

TODDLERS' SELF REGULATION AS A MEDIATOR OF THE ASSOCIATION BETWEEN
PARENTING AND CHILD COMPLIANCE AND NONCOMPLIANCE

By

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ABSTRACT

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Child compliance is considered an important precursor to later conscience and social development (Grusec, 2006; Feldman & Klein, 2003). A specific type of noncompliance (i.e., assertive noncompliance) can be also considered a positive indicator of children's developing autonomy and assertiveness. The goal of the current study was to examine whether the ability of older toddlers (at 36 months) to self-regulate, measured by inhibitory capacity, mediates the relation of earlier parenting styles (at 24 months) to child compliance and three types of noncompliance (at 36 months). 969 mother-child dyads ($\approx$ half boys; aged 24 to 36 months; $M=35.43$ $SD=2.78$), drawn from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care (1998), provided data. In the hierarchical multiple regression analyses, results indicated that children's inhibitory capacity partially mediated the relation of maternal sensitivity to compliance and passive noncompliance controlling for child's inhibitory capacity. Moreover, the full mediator effect was also found; the effect of intrusiveness on passive noncompliance became insignificant, when controlling for child inhibition. These findings suggest that not only did maternal sensitivity and intrusiveness relate to child compliance and passivity, but the child inhibitory capacity was also an important part of this development. Furthermore, the results indicated that if once children attained the inhibitory capacity without external support in the 'Don't' context, they would be more likely to comply or less likely to show passive noncompliance with parental demands later in the 'Do' context.

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CHAPTER 1. INTRODUCTION

Significance of the Present Study

Child compliance is considered an important precursor to later conscience and social development (Grusec, 2006; Feldman & Klein, 2003; Kochanska, Coy, & Murray, 2001). Compliance is viewed as a gradual developmental shift from external to internal control of behavior (Bandon, & Volling, 2008; Maccoby, 1992; Maccoby & Martin, 1983) and is interpreted as evidence that children develop the ability to internalize adults' demands (Kochanska & Aksan, 1995) or to self regulate (Braungart-Rieker, Gardwood, & Stifter, 1997). Researchers have established that compliance emerges during the second year of life (Smetana, Kochanska, & Chuang, 2000) and increases during preschool years (Braungart-Rieker et al., 1997; Forehand, 1977; Patterson, 1976). Specifically, the second year of life can be seen as a developmentally crucial period when the child's motivations and ability to be autonomous gradually increase, as skills related to the control of goal-directed action emerge (Erickson, 1963; Kopp, 1982; Sroufe, 1995). In the same period of time, parental attempts to control and socialize children become apparent as a way to encourage children to comply with parents' demands and social norms (Maccoby & Martin, 1983; Patterson, 2002). It would hardly be surprising to see that caregivers of toddlers and preschoolers frequently ask children to stop an exciting activity, wait to play with an interesting object, or engage with an undesirable task. As children grow and are exposed to social environments outside the home (i.e., school, community, and peer group), there will be increased pressure to embrace adult demands and social rules, even when those demands are contrary to their own wishes. From this perspective, the ability to comply with parental and environmental demands is an important developmental task for young children (Erickson, 1963; Feldman & Klein, 2003; Kochanska et al., 2001; Kopp, 1982; Stifter, Spinrad,

& Braungart-Rieker, Garwood, & Stifter, 1999).

