicted prekindergarten behavioral regulation. Specifically, the quality of the family learning environment, when controlling for Head Start status and gender, significantly predicted fall Head-To-Toes scores, $\beta = .41$, $p < .001$, with a trend to significantly predict spring Head-To-Toes scores, $\beta = .20$, $p = .054$. A relatively stronger effect was detected for the fall Head-To-Toes scores, with a one standard deviation increase in quality of the family learning environment predicting a .41 of a standard deviation increase on the Head-To-Toes Task, or about three points on the 20 point task. In the spring, a one standard deviation increase in the quality of the family learning environment predicted a .20 standard deviation increase in spring Head-To-Toes scores, or about 1.5 points on the 20-point task.

RQ3. Does Parental Warmth and Responsiveness Have an Indirect Effect on Behavioral Regulation Through the Quality of the Family Learning Environment?

We also found that parental warmth and responsiveness indirectly influenced fall and spring behavioral regulation through the quality of the family learning environment (see Table 2 for table of indirect effects). Specifically, the total indirect path from parental warmth and responsiveness to the fall Head-To-Toes Task, through the quality of the family learning environment, was significant, $\beta = .16$, $p < .01$. This path suggests that a one
standard deviation increase in warmth and responsiveness indirectly predicted a .16 of a standard deviation increase, or 1.20 points increase, in the fall Head-To-Toes Task. Furthermore, the total indirect effect leading from parental warmth and responsiveness to quality of the family learning environment to the spring Head-to-Toes scores was also significant, $\beta = .15, p < .01$. Specifically, a one standard deviation change in parental warmth and responsiveness indirectly predicted a .15 standard deviation increase, or a little under one-point increase, on the spring Head-To-Toes Task.

The total indirect effect from parental warmth and responsiveness to spring Head-to-Toes was significant ($\beta = .15, p < .01$). The indirect effect on spring behavioral regulation followed two pathways (see Table 2). First, there was a significant indirect effect from parental warmth and responsiveness, through the quality of the family learning environment, and then through fall Head-to-Toes, to predict spring Head-To-Toes scores, $\beta = .07, p < .01$. This pathway suggests a compounding effect of the fall Head-To-Toes scores on the spring scores. Second, there was a trend for a significant indirect effect from parental warmth and responsiveness through the quality of the family learning environment to spring Head-To-Toes scores, $\beta = .08, p < .10$. Overall, the total indirect effect path from parental warmth and responsiveness to fall behavioral regulation appeared stronger than the total indirect effect (following the two paths of influence) to spring behavioral regulation.
In addition to the three research questions, the family learning environment appeared to play a meditational role between Head Start status and behavioral regulation. Results of the final model indicated that the quality of the family learning environment mediated the influence of Head Start status on behavioral regulation. In other words, Head Start status, despite a significant association with Head-To-Toes scores, showed no direct effect on behavior regulation after controlling for the other variables in the model (including parental warmth and responsiveness and the quality of the family learning environment; $\beta = -.01, ns; \beta = -.17, ns$, respectively). However, Head Start status did negatively predicted the quality of the learning environment, $\beta = -.50, p < .001$, which then predicted both fall and spring behavioral regulation, $\beta = .41, p < .001; \beta = .20, p = .05$, respectively. This suggests that Head Start status, or being low-income, influenced prekindergarten behavioral regulation, through the quality of the family learning environment.

**Discussion**

The purpose of this study was to examine the direct and indirect influences of parenting style (parental warmth and responsiveness) and practice (quality of the family learning environment) on children’s behavior regulation development over the prekindergarten year. The most robust finding was that the quality of the family learning environment directly predicted behavioral regulation in the fall and spring of
prekindergarten. Moreover, although parental warmth and responsiveness did not directly predict behavioral regulation, it did slightly predict prekindergarten behavioral regulation indirectly through the quality of the family learning environment. Finally, the quality of the family learning environment appeared to mediate the influence between Head Start status and behavioral regulation.

**Direct Influence of Parental Warmth and Responsiveness**

Contrary to our expectations, parental warmth and responsiveness did not directly predict behavioral regulation in the fall or spring of preschool. Our hypothesis, predicting a connection between parental warmth and responsiveness and behavioral regulation, was based on research findings of significant relations between parental warmth and children’s early attention (an aspect of behavioral regulation; NICHD, 2003; Dunham & Dunham, 1993), but not all research has found this. For example, in a meta-analysis examining a range of parenting predictors of self-regulation development, Karreman et al. (2006) found more consistent support for positive parental control predicting self-regulation compared to measures of parental responsiveness. In other studies of parenting style, *autonomy support*, defined as the degree to which parents support independent problem solving, choice, and participation in decision-making, has more robustly predicted early self-regulation development when compared to other aspects of parenting (such as parent sensitivity; Grolnick & Ryan, 1989; Bernier et al., 2010). In addition, Lengua (2009) found
that parental warmth was related to early social competence, but was not significantly related to aspects of behavioral regulation (measured as effortful control). This suggests that although parental warmth and responsiveness may influence children’s social development, it may be less influential for behavioral regulation, specifically.

