

The Relations of Mothers' Conscientiousness to Children's Academics: Mediation  
through Parenting and Components of Children's Internalization

by

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## ABSTRACT

Guided by Belsky's *Determinants of Parenting Process Model*, the goal of the present study was to examine how mothers' personality (i.e., Conscientiousness) and behaviors (i.e., sensitivity, structure, and negative control) relate to children's developmental outcomes, such as internalization (i.e., committed compliance and effortful control) and academic adaptation. A multi-method, longitudinal model included five waves of data to examine the processes of the relations among variables. Mothers' Conscientiousness was measured via self-reported data when children were 18 months of age ( $N = 256$ ), mothers' parenting behaviors were measured through observational laboratory tasks when children were 30 months ( $N = 230$ ), children's internalization was measured using mothers' and caregivers' reports as well as observational data at 42 months ( $N = 210$ ), and children's school adaptation was measured when children were 72 and 84 months ( $Ns = 169$  and  $144$ ) using mothers' and teachers' reports. Through a series of regression analyses, the results supported the mediated effect of effortful control in the relation between mothers' behaviors and children's school adaptation. As hypothesized, mothers' Conscientiousness marginally predicted children's internalization. Contrary to hypotheses, mothers' Conscientiousness was unrelated to parenting behaviors and children's academic adaptation. Mothers' sensitivity interacted with maternal structure to predict children's effortful control. Socioeconomic status and child sex interacted with mothers' behaviors in predicting the child's committed compliance. The discussion focuses on the unique role of parenting practices and personality on children's internalization and academic adaptation and on the existing literature. Implications of the study for clinicians and intervention researchers are offered.

I would like to dedicate this document to my mother for her endless support and encouragement to always follow my dreams and goals. I am also thankful to God for His guidance throughout this journey.

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## **Introduction**

The importance of children's academic achievement has been greatly studied. It is well documented that superior academic performance is associated with positive developmental outcomes (Barnett, 1998; Duncan et al., 2007; Kerckhoff & Bell, 1998), including better interpersonal skills (Welsh, Parke, Widaman, & O'Neil, 2001) and higher self-esteem (Ross & Broh, 2000). The long-term benefits associated with early school success have been examined. Longitudinal work (e.g., Bradshaw, Zmuda, Kellam, & Ialongo, 2009; Ensminger & Slusarcick, 1992; Garnier, Stein, & Jacobs, 1997; Jimerson, Egeland, Stroufe, & Carlson, 2000) has shown that children's early academic achievement in elementary school is positively related to their high school graduation, which in turn is linked to higher educational attainment (Kerckhoff & Bell, 1998), and lower unemployment rates and higher wages in early adulthood (Kerckhoff & Bell, 1998; Peng, 1985). Conversely, inferior academic performance has been linked to a host of negative outcomes, such as poor peer relationships (Welsh et al., 2001), high school drop-out (Cairns, Cairns, & Neckerman, 1989; Ensminger & Slusarcick, 1992; Slavin, Karweit, & Waseik, 1993), behavioral problems, later drug and alcohol abuse (Nafpaktitis & Perlmutter, 1998), and lower wages and higher unemployment rates (Kerckhoff & Bell, 1998; Peng, 1985). Recent data indicate that nearly 20% of children (1 out of 5 children) between the ages of 6 and 11 fail to meet current academic standards (U.S. Census Bureau, 2009). Given the number of children who are at risk for poor academic outcomes, early academic performance is a critical issue and continues to warrant attention.

Scholars from various backgrounds have diligently worked on identifying risk factors that may be related to children's early academic competence. For example, Valiente and his colleagues (e.g., Eisenberg, Valiente, & Eggum, 2010; Valiente et al., 2011; Valiente, Swanson, & Eisenberg, 2012) have focused on understanding the role of internal factors, such as children's emotions and emotion regulation in their academic functioning. Other scholars have placed emphasis on studying external factors, including parental involvement (Fan & Chen, 2005; Grolnick & Slowiaczek, 1994), parenting style (Roopnarine, Krishnakumar, Metindogan, & Evans, 2006), home environment (Swanson, Valiente, & Lemery-Chalfant, 2012; Valiente, Lemery-Chalfant, & Reiser, 2007b), and the quality of peer (Kingery, Erdley, & Marshall, 2011; Swanson et al., 2012; Valiente, Lemery-Chalfant, Swanson, & Reiser, 2008; Welsh et al., 2001) and teacher-child relationships (Birch & Ladd, 1997; Hamre & Pianta, 2001; Mashburn et al., 2008; Silva et al., 2011; Swanson et al., 2012; Valiente, Lemery-Chalfant, & Castro, 2007a; Valiente et al., 2008), just to name a few. Importantly, each line of work has added to the literature on predicting children's early academic performance and adaptation.

In view of these important predictors of children's early academic adaptation, the goal of this study is to examine the role of both external and internal factors in relation to children's academics. Particularly, the goal is to understand the processes that may underlie the relation between common maternal behaviors that may be predicted by their personality and children's internal factors (i.e., internalization), such as emotion regulation and compliance, which in turn are hypothesized to predict children's academic adaptation. In light of the proposed hypotheses, the aim of the next several sections is to

describe the hypothetical mediation model (see Figure 1) and discuss previous research that guided these predictions.

### **Personality Development and Parenting**

As a key variable in this study, mothers' personality includes a variety of traits that encompass individuals' goals, motives, coping styles, and various other processes that define behavioral differences among people (Costa & McCrae, 1992; McAdams, 1995). Personality is typically measured through the Big Five factor model that represents five global domains: Extraversion, Conscientiousness, Agreeableness, Openness to Experience, and Neuroticism (Costa & McCrae, 1992). Extraversion refers to cheerful, energetic, and gregarious behaviors. Conscientiousness describes individuals who are self-controlled, responsible, punctual, and orderly. The Agreeableness domain identifies people who are often empathetic, altruistic, helpful, and exhibit genuine concern for others. Traits such as knowledge, curiosity, and originality define the Openness to Experience domain. Finally, Neuroticism is characterized by tendencies to feel sad, fearful, avoidant, socially inhibited, and anxious (Caspi & Shiner, 2006; Costa & McCrae, 1992). Importantly, personality is not characterized by a single domain, but rather consists of scores on each of these five dimensions.

Based on these specific personality traits, mothers' personality is thought to meaningfully predict their parental behaviors (Belsky, Crnic, & Woodworth, 1995; Huver, Otten, de Vries, & Engels, 2010; Kochanska, Friesenborg, Lange, & Martel, 2004b; Prinzie, Stams, Dekovic, Reijntjes, & Belsky, 2009). Indeed, in his *Determinants of Parenting Process Model*, Belsky (1984; Belsky & Jaffee, 2006) identified a parent's personality as an important component of parenting. Importantly, mothers who exhibit

these supportive and sensitive behaviors are likely to be characterized by low Neuroticism and high Agreeableness and Extroversion, and they may be high in Openness to Experience and Conscientiousness (Belsky & Jaffee, 2006).

Many researchers have made more specific predictions about the ways that mothers' personality may contribute to their parenting behaviors (Belsky et al., 1995; Bornstein, Hahn, & Haynes, 2011; Clark, Kochanska, & Ready, 2000; Kochanska, Clark, & Goldman, 1997a; Losoya, Callor, Rowe, & Goldsmith, 1997; Prinzie et al., 2009; Smith, 2010; Smith, Spinrad, Eisenberg, Gaertner, Popp, & Maxon, 2007). For example, it has been hypothesized that mothers who score high on Neuroticism are themselves anxious, may lack emotional stability, and may become easily distressed and tense (Belsky et al., 1995; Clark et al., 2000; Prinzie et al., 2009). Based on these characteristics, it would make intuitive sense to presume that mothers who score high on Neuroticism may be prone to insufficiently respond to children's needs (Belsky et al., 1995; Prinzie et al., 2009) and also misinterpret children's behavior by adding negative attributes to children's intentions (Prinzie et al., 2009). Further, mothers who view their children more negatively may emotionally distance themselves and provide little structure and guidance (Prinzie et al., 2009). Consistent with this notion, mothers high on Neuroticism have been found to exhibit lower levels of warmth and sensitivity (Bornstein et al., 2011; Kendler, Sham, & MacLean, 1997; Metsapelto & Pulkkinen, 2003; Smith, 2010), lower parental care (Reti, Samuels, Eaton, Bienvenu, Costa, & Nestadt, 2002) and stimulation (Belsky et al., 1995), higher use of power assertion (Bornstein et al., 2011; Clark et al., 2000; Kochanska, Aksan, & Nichols, 2003), and higher levels of intrusiveness and insensitive interactions (Belsky et al., 1995; Bornstein et al., 2011;

Smith, 2010). In a meta-analysis of 30 studies, Prinzie et al. (2009) examined the relation of personality to three domains of parenting behaviors: warmth, autonomy support (i.e., encouragement of independent thinking, cognitive stimulation, formulation of goals, problem solving), and behavioral control (i.e., gentle control, guidance, structure, sensitivity). High levels of parental Neuroticism were found to be negatively related to mothers' warmth, autonomy support and behavioral control. In light of these findings, it appears that mothers who score high on Neuroticism are prone to negatively view unexpected events or challenging situations and may convey negative affect (e.g., disgust, fear, anger, contempt) during parent-child interaction (Belsky et al., 1995).

Extroversion has been hypothesized to be related to stimulating parenting behaviors that reflect high levels of positive energy, engagement, assertive discipline (e.g., setting curfews), and sociability (Prinzie et al., 2009). In support of this hypothesis, Losoya and colleagues (1997) revealed that mothers who scored high on Extroversion were relatively affectionate when interacting with their children, easy going, high-spirited, and encouraging of their children's independence. Furthermore, Extroversion has been positively related to mothers' nurturance (Metsapelto & Pulkkinen, 2003), warmth (de Haan, Prinzie, & Dekovic, 2009; Kendler et al., 1997; Kochanska, Aksan, Penney, & Boldt, 2007; Losoya et al., 1997) and stimulating parenting (Belsky et al., 1995). Mothers who score high on Extroversion tend to be sensitive to their children's needs, emotionally engaged, and responsive (Belsky & Barends, 2002; Belsky et al., 1995; Bornstein et al., 2011; Mangelsdorf, Gunnar, Kestenbaum, Lang, & Andreas, 1990). Whereas the aforementioned findings reveal a positive relation between Extroversion and supportive parenting, some scholars have noted that mothers'

Extroversion is positively related to negative parental control (i.e., strict control over child's behavior; Clark et al., 2000; Kochanska et al., 1997a; Smith, 2010). It is possible that the dominant persona of mothers who scored high on Extroversion have contributed to assertive parenting behaviors (Clark et al., 2000). It is important to note that in one of these studies, the measure of control included parent-centered intrusive play and did not necessarily reflect negative emotionality and harsh control (Smith, 2010). As such, the relation between mothers' Extroversion and negative control remains unclear.

Nonetheless, in their meta-analysis review, Prinzie and colleagues (2009) reported that mothers' Extroversion was positively related to their warmth and behavioral control but unrelated to autonomy support. Together, these findings may allude that mothers who are defined by high levels of Extroversion are likely to establish warm, supportive interactions while maintaining boundaries in their childrearing practices.

The Openness to Experience trait has been thought to be related to engaging and stimulating parenting, which involves exploration of new interests and experiences (Prinzie et al., 2009). Openness to Experience has been related to mothers' nurturance and sensitivity (de Haan et al., 2009; Karreman, van Tuijl, van Aken, & Decovic, 2008; Kochanska, et al., 2007; Losoya et al., 1997; Metsapelto & Pulkkinen, 2003; Smith, 2010; Smith et al., 2007) especially during conflict or stress (Metsapelto & Pulkkinen, 2003). Mothers scoring high on this domain are likely to use positive control, which reflects guiding and instructional behaviors when disciplining their children (Karreman et al., 2008). These mothers appear to be relatively creative in finding ways to manage children's negative behavior (Karreman et al., 2008). Furthermore, Openness to Experience has been positively related to mothers' general knowledge about children's

development (i.e., understanding children's physical, cognitive, biological, and socioemotional needs at different developmental stages and parents' ability to fulfill those needs; Bornstein, 2006; Bornstein et al., 2007, 2011) and mothers' engagement in symbolic play with their children (Bornstein et al., 2011). In the meta-analysis review, Openness to Experience was positively related to maternal warmth, autonomy support, and behavioral control (Prinzle et al., 2009).

Furthermore, Prinzle and colleagues (2009) hypothesized that the Agreeableness trait may be related to high levels of nurturance, responsiveness, warmth, and respect for the children's autonomy. Similarly, Bornstein and colleagues (2011) hypothesized that mothers high on Agreeableness would be more satisfied in their role as parents and be more sensitive and affectionate with their children than would mothers who are low on Agreeableness. In support of this prediction, evidence has shown that mothers who rated high on the domain of Agreeableness responded adequately to their children's needs and signals (Clark et al., 2000; Kochanska et al., 1997a). Furthermore, mothers high on Agreeableness were less prone to exert anger, frustration, irritation, distress and are less likely to use harsh discipline (Prinzle et al., 2009). Based on these findings, it can be concluded that parental Agreeableness is likely to promote positive parenting that is characterized by warmth and responsiveness (Clark et al., 2000; de Haan et al., 2009; Kochanska et al., 1997a, 2004b; Metsapelto & Pulkkinen, 2003; Smith et al., 2007), sensitivity, cognitive stimulation, and positive affect (e.g., feelings of enthusiasm, happiness; Belsky et al., 1995). In the meta-analysis, Agreeableness was positively related to maternal warmth, autonomy support, and behavioral control (Prinzle et al., 2009).



Last, mothers' Conscientiousness has been hypothesized to be associated with consistent parenting, which imposes high standards and strong sense of purpose, and provides a more structured child-rearing environment, such as goal setting and helping children with the development of organization skills (Prinzle et al., 2009). Additionally, Bornstein and colleagues (2011) hypothesized that mothers who score high on Conscientiousness would be relatively engaged with their children, show greater sensitivity, and think of themselves as competent in their parenting practices. Consistent with these hypotheses, empirical evidence indicates that parental Conscientiousness is positively related to restrictive parenting (i.e., setting limits, expecting children to act mature and comply with rules; Metsapelto & Pulkkinen, 2003; Olsen, Martin, & Halverson, 1999), high parental warmth and support (Clark et al., 2000; Losoya et al., 1997), high parental knowledge (Bornstein et al., 2011), high maternal sensitivity (Bornstein et al., 2011; Smith, 2010; Smith et al., 2007), high consistency in parental monitoring (Kochanska et al., 2004b; Metsapelto & Pulkkinen, 2003), low levels of power assertion (Clark et al., 2000; Kochanska et al., 2003) or intrusiveness (Smith, 2010; Smith et al., 2007) and negative control (Losoya et al., 1997). Among other personality dimensions, Conscientiousness was the strongest predictor of maternal responsiveness (Clark et al., 2000). In the meta-analysis, Prinzle and colleagues (2009) concluded that parental Conscientiousness was associated with high maternal warmth and behavioral control, and was unrelated to support for autonomy. Because parental Conscientiousness is thought to be related to strong purpose of accomplishments (Prinzle et al., 2009), this dimension of personality will be the focus of current investigation rather than studying all dimensions of personality.

Self-reported Conscientiousness has been positively related to adolescents' academic achievement (Chamorro-Premuzic & Furnham, 2003) and adults' job performance (Bakker, Demerouti, & ten Brummelhuis, 2012; Barrick, Mount, & Judge, 2001; Mount, Barrick, & Stewart, 1998; Nettle, 2007). The ability to follow instructions and achieve goals makes individuals high on Conscientiousness good candidates for personal success (Barrick et al., 2001). With respect to parental behaviors, mothers defined by high Conscientiousness are likely to provide children with well-structured and consistent environment (Prinz et al., 2009) that is thought to be conducive to children's academic performance. Therefore, it is reasonable to speculate that children's academic performance may be predicted by parental Conscientiousness. Evidence in support for this relation can be better understood by examining the lower-order traits (or facets) which compose the underlying structure of Conscientiousness.

In the review of personality development, Caspi and Shiner (2006) included the following lower-order traits of Conscientiousness: *attention* (i.e., the capacity to focus and regulate attention as well as the ability to persist when feeling distracted); *self-control* (i.e., carefully planned, thoughtful, and well controlled behaviors; Peabody & De Raad, 2002); *achievement motivation* (also referred to as work or industriousness) which captures the ability to work hard, be productive, and persistently pursue initially set goals (Peabody & De Raad, 2002); *orderliness/organization* (i.e., propensity to be clean, efficient, organized; Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004; Roberts, Chernyshenko, Stark, & Goldberg, 2005); and *responsibility* which captures reliable, dependable, scrupulous, and dutiful aspects of behaviors (Peabody & De Raad, 2002). Persistent, efficient, and achievement-oriented individuals are likely at an advantage for

superior job performance (Bakker et al., 2012; Barrick et al., 2001; Mount et al., 1998; Nettle, 2007) and career success (Barrick et al., 2001; Judge, Higgins, Thoreson, & Barrick, 1999). Importantly, their commitment to exceptional performance may also be reflected in their parenting behaviors. As such, it is hypothesized that mothers who score high on Conscientiousness would help their children develop strong values with respect to work ethic and educational attainment.

Because children's internalization is an important mediating variable in this study, it is important to briefly discuss the lower-order traits of parental Conscientiousness that may play a pivotal role in promoting children's compliance and self-regulation. Eisenberg, Duckworth, Spinrad, and Valiente (2012) theorized that *responsivity* may be an important component of one's internalization. Highly responsible parents may place emphasis on teaching their children to act in accordance with appropriate standards of behaviors whereby promoting children's internalized compliance. Furthermore, individuals' *attention* and *self-control* are thought of as precursors of self-regulation (Ahadi & Rothbart, 1994), which are critical to successful internalization (Kopp, 1982). Thus, well-regulated parents, particularly mothers, may encourage their children to adopt similar regulation strategies. Although this study is primarily focused on identifying mothers' socializing behaviors that may evoke children's internalization, genetic factors also contribute to the prevalence of the above mentioned lower-order traits (Luciano, Wainwright, Wright, & Martin, 2006).