Along with the development of child compliance, noncompliant behaviors are also seen in children during conflict situations that arise due to the increasing number of parental demands and the child's emerging sense of his or her own autonomy. Researchers have documented the increase in parent and child conflict across the toddler and early preschool years (e.g., Dunn, 1988; Dunn & Munn, 1985, 1987; Kuczynski, Kochanska, Radke-Yarrow, & Girnius-Brown, 1987). According to Dix (1991), parents with very young children are engaged in conflict with their children on average between 3.5 to 15 times an hour, and other researchers have reported even higher rates of conflict (Klimes-Dougan & Kopp, 1999). Considering the fact that compliance with parental and social rules is critical to child development, and that parents report that obedience is a principal goal during childrearing (Dix & Branca, 2003), noncompliant behaviors can be viewed by some parents as an early sign of problematic behaviors. However, it is imperative to examine several types of child noncompliance behaviors by distinguishing the motivational differences underlying these behaviors, since noncompliance behaviors are assumed to vary in their qualities and skills as social strategies (Braungart-Rieker et al., 1997; Dix, Stewart, Garshoff, & Day, 2007; Feldman, Greenbaum, & Yirmiya, 1999; Kuczynski, Kochanska, Radke-Yarrow, & Girnius-Brown, 1987; Kuczynski and Kochanska, 1990; Kochanska et al., 1998; Kochanska, 2002; Kochanska et al., 1995; Kochanska, Aksan, & Koenig, 1995; Kuczynski et al., 1987; Stifter et al., 1999). In the literature, assertive noncompliance can be considered a positive indicator of children's developing autonomy and assertiveness, while defiant noncompliance and passive noncompliance are representative of unskillful and less sophisticated styles of noncompliant behaviors (Dix et al., 2007; Erickson, 1963; Kuczynski et al., 1987; Spitz, 1957; Wenar, 1982).

Previous studies have examined parental behaviors and child temperament as possible antecedents of child compliance and noncompliance (Kochanska & Joy, 2007; Crockenberg & Litman, 1990). However, these studies underemphasized a critical role of child inhibitory capacity, as a component of self-regulation, in shaping compliance. In the literature, it was suggested that children's self-regulation ability can be one of the potential correlates of compliance behavior (Kochanska et al., 1998; Kochanska et al., 2001). Self-regulation is a complex construct, but one that is highly relevant, developmentally, in toddler age group. Self regulation has been defined variously as initiating and ceasing activities according to situational demands, delaying acts upon a desired object or goal, or as generating socially appropriate behavior without external involvement (Kopp, 1982). In her work, it was delineated that self-regulation emerges across the first years, with maturation of inhibitory capacity as a precursor of child compliance to parental requests. A key component of self regulation, *inhibitory control*, is particularly relevant to the study of compliance and noncompliance. Inhibitory control has been described by multiple researchers in several ways. Mainly, child inhibitory capacity reflects self-control, or the ability to delay, behaviors in the absence of external monitors (Kochanska, Murray, & Harlan, 2000; Derryberry & Reed, 1994; Kochanska, 1993; Kopp, 1982; Rothbart & Ahadi, 1994). Inhibitory capacity has been regarded as one of the individual characteristics that prepare children to more internalize family and societal standards (Reznick, Gibbons, Johnson, & McDonough, 1989). Additionally, Rothbart (1989) stated that the emerging inhibitory capacity makes it possible for children to begin to comply with parental demands, which will involve initiating new behaviors or suppressing ongoing physical acts.

The Purpose of the Study

Given that developing self regulation skills might be represented by child compliance ability

(Braungart-Rieker et al., 1997), and that both parenting and child inhibitory capacity are associated with child compliance and noncompliance, the current study examined children's inhibitory capacity, one component of self regulation, as a potential mediator on the association between parenting and child compliance and the three types of noncompliance (passive noncompliance, defiance, and assertive noncompliance).

CHAPTER 2. REVIEW OF THE LITERATURE

Types of Toddlers' Compliance and Noncompliance

Numerous researchers emphasized motivational differences underlying the range of behaviors that might be considered to be types of child compliance and noncompliance. According to the literature, compliance encompasses at least motivationally distinct forms: committed compliance and situational compliance (Baungart-Rieker et al., 1997; Crockenberg & Litman, 1990; Feldman et al., 1999; Feldman & Kein, 2003; Kochanska & Aksan, 1995; Kochanska, Aksan, & Koenig, 1995; Kochanska, Coy, & Murray, 2001; Kochanska, Aksan, & Carlson, 2005). Committed compliance refers to instances when children wholeheartedly engage with parental demands and embrace parental directives in enthusiastic, self-regulated, and proactive ways without immediate parental control; children are actively involved in completing the task and continue spontaneously with picking up the toys without mother's continuing reminders. On the other hand, situational compliance describes children's behaviors when they are generally cooperative, but do not appear to conform to parental demands wholeheartedly. Such compliance reflects children's reactive, sullen, or half-hearted engagement in parental requests, and compliance must be sustained by the mother's continuing control (Kochanska et al., 1995; Kochanska et al., 1998). For instance, children pick up the toys, but with no enthusiasm or positive affect, grumbling, stopping frequently, and need continuous reminders to stay on task. Committed compliance is negatively related to situational compliance (Kochanska et al., 1998; Kochanska et al., 2001), and younger children show less committed compliance than older children (Kochanska et al., 1998; Kochanska et al., 2001). The focus of the current study was committed compliance.