Measurement issues may also explain the nonsignificant relationship between parental warmth and responsiveness and behavioral regulation. Karreman et al. (2006) identified common issues attributed to nonsignificant findings in early childhood self-regulation studies including: inconsistencies of operational definitions and measurement tools, and the lack of variation in measurement of parental responsiveness. For example, conceptually, the parental warmth and responsiveness variable addresses broad patterns of parent-child interactions (e.g., I encourage my child to talk to me about his/her feelings). Considering the variable’s broad focus, this aspect of parenting may be more difficult to accurately measure than the more specific behaviors of parenting practice (e.g., number of hours spent reading to child over last week). In addition, the effects of social desirability, common in survey questionnaires, may have hindered the variability of responses to the parent questionnaire. Other forms of measurement, such as direct observations, may provide a less biased estimate of parental warmth and responsiveness than survey measures. For example, an observational study of maternal warmth and responsiveness significantly predicted general preschool social outcomes, including children’s compliance
or negotiation in response to maternal requests (Landry et al., 2001). This parent-
observation study suggests that observational measures of parenting may be more
sensitive than parent self-report when predicting child outcomes. Future research should
more closely examine how parenting constructs are operationalized in studies and
consider including observational parenting measures when examining possible paths of
parenting style influence on children’s developmental outcomes.

Finally, the small positive bivariate association (see correlation table) between
warmth and responsiveness and behavioral regulation disappeared when controlling for
quality of the family learning environment and age. A shift in relationship suggests that the
positive association between parental warmth and responsiveness and behavioral
regulation was explained by the other variables in the model. However, the ability to
generalize from this finding is limited because both the correlations and paths within the
analysis model failed to reach statistical significance.

**Direct influence of the quality of the family learning environment**

The strongest findings from this study were that the quality of the family learning
environment, including both learning materials and parent-child interactions, contributed
to fall and spring behavioral regulation. This direct effect adds to the limited literature
linking parenting practice to aspects of behavioral regulation development (e.g., NICHD,
2003; Bradley et al., 1988). For example, in one study, the observations of the home
environment significantly predicted a child’s on-task orientation (an aspect of behavioral regulation) in school at ages 2 and 10 (Bradley et al., 1988). Additionally, the current study replicates findings from the NICHD study (2003), which found that four-year-old children’s attention was predicted by the quality of the home learning environment. The study also found that child’s attention then mediated the relationship between the learning environment and early achievement and language outcomes (NICHD, 2003). Our study’s findings reinforce an aspect of this study, suggesting that parents who provide learning materials and experiences in their home have children who are better able to maintain attention, control impulses, and use working-memory in the classroom environment.

Future work should continue to examine the influence what specific aspects of the family learning environment foster greater attention and behavioral regulation in preschool.

We speculate that the shared learning experiences between parents and children may play a key role in the link between the family learning environment and prekindergarten behavioral regulation. Shared learning experiences in the home (e.g., book reading) may provide children greater opportunity to practice their behavioral regulation skills. For example, when a mother shares a storybook with her son, the child must practice behavioral regulation skills. He must pay attention to the words and pictures, inhibit impulses in order to listen, and use working memory to follow the story line. We suspect
that these shared learning experiences are key aspects of the learning environment that predict children’s behavioral regulation skills.

**The indirect influence of parenting style on behavioral regulation**

The results of this study also suggested a small indirect pathway from parental warmth and responsiveness to behavioral regulation, through the quality of the family learning environment. This finding suggests that parents who have a warm and responsive style may provide their children a higher quality family learning environment, which then facilitates stronger behavioral regulation in preschool. In recent work, the connections between parenting style (e.g., parental warmth and responsiveness) and parenting practice (e.g., the quality of the family learning environment) have been theorized as important concepts in understanding the dynamic process of parenting on children’s outcomes (Darling & Steinberg, 1993). Darling and Steinberg (1993) suggested that parenting style plays a foundational role in how parents influence children. As such, the influence of parenting style on child outcomes may be best explained through complex and dynamic relations with parenting practice.