### **Parenting Dimensions**

As previously stated, a voluminous body of research indicates that personality is a noteworthy predictor that is related to a host of outcomes (Nettle, 2007; Prinzie et al.,

2009; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007; Roberts, Walton, & Bogg, 2005). Given that Conscientiousness is the most favorable domain in relation to job performance and career success (Barrick et al., 2001; Judge et al., 1999; Nettle, 2007), the central goal of this study is to determine whether parental behaviors associated with parents' Conscientiousness will elicit similar industrious behaviors in their children. The prevailing view of this study is that Conscientiousness in parents will promote children's internalized behaviors, such as compliance and self-regulation, which in turn would predict academic adaptation. Responsible, scrupulous, and industrious mothers may teach and also expect their children to be compliant, respectful of authority figures, and effectively regulate their behavior.

Among previously listed parental behaviors that are indicative of mothers' Conscientiousness, responsivity/warmth (Crockenberg & Litman, 1990; Kochanska & Aksan, 1995, 2004; Spinrad et al., 2012) and control (Feldman and Klein, 2003; Grolnick & Pomerantz, 2009; Kochanska & Aksan, 1995, 2004; Kochanska et al., 2003) are thought to play a critical role in the development of children's internalization. Parental responsivity reflects behaviors that are warm, sensitive and emotionally positive (Kochanska & Aksan, 1995; Leerkes, Blankson, & O'Brien, 2009; Pappalardo & Maccoby, 1985). It is well documented that such behaviors promote children's effective regulation of emotions (Eisenberg, Zhou, Spinrad, Valiente, Fabes, & Liew, 2005; Grusec & Goodnow, 1994; Kochanska, Murray, & Harlan, 2000; Leerkes et al., 2009; Spinrad et al., 2007, 2012) and compliance with parental requests (Braungart-Rieker, Garwood, & Stifter, 1997; Chen et al., 2003; Crockenberg & Litman, 1990; Kochanska, Woodard,

Kim, Koenig, Yoon, & Barry, 2010b; Leerkes et al., 2009; Parpal & Maccoby, 1985; Spinrad et al., 2012).

Parental control has been acknowledged as an important parenting behavior, although its definition has varied across studies. Nonetheless, parental control is typically perceived as a negative strategy (Grolnick & Pomerantz, 2009). To reduce ambiguity and misconceptions, Grolnick and Pomerantz (2009) suggested organizing controlling strategies based on the relation to children's developmental outcomes. They argued that it would be helpful to refer to parental control associated with healthy psychological outcomes as parental structure, whereas forms of parental control related to negative developmental outcomes may continue to be regarded as control (Grolnick & Pomerantz, 2009). Advancing in this direction may particularly help eliminate challenges in research on restrictive control. Importantly, because restrictive control has often been reflected in parental Conscientiousness (Metsapelto & Pulkkinen, 2003; Olsen et al., 1999), studying its origin is particularly relevant to this study.

In her earlier work, Baumrind (1989) identified two forms of restrictive control: *monitors* and *intrusive-directiveness*. Parental monitoring reflects parental ambition to provide safe, supervised, and orderly environment for their children (Baumrind, 1989). This type of control strongly resembles what Grolnick and her colleagues (e.g., Grolnick, Deci, & Ryan, 1997; Grolnick & Pomerantz, 2009) defined as parental structure. As predicted, parental structure or monitoring has been associated with positive developmental outcomes, including children's academic competence (Farkas & Grolnick, 2010; Grolnick & Ryan, 1989) and is thought to promote children's internalization of values (Grolnick & Pomerantz, 2009). In contrast, the *intrusive-directiveness* type of

restrictive control refers to parental opposition of children's stage-appropriate activities and exploration (Baumrind, 1989). Intrusive parents are likely to undermine children's thoughts and impose insensitive guiding (Graziano, Keane, & Calkins, 2010). Evidence indicates that intrusive parenting impairs children's regulatory skills (Graziano et al., 2010) and internalization (Kochanska & Knaack, 2003).

It is evident that both strategies of restrictive parenting include certain level of parental control (or structure), but intrusive control appears more coercive and harmful to children's well-being than parental structure. In support of Grolnick and Pomerantz's (2009) argument, it is imperative to separate these two forms of control to prevent conflicting findings. Because parental structure is related to children's positive developmental outcomes (Farkas & Grolnick, 2010; Grolnick & Pomerantz, 2009; Grolnick & Ryan, 1989), it may be helpful for researchers to differentiate between these types of control. It is expected that Conscientiousness in mothers would be positively related to structure, but not intrusive/harsh control. Furthermore, as a dimension of parental control, structure is predicted to be an important component of children's internalization.

Further, it may be useful to disentangle the circumstances under which structure could be related to children's positive outcomes. In other words, in addition to understanding the direct relation between structure and children's internalization, it may be helpful to explore moderating effects. For example, it is possible that under conditions of relatively high parental sensitivity, children are more likely to be receptive to parental guidance and directions. Stated differently, when parental sensitivity is high, parental structure may be more strongly positively related to children's internalization. As coined

by Baumrind (1989), such unique combination of parenting practices (i.e., high responsiveness and high demandingness) is often referred to as authoritative parenting style, which is the most conducive to children's positive development (Baumrind, 2013). On the other hand, when mothers display less sensitive behaviors, children may perceive parental structure as a form of negative control. Accordingly, these children and their mothers may be less inclined to develop a mutually positive and secure relationship. Sensitivity may play a key role in distinguishing between parental structure and parental negative control. Relevant to the current study, it is hypothesized that structure would relate positively to children's internalization, but only when combined with high levels of sensitivity. Conversely, in the instances of low levels of sensitivity, mothers' structure is thought to be unrelated to children's internalization.

### **Internalization**

Internalization is a critical milestone in children's development (Grusec & Goodnow, 1994; Kochanska, 1993, 1994). Internalization encompasses children's ability to self-regulate their behaviors in accordance with social standards of conduct, even in the absence of surveillance (Grusec & Goodnow, 1994; Kochanska, 1993; Kochanska, Coy, & Murray, 2001). Children's individual characteristics (e.g., temperamental qualities, such as regulation, fearfulness) and early socialization are the key predictors of successful internalization (Aksan & Kochanska, 2005; Kochanska, 1993, 1997; Kochanska & Aksan, 2006).

As an internal regulatory process, internalization includes classic dimensions of morality: emotions, conduct, and cognition (Kochanska, 2002; Kochanska & Aksan, 2006; Kochanska, Forman, Aksan, & Dunbar, 2005). The emotional element resembles

children's concerns or feelings of remorse after wrongdoing (Aksan & Kochanska, 2005; Kochanska & Aksan, 2006). Moral conduct, on the other hand, captures children's behaviors that reflect their abilities to comply with social standards and demands (Aksan & Kochanska, 2005; Kochanska & Aksan, 2006). Children's volition to restrain from prohibited acts and obey rules without close supervision is an example of internalized moral conduct (Kochanska & Aksan, 2006). Finally, moral cognition measures children's understanding of possible consequences following transgression (Kochanska & Aksan, 2006). Although each aspect of morality plays an important role in the development of internalization (Kochanska & Aksan, 2006), moral conduct is thought to significantly forecast children's school competence (Kochanska, Koenig, Barry, Kim, & Yoon, 2010a) and, as such, is of particular interest in this study.

### **Parenting and Children's Internalization**

Both theoretical perspectives (Grusec & Goodnow, 1994; Hoffman, 1994) and empirical evidence (Kochanska, 1993; Kochanska & Aksan, 2006; Kochanska et al., 2003) underscore the importance of further unveiling the role of parental behaviors in children's internalization. Indeed, understanding the underlying mechanisms of children's internalization and finding ways to promote moral conduct has been an impetus of many child development studies. Scholars who focused on socializing practices have consistently indicated that maternal warmth/responsivity promotes early internalization (Kochanska, Aksan, Knaack, & Rhines, 2004a), whereas intrusive/harsh controlling strategies undermine children's ability to behave appropriately (Kochanska et al., 2003). With respect to individual differences in the development of internalization, researchers have examined the significance of various skills, including children's regulatory



capacities (Kochanska & Aksan, 2006; Kopp, 1982) and their ability to comply (Aksan & Kochanska, 2005; Kochanska et al., 2005). In light of these critical factors, the following sections seek to summarize the relation between previously listed parenting dimensions (i.e., warmth/responsivity, control, and structure) and two components of internalization: regulation and compliance.

**Relations between parenting and children's emotion regulation (or effortful control).** Researchers have demonstrated that effective emotion regulation is related to temperamental regulatory capacities known as *effortful control* (Dennis, Hong, & Solomon, 2010; Eisenberg, Smith, & Spinrad, 2011). Effortful control (EC) reflects children's ability to regulate their behavior and voluntarily inhibit a reaction response (Rothbart & Bates, 2006). Moreover, children's EC is considered a critical temperamental underpinning of behavioral internalization (Kochanska & Aksan, 2006; Kochanska & Knaack, 2003; Kochanska, Murray, & Coy, 1997b; Kochanska, Murray, Jacques, & Vandegest, 1996). Children who are high on EC are likely to restrain from prohibited acts and willfully conform to established rules and requests (Kochanska et al., 1997b, 2000, 2001; Spinrad et al., 2011).

Although EC is temperamentally-based (Kochanska, 1993; Kochanska et al., 2000; Rothbart & Bates, 2006) and is assumed to be, at least partially, a product of our genetic endowment (Goldsmith, Pollak, & Davidson, 2008; Posner, Rothbart, & Sheese, 2007), parental behaviors contribute to its malleability (Eisenberg et al., 2010; Spinrad et al., 2007, 2012). Parenting is thought to play an especially critical role during early toddlerhood, which is marked by the onset of EC development (Eisenberg et al., 2010; Kochanska & Knaack, 2003; Kochanska et al., 2000; Putnam & Stifter, 2002). Evidence

also suggests that parenting may be contingent on children's stage of development (Eisenberg et al., 2010). That is, depending on children's age, parents may use different discipline strategies to achieve certain socialization goals (Eisenberg et al., 2010).

An abundant body of literature indicates that responsiveness is a critical component of parenting that enhances children's ability to effectively regulate their behaviors (Cipriano & Stifter, 2010; Eisenberg et al., 2005; Graziano et al., 2010; Karreman et al., 2008; Kochanska et al., 2000; Spinrad et al., 2007). The mechanisms through which parental responsiveness predicts children's EC merits more research, however, it has been suggested that parental responsiveness alleviates children's levels of distress (Kochanska et al., 2000), which in turn may promote better self-regulation and coping strategies (Eisenberg et al., 2005; Graziano et al., 2010; Spinrad et al., 2007; von Suchodoletz, Trommsdorff, & Heikamp, 2011). Indeed, when mothers interact with their children in a comforting and supportive manner, children are likely to maintain optimal level of arousal (Spinrad et al., 2007) and demonstrate superior EC abilities (Graziano et al., 2010; Karreman et al., 2008; Kochanska et al., 2000; Spinrad et al., 2007, 2012). Notably, high levels of EC promote children's development of internalization (Kochanska & Knaack, 2003; Kochanska et al., 1996, 1997b, 2000).

Parental control strategies also predict the development of children's EC (Karreman, van Tuijl, van Aken, & Dekovic, 2006; Karreman et al., 2008; Kochanska, Aksan, Prisco, & Adams, 2008; Kochanska & Knaack, 2003). Reflecting on the earlier described differences between positive and negative control, parental structure fosters better regulatory skills (Karreman et al., 2008). Additionally, structure is thought to be a useful strategy in teaching children to effectively regulate their emotions (Feldman &

Klein, 2003; Karreman et al., 2006, 2008). On the contrary, high levels of intrusive control have been linked to poor EC skills (Graziano et al., 2010; Karreman et al., 2006, 2008; Kochanska et al., 2008; Kochanska & Knaack, 2003) and impaired internalization (Kochanska & Knaack, 2003). Notwithstanding, the path between children's level of EC and parental control may be bi-directional. Parents of dysregulated children may need to exert more controlling types of discipline strategies to manage their children's misbehavior than parents of well-regulated children (Bridgett et al., 2009; Kochanska & Knaack, 2003; Lengua, 2006).

**Relations between parenting and children's compliance.** As previously discussed, children's compliance is thought to be an initial marker of internalization (Kochanska, 1991; Kochanska, Aksan, Koenig, 1995). Kochanska and Aksan (1995) identified two distinct forms of compliance: *situational compliance* and *committed compliance*. Situational compliance reflects children's behaviors that lack sincere internal commitment (Kochanska, 2002; Kochanska & Aksan, 1995). For example, a child may comply with parental requests because of a promised award or inevitable punishment. Committed compliance, on the other hand, mirrors children's devotion and eagerness to adopt their parents' agenda (Kochanska & Aksan, 1995; Kochanska et al., 1995). Because committed compliance is closely related to successful internalization (Kochanska, 2002; Kochanska & Aksan, 1995; Kochanska et al., 1995, 1998, 2001) and is positively associated with self-regulation skills (Kochanska, 2002; Kochanska et al., 2001; Kopp, 1982; Spinrad et al., 2012), this study will solely focus on mothers' behaviors associated with committed compliance.

Parental strategies may either promote or discourage children's committed compliance (Kochanska, 1997; Kochanska & Aksan, 1995; Kochanska et al., 1995; Parpal & Maccoby, 1985). An extensive body of literature demonstrates that parental responsiveness is positively related to children's committed compliance (Crockenberg & Litman, 1990; Feldman & Klein, 2003; Kochanska & Aksan, 1995; Parpal & Maccoby, 1985; Spinrad et al., 2012). It appears that when mothers respond with support, affection, and approval, children are likely to comply with their mothers' requests (Crockenberg & Litman, 1990; Leerkes et al., 2009; Parpal & Maccoby, 1985). Parental responsiveness may promote children's feelings of reciprocity in the relationship and augments cooperative behaviors (Parpal & Maccoby, 1985). Moreover, responsive parents are likely to be in synchrony with their children's emotional states and respond appropriately to children's emotions (Maccoby, 1992). For example, mothers' empathetic response to children's negative emotions and the ability to adapt to children's viewpoint elicits reciprocity (Kochanska, 1997). And, in mutually responsive dyads children are likely to internalize the required obedience (Kochanska, 1997).

Another aspect of parental behaviors that is related to children's compliance is parental control (Crockenberg & Litman, 1990; Karreman et al., 2006; Kuczynski & Kochanska, 1990). Among many parental control strategies, the most detrimental to children's internalization of parental agenda and compliance is power-assertive or harsh control (Hoffman, 2000; Kuczynski & Kochanska, 1990; Maccoby, 1992). Power-assertive control includes physically forceful or coercive strategies (e.g., spanking, constraining, issuing threats; Hoffman, 2000; Kuczynski & Kochanska, 1990) that often lack explanation or qualification for the stated demands (Hoffman, 2000). Such type of

control is conceptualized and sometimes referred to as negative (Crockenberg & Litman, 1990; Karreman et al., 2006; Rothbaum & Crockenberg, 1995), intrusive (Ispa et al., 2004) or psychological (Barber, 1996) control. Although parental enforcement of physical punishment or threats may evoke children to behave in accordance with parental wishes, their commitment to compliance may be less voluntary (Chapman & Zahn-Waxler, 1982; Kochanska, 2002) and more fear-driven (Hoffman, 2000). Findings consistently reveal that power-assertive/harsh control is associated with less committed compliance (Braungart-Rieker et al., 1997; Crockenberg & Litman, 1990; Kochanska et al., 2001).

On the other hand, parents who limit the use of harsh discipline are likely to elicit children's committed compliance (Karreman et al., 2006; Kochanska & Aksan, 1995; Kuczynski & Kochanska, 1990). The non-coercive parental control reflects parental guidance, suggestions, and reasoning (Hoffman, 2000; Kuczynski & Kochanska, 1990) and is commonly referred to as warm (Feldman & Klein, 2003), positive (Karreman et al., 2006; Karreman, van Tuijl, & van Aken, & Decovic, 2009), gentle (Kochanska & Aksan, 1995) or behavioral (Barber, 1996) control. Typically, these indices of parental control have shown to be positively related to children's healthy psychological development (Feldman & Klein, 2003; Karreman et al., 2006), including committed compliance (Kochanska & Aksan, 1995). Importantly and in accord with Grolnick and Pomerantz (2009) argument, because such parental discipline promotes children's wellbeing, this type of control should fall under the umbrella of parental structure.

It is also important to note that the relation between parenting and children's compliant and noncompliant behaviors may be reciprocal (Spinrad et al., 2012). For

example, when children comply with their mothers' agenda and obey rules, it may feel more natural for the mothers to interact with their children in a warm and supportive manner. On the other hand, highly noncompliant children may elicit harsher discipline from their mothers.

### **Children's Internalization and Academics**

It is further proposed that internalization of parental values relevant to academic attainment may promote children's academic aspirations. Although the relation between global internalization and children's academic performance remains largely unexplored, much attention has been devoted to studying individual components that encompass children's internalization. One of the widely studied mechanisms, also included in the present model, has been EC. On the other hand, children's compliance in connection to their academic performance has been less studied, however; as a significant component to internalization, children's compliance may also forecast children's academic excellence. The support for these relations is further discussed.

**Relations between children's effortful control and academic performance.** A plethora of studies has shown that children's regulatory skills, particularly EC, have been linked to children's academic performance (Blair & Razza, 2007; Deater-Deckard, Mullineaux, Petril, & Thompson, 2009; Liew, 2012; Liew, Chen, & Hughes, 2010; Swanson et al., 2012; Valiente et al., 2007a, 2008, 2011). Specific to the academic setting, EC reflects children's ability to follow instructions (Kochanska et al., 2000), engage in socially acceptable behaviors (Eisenberg et al., 2005, 2010; Rothbart & Bates, 2006), and exhibit necessary skills to shift and focus attention as needed (Eisenberg et al., 2005; Kochanska et al., 2000) for longer periods of time (Coplan, Barber, & Lagace-

Seguin, 1999). There are numerous reasons to believe that children's EC would be linked to their academic performance. For example, in the classroom environment, children must exhibit the ability to sit still and maintain attention in accordance with teachers' demands (Rothbart & Bates, 2006). Moreover, children need to show the ability to remember rules (McClelland, Cameron, Connor, Farris, Jewkes, & Morrison, 2007), plan ahead, and acquire necessary skills to suppress socially inappropriate behaviors (Rothbart & Bates, 2006). These skills are indicative of EC. Thus, children who are able to pay attention in class, focus on tasks and avoid distractions are likely to perform better academically than children whose regulatory skills are impaired (McClelland et al., 2007).