Following a number of noncompliance studies, three categories of children's noncompliant

behaviors can be delineated: assertive noncompliance, defiant noncompliance, and passive noncompliance, and they are assumed to vary in their qualities and skills as social strategies (Braungart-Rieker et al., 1997; Dix et al., 2007; Feldman et al., 1999; Kuczynski, Kochanska, Radke-Yarrow, & Girnius-Brown, 1987; Kuczynski and Kochanska, 1990; Kochanska et al., 1998; Kochanska, 2002; Kochanska et al., 1995; Kochanska, Aksan, & Koenig, 1995; Kuczynski et al., 1987; Stifter et al., 1999). According to the study by Dix et al., (2007), assertive noncompliance refers to a skillful and sophisticated form of noncompliant behavior, which increases in frequency as children grow. Specifically, assertive noncompliance is exhibited by children in several ways, including calmly saying ‘no’ without negative affect, compromising, explaining, and reasoning with parents. These ways of asserting their opinions can be regarded as children’s autonomy-oriented attempts to modulate the situation constructively to achieve their goals or wishes. In other studies, such behavior has been labeled self-asserting (Crockenberg & Litman, 1999; Donovan, Leavitt, & Walsh, 2000), simple refusal (Kuczynski & Kochanska, 1990), and overt resistance (Kochanska & Aksan, 1995). It has been proposed that assertive noncompliance can function positively in a child’s social development by providing an opportunity for children to assert their autonomy and to develop social skills and strategies to express their autonomy in a socially appropriate manner (Dix et al., 2007; Kuczynski et al, 1987). Kuczynski and his colleagues (1987) supported this proposition by providing evidence that simple refusal (i.e., simple physical or verbal refusal) was associated with fewer internalizing problems later. According to Grolnick (2003), the development of autonomy is a central component of child’s optimal development. Therefore, both compliance and autonomy might be critical factors in children’s social development; socially healthy children are able to conform to social rules as well as to maintain a sense of self (Power & Manire, 1992). Neither children who

always comply with adults' requests, nor those who always assert their opinion without embracing to other's demands may be seen as developmentally optimal.

Passive noncompliance and defiant noncompliance are representative of unskillful and less sophisticated styles of noncompliant behaviors. Passive noncompliance refers to children's ignoring their parents' demands without displaying negative affect (Bryan & Dix, 2009; Feldman et al., 1999; Kaler & Kopp, 1990). It should be noted that ignoring commands is not regarded as passive noncompliance when children are very young and do not yet have enough language ability to interpret the parent's demands. However, when they are able to understand the demands, ignoring those demands would be regarded as passive noncompliance. When an older toddler shows passive noncompliance instead of defiance in such a situation, one possible interpretation is that the child was able to regulate his or her behavior and emotion, and to do so in a way to maintain some level harmony with the mother. Passive noncompliance, as opposed to defiant noncompliance, would involve relatively less negative affect, and would be less disruptive to the relationship. Based on a study by Kuczynski et al., (1987), however, the frequent use of passive noncompliance may reflect a low level of social skills and self regulation, because ignoring requests is likely to be aversive to parents, and because it is not a constructive or assertive method of expressing resistance. This interpretation is supported by other research showing that passive noncompliance shows negative associations with internalization of social rules (Kochanska et al., 1998). Defiant noncompliance is observed when children display aversive behavior, such as crying, screaming, whining, or aggressive behaviors accompanied by physical refusal to obey the parents' request. These episodes are difficult for parents to modulate (Dix et al., 2007). Both unskillful forms of noncompliance (i.e., passive noncompliance and defiance) have shows positive associations with externalizing behavior problems in children at

age 5 (Kuczynski et al., 1987).