This indirect pathway also adds to previous work that has examined indirect parenting influences on children’s social outcomes. Previous studies have found parenting practice played partial mediator role between parenting beliefs and children’s academic and social outcomes (Morrison & Cooney, 2002; Davis-Kean, 2005). In a recent study, an
aspect of parenting style, autonomy support, was speculated to predict executive functioning, although the link was not directly tested (Berner et al., 2010). Specifically, Berner et al. suggested that two aspects of parenting style: sensitivity and mind-mindedness (or the tendency to use mental terms when talking to a child) may indirectly influence a child’s behavioral regulation through autonomy support. In other words, a mother who is skilled at interpreting and reacting to her child’s signals, while being is aware of her child’s mental processes, is well equipped to provide the child with an autonomy-supportive environment, including scaffolding behaviors, which are important for behavioral regulation development. The current study contributes to the indirect parenting influence theorizing by suggesting an additional indirect parenting pathway, this one from parenting style to self-regulation, through parenting practice (i.e., the quality of the family learning environment).

In addition to study’s three research questions, the quality of the learning environment appeared to fully mediate the relationship between Head Start status (i.e., low-income) and prekindergarten behavioral regulation. The lack of a direct influence of Head Start status on behavioral regulation, once the indirect pathway from Head Start status through the quality of the family learning environment was entered into the model, suggests that effects of being low-income may influence behavioral regulation through the quality of the family learning environment. In other words, low-income children appear to
be more likely to have lower-quality family learning environments, which then leads to poorer behavioral regulation. This finding supports other research supporting a negative indirect influence of low family income on children’s self-regulation, through the quality of the home environment (Evans & Rosenbaum, 2008). Future research should examine the roles between more distal demographic factors (e.g., income) and children’s behavioral regulation development in a larger sample of children.

**Practical Implications**

The findings from this study address the influential role of parenting on children’s behavioral regulation development. The possibility that different aspects of parenting may directly and indirectly facilitate behavioral regulation provides empirical support for programs and interventions aimed toward promoting child behavioral regulation skills. Early intervention research has established parent-mediated interventions as a promising avenue for addressing childhood behavior problems that may stem from behavioral regulation difficulties (Webster-Stratton & Reed, 2006). Our findings suggest that programs aimed at supporting a high-quality family learning environment may be beneficial in facilitating prekindergarten behavioral regulation. In other words, by increasing the learning materials and time dedicated to parent-child interactions, parents can assist children’s behavioral regulation development during preschool.
Additionally, the strong effect of income (as indicated by Head Start status) on the quality of the family learning environment is an important area to examine in future research and consider in early-interventions. The finding that the influence of Head Start status on behavioral regulation was fully explained through the quality the learning environment, suggests the learning environment is an explanatory mechanism for the association between low-income status and low behavioral regulation. When designing programming targeted to low-income families, it is important to consider the unique challenges low-income families face in terms of the increased stress and lack of resources to invest in their children (Dearing, Berry, & Zaslow, 2006). Parents may be able to change their knowledge and beliefs about parenting, but not have the physical and psychological resources to support the behaviors associated with the shift in beliefs. Thus, future research should take a closer look at how programming can address the link between income and behavioral regulation outcomes by supporting quality of the family learning environment in a way that is sensitive and responsive to the complex environments that are common in low-income families.

**Limitations**

Although this study examined the some of the complexities among aspects of parenting and children’s behavioral regulation, it is by no means an exhaustive model of parent and child variables that may predict children's behavioral regulation development.
Considering the study’s small sample size, parameters were carefully chosen in order to increase the power of the model. Despite limited statistical power, significant relations were detected, supporting an indirect influence of parental warmth and responsiveness, and a direct influence of the quality of the family learning environment, on prekindergarten behavioral regulation. Future work should take a closer look at other aspect of parenting, such as autonomy support, that may play a central role in facilitating behavioral regulation development. Replication of these parenting relationships with a larger sample would also reinforce these findings.

In addition, all parenting information was based on parent report, which offers a valuable parent perspective, but is also subject to response bias. In spite of a possible lack of sensitivity of the scales due to parents desire to answer the questionnaire positively, the effects of aspects of parenting on children’s behavioral regulation were substantive. Future research should consider using multiple sources of measurement, including both direct observation and parent self-report, to more precisely assess aspects of parenting that may be subject to social desirability, such as parenting style.

Additionally, considering the income and ethnic diversity of the sample, it is possible that parent-child interaction styles and relationships differ depending on the socialization goals and parenting styles of different cultures. For example, one study found parental warmth predicted child achievement in the African American subsample, but not
for the Anglo-American subsample (Davis-Kean, 2005). Families from different cultural
groups may experience different pathways of parent-child influence, stemming from
differing values and child expectations. Even with this study's diverse sample, predictable
links were found, offering general support for these aspects of parenting for a wide range
of parents. As U.S. schools continue to see increasing diversity, it is crucial to better
understand the variations of parental influence depending on different cultural groups.
Future research should consider the possibility of differing models of parental influence
depending on family cultures.