Indeed, a flurry of studies found that children's EC was related to greater academic gains, such as math and literacy skills (Blair & Razza, 2007; Duncan et al., 2007; Liew, McTigue, Barrois, & Hughes, 2008; McClelland et al., 2007). For example, in one longitudinal study, children's behavioral regulation was observed in the fall (Wave 1) and in the spring (Wave 2) and their academic performance was assessed through emergent literacy, vocabulary, and math tests (McClelland et al., 2007). The results of the study indicated that children's self-regulation predicted regulation of classroom behavior, such as paying attention to the teacher and completing tasks. In addition, behavior regulation predicted higher academic achievements (i.e., strong emergent literacy score gains, vocabulary gains, and greater math skills). Overall, children who improved behaviorally from fall to spring also evidenced gains in all three aspects of academic achievement (McClelland et al., 2007). In this study, McClelland and her colleagues strongly demonstrated the importance of children's regulatory skills in their academic

success (McClelland, et al., 2007). Because children's ability to regulate has been positively linked to their ability to pay attention in class, following instructions, and completing tasks (McClelland et al., 2007), EC may be the foundation to children's success in school.

As evidenced, EC is critical to children's academic functioning. Children with high levels of EC are likely to engage in appropriate social and classroom behaviors that are conducive to effective learning (McClelland, et al., 2007; Valiente et al., 2011). Conversely, lack of EC skills has been linked to externalizing problems in children (Eisenberg et al., 2005; Karreman et al., 2009; Kochanska & Knaack, 2003; Olson, Sameroff, Kerr, Lopez, & Wellman, 2005; Spinrad et al., 2007), which in turn is predictive of deficits in their academic performance (Hinshaw, 1992; Valiente et al., 2011). Due to an overwhelming support for this relation, it is expected that children with higher EC skills would perform better academically than their less regulated counterparts.

**Relations between children's committed compliance and academic performance.** The literature linking compliance to children's academic performance is scant. Nonetheless, one can presume that compliance would be linked to superior academic performance (Adams, Ryan, Ketsetzis, & Keating, 2000). Because young children's cognitive skills are not fully predictive of academic success, their ability to sit quietly and comply with teachers' instructions is thought to be critical for early school success (Serbin, Zelkowitz, Doyle, & Gold, 1990). Moreover, Adams and colleagues (2000) found that compliant children are less assertive and are likely to tolerate frustration, which is related to teachers' preference of having children with these types of behaviors in their classrooms. It is possible that teachers would be more motivated to



reward compliant children by providing special guidance in helping and encouraging them to achieve optimal academic adaptation.

More support for the relation between children's compliance and academic adaptation can be drawn from the literature on children's internalization. One could hypothesize that a child who internalizes standards (e.g., follows rules, obeys authority) would likely be motivated to perform well in school. Indeed, some researchers have demonstrated that children's compliance in the home environment is "carried over" to other contexts, such as school (Bierman & Smoot, 1991). It is further hypothesized that children who obey parental authority would exhibit similar behaviors in school, and therefore, perform better academically. In reference to the current study, because mothers who score high on Conscientiousness reflect achievement-oriented attitude, they may be prone to place high expectation on their children (Prinz et al., 2009). Children of these mothers are expected to respond favorably to their mothers' requests and exhibit relatively high levels of internalization (i.e., regulation and compliance), which in turn may predict their academic skills. In other words, children's internalization is thought to mediate the relation between parenting behaviors that are reflective of mothers' Conscientiousness and children's academic performance.

### **Possible Moderators: Sex, Socioeconomic Status, and Ethnicity**

In examining relations between the study variables, it is important to consider potential differences and possible moderating effects of common control variables, such as children's sex, family SES, and ethnicity. A summary of literature review related to differences and similarities in parenting behaviors and children's developmental outcomes are outlined in the next paragraphs.

Differences in parental socialization of sons and daughters have been greatly studied. For example, in a meta-analysis of 147 studies, Lytton and Romney (1991) concluded that although the distinction in parental warmth and control to boys and girls did not reach statistical significance, mothers of girls were less controlling and higher on warmth than were mothers of boys (Lytton & Romney, 1991). Consistent with these findings, in a more recent study, using a sample of predominantly African-American families, mothers of girls were significantly higher on warmth and lower on control than were mothers of boys (Tamis-LeMonda, Briggs, McClowry, & Snow, 2009).

Sex differences in children's internalization also have been found. For example, researchers noted that girls were more skilled at regulating their behaviors (Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006; Kochanska et al., 1997b; Olson et al., 2005) and were more likely to wholeheartedly comply with parental requests (Kochanska et al., 1998; von Suchodoletz et al., 2011) than were boys.

Although parenting behaviors may contribute to children's internalization (Kochanska, 1997; Kochanska et al., 2004a), children's sex may be a potential moderator. That is, parental warmth and control may predict behavioral outcomes differently for boys and girls. Despite mixed findings (e.g., Chang, Olson, Sameroff, & Sexton, 2011; Colman, Hardy, Albert, Raffaelli, & Crockett, 2006; von Suchodoletz et al., 2011), some reports indicated that low levels of parental warmth were positively related to problem behaviors (e.g., noncompliance) in boys, but not in girls (Chang et al., 2011). With respect to parental use of harsh discipline strategies, behavior problems were predicted in both boys and girls (McKee et al., 2007), but the relation was stronger for

same-sex dyads (Chang, Schwartz, Dodge, & McBride-Chang, 2003; Deater-Deckard & Dodge, 1997).

The issue pertaining to sex differences in academics has been controversial. A meta-analysis of 100 studies that assessed sex differences in math performance showed a slight superiority favoring girls during elementary and middle school years (Hyde, Fennema, & Lamon, 1990); however, in a more recent single study, Ponitz and colleagues (2009) did not replicate these results. Sex differences in literacy findings have been inconsistent. Whereas some studies showed girls at advantage for early literacy scores (Kermode, Rawlinson, & Tuck, 2003; Lynch, 2002; Pomerantz, Altermatt, & Saxon, 2002; Valiente et al., 2011), other studies, however, could not extend literature in similar ways (Harper & Pelletier, 2008; Ponitz et al., 2009). Furthermore, the moderating role of sex in the relation of internalization to academics has been examined, but evidence of moderation has not been supported (Graziano, Reavis, Keane, & Calkins, 2007; Newman, Noel, Chen, & Matsopoulos, 1998; Valiente et al., 2007, 2011). Considering the importance of children's sex, this study will examine children's sex as a possible moderator in predicting children's developmental outcomes.

In addition to sex, scholars have examined the critical role of families' SES in child-rearing practices (Dodge, Pettit, & Bates, 1994; Qi & Kaiser, 2003), children's behavioral outcomes (Dodge et al., 1994), and their academic achievement (McLoyd, 1998; Valiente, Lemery-Chalfant, & Swanson, 2010). It has been well documented that parents with relatively low income exhibit low nurturing behaviors (Bradley, Corwyn, MaAdoo, & Coll, 2001; Dodge et al., 1994; Patterson, Cohn, & Kao, 1989) and high controlling discipline strategies (Dodge et al., 1994; Qi & Kaiser, 2003). Moreover, in

comparison to children who are raised in economically advantaged homes, children raised in families of lower SES have been reported to have more behavioral problems (Dodge et al., 1994) and do less well academically (McLoyd, 1998; Smith, Brooks-Gunn, & Klebanow, 1997; Valiente et al., 2007). Thus, it is important to consider SES as a contributor to and as a possible moderator in predicting parenting behaviors, children's behavioral and academic outcomes.

The role of cultural factors in shaping parenting and children's developmental outcomes has been explored. Specific to parenting, some findings suggested that ethnic minority youth (e.g., Hispanics, African-Americans) are likely to be exposed to more intrusive and less warm parenting behaviors than are Caucasian or White/non-Hispanic children (Chao & Kanatsu, 2008; Ispa et al., 2004). Additionally, Chao and Kanatsu (2008) reported marginal difference in parental monitoring (or structure) with Hispanic mothers taking a lead over non-Hispanic mothers. Other studies (e.g., Bradley et al., 2001; Ceballo & Hurd, 2008; Hill & Tyson, 2008) did not detect differences by ethnicity in parental warmth and intrusiveness (or negative control). Nonetheless, in relation to children's internalization, warm and less intrusive parenting predicted better self-regulation in children across various ethnicities (Eisenberg, Smith, Sadovsky, & Spinrad, 2004; Lengua, Honorado, & Bush, 2007). Put differently, ethnicity was not found to moderate the link between parenting and children's self-regulatory skills (Li-Grining, 2007; Moilanen, Shaw, Dishion, Gardner, & Wilson, 2010). In this study, the moderating role of ethnicity will be tested, but it is not expected that the relations between parenting and children's internalization differ significantly across ethnicities.

Furthermore, although children's development of self-regulatory skills is largely similar across ethnicities (Li-Grining, 2007; Sektnan, McClelland, Acock, & Morrison, 2010), ethnic disparities in educational attainment continue to persist (Chatterji, 2006; Sektnan et al., 2010). Reports indicate that children belonging to racial minorities lag behind their Caucasian counterparts on measures of academic performance (Chatterji, 2006; Hall, Davis, Bolen, & Chia, 1999; Sektnan et al., 2010). Important to note that findings related to ethnic differences and similarities should be interpreted with caution. Because ethnicity and SES are often confounded (e.g., minority youth are likely to live in low-income families), it may be difficult to disentangle and understand the unique and important contribution of ethnicity on particular outcomes (Le, Ceballo, Chao, Hill, Murry, & Pinderhughes, 2008; Sektnan et al., 2010). Despite the challenges, this study will examine the moderating role of children's ethnicity in the relation between parenting behaviors and children's internalization and in the relation between children's internalization and academic performance.

### **The Current Study**

The purpose of this study is to bring together findings from the separate bodies of literature to determine if mothers' Conscientiousness is associated with children's academic adaptation. The relations between parental personality, parental behaviors, components of children's internalization, and children's academic adaptation will be evaluated through a series of regression analyses (see Figure 2).

The first goal is to determine if mothers' Conscientiousness predicts typical parenting behaviors. Consistent with extant literature, it is expected that mothers who score high on Conscientiousness would exhibit high levels of warmth/sensitivity in their

parenting practices (Clark et al., 2000; Losoya et al., 1997; Prinzie et al., 2009).

Moreover, mothers' Conscientiousness is thought to be positively related to parental structure (Metsapelto & Pulkkinen, 2003; Olsen et al., 1999) and negatively related to parental negative control (Losoya et al., 1997).

The second aim of the current study is to link the aforementioned parental behaviors to the aspects of children's internalization, such as EC and committed compliance. It is hypothesized that both structure and warmth/sensitivity would elicit children's EC and committed compliance, whereas negative control would impair children's EC skills and inhibit their compliance.

Finally, the relation between children's aspects of internalization and their academic adaptation will be separately evaluated. In line with previous literature (e.g., Liew, 2012; Valiente et al., 2011), it is expected that high levels of EC would predict superior academic performance. Although less is known about children's committed compliance and their academic adaptation, the model predicts a positive relation.

In terms of direct effects, it is hypothesized that both mothers' Conscientiousness and mothers' parental behaviors would predict children's academic performance. Additionally, high levels mothers' Conscientiousness is thought to be directly associated with children's strong internalized conduct.

The proposed model includes two mediators. According to the model, parental behaviors (i.e., warmth/sensitivity, structure, and control) are thought to mediate the relation between mothers' Conscientiousness and children's internalization. In addition, the relation between parental behaviors and children's school performance is expected to be mediated by children's internalized conduct (i.e., EC and compliance).

This study will also examine the moderating effects of children's sex, ethnicity, and family SES in the relation between mothers' behaviors and children's internalization and in the relation between children's internalization and children's academic adaptation. Because literature regarding moderating effects is less consistent (as previously described), these interaction analyses are exploratory in nature.

The final analysis of the study is related to Baumrind's (1989) work on the different parental control strategies (i.e., monitoring or structure and intrusiveness or negative control) and parental sensitivity. Specifically, it is hypothesized that paired with high levels of sensitivity, mothers' structure would predict successful internalization. Stated differently, mothers' sensitivity is thought to moderate the relation between mothers' structure and children's internalization.

## **Method**

### **Participants**

The current study is a part of a longitudinal research project of toddlers' emotional regulation, socialization, and social competence. The participants lived in the Phoenix area and were recruited at birth through three local hospitals. All infants were healthy and full-term. Mothers' average age at child's birth was 29 years (range 19 to 44 years). The full sample consisted of 256 infants (141 boys;  $M$  age in months = 17.73,  $SD$  = .45; 115 girls;  $M$  age = 17.84 months,  $SD$  = .56).

The first laboratory visit (Time 1; T1) occurred when toddlers were approximately 18 months of age ( $M$  = 17.79 months,  $SD$  = .51). A total of 247 families participated in the lab observational sessions and 9 families participated by mail only (i.e., 256 families total). The second laboratory visit (i.e., Time 2 [T2], when toddlers

were 30 months of age), consisted of 230 families of which 14 families participated by mail (102 girls, 128 boys;  $M$  age = 29.76 months,  $SD$  = .63). At Time 3 (T3; i.e., 42 months) 210 families participated in the study (117 boys, 93 girls;  $M$  age = 41.75 months,  $SD$  = .63), including 18 families that participated by mail. At 72 months (Time 5 [T5]), 150 children and their mothers were assessed during a home visit and 19 subjects participated by mail (i.e., 169 families total; 94 boys, 75 girls;  $M$  age = 73.04 months,  $SD$  = 1.48). Additionally, questionnaires were completed by children's teachers ( $n$  = 144). Finally, at 84 months (Time 6 [T6]), 143 children ( $M$  age = 84.86 months,  $SD$  = 2.8) participated in the study. For this assessment questionnaires were completed and returned by mail.

At T1 most families had complete data. Families who participated at T1 and continued the study ( $n$  = 163) were compared with those who were lost because of attrition by the last assessment at T5/T6 ( $n$  = 80). In terms of demographic variables, families that were lost because of attrition were of significantly lower SES ( $M$  = -.24,  $SD$  = .89) than families who remained in the study ( $M$  = .11,  $SD$  = .80),  $t(143.05) = 2.99$ ,  $p < .01$ . No other differences were found.

At T1, the majority of toddlers (81%) were Caucasian, 5% were of African-American descent, 4% were Native Americans, 2% were Asians and about 1% were identified as Pacific Islanders. In terms of ethnicity, 77% of toddlers were identified as non-Hispanic and 23% were identified as Hispanic. The average household income ranged from \$45,000 to \$60,000, and parents' education was approximately 14 years (2 years of college) for mothers and fathers. Eight five percent of the parents were married ( $M$  = 5.9 years,  $SD$  = 3.8).



## **Procedure**

As stated above, adult mothers (over 18 years of age) were recruited from three local hospitals in a southwestern city of the United States following the birth of healthy, full-term infants. At T1, mothers were asked to complete a packet of questionnaires by mail and bring it to the laboratory visit. The packet included the Big-Five Inventory (John, Donahue, & Kentle, 1991), which was designed to measure mothers' personality. Children and their mothers also participated in the laboratory visit, but none of the data from this wave will be used in the current study. At T2 and T3, mothers and their toddlers were invited to the research laboratory to participate in observational assessments. Each laboratory visit lasted approximately 1.5 to 2 hours and the data were videotaped for later coding. During the laboratory visits, maternal behaviors (i.e., warmth/sensitivity, structure, negative control) and children's EC and committed compliance were assessed. Additionally, parents completed a set of questionnaires about their child-rearing practices and their children's compliance. Although a series of tasks was done at T4, none of the data from this wave will be used in this study. A home visit was conducted at T5, and questionnaires were sent to families at T6. Both children and mothers completed a packet of questionnaires that included a measure of children's school liking and avoidance (School Liking and Avoidance Questionnaire or SLAQ; Ladd & Price, 1987). Also, if parental consent to contact the child's teacher was received, a teacher version of SLAQ and Teacher Rating Scale of School Adjustment (TRSSA; Birch & Ladd, 1997) was mailed to the teachers at T5 and T6. Finally, at T5 and T6, both mothers and teachers reported on children's academic standing by assigning a letter grade that was thought to

be reflective of their school performance. Participants were paid for their participation in the study and children received a toy or a t-shirt.

## Measures

**Mothers' personality.** To assess mothers' level of Conscientiousness, at T1 mothers completed a *Conscientiousness* subscale of widely utilized personality measure (i.e., Big-Five Inventory; John et al., 1991). The selected subscale included 7 items (e.g., "Do you think that you are a reliable worker" and "Do you think you do things efficiently";  $\alpha = .68$ ) that were rated on a 5-point Likert scale (1 = disagree strongly to 5 = agree strongly). A person scoring high on this domain is considered efficient, responsible, and scrupulous, whereas a person scoring low is likely to be disorganized, inconsistent, and less dependable.

**Mothers' behaviors.** At T2, three aspects of parental behaviors were evaluated: (a) warmth/sensitivity, (b) structure, and (c) negative control.

**Maternal warmth/sensitivity.** The observational measure of maternal warmth was assessed through the teaching task. In the teaching task, mothers were asked to naturally interact with her child and help him/her complete a wooden puzzle. Maternal warmth reflected mothers' level of physical affection, encouragement, closeness, and positive quality conversations. The task lasted 3 minutes during which maternal warmth was coded in six 30-second intervals and rated on a 5-point scale (1 = a parent ignored the child and displayed negative affect and 5 = a parent was engaged and positively affectionate). Inter-rater reliability (ICC) for maternal warmth during teaching task was conducted on approximately 25% of the sample and was .66.