Developmental Changes in Use of Child Noncompliance

Additionally, research has demonstrated distinct developmental changes in children's noncompliance behaviors in the context of eliciting stress (Kuczynski et al, 1987). Significant correlations between the child's age and the different forms of noncompliance have been reported in the literature. Relatively skillful and sophisticated noncompliance forms (i.e., assertive noncompliance or simple refusal plus negotiation) were positively related to the age of children, while unskillful and less sophisticated forms of noncompliance (passive noncompliance and direct defiance) were marginally associated with children's age. In addition, it has been found that passive noncompliance decreased during a child's 24 to 36 month period, while more active and oppositional noncompliance increased during the same time period (Vaughn, Kopp, & Krakow, 1984; Kuczynski et al., 1987; Kuczynski and Kochanska, 1990). Therefore, in the present study, the developmental changes in use of noncompliance behavior between 24- and 36-month-old children were examined.

Antecedents of Child Compliance/Noncompliance: Child Temperament and Parenting

Previous studies have been conducted to examine child temperament and parenting behaviors as possible antecedents of child compliance and noncompliance (e.g., Crockenberg & Litman, 1990; Kochanska & Joy, 2007). First, in the domain of child temperament, some specific dimensions of temperament (i.e., reactivity, fearfulness, anger) have been implicated in predicting compliance and noncompliance. In the studies of Kochanska and her colleagues (1995, 1997), children who had higher scores on fearfulness and shyness were more likely to show committed compliance that involved refraining from engaging in attractive but prohibited behavior. Also, children who had higher levels of reactivity were more likely to show passive

noncompliance (Stifter et al., 1999).

Mothers' parenting behaviors have also been identified as an important determinant in children's use of compliance and noncompliance (Kochanska & Aksan, 2006; Kochanska et al., 1995). The effect of maternal sensitivity and intrusiveness on compliance and noncompliance has been especially apparent. Maternal sensitivity includes the following behaviors: prompt and appropriate responses to the child's social gestures, expressions, and signals, and child-centered interaction. On the other hand, intrusiveness describes mother's behaviors when they interrupt, oppose, or control the ongoing goals and activities of the child. A number of previous studies have found that the maternal use of gentle guidance has a positive relationship with compliance in children, and the mother's response to child's verbal and nonverbal cues has been positively associated with child's assertive noncompliance (Braungart-Rieker et al., 1997; Crockenberg & Litman, 1990; Kochanska & Aksan, 1995; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004; Strand, 2002). Attachment theory is consistent with the idea that children whose mothers are sensitive and maintain mutual relationships with them are more likely to show higher levels of cooperation and lower rates of opposition. On the other hand, maternal use of negative control and power assertion has been found to be associated with lower levels of committed compliance and higher rates of defiance and passive noncompliance (Braungart-Rieker et al., 1997; Campbell, Pierce, March, & Ewing, 1991; Crockenberg & Litman, 1990; Donovan et al., 2000; Kochanska & Aksan, 1995; Koenig, Cicchetti, & Rogosch, 2000; Smith et al., 2004).

Limitations of the Previous Researches on compliance/noncompliance

As aforementioned, numerous studies have been conducted to examine child temperament and parenting behaviors as possible antecedents of child compliance and noncompliance (e.g., Crockenberg & Litman, 1990; Kochanska & Joy, 2007). However, neither antecedent factors,

child temperament, or parenting, can fully explain the individual differences in compliance and noncompliance.

First, the role of children's inhibitory capacity, as one component of self-regulation skills, has been underemphasized in shaping compliance, while the effect of child temperament on (non)compliance was overexamined. Although Kochanska, Tjebkes, and Forman (1998) have found that children who were more able to delay gratification tended to show more committed compliance and less passive noncompliance, parenting and children's self-regulation were not assessed simultaneously in that study.