Conclusion

This study explored possible parenting predictors of behavioral regulation in young
children. These findings build upon current parenting research by focusing on the effects of
two distinct aspects of parenting including: parenting style (warmth and responsiveness)
and parenting practice (quality of the family learning environment). In addition, by
considering an indirect pathway of parenting influence, this study addresses a part of the
proximal process, or the complex relationship between children and their environments
(Bronfenbrenner & Morris, 2006). Results most strongly demonstrated that the family
learning environment significantly influenced children’s behavioral regulation in the fall
and spring of prekindergarten. In addition, parental warmth and responsiveness was
slightly indirectly related to children’s behavioral regulation, through the influence of the
quality of the family learning environment. This study provides important empirical support to the relevance of parenting as an important facilitator of behavioral regulation development. Despite limitations, this study provides an important look into how a child’s proximal contextual factors, specifically parenting style and practice, predict behavioral regulation during the prekindergarten year. Overall, this study supports existing evidence of the importance of the quality and quantity of parent-child interactions on children’s self-regulation outcomes (Dunham & Dunham, 1993; Ruff & Rothbart, 1996; NICHD, 2003).
References


### Appendix

Table 1

*Parent Warmth and Responsiveness, Quality of the Family Learning Environment, Fall and Spring Behavior Regulation, and Control Variables: Correlations and Descriptive Statistics (N = 93).*

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>1. Fall Behavioral Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.54***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Spring Behavioral Regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.11</td>
<td>-.03</td>
<td></td>
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<td>3. Parental Warmth and Responsiveness</td>
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<td></td>
<td></td>
<td></td>
<td>.18†</td>
<td>.03</td>
<td>.06</td>
</tr>
<tr>
<td>4. Quality of Family Learning Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.18†</td>
<td>-.34**</td>
<td>-.05</td>
</tr>
<tr>
<td>5. Child Age (in months)</td>
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<td></td>
<td></td>
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<td>.01</td>
<td>.01</td>
<td>.16</td>
</tr>
<tr>
<td>6. Family Income (1 = Head Start)</td>
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<td></td>
<td></td>
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<td>7. Sex (Male = 1)</td>
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<td></td>
<td></td>
<td></td>
<td>-.03*</td>
<td>.01</td>
<td>.16</td>
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<tr>
<td>M</td>
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<td>4.23</td>
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<td>.48</td>
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<tr>
<td>SD</td>
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<td>6.83</td>
<td>.53</td>
<td>.42</td>
<td>3.33</td>
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<td>.50</td>
</tr>
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<td>Range</td>
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<td>0 - 20</td>
<td>2.42 -</td>
<td>1.46 -</td>
<td>49 -</td>
<td>0 - 1</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

*Notes.* Behavioral Regulation = Sum of Head-To-Toes Task.

†p < .10. *p < .05. **p < .01. ***p < .001.
Table 2

*Final Model Indirect Effects: Standardized Coefficients of Direct Paths, Indirect Paths and Total Effects* (N=93).

<table>
<thead>
<tr>
<th>Paths</th>
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<th>Indirect</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>PWR → Fall Behavior Regulation</td>
<td>ns</td>
<td></td>
<td>.155**</td>
</tr>
<tr>
<td>PWR → QFLE → Fall Behavioral Regulation</td>
<td></td>
<td>.155**</td>
<td></td>
</tr>
<tr>
<td>PWR → Spring Behavioral Regulation</td>
<td>ns</td>
<td></td>
<td>.146**</td>
</tr>
<tr>
<td>PWR → QFLE → Fall Behavioral Regulation</td>
<td></td>
<td>.071**</td>
<td></td>
</tr>
<tr>
<td>PWR → QFLE → Spring Behavioral Regulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWR → QFLE → Spring Behavioral Regulation</td>
<td></td>
<td>.075†</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Behavioral Regulation = Sum of Head-To-Toes Task. PWR = Parental warmth and responsiveness. QFLE = Quality of the Family Learning Environment. *ns* = nonsignificant. †*p < .10. *p < .05. **p < .01. ***p < .001.
Final Path Model

Fit stats:
χ²(8) = 7.87, p = .446
CFI = 1.00, TLI = 1.00
RMSEA = 0.00(0.0 – 0.12)
SRMR = 0.05

Notes. Dashed lines indicate paths trimmed from final model because of nonsignificant effects.
*p < .05. **p < .01. ***p < .001