Mothers' observed sensitivity was assessed through the free play and teaching task. During the free play procedure, mothers and their toddlers engaged in a 3 minute play with age-appropriate toys. Maternal sensitivity included instances of appropriate responses and attention to the child's current level of arousal, interests, needs, and abilities. Maternal sensitivity was coded in twelve 15-second intervals and rated on a 4-point scale ( $1$  = no evidence of a given behavior and  $4$  = strong evidence of a given behavior). For example, a score of 1 was given when maternal sensitivity was not observed, 2 when some sensitivity was observed, 3 when more than one instance of sensitivity was captured, and 4 was coded when mothers were aware of their toddlers' states and responded with interest and affect. Mothers' sensitivity during teaching task was coded at the intervals of 30 seconds using the same coding scheme as during the free play. *ICC* for maternal sensitivity was conducted on approximately 25% of the sample and was .86 and .71 for free play and teaching task respectively.

***Maternal structure.*** Maternal structure was assessed through two observational tasks: the clean-up and the prohibition toys. Following the free play, mothers were asked to instruct their child to pick up the toys and place them back in the basket – the clean-up task. Maternal structure reflected instances of gentle verbal and physical control/guidance. Gentle verbal control/guidance occurred when mothers were playful, affectionate and used polite suggestions to encourage their child to clean up the toys. In addition, gentle physical control/guidance was observed when mothers gently guided a child to pick up the toys by placing it in the child's hand and pointing at the basket, for example. The absence or presence of maternal structure ( $0$  = absent/not observed,  $1$  = present/observed) was coded every 15 seconds from the time mothers asked children to

pick up the toys. The segment lasted 3 minutes or until all the toys were put in a basket (whichever occurred first). Scores on the occurrence of maternal structure were averaged across the epochs. Kappas were calculated on approximately 26% of the data and were .85 for gentle verbal control/guidance and .86 for gentle physical control/guidance.

Next, the prohibition toys task assessed children's ability to restrain from a prohibited activity. During the time when mothers were playing with their toddlers (i.e., during free play activity), an experimenter brought a set of very attractive toys and placed them along the empty shelf. Although the newly placed toys were within a child's reach, mothers were instructed that children were prohibited from touching those toys. Additionally, a "do not touch" sign was conspicuously attached to the shelf to remind mothers of the rule. Similar to the clean-up activity, maternal structure included gentle verbal and physical control/guidance. Gentle verbal control/guidance occurred when mothers affectionately interacted with their toddlers while encouraging children to follow the rule. They used subtle reminders about not touching the prohibited toys (e.g., "Those toys are pretty, but remember, we cannot touch them.") or tried to distract toddlers' attention by offering to play with them (e.g., "Why don't we try to solve this puzzle?"). Gentle verbal control/guidance was observed when mothers initiated direct physical contact with the child, but did not impose control of a child's behavior (e.g., reorienting a child's attention by gently tapping on his/her shoulder). Coding of the episode began when children were tempted to touch or directed their attention to the prohibited toys (e.g., a child looked at, pointed, approached, touched, or was reminded by the mother not to touch the toys) and ended when children were no longer interested in the toys (e.g., a child reoriented his/her attention to a new activity). Maternal structure was coded

(present/absent) during each 15 second intervals. The *prohibition toys* task lasted for approximately 10 minutes. Kappas were based on 27% of the sample and were .71 for gentle verbal control/guidance and .74 for gentle physical control/guidance.

***Maternal negative control.*** Maternal negative control was measured using observational data of the following procedures: free play, teaching task, clean-up, and the prohibition toys. In the free play, negative control reflected instances of maternal intrusiveness and included the following examples of behaviors: physical manipulation of child's actions (e.g., pulling the child's hands from the object), ignoring child's interests, attempting to take away objects with which a child was playing, and acting in less child-centered ways. Maternal intrusiveness was coded in 15-second intervals and was rated on a 4-point scale (*1* = no evidence of a given behavior and *4* = strong evidence of a given behavior). For example, a score of 1 was given when mothers did not display intrusive behaviors, 2 was given when one instance of intrusive behavior was observed, 3 was coded when intrusive behaviors occurred more than once, and 4 was coded if mothers displayed constant controlling behaviors. ICC for maternal intrusiveness during the free play task was reliably coded on approximately 25% of the sample and was .81.

In the teaching task, maternal negative control also resembled instances of maternal intrusive behaviors. Intrusive mothers commonly ignored their children's interests, failed to respond to children's cues and negative affect, and physically manipulated children's actions (e.g., yanked a puzzle piece from the child's hand). Moreover, intrusive mothers were likely to impose their own agenda (e.g., terminating a play before a child lost interest). Maternal intrusiveness was coded in 30-second intervals and was rated on a 4-point scale (*1* = parent was not intrusive and *4* = parent was

extremely intrusive). *ICC* for intrusiveness in the teaching task was conducted on approximately 25% of the sample and was .71.

As for the assessment of maternal negative control in the clean-up and prohibition toys task, the measures included the degree of assertive verbal and physical control. As with maternal structure, maternal negative control was coded every 15 seconds and was measured using the absence or presence codes (*0* =absent/not observed, *1* = present/observed) for both paradigms. Verbal assertive control included instances when mothers were direct with their children and their verbal tone was slightly irked and impatient, but not explicitly angry. Mothers were commanding and may have used references of punishment (e.g., “Should I start to count?” or “Don’t touch those toys.”). Assertive physical control reflected firm and decisive level of physical control without a display of anger. In the clean-up, assertive physical control was coded when mothers directed a child to pick up the toys by removing a toy from the child’s hands when he or she was playing with it, for instance. An example of assertive physical control in the prohibition toys task was when mothers blocked their child’s movement or picked up their child to direct his or her attention away from the prohibited toys. Kappas for mothers’ behaviors during the clean-up and prohibition toys tasks were based on 26% and 27% of the sample respectively. Kappas for assertive verbal control were .82 in the clean-up and .73 in the prohibition toys task and kappas for assertive physical control were .96 and .75 respectively. Forceful verbal and physical control was also coded during the task, but due to the rare occurrences, these measures could not be used in the present study.

**Children's effortful control.** At T3, children's EC was measured using parents' reports, caregivers' reports, and observation data. For reported data, mothers and caregivers completed Childhood Behavior Questionnaire (CBQ) which was intended to measure various aspects of temperament (i.e., emotionality, EC, reactive control) in 3 to 8 year old children (Rothbart, Ahadi, Hershey & Fisher, 2001). Children's EC was assessed using a subscale of *attention shifting* (12 items;  $\alpha$ s = .67 and .80 for mothers' and caregivers' reports respectively; included items such as "The child is good at games with rules, such as card games"), *attention focusing* (14 items;  $\alpha$ s = .77 and .74 for mothers' and caregivers' reports respectively; included items such as "When picking up toys or doing other tasks, the child usually keeps at the task until it's done"), and *inhibitory control* (13 items;  $\alpha$ s = .77 and .82 for mothers' and caregivers' reports respectively; included items such as "This child is usually able to resist temptation when told he or she is not supposed to do something"). Mothers rated children's behavior in the last week on a 7-point scale (1 = extremely untrue to 7 = extremely true). Caregivers' reports were slightly modified because of inappropriateness of some items.

Observational data were used to assess various dimensions of EC. The waiting for a bow was a measure of observed EC (Kochanska et al., 2000). An attractive gift box with a removable lid was placed in front of a child. The experimenter then told the child that she forgot to bring a bow that was supposed to be placed on top of the gift box. The experimenter instructed the child to stay in the seat and not touch the gift box until she came back with a bow. The child's mother was facing away from the child during the entire episode. The mother was asked to fill out questionnaire forms and not to interact with her child until the procedure was completed. The experimenter left the room for 2

minutes. A child's *strategy code* ( $ICC = .95$  based on the 25% of the sample) was rated on a 5-point scale (with higher score indicating more EC): a 1 was given when a child pulled a gift from box, 2 reflected if child put hand into box, 3 was coded when the child peeked in box, 4 reflected when the child touched box, but did not peek, and 5 was given when the child did not touch box.

The dinky toys procedure was another measure of observed EC (Kochanska, et al., 2000). At the end of the laboratory visit, the experimenter showed a child a clear plastic container with many fun dinky toys, such as bracelets, sunglasses, bouncy balls, and small stuffed animals. A child was praised for a wonderful job during a lab visit and was told that as a reward, one dinky toy could be taken home. The experimenter, however, asked a child to place his/her hands on his/her lap, look at the toys, and tell the experimenter which toy he or she wanted to take home without grabbing it. If a child reached for a toy, the experimenter blocked the attempt and reminded a child of rules. This task was repeated twice and the final score for each measure was averaged between the two trials. The task began when the experimenter opened the box and asked a child to choose a toy. The child's *strategy to choose* ( $ICC = .92$  based on 25% of the sample) was rated on a 0 to 6-point scale (0 = child grabbed a toy out of container immediately, 1 = child waited less than 2 seconds before taking toy out of container, 2 = child touched toy in container, but did not take it out, 3 = child pointed to toys, 4 = child removed hands from lap, 5 = child twitched or moved hands, but hands did not leave lap, and 6 = child did not remove hands from lap).

**Children's committed compliance.** At T3, children's committed compliance was observed in the "Do" and "Don't" contexts (clean-up and prohibition toys task



respectively; see Kochanska et al., 1995). In the “Do” context, committed compliance was coded when a child followed the mother’s instructions to put the toys in the basket after playing with them (see previous section for description of the task). Committed compliance captured children’s willingness to stop playing with interesting toys and tend to a less exciting activity – cleaning up the toys. The coding scheme for committed compliance reflected children’s self-regulated attempts to complete the chore with minimal or no parental intervention. Committed compliance was coded (present/absent) in 30-second intervals from the time a child began picking up the toys. Kappa was assessed on approximately 25% of the sample and was .62.

In the “Don’t” context, mothers asked children not to touch or cease contact with the prohibited toys (see previous section for description of the task). Committed compliance was observed when children showed interest in the toys, but restrained from touching them without physical maternal intervention. Committed compliance was also coded when children touched the toys, but immediately self-corrected themselves or responded positively to parental requests to cease contact with the prohibited toys. Children’s committed compliance was coded (present/absent) every 30 seconds from the onset of the episode and until children were no longer interested in the toys (e.g., pursued other activity). The episode began when the child was clearly aware of the toys but restrained him or herself from touching and approaching the toys. The conventions were made based on a child’s body language (e.g., a child looked at the direction of where the toys were and showed interest, distracted him or herself) and whether mothers may have intervened by reminding the child that the toys could not be touched. These conventions were also used to decide whether or not an episode continued for each consecutive 15-

second segment. The segment ended when the child reoriented his/her attention away from the toys. However, if the child went back to showing interest in the toys, the coding of the episode continued. Kappa for children's committed compliance during the "don't touch" task was assessed on approximately 25% of the sample and was .77.

**Children's academic adaptation.** Children's academic adjustment was measured at T5 and T6 (i.e., 72 and 84 months respectively) and was assessed via questionnaire data. At T5 and T6, mothers and teachers used the SLAQ (Ladd & Price, 1987) to report on children's school enjoyment (measured using *school liking* subscale) and avoidance (measured using *school avoidance* subscale). Mothers' answers were rated on a 5-point scale (1 = almost never to 5 = almost always). The *school liking* subscale (5 items;  $\alpha$ s = .80 and .83 for T5 and T6 respectively) included items such as "Looks forward to going to school" and *school avoidance* subscale (5 items:  $\alpha$ s = .94 and .92 for T5 and T6 respectively) included items such as "Asks to stay home from school." The avoidance items were reversed and averaged within and across subscales to form a composite reflecting children's school liking ( $\alpha$ s = .92 for both T5 and T6). Teachers' measure was utilized on a 3-point scale (1 = doesn't apply, 2 = somewhat applies, and 3 = certainly applies) and included 7 *school liking* items ( $\alpha$ s = .83 and .79 for T5 and T6 respectively; e.g., "Likes being in school") and 6 *school avoidance* items ( $\alpha$ s = .81 and .68 for T5 and T6 respectively; e.g., "Makes up reasons to go home from school"). As with mothers' reports, the avoidance items were reversed and averaged within and across subscales to form a single composite reflecting children's school liking ( $\alpha$ s = .87 and .84 for T5 and T6 respectively).

Additionally, at both T5 and T6, teachers evaluated children's adjustment to school using the Teacher Rating Scale of School Adjustment (TRSSA; Birch & Ladd, 1997). The measure consisted of two subscales: *cooperative participation* and *self-directedness*. The *cooperative participation* subscale (7 items;  $\alpha$ s = .93 and .91 for T5 and T6 respectively) was designed to assess children's ability to comply with the rules and included items such as "Follows teacher's directions" and *self-directedness* subscale (4 items;  $\alpha$ s = .86 and .84 for T5 and T6 respectively) examined children's independent behavior and included items such as "Works independently". Teachers rated their answers on a 3-point scale (0 = doesn't apply, 1 = applies sometimes, and 2 = certainly applies).

Last, at both wave points (i.e., T5 and T6), mothers and teachers evaluated children's academic performance using a letter grading system with plus/minus scale (i.e., from A+ to D or below). A score of 10 was given when a child received an A+ and a score of 1 represented a letter D or below. The assigned letter grade was thought to reflect children's academic standing.

### **Analytic Plan**

All analyses were done using a statistical software package SPSS 21. Because mothers' behaviors were assessed using various measures, composite variables were created to reduce the number of regression analyses. In other words, because measures were positively correlated, variables were combined (by standardizing and averaging) to create one measure of maternal warmth/sensitivity, one measure of maternal control, and one measure of maternal structure. Separate regression analyses were conducted to predict each aspect of maternal behavior (i.e., warmth, control, structure) from mothers'

Conscientiousness. Then, using regression analyses, mothers' parenting behaviors were thought to predict children's EC and committed compliance. Finally, children's academics were predicted by aspects of children's internalized conduct.

The current model included two mediators: mothers' behaviors and variables of children's internalized conduct (i.e., EC and compliance). Mothers' behaviors mediated the relation between mothers' Conscientiousness and children's internalization. Based on the mediation model proposed by MacKinnon and colleagues (2002), the causal sequence of mediation occurred if the relation between mothers' Conscientiousness and parenting behaviors (i.e., independent variable and mediator) and the relation between parenting behaviors and children's internalized conduct (i.e., mediator and dependent variable) were significant. Also, the mediation was thought to be complete if after controlling for mothers' parenting behaviors (i.e., mediator), the relation between mothers' Conscientiousness (i.e., independent variable) and children's internalized conduct (i.e., dependent variable) were no longer significant.

In a similar manner, in the next mediation analysis, children's internalization mediated the relation between mothers' parenting behaviors and children's academic adaptation. The mediation was expected to occur if the paths between mothers' behaviors and children's internalization (i.e., independent variable and mediator) and children's internalization and their academics (i.e., mediator and dependent variable) were statistically significant. The mediation was considered complete if after controlling for children's internalization (i.e., mediator), mothers' parenting behaviors no longer have an impact on children's academic performance. Last, to ensure the validity of results, this study controlled for children's sex, families' SES, and children's ethnicity in all analyses.

An additional control variable, children's linguistic skills at T2, was added to the analyses. Children's language was unrelated to academics, but was significantly positively correlated with mothers' verbal structure ( $r[213] = .18, p < .01$ ), marginally negatively correlated with mothers' negative verbal control ( $r[213] = -.16, p < .05$ ), and marginally positively correlated with children's EC ( $r[194] = .15, p < .05$ ). The results of the regression analyses controlling for language remained essentially the same. Thus, although tested, the results did not include children's linguistic skills as a control variable.

## Results

### Data Reduction

**Mothers' behaviors.** Mothers' behaviors were positively correlated as follows: (a) observed sensitivity (i.e., during free play and teaching task) and warmth (i.e., during teaching task),  $r(214) = .27$  to  $.46, ps < .01$ ; (b) verbal structure (i.e., during the clean-up and prohibition task),  $r(204) = .27, p < .01$ ; (c) verbal control (i.e., during the clean-up and prohibition toys task),  $r(204) = .26, p < .01$ ; and (4) intrusiveness (i.e., during free play and teaching task),  $r(214) = .25, p < .01$ . Because of rare occurrence (i.e., low means) and non-significant relations with other study variables, the physical structure and physical control variables were excluded from further analyses. To reduce the number of variables, scores were standardized and averaged to create composites of observed sensitivity, observed verbal structure, observed verbal control, and observed intrusiveness. Observed verbal control and observed intrusiveness were further positively correlated ( $r[214] = .41, p < .01$ ), and as such, a composite of observed negative verbal

control was created. After data reduction, mothers' behaviors consisted of (a) sensitivity, (b) verbal structure, and (c) negative control.

**Children's internalization.** Variables of children's internalization significantly positively correlated as follows: mothers' and caregivers' reports of children's EC (i.e., attention shifting, attention focusing, and inhibitory control;  $r_{s[203]} = .23$  and  $.51$  and  $r_{s[148 \text{ and } 147]} = .41$  and  $.65$ ,  $p_s < .01$  for mothers and caregivers respectively), observed EC (i.e., during waiting for a bow and dinky toys task;  $r[188] = .35$ ,  $p < .01$ ), and committed compliance (i.e., during the clean-up and prohibition toys task;  $r[169] = .25$ ,  $p < .01$ ). Scores for these variables were standardized and averaged to create a composite of mother-reported EC, caregiver-reported EC, observed EC, and committed compliance. Mother-reported EC and caregiver-reported EC were further positively correlated, ( $r[145] = .23$ ,  $p < .01$ ), and as such, a composite of adult-reported EC was created. Moreover, adult-reported EC and children's observed EC were significantly positively correlated,  $r(190) = .27$ ,  $p < .01$ . Thus, a composite of children's EC was created. After final variable and composite reduction, children's internalization consisted of (a) EC and (b) observed committed compliance.