Second, the relations of parenting styles to child compliance have also explanatory limitations; parents were regarded as active contributors to children's behaviors, while children were seen as passive recipients. These associations do not seem to consider how child self-regulation ability works for compliance. Considering the fact that developing self-regulation skill might be represented by child compliance ability (Braungart-Rieker et al., 1997), child compliance needs to be examined with relation to the development of child self-regulation and parenting styles. Additionally, since most previous researchers examined parenting behaviors as contemporaneous variables correlated with child compliance during the same period, it was little known how early parenting behaviors influence child compliance and noncompliance later. Thus, in the present study, maternal behaviors at 24 months were used as predictors of child compliance and noncompliance at 36 months.

Third, inconsistent findings across multiple studies were shown based on the relationship between positive parenting and compliance. Although some studies have found that securely attached children whose mothers showed higher sensitivity were more likely to willingly comply with mothers' requests at high rates (Stayton, Hogan, & Ainsworth, 1971; Kochanska, 1995), Dix

and his colleagues (2007) have proposed that children whose mothers were sensitive during both play and clean-up tended to score not only compliance, but also defiant noncompliance at high rates. Attachment theory supports this proposition. Securely attached 2-year-olds, for example, show more oppositional behaviors (i.e., defiant noncompliance) in the clean-up situation than children in the insecure group (Matas, Arend, & Sroufe, 1978). These mixed results suggest a possibility that parenting types do not always directly influence child (non)compliance. Rather there is an indirect effect of parenting on child (non)compliance. Therefore, the current study simultaneously examined children's self-regulation as a potential mediator to clarify the relationship between parenting and child compliance and the three types of noncompliance (passive noncompliance, defiance, and assertive noncompliance).

Behavioral Inhibition as a Potential Mediator in the Parenting-Compliance Link

Child inhibitory capacity has also been shown to have significant associations with child (non)compliance and parenting behaviors. Delay of gratification paradigms are often used in the study of children's inhibitory capacity. In young children, child inhibition is usually measured in the delay of gratification context, where children are asked to refrain from touching an attractive toy in the absence of maternal involvement, or to delay eating a treat in order to be given more treats at the end of the episode. To ask a young child to postpone immediate gratification in order to achieve a future goal is a challenging situation for youngsters, in which behavioral inhibition is required to succeed. In this controlled context, latency to engage with the prohibited toy or eat the treat is representative of how long children are capable of inhibiting their predominant behavior (to play with a prohibited toy or eat a treat) in order to perform a subdominant behavior (to cease playing with a prohibited toy or eat a treat).

First, with regard to the relationships between child inhibitory capacity and (non)compliance,

Kochanska, Tjebkes, and Forman (1998) have reviewed results showing a number of significant associations between these two factors. In that study, child's internalization of maternal inhibition (i.e., inhibitory capacity) while alone with a prohibited toy was assessed as a contemporaneous correlate with children's compliance and noncompliance at the same age in the control context. They have found that those who were showed greater internalization (i.e., greater effect of maternal inhibition) also showed significantly more committed compliance than children who showed less internalization. Additionally, children with lower internalization displayed more passive noncompliance. In the longitudinal study from 14-to 45- month old children by Kochanska et al., (2001), it was suggested that children who internalized maternal demands were more likely to display higher levels of committed compliance and lower levels of situational compliance. Despite providing important information about the relations between inhibitory capacity and compliance/noncompliance, it should be noted that these studies did not account for the influence of any type of parenting variable on this relationship.

Second, parenting behaviors should be considered as important contributors to children's developing inhibitory capacity. Numerous studies have reported that mothers who encourage and accept child withdrawal, who respond sensitively, and discipline positively tend to have children who show a greater capacity to delay gratification (Belsky, Rha, & Park, 2000; Feldman et al., 1999; Silverman & Ragusa, 1990; Shamir-Essakow, Ungerer, Rapee, & Safier, 2004). On the other hand, maternal negative control (e.g., intrusiveness, negative regard) predicts lower rates of inhibition in preschoolers (Kochanska & Knaack, 2003; Loukas, Fitzgerald, Zucker, & von Eye, 2001; Park, Belsky, Putnam, & Crnic, 1997; Rubin, Burgess, & Coplan, 2002; Silverman & Ragusa, 1990).

Given that child inhibitory capacity begins to develop in the second year of life (Feldman &

Klein, 2003; Kopp, 1982), and influences compliance and noncompliance, toddlers' compliance and noncompliance may not be directly related to parenting behavior that occurred earlier in development. Rather, child compliance during toddlerhood might be influenced more directly by whether children are able to cope with frustrated emotion, which is caused when a child's wishes conflict with a maternal request. Children who already possess the ability to self regulate by showing higher levels of behavioral inhibition may embrace the mothers' requests well, even when these requests are not their own interests, or assert their opinions without emotional negativity (e.g., saying no), especially if they have previously experienced high quality parenting. On the other hand, low levels of inhibition in children might cause passive or defiant noncompliance. In this point of view, children's inhibition ability might be more important in predicting compliance and be a potential mediator in the relationship between parenting styles and child (non)compliance. Thus, the goal of the current study was to examine whether the relation of parenting to child compliance and three types of noncompliance (assertive noncompliance, defiance, passive noncompliance) would be mediated by the ability of children to self-regulate, measured by their inhibitory capacity.

CHAPTER 3. CURRENT STUDY

Conceptual Model

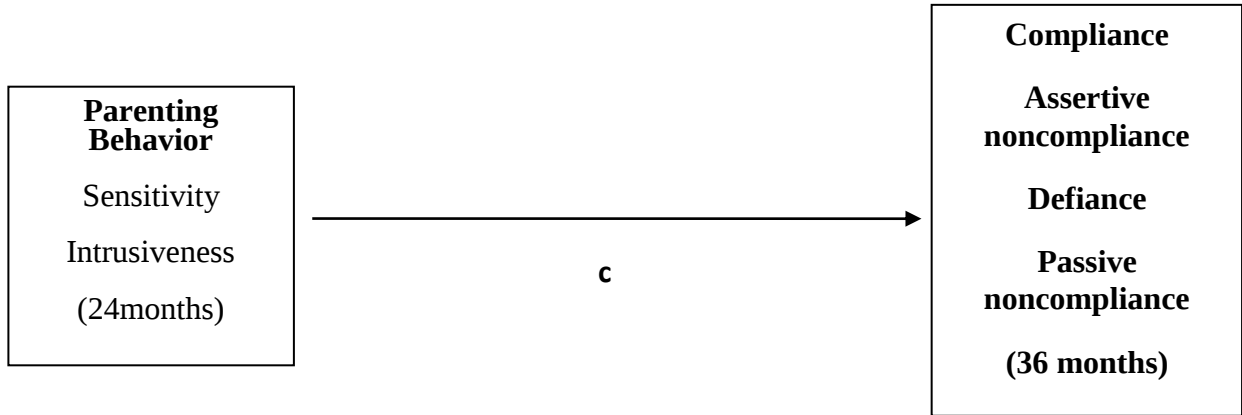


Figure 1. Panel A. The simple relationship between parenting behaviors and child compliance and three types of noncompliance