**Children's academics.** At both waves, mothers' and teachers' reports of school liking were significantly positively correlated,  $r_{s(130 \text{ and } 117)} = .29$  and  $.37$ ,  $p_s < .01$  for T5 and T6 respectively. As such, scores on each variable were standardized and averaged to create a composite of adult-reported school liking at T5 and T6. Moreover, because adult-reported school liking at T5 positively correlated with adult-reported school liking at T6, ( $r[150] = .51$ ,  $p < .01$ ), a composite of total reported school liking (i.e., across both waves) was created by averaging the variables.

Next, mothers' and teachers' reported GPA were highly correlated at each time,  $r(112) = .68, p < .01$  for T5 and  $r(107) = .66, p < .01$  for T6. As such, mothers' and teachers' reports were standardized and averaged to create a composite of adult-reported GPA at T5 and T6. Moreover, because adult-reported GPA at T5 positively correlated with adult-reported GPA at T6, ( $r[141] = .58, p < .01$ ), a composite of total GPA (i.e., across both waves) was created by averaging the variables.

Furthermore, because teachers' reported self-directedness and cooperation were positively correlated at both times ( $rs[142 \text{ and } 130] = .69 \text{ and } .60, ps < .01$  for T5 and T6 respectively), variables were standardized and averaged to create a composite of teacher-reported school adjustment at T5 and T6. Teacher-reported school adjustment at T5 further positively correlated with teacher-reported school adjustment at T6,  $r(109) = .47, p < .01$ . Thus, a composite of total school adjustment (i.e., across both waves) was created by averaging the variables.

Finally, composites of total reported school liking, total GPA, and total school adjustment were positively correlated,  $rs(164 \text{ to } 169) = .35 \text{ to } .66, ps < .01$ . Therefore, these variables were further reduced to create a single composite of children's school adaptation.

### **Normality of Data**

The descriptive statistics of final variables and composites were examined through the descriptive function (specifically the values of skewness and kurtosis) and histogram plots. Values of skewness  $> 2.0$  and  $< -2.0$  or kurtosis  $> 7.0$  and  $< -7.0$  are thought of as problematic and are often considered for transformation to meet the

assumption of normality (Tabachnick & Fidell, 2007). Relevant to the distribution of data in the present study, all data met the assumption of normality.

### **Preliminary Analyses**

**Sex differences.** Means and standard deviations of all study variables, including individual variables, final composites, and variables that were eliminated from further analyses (i.e., because of the rare occurrence) are presented in Table 1. Independent sample *t*-tests were conducted to determine whether mothers' Conscientiousness, mothers' parenting behaviors, children's internalization, and children's academics varied by children's sex.

With respect to mothers' data, there were no sex differences for mothers' Conscientiousness. Sex differences were found for a number of mothers' behaviors variables. For example, mothers were at least marginally more sensitive with their daughters than with their sons during the free play. Consistent with this finding, sensitivity during the teaching task and a composite of mothers' sensitivity indicated that mothers were significantly more sensitive with their daughters than with their sons. Mothers provided significantly more verbal structure to their daughters than to their sons during the clean-up task. Although excluded from future analyses, mothers' use of physical structure was at least marginally more common for boys than for girls during the clean-up task and significantly more common for boys than for girls during the prohibition toys task. A composite of verbal structure indicated that mothers provided significantly more verbal structure to their daughters than to their sons. In addition, mothers exhibited significantly higher levels of intrusive behaviors during the free play with their sons than with their daughters and were significantly more verbally negatively



controlling with their sons than with their daughters during the clean-up task. Consistent with these findings, a composite of mothers' negative control significantly favored girls.

In reference to children's data, girls scored significantly higher on mothers' reports of *attention focusing* and exhibited at least marginally higher levels of EC during the waiting for a bow task than did boys. A composite of EC indicated that girls displayed significantly higher levels of EC than did boys. Girls showed significantly higher levels of committed compliance across both task (i.e., during the clean-up and prohibition toys), including the composite. In terms of school variables, teachers' reports showed that girls scored marginally higher on school liking at T5 than did boys. At both times, mothers' reports of school liking indicated significant difference favoring girls. Girls scored higher than did boys on teachers' reports of cooperative participation at both times and self-directedness at T5. Girls scored marginally higher on teacher-reported GPA at T5 and significantly higher on mother-reported GPA at T5 than did boys. Finally, scores on a composite of children's school adaptation were significantly higher for girls than for boys. Given the number of differences, sex was controlled for in further analyses.

**Socioeconomic status.** Although parents reported their socioeconomic status (SES) during each wave of data collection, SES is considered to be a relatively stable construct ( $r$ s ranged from .93 to .95 as measured at T1, T2, and T3,  $p$ s < .01). Thus, only SES at the first time point in this study (T1) was used. SES was significantly positively correlated with mothers' Conscientiousness ( $r[232] = .26, p < .01$ ), mothers' sensitivity ( $r[202] = .35, p < .01$ ), mothers' verbal structure ( $r[202] = .25, p < .01$ ), and children's EC ( $r[192] = .28, p < .01$ ). SES was significantly negatively correlated with mothers'

negative control,  $r(202) = -.30, p < .01$ . Considering the significance of SES, this variable was controlled in further analyses. Moderation by SES was also examined.

**Ethnicity.** The next goal was to determine whether study variables differed based on children's ethnicity (i.e., Hispanic vs. non-Hispanic). Independent sample *t*-tests were conducted to determine whether mothers' Conscientiousness, mothers' parenting behaviors, children's internalization, and children's academics varied by children's ethnicity (see Table 1).

A number of differences were found for mothers' data. For example, mothers of Hispanic children were significantly lower on the Conscientiousness measure of personality. In reference to parenting behaviors, mothers of non-Hispanic children reported to be significantly less negatively controlling than mothers of Hispanic children. Furthermore, mothers of Hispanic children were significantly lower on sensitivity during free play, warmth during teaching task, sensitivity composite, and physical structure during the clean-up task than were mothers of non-Hispanic children. Hispanic mothers were observed to be at least marginally more verbally controlling during the clean-up task than mothers of non-Hispanic children. Contrary to this pattern, during the prohibition task, mothers of non-Hispanic children exhibited significantly higher levels of physical negative control than mothers of Hispanic children.

With respect to children's data, non-Hispanic children scored significantly higher on mothers' reports of *attention focusing* and at least marginally higher on mothers' reports of *inhibitory control*. Moreover, Hispanic children scored at least marginally higher on mother-reported school liking at T6, but marginally lower on teacher-reported GPA at T5 than did non-Hispanic children. Finally, mother-reported GPA at T6 revealed

marginal advantage for Hispanic children than for non-Hispanic children. Given the importance of ethnicity, this variable was controlled in further analyses.

### **Correlations**

Correlations among the study variables are presented in Table 2. It is important to note that variables with low means and non-significant relations to other study variables (i.e., physical structure and physical negative control) were excluded from investigation. Also, only composite variables (and not their components) were used in further analyses.

**Conscientiousness.** Conscientiousness was unrelated to parenting variables. Mothers' Conscientiousness was positively associated with children's EC and committed compliance. Correlation between mothers' Conscientiousness and children's school adaptation was non-significant.

**Mothers' behaviors.** Mothers' sensitivity was significantly positively correlated with mothers' verbal structure and highly negatively correlated with mothers' negative control. Furthermore, mothers' sensitivity was positively correlated with children's EC, committed compliance, and children's school adaption. Mothers' verbal structure related negatively to mothers' negative control and positively to children's EC, but it was unrelated to children's committed compliance and school adaptation. Mothers' negative control significantly correlated with low levels of children's EC, committed compliance, and children's school adaptation.

**Children's internalization.** EC was significantly positively correlated with children's committed compliance and school adaptation. Children's committed compliance was unrelated to school adaptation.

### **Hypothesized Direct Relations**

Hierarchical stepwise multiple regression analyses were conducted to determine the direct relations between the variables. The controlled variables (i.e., children's sex, family SES, and children's ethnicity) were entered in the first step of the regressions and the independent variable of interest was entered in the second step. The first set of regression analyses examined the relation between mothers' Conscientiousness and children's internalization (i.e., EC and observed committed compliance). Next, the relations between mothers' Conscientiousness and children's school adaptation were examined. Finally, each of the parenting behaviors (i.e., sensitivity, observed verbal structure, and negative control) were evaluated in relation to children's school adaptation. The results of the hierarchical multiple regression analyses are presented in Tables 3 and 4.

In terms of relations between mothers' Conscientiousness and children's internalization (see Table 3), Conscientiousness was weakly marginally positively related to children's EC and committed compliance. Contrary to the hypothesized predictions, mothers' Conscientiousness was unrelated to children's school adaptation (see Table 3). As predicted, mothers' sensitivity was a marginal predictor of children's higher school adaptation, but verbal structure and negative control were not predictors of children's school adaptation.

### **Hypothesized Mediation**

Mediation analyses were examined using three complementary methods: (a) a four-step approach (i.e., stringent), (b) a three step approach (i.e., less stringent), and (c) an RMediation analysis (or the distribution-of-the product method).

Following MacKinnon et al.'s (2002) four-step mediation approach guidelines, the predictor had to be significantly related to the outcome variable (1<sup>st</sup> step) and to the mediator (2<sup>nd</sup> step), the mediator had to be significantly related to the outcome variable (3<sup>rd</sup> step), and when controlling for the mediator, the relation between the predictor and outcome variable had no longer to be significant (4<sup>th</sup> step). The three step mediation approach omitted the significance of the first step (i.e., the significance of predictor on the outcome variable) and the rest of the requirements remained the same. Although it may be ideal to use the most stringent mediation analyses, it may be unrealistic to expect for a single mediator to explain the relation between the predictor and criterion (Baron & Kenny, 1986). As such, a three step approach is acceptable and highly suggested for social science research analyses.

In addition to the traditional stepwise regression approach, the proposed mediated effects were further tested through the distribution of confidence interval (CI) using the RMediation package (Tofighi & MacKinnon, 2011). The RMediation package tests the product of two random normal variables of interest and is argued to be an accurate measure for examining the distribution of CIs for various effects, including the mediation effects. Thus, this method has become the most current standard of the mediation testing. RMediation computes confidence intervals (CIs) for mediated effects using two regression coefficients. A significant mediated effect excludes the value of zero from the CI.

Relevant to this study, none of the hypothesized mediated relations were significant using the four-step approach; however, there was some evidence of a mediated effect when implementing the three step mediation approach and RMediation

analysis. The mediation results using the three step approach are presented in Tables 6 – 9.

As can be seen in Table 5 (i.e., the relation between the predictor and mediator: mothers' Conscientiousness and mothers' behaviors), Table 6 (i.e., the relation between the mediator and outcome variable: mothers' behaviors and children's internalization), and Table 7 (i.e., the relation between the predictor and outcome variable while controlling for the mediator: mediated effect of mothers' behaviors in the relation between mothers' Conscientiousness and children's internalization), mothers' behaviors did not mediate the relations between mothers' Conscientiousness and children's internalization. This finding is consistent with correlation analyses indicating non-significant correlations between mothers' Conscientiousness and mothers' observed parenting behaviors.

The next goal was to test whether children's internalization mediated the relations between mothers' behaviors and children's school adaptation. Regressions indicated that mothers' sensitivity, verbal structure, and negative control predicted children's EC (see Table 6), which in turn, predicted children's school adaptation (see Table 8). Under the guidelines of mediation, the effect of mothers' sensitivity, verbal structure, and negative control dropped or became marginal after controlling for children's EC (see Table 9). The evidence of mediated effect of EC in the relation between mothers' behaviors and children's school adaptation was further supported in the RMediation analysis, 95% CIs (.012 to .097), (.010 to .081), and (-.130 to -.020) for mothers' sensitivity, verbal structure, and negative control respectively. Both methods suggested that children's EC mediated the relation between mothers' behaviors and children's school adaptation.

Contrary to the hypothesized predictions, children's committed compliance did not mediate the relation between mothers' behaviors and children's school adaptation.

### **Hypothesized Moderation**

The next step was to test whether the relation between mothers' behaviors and children's internalization and the relation between children's internalization and school adaptation varied by family SES, children's sex, children's ethnicity, (i.e., moderators).

**Exploration of moderated effects: Mothers' behaviors and children's internalization.** When exploring the moderated effects in the relation between mothers' behaviors and children's internalization, the continuous predictor variables (i.e., parenting behaviors) and continuous outcome variables (i.e., EC, committed compliance) were standardized, the continuous moderator (i.e., SES) was centered, and the categorical moderators (i.e., children's sex and ethnicity) were dummy coded to ensure that the variables of interest had a meaningful zero (Cohen, Cohen, West, & Aiken, 2003). An interaction variable (or cross-product) was computed by multiplying a predictor and a moderator.

The moderating effect of SES in the relation between mothers' behaviors and children's internalization was computed as follows. The controlled variables (i.e., children's sex and ethnicity) were entered in the first step of the equation. The standardized predictor (i.e., mothers' behaviors), moderator (i.e., standardized SES), and the interaction variable (i.e., the cross-product of mothers' behaviors and SES) were entered in the second step of the equation. The analysis revealed that SES interacted with both mothers' sensitivity ( $\beta = .16, t = 1.95, p = .05$ ) and mothers' verbal structure ( $\beta = .15, t = 2.05, p = .04$ ) to predict children's committed compliance, but not EC. Following

procedures recommended by Aiken and West (1991), the significant interactions were probed with simple regression slopes examined at the mean level of SES, 1 standard deviation above the mean (high SES), and 1 standard deviation below the mean (low SES). At high SES, mothers' sensitivity was marginally positively related to children's compliance ( $\beta = .21, t = 1.76, p = .08$ ), but at the mean level ( $\beta = .05, t = .61, p = .55$ ) and at low SES ( $\beta = -.10, t = -.89, p = .38$ ), mothers' sensitivity was unrelated to children's committed compliance (see Figure 3). Similarly, at high SES, mothers' verbal structure was marginally positively related to children's committed compliance ( $\beta = .22, t = 1.83, p = .07$ ), but at the mean level ( $\beta = .07, t = .86, p = .39$ ) and at low SES ( $\beta = -.08, t = -.82, p = .41$ ), mothers' verbal structure was unrelated to children's committed compliance (see Figure 4).

Next, the moderating effect of children's sex was tested by entering the control variables (i.e., SES and children's ethnicity) in the first step of the equation. The standardized predictor (i.e., mothers' behaviors), moderator (i.e., dummy coded sex), and the interaction variable (i.e., the cross-product of mothers' behaviors and children's sex) were entered in the second step of the equation. The analysis showed that children's sex significantly moderated the relation between mothers' sensitivity and children's committed compliance, ( $\beta = .34, t = 2.06, p = .04$ ). This significant interaction was further probed by examining the simple regression slope for each sex. To determine whether the slope representing the relation between children's committed compliance and mothers' sensitivity differed significantly from zero for boys and for girls, an additional regression analysis was performed. In doing so, children's dummy coded sex variable was recoded such that the sex that had a value of 0 was recoded to 1 and the sex that had



a value of 1 was recoded to 0 (Aiken & West, 1991). Values from the regression in which boys were coded as zero and values from regression in which girls were coded as 0 indicated the significance of the slope for each sex. The results showed (see Figure 5) that mothers' sensitivity was a marginal predictor of committed compliance for boys ( $\beta = .19$ ,  $t = 1.73$ ,  $p = .09$ ), but not for girls ( $\beta = -.15$ ,  $t = -1.14$ ,  $p = .26$ ).

The moderating effect of children's ethnicity in the relation between mothers' behaviors and children's internalization was computed as follows. The controlled variables (i.e., SES and children's sex) were entered in the first step of the equation. The standardized predictor, moderator (i.e., dummy coded ethnicity), and the interaction variable (i.e., the cross-product of mothers' behaviors and children's ethnicity) were entered in the second step of the equation. The analyses showed that children's ethnicity did not moderate the relations between mothers' behaviors and children's internalization.

**Exploration of moderated effects: Children's internalization and school adaptation.** A second set of regression analyses were conducted to examine the moderated effect of family SES, children's sex, and children's ethnicity in the relation between children's internalization and school adaptation. Analyses were conducted similar to those described above. No significant interactions were found in the relation between children's internalization and school adaptation.

### **Interactions between Parenting Variables**

Additional tests were conducted to determine whether mothers' sensitivity moderated the relation between mothers' structure in predicting children's internalization. In doing so, the following variables were used: standardized predictor (i.e., mothers' verbal structure), standardized outcome variable (i.e., children's internalization), and

centered moderator (i.e., mothers' sensitivity). The controlled variables (i.e., family SES, children's sex, and children's ethnicity) were entered in the first step of the regression, and mothers' sensitivity, structure, and the cross-product of mothers' sensitivity and structure were entered in the second step. The results of the regression analyses indicated that mothers' sensitivity interacted significantly with mothers' verbal structure in predicting children's EC ( $\beta = .18, t = 2.46, p = .02$ ), but not committed compliance ( $\beta = -.01, t = -.16, p = .87$ ).

Probing of this interaction revealed that mothers' verbal structure was positively related to children's EC at high ( $\beta = .42, t = 3.32, p = .00$ ) and moderate ( $\beta = .23, t = 3.04, p = .00$ ) levels of mothers' sensitivity, but not at low levels of mothers' sensitivity ( $\beta = .05, t = .58, p = .57$ ). See Figure 6.

The final exploratory interaction analyses examined whether the relations between mothers' behaviors and children's adaptation would be moderated by family SES, children's sex and ethnicity. No significant interactions were found. Additionally, mothers' sensitivity did not interact with mothers' structure to predict children's academic adaptation.

### **Exploration of Bidirectional Relations**

Although not necessarily included in the goals of the study, the reverse path between mothers' behaviors and children's internalization was tested as well. That is, the analysis aimed to explore whether children's internalization (i.e., EC and committed compliance) would predict mothers' sensitivity, structure, and negative control. In doing so, variables for children's internalization at 30 months (T2) and parenting behaviors at 42 months (T3) were added to the existing model (i.e., data from the same tasks at a

different time point). Due to the lack of significant correlation for children's data at T2, comparable composites for children's EC and committed compliance were not made. Thus, the question of bidirectional relations could not sufficiently be answered in this work.