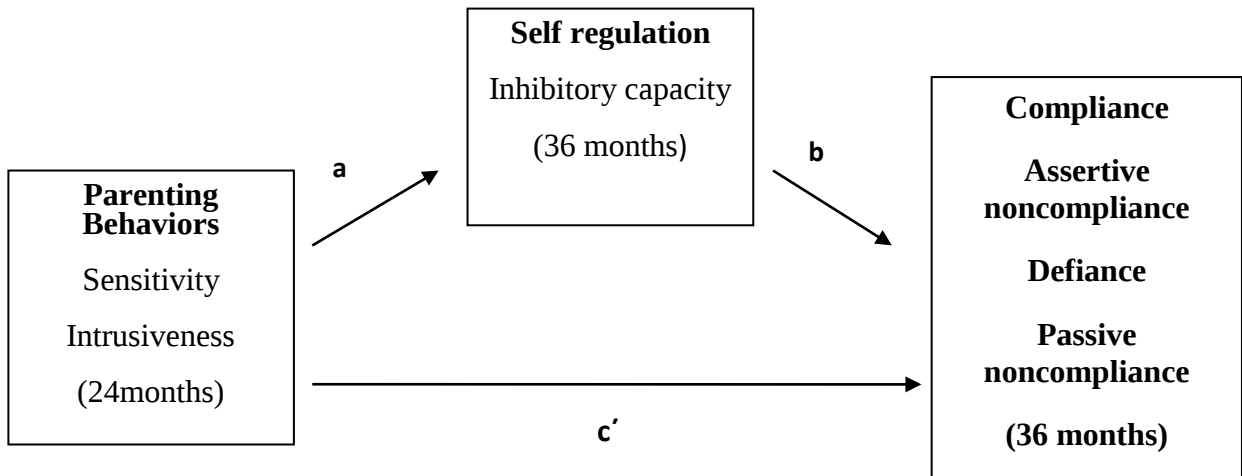


Figure 1. Panel B. The mediational path between parenting behaviors and child compliance and three types of noncompliance controlling for child inhibitory capacity

Hypotheses

I hypothesized that children's inhibitory capacity, as one aspect of self-regulation, serves to mediate the link between parenting and children's compliance/noncompliance. The mediation

hypothesis that I tested was that maternal sensitivity (at 24 months) would increase child inhibitory ability later (at 36 months), which in turn would facilitate child compliance or assertive noncompliance with parents' requests (at 36 months). On the other hand, maternal intrusiveness was expected to cause poorer inhibition, which in turn would decrease compliance and increase defiant noncompliance and passive noncompliance.

Step 1) Path a

H1. Parenting behavior is related to child's self-regulation skills such that children whose mothers show higher rates of sensitivity will have higher scores on inhibitory capacity, as measured by longer latency to become actively engaged with a prohibited toy. On the other hand, children with mothers who display higher scores in intrusiveness will have lower inhibitory ability.

Step 2) Path b

H2. The ability to delay gratification is associated with child compliance and noncompliance such that children who have higher scores in inhibitory capacity will be more compliant and show more assertive noncompliance. On the other hand, children who exhibited lower levels of inhibitory capacity will be more defiant or passively noncompliant with the mother's demands in the clean-up episode.

Step 3) Path c

H3. Parenting behaviors are associated with child compliance and noncompliance in such that when mothers respond sensitively to their children, their children are more likely to display compliance and assertive noncompliance. On the other hand, children whose mothers have intruded on their activity will exhibit defiance and passive noncompliance at higher rates.

Step 4) Mediation Path

H4. Parenting styles (i.e., sensitivity and intrusiveness) are indirectly related to child compliance and three types of noncompliance (i.e., assertive noncompliance, defiance, and passive noncompliance) via child inhibitory ability, such that once the relationship between child inhibition and (non)compliance are accounted for, there will be a weaker relationship between parenting and (non)compliance. Thus, the child inhibitory capacity is hypothesized to be a mediator.

CHAPTER 4. METHOD

Participants

The hypothesized pathway linking self-regulation with parenting styles and (non)compliance was tested by using a large sample ($N=969$) drawn from the NICHD Study of Early Child Care (NICHD Early Child Care Research Network, 1998). The current study used observation-based indices of parenting behaviors, child's self-regulation (i.e., inhibition capacity), and compliance and three types of noncompliance (i.e., assertive noncompliance, defiant noncompliance, and passive noncompliance)

Data were based on the participation of 969 families with healthy newborn babies, who were enrolled in the NICHD Study of Early Child Care (NICHD Early Child Care Research Network, 1998). At 1 month, basic demographic information was obtained, such as maternal education, mother's ethnicity, marital status, maternal depression, child gender, and income-to-needs ratio. As seen in Table 1, the child sample consisted of 498 boys (48.2%) and 464 girls (51.8%) ($M=35.43$, $SD=2.78$). The enrolled families consisted of a wide range of socioeconomic and sociocultural backgrounds, as well as diverse family arrangements. Mothers' self-reported ethnicity was classified as white (86.7%), black (9.6%), Asian (2.1%), American Indian (0.3%), and other (1.4%). Income-to-needs ratio was categorized as poverty group (19.8%), near poverty (18.7%), and non-poverty (61.5%). Moreover, 6.4% of mothers did not complete high school, and 15.8% of families were headed by single mothers.