## **Summary**

In summary, the hypothesized direct relations between the variables were evidenced in the following instances. Mothers' Conscientiousness was a marginal predictor of children's internalization (i.e., both EC and committed compliance), but it was unrelated to children's school adaptation. The link between parenting behaviors and children's school adaptation was partially supported. Only mothers' sensitivity marginally predicted better school adaptation, but structure and negative control did not.

With respect to mediation, mothers' behaviors did not mediate the relation between mothers' Conscientiousness and children's internalization. Absence of mediation was evident in the first step of the mediation analysis in which the path from mothers' Conscientiousness to mothers' behaviors was insignificant. Next, children's EC, but not committed compliance, mediated the relation between mothers' behaviors (i.e., sensitivity, verbal structure, and negative control) and children's school adaptation. In terms of interaction effects, SES moderated the link between (a) mothers' sensitivity and children's committed compliance and (b) mothers' verbal structure and children's committed compliance, showing a significant positive relation for children living in economically advantaged homes only. Additionally, mothers' sensitivity was a marginal predictor of children's committed compliance for boys, but not for girls. Finally,

mothers' mid- to high- levels of sensitivity moderated the relation between mothers' structure and children's EC. No other significant interaction effects were found.

### **Discussion**

The primary goal of this work was to describe the role of mothers' personality and mothers' parenting behaviors (e.g., sensitivity, structure, and negative control) in relation to children's developmental outcomes, including EC, committed compliance, and academic adaptation. Overall, the results supported a direct link between mothers' personality and children's internalization and identified both direct and indirect pathways through which supportive parenting practices promote children's school adaptation.

First, the findings from this study supported the mediating role of children's EC in the relation between mothers' parenting behaviors and children's school adaptation. This result adds to the well-established body of literature highlighting the mediating role of children's EC in predicting children's academics (Razza & Raymond, 2013; Valiente et al., 2011). Specifically, mothers' behaviors were found to be significant predictors of children's EC, which in turn predicted children's academic adaptation. Consistent with the documented literature, mothers' sensitivity (Graziano et al., 2010; Spinrad et al., 2012) and structure (Karreman et al., 2008) predicted effective regulatory skills in children, whereas negative control suppressed children's ability to regulate (Kochanska et al., 2008). Furthermore, higher levels of EC predicted better academic adaptation (Liew, 2012; Valiente et al., 2011). These findings highlight the critical mediating role of children's EC in the link between parenting behaviors and children's school adaptation.

Whereas adding to the growing body of literature that mothers' behaviors are crucial to children's internalization, the key feature of this work was the focus on

mothers' structure. As a dimension of parenting, parental structure has received less attention in the realm of research, but it only recently began gaining momentum among few researchers (e.g., Farkas & Grolnick, 2010; Grolnick & Pomerantz, 2009; Karreman et al., 2008; Pomerantz & Grolnick, 2010) as a unique and important contributor to children's development. Parental structure is a form of positive control that reflects consistency in discipline and clear expectations of acceptable behaviors (Farkas & Grolnick, 2010). Parental structure closely resembles what Kochanska and her colleagues (e.g., Kochanska, 1993, 1997; Kochanska & Aksan, 1995) referred as gentle control. Importantly, as a dimension of parenting, parental structure considers children's input (Pomerantz & Grolnick, 2010) and, therefore, is conducive to children's positive development, including self-regulation (Farkas & Grolnick, 2010; Kochanska & Aksan, 1995). Specific to this study, measures of parental verbal structure captured mothers' gentle guidance of children's behavior. For example, a parent high on parental structure affectionately interacted with a child and politely suggested or reminded of expectations. Consistent with its definition, the goal of parental verbal structure in this study was to offer clear expectations to the child and provide constructive guidance.

Closely related to the importance of parental structure, the most interesting finding was the moderating role of mothers' sensitivity in the relation between mothers' structure and children's EC. Consistent with Baumrind's (1989) work on the use of parental discipline strategies in the context of supporting parenting, this finding provided evidence that combined with mothers' mid- to high-levels of sensitivity, mothers' structure was a significant positive predictor of children's EC. To understand the combined strength of sensitivity and structure, it may be helpful to tease apart the

meanings of both constructs. In comparison to sensitivity, structure may be a more advanced form of parenting that requires planning and preparation of responding effectively to a child in ways that is reflective of his or her stage in the development. Increased effort in being gentle, constructive, and consistent in parenting regardless of the child's behaviors, may be the essential components of structure. Importantly, when such characteristics are combined with greater levels of sensitivity, these children are more apt to control their behaviors. On the other hand, combined with low levels of sensitivity, mothers' structure was unrelated to children's EC. Current findings highlight the importance of distinguishing between various types of parental control (Grolnick & Pomerantz, 2009) and underscore the critical role of parental structure and sensitivity in predicting positive developmental outcomes in children.

In addition to the relations of parenting to children's internalization and academic outcomes, this work also provided evidence that mothers' Conscientiousness was a weak predictor of children's higher EC and committed compliance. At least two possible mechanisms may account for these results. It is possible that successful internalization is a product of genetic inheritance (Bouchard & Loehlin, 2001; Goldsmith et al., 2008; Luciano et al., 2006). Particular to the current study, researchers (e.g., Jang, McCrae, Angleitner, Riemann, & Livesley, 1998) have found substantial heritability of lower-order traits of Conscientiousness that are thought to be rooted in early aspects of internalization. The magnitudes of heritability of traits that are related to regulatory capacities varied across studies, but generally have ranged in the vicinity of 30-50% in explaining children's internalized behaviors (Figueredo, Vasquez, Brumbach, & Schneider, 2010; Jang et al., 1998; Loehlin, McCrae, & Costa, 1998). Importantly and

consistent with previous research (e.g., Halverson et al., 2003), these findings further illustrate that personality traits related to self-regulatory tendencies become apparent in the early years of life. Thus, linking parental personality to its lower order traits in children may provide wealth of information on the origin of children's behaviors. Important to note, however, that children may have also inherited personality traits from their fathers (Bouchard & Loehlin, 2001) who were not a part of the present study. As such, these findings need to be interpreted with caution.

Another possible explanation for the relation between mothers' Conscientiousness and children's successful early internalization may be through social learning perspective (or modeling; Bandura, 1977; Campbell, Shaw, & Gilliom, 2000; Chibucos, Leite, & Weis, 2005). Individuals who score high on Conscientiousness are known to set high expectations and act accordingly to achieve the desired results (Barrick et al., 2001). For example, studies focusing on job performance continuously highlight the critical role of Conscientiousness traits (e.g., efficiency, reliability, self-control, achievement-oriented attitude, dutifulness) in employees. Additionally, people who score high on the Conscientiousness measure have an acutely developed sense of adhering to demands and complying with authority figures (Roccas, Sagiv, Schwartz, & Knafo, 2002). Relevant to parenting, mothers high on Conscientiousness may serve as positive role models and are probably exposing their children to similar values and beliefs. In social interactions, these parents may communicate the value of commitment by following up on their promises. Responsible and well-regulated parents may model socially appropriate rules of conduct for their children and elicit alike behaviors. Moreover, children who are reared with values and attitudes that are characteristic of Conscientiousness domain of personality

may be more successful in effectively regulating their behaviors and in complying with others' requests than children whose parents lack such qualities or score low on the Conscientiousness measure of personality. These results emphasize the importance of studying personality characteristics as the findings may offer a more detailed approach to parents' childrearing practices that go beyond general parenting behaviors or the behaviors measured in the current study.

It is important to note that contrary to the hypothesized prediction, mothers' Conscientiousness was unrelated to children's academic adaptation. This argument was rested on the idea that mothers high on Conscientiousness would also impose and teach their children to have high expectations with respect to school performance. Put differently, it was hypothesized that these mothers would help children develop traits that are related to performance, such as persistence and goal setting. The lack of findings may be due to children's age at which academic adaptation was measured (i.e., ages 6 to 7). It is possible that the traits which parents attempt to elicit, such as persistency and achievement-oriented attitude, may not yet be fully developed in young children. In other words, these young children may not have developed the capacity to make a conscious decision to pursue long-term goals (Caspi & Shiner, 2006) and it may still be difficult for them to plan far ahead and understand the importance of school. These more complex traits of goal-oriented attitude may be more evident in children of middle to late childhood ages. Moreover, although mothers high on Conscientiousness may be creating the environment that would induce superior academic outcomes in children, it does not necessarily mean that they expect or demand that children perform at high levels. For example, mothers high on Conscientiousness may motivate their children to do well in



school by instilling the core values and by assisting children in executing a plan to achieve academic goals, but children's performance may not necessarily depend on those facts alone. It is quite possible that the link between mothers' Conscientiousness and children's academics is mediated by another factor, such as motivation or parents' values. Future studies would benefit by identifying possible intervening variables.

Furthermore, results showed that some aspects of parenting, but not others, predicted children's school adaptations. Specifically, mothers' sensitivity predicted better school adaptation (Culp, Hubbs-Tait, Culp, & Starost, 2000; Morrison, Rimm-Kauffman, & Pianta, 2002; NICHD, 2002; Razza & Raymond, 2013), but neither mothers' structure nor negative control related to children's school outcomes. Although literature linking parental negative control to children's academics is extant (e.g., Ginsburg & Bronstein, 1993), current study failed to replicate similar results. With respect to the finding regarding negative control, it is important to note that studies in which negative control is investigated often reflect parenting behaviors that include harsh physical control, intrusiveness, and hostility (Graziano et al., 2010; Morris, Silk, Steinberg, Sessa, Avenevoli, & Essex, 2002). In the current study, such types of parenting behaviors were rare. Because of low occurrence, physical negative control was excluded from this study's analyses. Although verbal negative control is thought to be a valid measure in predicting children's developmental outcomes (e.g., EC), it may not necessarily be a strong enough measure to forecast children's academic adaptation as physical negative control might have.

Finally, provided that literature on parental structure is less clear, failure to find the expected positive relation between mothers' structure and children's school

adaptation was less surprising. It is possible that parental structure would not necessarily predict children's overall academic adaptation, but rather help with organization skills, for example, which in turn may enhance school performance for some children. Additionally, to do less well in school may not necessarily mean to violate parents' expectations (Farkas & Grolnick, 2010). For instance, children may have accepted parents' feedback on homework and followed the rules of the study time, but their efforts did not result in superior academic adaptation. Though parenting may help enhance children's academic competencies, their cognitive capacities (e.g., IQ, early literacy skills) may be stronger predictors (McClelland et al., 2007; Walker, Greenwood, Hart, & Carta, 1994). The findings of this study suggest that parental structure is an indirect predictor of children's academics.

Although not necessarily included in the theoretical model of hypothesized relations, current study attempted to examine the bidirectional path between mothers' behaviors and children's internalization. Specifically, provided that parenting behaviors were significant predictors of children's EC, it was practical to presume the reciprocal relation. Even though the bidirectional path could not be tested in the current study, the theoretical framework (Belsky, 1984) and scant research evidence provide support for the bidirectional pathway between parenting and children's developmental outcomes (Eisenberg, Fabes, Shepard, Guthrie, Murphy, & Reiser, 1999; Lengua, 2006; Lengua & Kovaks, 2005). Parenting focused studies that include longitudinal data analyses may benefit from examining bidirectional processes.

The next notable finding of the present study was with respect to the moderating role of SES and children's sex in the relation between mothers' behaviors in predicting

children's committed compliance. Specifically, mothers' sensitivity and structure were prominent for children living in high SES and mothers' sensitivity was more important for boys than it was for girls in predicting their committed compliance. Although the probing of these moderating effects was marginal, this study may be the first to find such effects, particularly in relation to children's committed compliance. Possible explanations for these interaction effects are in order.

First, the findings show that mothers' sensitivity and structure predicted committed compliance, but only for children living in economically advantaged homes. Although low SES is often associated with less child-centered parenting behaviors (Farver, Xu, Eppe, & Lonigan, 2006; McLoyd, 1998) and less optimal developmental outcomes for children (Bradley & Corwyn, 2002), improvements in parenting practices have shown to protect children from negative outcomes associated with low SES (Chen, Miller, Kobor, & Cole, 2011). Relevant to current study, it is puzzling that the increase in mothers' sensitivity and structure was unrelated to committed compliance in children of lower economic standing. Two possible explanations are offered. First, it is possible that mothers of low SES were less comfortable being observed/videotaped in a laboratory setting and may have interacted with their children in ways less consistent than usual. Second, children's committed compliance may be more valued or appreciated in economically advantaged families. Thus, when mothers are sensitive and use structure, children are likely to display high levels of obedience. These findings may have important implications for understanding the role of parenting and differences in SES in the development of children's internalization. Future studies might focus on the processes

of children's committed compliance and mothers' parenting behaviors, specifically sensitivity and structure, in a more "at-risk" sample than in the present study.

Furthermore, despite mixed finding on the possible moderating effect of children's sex in the relation between parenting and children's behavior outcomes (Chang et al., 2011; Colman et al., 2006; von Suchodoletz et al., 2011), it was found that mothers' sensitivity predicted committed compliance, but only for boys. Provided that girls were more compliant than were boys, these results suggest that parental sensitivity is more critical to internalization, particularly committed compliance, for boys than it is for girls. Consonant with existing research on gender differences (e.g., Else-Quest et al., 2006), this finding suggests that boys are more susceptible to problem behaviors, such as noncompliance, than are girls, and are more vulnerable to differences in parenting behaviors. These findings add to the well-established body of literature emphasizing the importance of mothers' sensitivity in predicting children's internalization.

This study had a number of notable strengths. First, the longitudinal design of this study enabled to explore direct and indirect pathways as well as identify potential causal links between parenting and children's developmental outcomes. In this study, data ranged from the time children were 18 months old to the completion of first year in elementary school. Second, to reduce potential reporter bias, multiple reports and measures were used for children's EC and academic adaptations. Finally, although parenting behaviors and children's committed compliance were based on observational data only, the composites included measures of at least two observational tasks indicating the validity of measures.

Despite the above mentioned strengths, several limitations should be noted as well. One important limitation was the sample size, which primarily consisted of Caucasian middle class families. Given the low-risk sample, mothers seldom displayed behaviors that included physical force. Because of infrequent physical negative control and physical structure, these behaviors were excluded from the analyses. A more diverse sample is needed to address these issues. Next, only mothers' reports were collected to assess mothers' level of Conscientiousness. In the future, it would be more informative to use multiple reporters. Importantly, provided that many traits of Conscientiousness can be identified in the context of work, it may be beneficial to have at least one informant from the person's place of employment (e.g., a supervisor). Another limitation was that this study primarily focused on mothers' behaviors and none of fathers' data were included in the analyses. Thus, generalization of present findings is limited to mothers only. Last, but not least, the hypothesized model should be examined using a more sophisticated statistical approach, such as structural equation modeling, which is a more fruitful approach to examine the relations between the variables, overall model fit, and the stability of constructs over time.

Future studies should consider these important limitations. Additionally, it may be more valuable for researchers to design more specific measures of parenting behaviors that would in greater depth reflect their daily encounters with children. For example, discerning between different types of control is moving the field forward in that direction. Another suggestion may be to design a measure that includes questions about parenting practices that are reflective of their personality. These improvements may provide a

wealth of information about parental values and whether these values are consistent with their personality traits.

Overall, current findings contribute to the growing body of literature and advance the claim that parenting practices and behaviors play an important role in children's development. Importantly, the results of this study could be incorporated into various parenting programs focused on eliciting positive socio-emotional development in children as well as educational interventions that target to promote children's academic competence and adaptation. Specifically, to elicit children's internalization, parenting programs may emphasize the critical role of mothers' sensitivity and structure as well as the importance of consistency in practicing these behaviors. Moreover, to ensure or to enhance children's academic well-being, mothers' understanding and implication of sensitivity is crucial. Research findings regarding mothers' sensitivity could be communicated through parent-teacher conferences or during the enrollment process of children into school. Educating parents on the possible impact of parenting practices may ensure optimal developmental outcomes and provide children with greater potential for succeeding in school.

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Table 1

*Means and Standard Deviations of Study Variables and Composites for Children's Sex and Ethnic Differences*

	Possible range	Total		Male		Female		Child sex differences <i>t</i> -test	Hispanic or Latino		Non-Hispanic		Ethnic differences <i>t</i> -test
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
M Conscientiousness ( <i>N</i> = 243)													
1-7		3.89	.62	3.86	.62	3.91	.62	-.60	3.59	.54	3.93	.62	2.96**
Mothers' Sensitivity ( <i>N</i> s = 216-222)													
O Sens (free play)	1-4	2.82	.52	2.77	.55	2.90	.47	-1.89†	2.58	.49	2.86	.52	2.73**
O Sens (teaching)	1-4	3.77	.36	3.73	.39	3.83	.31	-2.14*	3.68	.34	3.79	.37	1.41
O Warm (teaching)	1-5	3.50	.47	3.47	.47	3.55	.46	-1.26	3.31	.45	3.53	.46	2.38*
Sens COMP		.00	.76	-.11	.77	.13	.72	-2.31*	-.38	.70	.05	.75	2.89**
Mothers' Structure ( <i>N</i> s = 207-215)													
O Stru (CL VR)	0-1	0.89	.19	0.86	.22	0.92	.16	-2.07*	.82	.26	.90	.18	1.60
O Stru (CL PH) <sup>a</sup>	0-1	0.15	.17	0.17	.18	0.13	.16	1.85†	.10	.11	.16	.18	2.40*
O Stru (DNT VR)	0-1	0.64	.33	0.62	.34	0.65	.33	-.67	.65	.32	.64	.34	-.24
O Stru (DNT PH) <sup>a</sup>	0-1	0.11	.19	0.14	.23	0.07	.14	2.60*	.10	.22	.10	.19	.11
Stru VR COMP		-.01	.83	-.10	.91	.11	.69	-1.94†	-.19	.88	.02	.82	1.28
Mothers' Negative Control ( <i>N</i> s = 207-222)													
O Intr (free play)	1-4	1.25	.24	1.29	.26	1.20	.21	2.79**	1.30	.21	1.24	.25	-1.17
O Intr (teaching)	1-4	1.10	.22	1.10	.20	1.10	.25	.14	1.14	.23	1.09	.22	-1.13
O Ctrl (CL VR)	0-1	0.25	.30	0.29	.32	0.19	.25	2.56*	.36	.36	.23	.29	-1.85†
O Ctrl (CL PH) <sup>a</sup>	0-1	0.03	.08	0.04	.10	0.02	.07	1.53	.03	.07	.03	.09	.11
O Ctrl (DNT VR)	0-1	0.41	.35	0.41	.33	0.41	.37	-.01	.33	.34	.42	.35	1.35
O Ctrl (DNT PH) <sup>a</sup>	0-1	0.20	.30	0.22	.30	0.17	.30	1.19	.08	.21	.22	.30	3.03**
Ctrl COMP		-.00	.67	.08	.66	-.10	.67	2.07*	.14	.63	-.02	.67	1.21
Child's Internalization ( <i>N</i> s = 150-209)													
M EC (attn shift)	1-7	4.07	.61	4.09	.59	4.04	.63	.65	4.01	.58	4.07	.62	.44
M EC (attn focus)	1-7	4.55	.72	4.46	.76	4.66	.65	-2.03*	4.25	.70	4.59	.71	2.23*
M EC (inhib ctrl)	1-7	4.37	.73	4.31	.76	4.45	.70	-1.39	4.10	.57	4.41	.75	1.95†
CR EC (attn shift)	1-7	4.40	.79	4.33	.81	4.48	.75	-1.17	4.36	.57	4.41	.80	.27
CR EC (attn focus)	1-7	4.66	.68	4.61	.65	4.74	.71	-1.18	4.44	.55	4.69	.69	1.62
CR EC (inhib ctrl)	1-7	4.69	.80	4.63	.81	4.79	.78	-1.21	4.60	.63	4.71	.82	.49
O EC (waiting for a bow)	1-5	2.85	1.04	2.73	1.11	2.99	.93	-1.75†	2.58	1.06	2.88	1.03	1.33
O EC (dinky toys)	1-6	2.40	1.85	2.24	1.77	2.60	1.94	-1.37	2.25	1.61	2.40	1.87	.43
EC COMP		-.00	.84	-.12	.83	.15	.83	-2.32*	-.26	.76	.03	.85	1.61
O CC (CL)	0-1	0.58	.35	0.53	.35	0.64	.35	-2.28*	.55	.37	.58	.35	.40
O CC (DNT)	0-1	0.66	.37	0.60	.41	0.73	.32	-2.33*	.61	.38	.66	.37	.60
O CC COMP		.02	.82	-.14	.83	.19	.77	-2.83**	-.13	.77	.03	.83	.92
Child Academics ( <i>N</i> s = 127-173)													
T SLAQ T5	1-3	4.14	.30	4.10	.33	4.19	.26	-1.74†	4.12	.29	4.14	.31	.31

T SLAQ T6	1-3	4.21	.24	4.20	.25	4.23	.23	-.65	4.20	.25	4.21	.25	.24
M SLAQ T5	1-5	4.51	.60	4.40	.70	4.64	.41	-2.66**	4.32	.83	4.53	.57	1.00
M SLAQ T6	1-5	4.39	.63	4.30	.69	4.50	.52	-2.01*	4.59	.36	4.37	.64	-1.90†
T coop part T5	0-2	1.58	.50	1.44	.54	1.75	.38	-4.03**	1.50	.61	1.58	.49	.62
T coop part T6	0-2	1.62	.45	1.51	.48	1.78	.35	-3.75**	1.68	.54	1.62	.43	-.48
T self-direct T5	0-2	1.38	.58	1.27	.57	1.52	.56	-2.71**	1.19	.65	1.40	.57	1.37
T self-direct T6	0-2	1.42	.55	1.37	.59	1.49	.50	-1.31	1.46	.54	1.42	.55	-.26
T GPA T5	1-10	7.59	2.42	7.28	2.42	7.98	2.39	-1.66	6.21	3.12	7.74	2.29	1.78†
T GPA T6	1-10	7.44	2.34	7.45	2.22	7.41	2.50	.10	7.36	2.62	7.46	2.32	.15
M GPA T5	1-10	8.52	1.62	8.27	1.72	8.83	1.44	-2.13*	8.00	1.81	8.59	1.60	1.33
M GPA T6	1-10	8.16	1.71	7.99	1.64	8.38	1.78	-1.28	8.92	1.24	8.11	1.70	-2.05†
SA COMP		.00	.82	-.19	.85	.26	.69	-3.71**	-.16	.98	.03	.80	.96

*Note.* <sup>a</sup> These variables had low frequency and were dropped from further analyses. Attn = Attention; CC = Committed compliance; CL = Clean-up; COMP = Composite; Coop part = Cooperative participation; CR = Caregiver-reported; Ctrl = Control; DNT = Do not touch (or prohibition toys task); EC = Effortful control; Focus = Focusing; Inhib = Inhibitory; Intr = Intrusiveness; M = Mother-reported; O = Observed; PH = Physical; SA = School adaptation; Self-direct = Self-directedness; Sens = Sensitivity; Shift = Shifting; SLAQ = School liking; Stru = Structure; T = Teacher-reported; VR = Verbal; Warm = Warmth.  
 \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ .

Table 2

*Correlations of Final Study Variables*

	2	3	4	5	6	7
1 Mother-reported conscientiousness (18 months)	.12	.10	-.04	.22**	.16*	-.02
2 Sensitivity composite (30 months)		.43**	-.59**	.38**	.16*	.25**
3 Verbal structure composite (30 months)			-.51**	.33**	.10	.02
4 Negative control composite (30 months)				-.42**	-.27**	-.16*
5 Effortful control composite (42 months)					.25**	.27**
6 Observed committed compliance composite (42 months)						.14
7 School adaptation composite (72/84 months)						

\*\*  $p < .01$ ; \*  $p < .05$ .

Table 3

*Hierarchical Regressions Testing Direct Relations between Mothers' Conscientiousness and (a) Children's Effortful Control, (b) Committed Compliance, and (c) School Adaptation*

Variable	Effortful control				Committed compliance				School adaptation			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.13				.07				.08
Sex	.23	.08	.19**		.37	.12	.23**		.39	.11	.28**	
SES	.19	.05	.28**		.12	.07	.13†		.11	.07	.13†	
Ethnicity	-.10	.13	-.05		-.01	.19	-.00		.05	.17	.03	
Step 2				.02				.01				.00
Mother-reported conscientiousness	.12	.07	.12†		.17	.10	.12†		-.05	.09	-.04	
<i>F</i> for equation	$F(4, 183) = 7.88, p < .01$				$F(4, 173) = 4.09, p < .01$				$F(4, 153) = 3.61, p < .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. \*\*  $p < .01$ ; †  $p \leq .10$ .

Table 4

*Hierarchical Regressions Testing Direct Relations between Mothers' Behaviors and Children's School Adaptation*

Variable	School adaptation			$\Delta R^2$
	<i>B</i>	<i>SE B</i>	$\beta$	
Step 1				.09
Sex	.33	.11	.24**	
SES	.05	.07	.06	
Ethnicity	.09	.17	.04	
Step 2				.02
Sensitivity	.16	.08	.17†	
<i>F</i> for equation	$F(4, 151) = 4.60, p < .01$			
Step 1				.09
Sex	.40	.11	.29**	
SES	.12	.07	.14†	
Ethnicity	.09	.17	.04	
Step 2				.01
Verbal structure	-.06	.07	-.07	
<i>F</i> for equation	$F(4, 151) = 3.77, p < .01$			
Step 1				.09
Sex	.37	.11	.27**	
SES	.08	.07	.10	
Ethnicity	.08	.17	.04	
Step 2				.01
Negative control	-.08	.09	-.08	
<i>F</i> for equation	$F(4, 151) = 3.77, p < .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. SES = Socioeconomic status. \*\*  $p < .01$ ; †  $p < .10$ .

Table 5

*Hierarchical Regressions Testing Direct Relations between Mothers' Conscientiousness and Mothers' Behaviors*

Variable	Sensitivity				Verbal structure				Negative control			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.17				.08				.13
Sex	.31	.09	.22**		.27	.12	.16*		-.28	.08	-.22**	
SES	.28	.06	.33**		.24	.07	.24**		-.23	.05	-.31**	
Ethnicity	-.20	.14	-.09		-.04	.18	-.02		.02	.13	.01	
Step 2				.00				.00				.00
Mother-reported conscientiousness	.00	.08	.00		.03	.10	.02		.05	.07	.05	
<i>F</i> for equation	$F(4, 197) = 9.89, p < .01$				$F(4, 197) = 4.56, p < .01$				$F(4, 197) = 7.34, p < .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. SES = Socioeconomic status. \*\*  $p < .01$ ; \*  $p < .05$ .

Table 6

*Hierarchical Regressions Testing Direct Relations between Mothers' Behaviors and Children's Internalization*

Variable	Effortful control				Committed compliance			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.14				.07
Sex	.19	.08	.16*		.37	.12	.23**	
SES	.16	.05	.23**		.13	.08	.13	
Ethnicity	-.09	.13	.05		-.06	.19	-.02	
Step 2				.04				.00
Sensitivity	.19	.06	.22**		.06	.09	.05	
<i>F</i> for equation	$F(4, 178) = 9.95, p < .01$				$F(4, 173) = 3.46, p = .01$			
Step 1				.14				.07
Sex	.19	.08	.16*		.37	.12	.23**	
SES	.18	.05	.26**		.13	.08	.14†	
Ethnicity	-.13	.13	.07		-.07	.19	-.03	
Step 2				.04				.00
Verbal structure	.16	.05	.22**		.03	.08	.03	
<i>F</i> for equation	$F(4, 178) = 10.11, p < .01$				$F(4, 173) = 3.42, p = .01$			
Step 1				.14				.07
Sex	.17	.08	.14*		.32	.12	.19**	
SES	.15	.05	.22**		.08	.08	.08	
Ethnicity	-.12	.13	-.06		-.07	.19	-.03	
Step 2				.08				.04
Negative control	-.27	.07	-.30**		-.25	.10	-.20*	
<i>F</i> for equation	$F(4, 178) = 12.47, p < .01$				$F(4, 173) = 5.17, p < .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. SES = Socioeconomic status. \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ .

Table 7

*Hierarchical Regression Analysis for Mothers' Behaviors as a Mediator between Mothers' Conscientiousness and Children's Internalization*

Variable	Effortful control				Committed compliance			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.14				.07
Sex	.19	.08	.16*		.36	.12	.22**	
SES	.14	.05	.20**		.10	.08	.10	
Ethnicity	-.06	.13	-.03		-.00	.19	.00	
Step 2				.04				.00
Sensitivity	.18	.06	.21**		.07	.10	.06	
Step 3				.01				.01
Mothers' conscientiousness	.11	.07	.12		.17	.10	.13†	
<i>F</i> for equation	$F(5, 176) = 8.09, p < .01$				$F(5, 171) = 3.36, p < .01$			
Step 1				.14				.07
Sex	.20	.08	.17*		.37	.12	.22**	
SES	.16	.05	.22**		.11	.08	.11	
Ethnicity	-.10	.13	-.06		-.01	.19	-.01	
Step 2				.04				.00
Verbal structure	.16	.05	.22**		.04	.08	.04	
Step 3				.01				.01
Mothers' conscientiousness	.11	.07	.12		.17	.10	.13†	
<i>F</i> for equation	$F(5, 176) = 8.43, p < .01$				$F(5, 171) = 3.30, p < .01$			
Step 1				.14				.07
Sex	.17	.08	.14*		.31	.12	.19*	
SES	.13	.05	.18*		.05	.08	.05	
Ethnicity	-.09	.13	-.05		-.01	.19	-.00	
Step 2				.08				.04
Negative control	-.28	.07	-.30**		-.28	.10	-.22**	
Step 3				.02				.02
Mothers' conscientiousness	.13	.07	.13†		.18	.10	.14†	
<i>F</i> for equation	$F(5, 176) = 10.26, p < .01$				$F(5, 171) = 5.00, p < .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. SES = Socioeconomic status. \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ .



Table 8

*Hierarchical Regressions Testing Direct Relations between Children's Internalization  
and School Adaptation*

Variable	School adaptation			$\Delta R^2$
	<i>B</i>	<i>SE B</i>	$\beta$	
Step 1				.09
Sex	.31	.10	.24**	
SES	.06	.06	.08	
Ethnicity	.10	.15	.05	
Step 2				.05
Effortful control	.25	.08	.24**	
<i>F</i> for equation	$F(4, 153) = 6.03, p < .01$			
Step 1				.08
Sex	.31	.10	.24**	
SES	.09	.06	.12	
Ethnicity	.05	.16	.03	
Step 2				.01
Committed compliance	.07	.06	.09	
<i>F</i> for equation	$F(4, 146) = 3.47, p = .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. SES = Socioeconomic status. \*\*  $p < .01$ .

Table 9

*Hierarchical Regression Analysis for Children's Internalization as a Mediator between Mothers' Behaviors and Children's School Adaptation*

Variable	School adaptation				Variable	School adaptation			
	<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$		<i>B</i>	<i>SE B</i>	$\beta$	$\Delta R^2$
Step 1				.08	Step 1				.08
Sex	.26	.10	.20*		Sex	.26	.11	.20*	
SES	.01	.07	.02		SES	.04	.07	.05	
Ethnicity	.11	.15	.06		Ethnicity	.07	.16	.03	
Step 2				.06	Step 2				.01
Effortful control	.25	.09	.24**		Committed compliance	.07	.06	.09	
Step 3				.01	Step 3				.02
Sensitivity	.09	.08	.10		Sensitivity	.15	.08	.17†	
<i>F</i> for equation	$F(5, 147) = 5.11, p < .01$				<i>F</i> for equation	$F(5, 145) = 3.56, p < .01$			
Step 1				.08	Step 1				.08
Sex	.30	.10	.24**		Sex	.32	.11	.25**	
SES	.06	.06	.08		SES	.11	.07	.14	
Ethnicity	.14	.15	.07		Ethnicity	.06	.16	.03	
Step 2				.06	Step 2				.01
Effortful control	.32	.09	.31**		Committed compliance	.07	.06	.09	
Step 3				.02	Step 3				.00
Verbal structure	-.12	.07	-.15†		Verbal structure	-.05	.07	-.06	
<i>F</i> for equation	$F(5, 147) = 5.58, p < .01$				<i>F</i> for equation	$F(5, 145) = 2.87, p = .02$			
Step 1				.08	Step 1				.08
Sex	.28	.10	.22**		Sex	.29	.11	.23**	
SES	.03	.07	.04		SES	.07	.07	.09	
Ethnicity	.11	.15	.06		Ethnicity	.05	.16	.03	
Step 2				.06	Step 2				.01
Effortful control	.23	.09	.25**		Committed compliance	.06	.07	.07	
Step 3				.00	Step 3				.01
Negative control	-.02	.09	-.02		Negative control	-.10	.09	-.10	
<i>F</i> for equation	$F(4, 147) = 4.84, p < .01$				<i>F</i> for equation	$F(4, 145) = 3.04, p = .01$			

*Note.* All betas are reported from the final step; thus, significance levels for the betas and steps may not match. SES = Socioeconomic status. \*\*  $p < .01$ ; \*  $p < .05$ ; †  $p < .10$ .

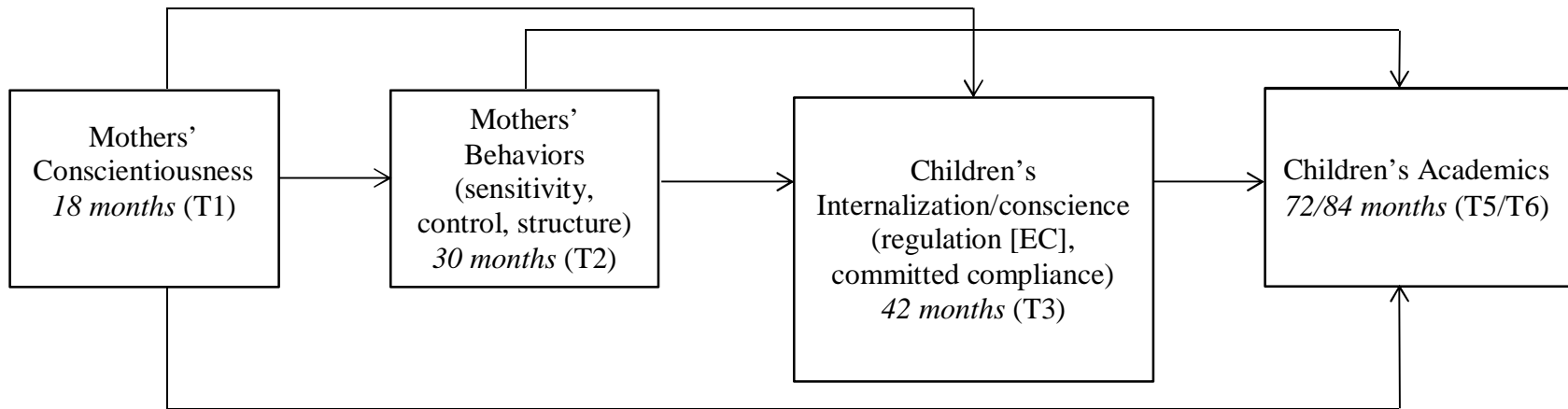


Figure 1. Conceptual model indicating paths of both direct and indirect relations from mothers' conscientiousness to mothers'

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behaviors to children's internalization to children's academics. EC = Effortful control; T1 = Time 1; T2 = Time 2; T3 = Time 3;

T4 = Time 4; T5 = Time 5.

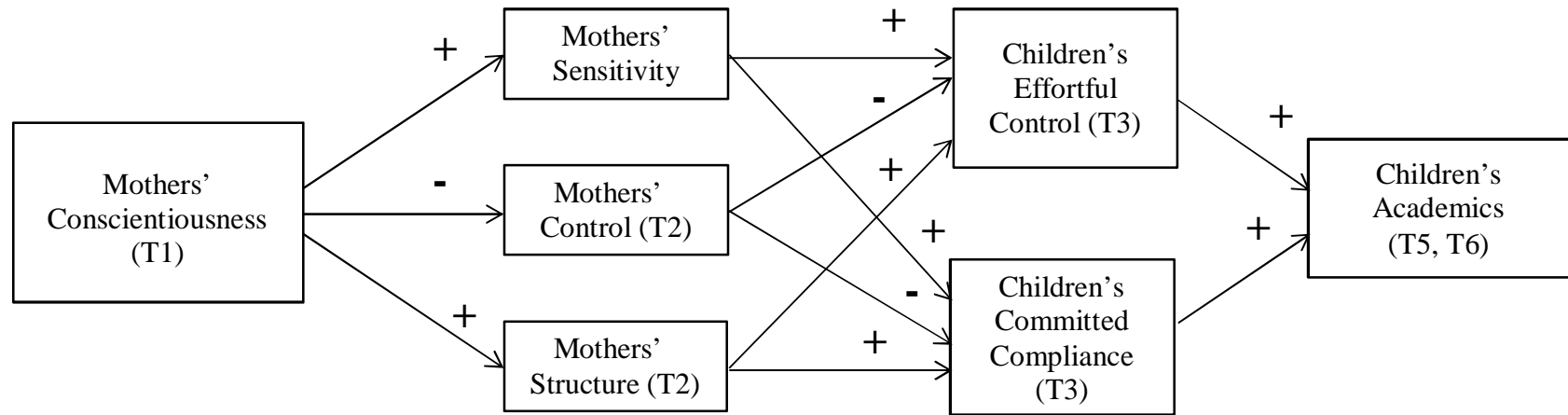


Figure 2. Hypothesized longitudinal model indicating expected relations between parenting and internalization variables.

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Although direct paths are not depicted, it is hypothesized that mothers' conscientiousness and mothers' behaviors will be directly related to children's academic performance. Additionally, mothers' conscientiousness and components of children's internalization (i.e., effortful control and committed compliance) are expected to be directly associated. T1 = Time 1; T2 = Time 2; T3 = Time 3; T4 = Time 4; T5 = Time 5.

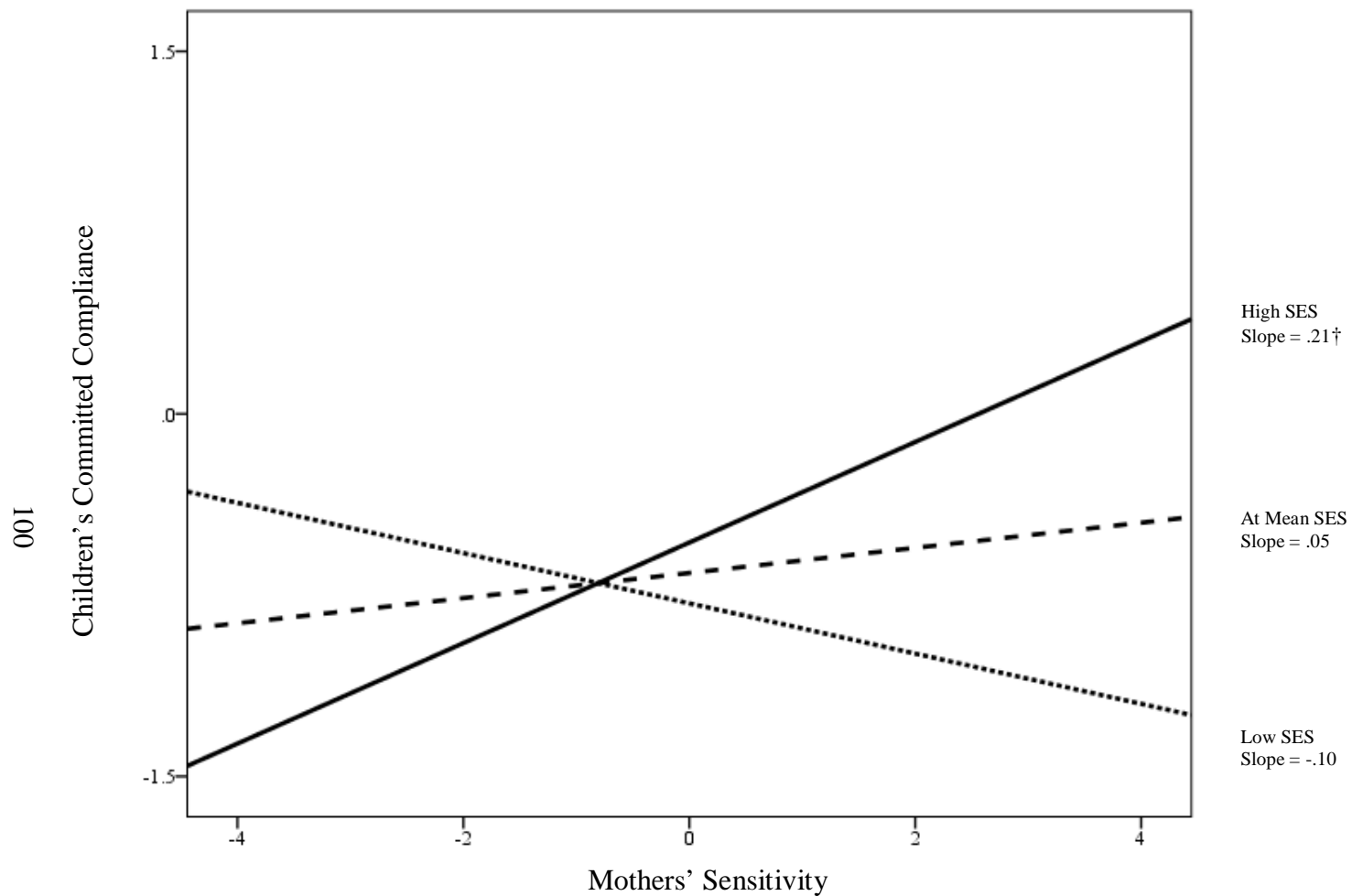


Figure 3. Interaction of socioeconomic status and mothers' sensitivity on children's committed compliance. SES = Socioeconomic status. †  $p < .10$ .

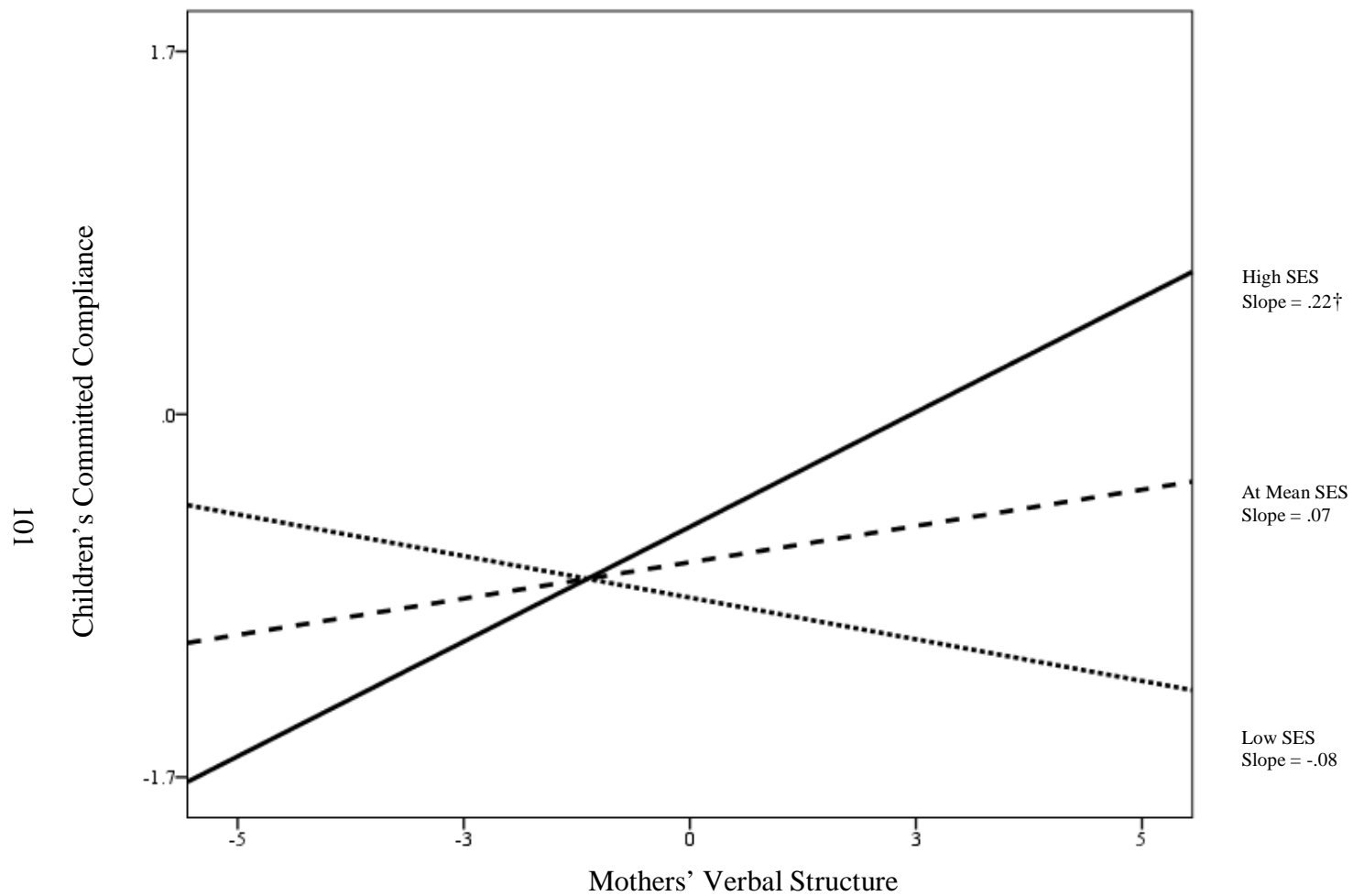


Figure 4. Interaction of socioeconomic status and mothers' verbal structure on children's committed compliance. SES = Socioeconomic status. †  $p < .10$ .

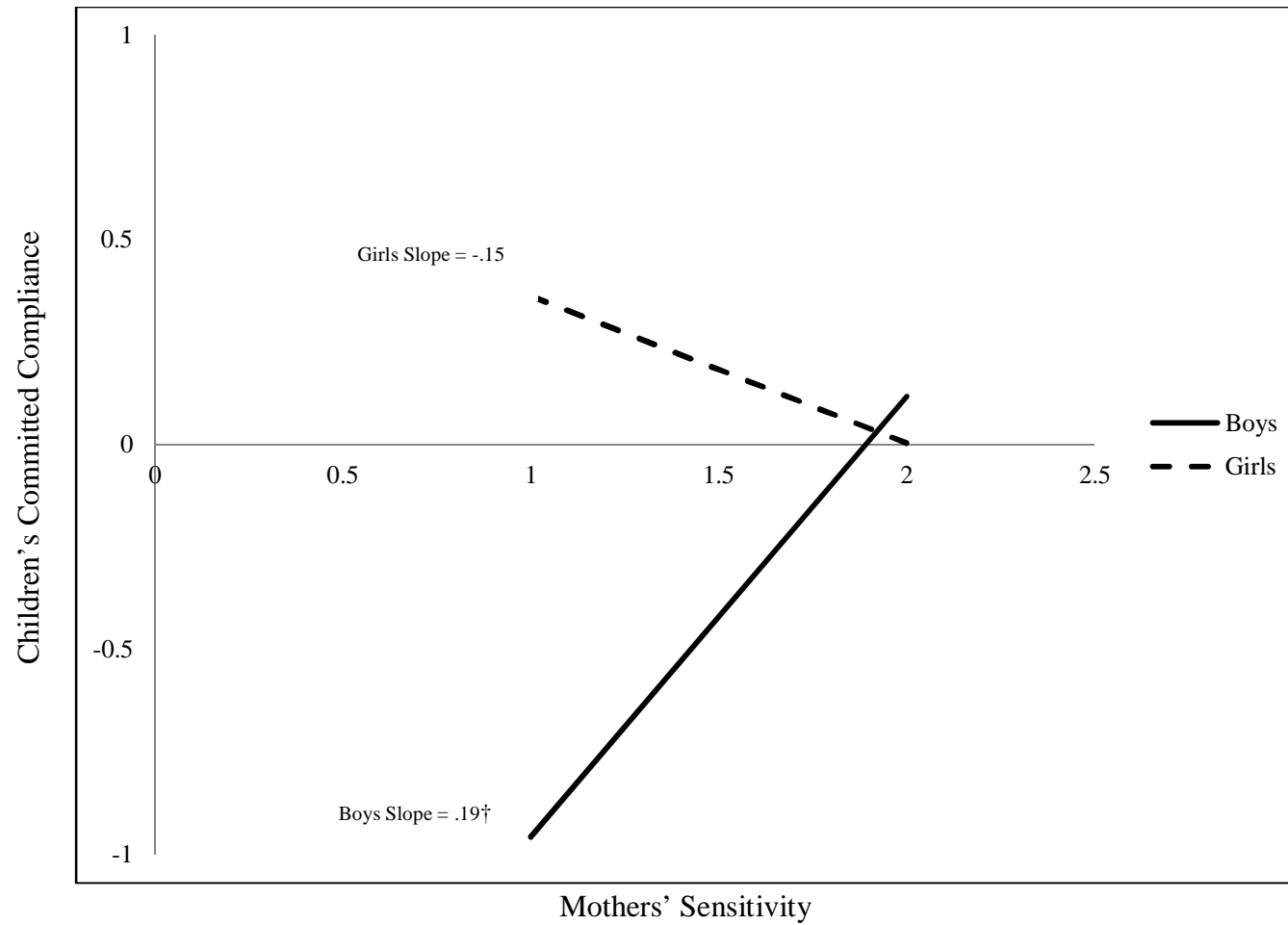


Figure 5. Interaction of children's sex and mothers' sensitivity on children's committed compliance. †  $p < .10$ .

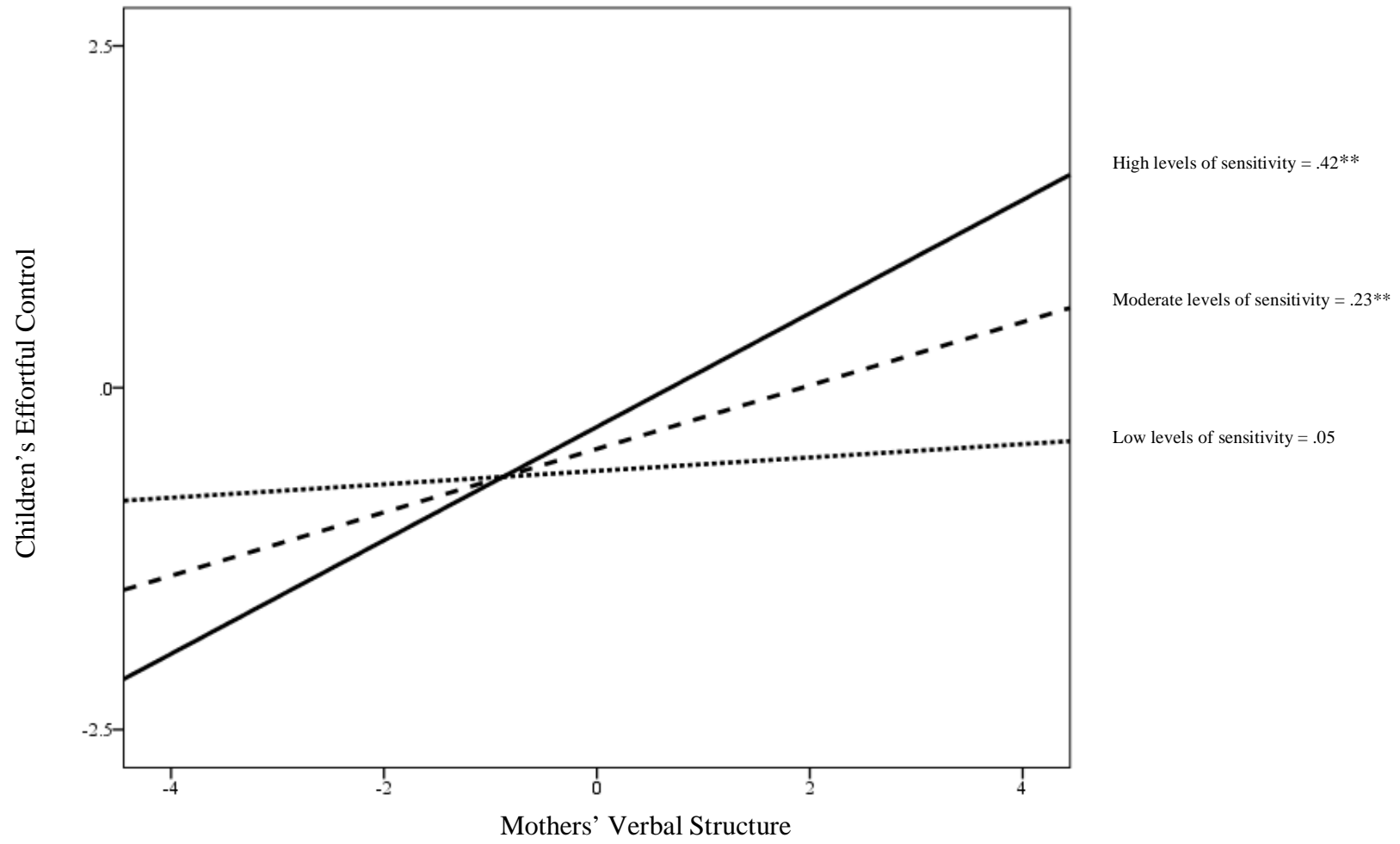


Figure 6. Interaction of mothers' sensitivity and verbal structure on children's effortful control. \*\*  $p < .01$ .