Procedure

Mothers' and children's behavior was observed in multiple episodes in laboratory sessions. The data for all of the latent variables were collected when children were 24 months and 36 months of age. At the first observation, the mothers and children participated in three box

episode at 24 months and then parenting styles (i.e., sensitivity and intrusiveness) were collected. At the second observation (at 36 months), child's inhibitory behavior was collected in the context of delay of gratification protocol. Finally, mothers and children participated in a clean-up episode when children were 36 months old. Then, measures of child compliance and the three types of noncompliance (i.e., assertive noncompliance, defiance, passive noncompliance) were obtained.

Measures

Three box episode (24 months). Mother and child interactions were rated in the 15 minute semi-structured context that consisted of two episodes. In the first 7-8 minutes, mothers received a request to play as they normally would with their infants, the Free Play Episode, using toys of their own choice. This was immediately followed by a second 7-8 minute episode, the Three Box Episode, in which mothers were supplied with a standard set of toys with which to engage their infants in play. The second episode utilized three numbered boxes each containing a single toy. Mothers were instructed to have their children spend time with the toys in each of the boxes, beginning with Box 1 and ending with Box 3. Box 1 contained a picture book (Barnyard Tracks by Deborah Duffy). Box 2 contained a "toddler kitchen" with four accessories. Box 3 contained a "discovery cottage" that included a small house with moveable parts, three figures, and a car. Maternal behaviors reflecting sensitivity to nondistress and intrusiveness at 24 months were coded from videotapes made of the Free Play and Three Box episodes based on several ratings using global 4 point scales (1 = uncharacteristic, 2=minimally characteristic, 3=moderately characteristic, and 4 = highly characteristic).

In particular, maternal sensitive behaviors include (a) acknowledging the child's affect; (b) responsiveness to the child's talk and/or activity; (c) facilitating, but not overcontrolling the

child's play; (d) appropriate timing of activities to reflect the child's interest; (e) changing the pace when the child appears understimulated, overexcited, or tired; (f) picking up on the child's interests; (g) shared positive affect; (h) providing an appropriate level of stimulation and appropriate range and variety of activities; (i) timely discipline that matches the nature of the misdeed under consideration and the child's ability to understand and benefit from whatever reprimand is offered; and (j) general flexibility in handling compliance and autonomy issues, including not overreacting to noncompliance and supporting autonomy while permitting dependence. Ratings on maternal sensitivity were based on both quality and quantity of mothers' behaviors.

Specific codes characterizing mothers' intrusive interactions include (a) failing to modulate adult-centered behavior, especially if the child defends against it or expresses negative affect to it; (b) offering a continuous barrage of toys, directions or suggestions; (c) not allowing the child to influence the pace or focus of play; (d) taking away toys or curtailing activities without a reasonable explanation and while the child still appears interested; (e) insisting that the child do something (play, interact) that s/he is not interested in doing; (f) not allowing the child to make choices; and (g) excessively or abruptly disciplining the child. Mothers' behaviors that were clearly in the child's best interest, such as removing a child from danger, were not included in considerations of intrusiveness. Ratings of intrusiveness were evaluated from the perspective of the child.

Delay of gratification (36 months). Approximately midway through the 2 hour laboratory session, the Forbidden Toy Task was initiated by the visiting coordinator, while the mother worked on questionnaires (ASBI) in a corner of the room. The task was designed to measure the children's ability to resist temptation and heed adult instructions, which was seen as an indicator

of developing self-regulation in the mothers' absence. The task started with a brief period of play with a new and attractive toy, Ski Boat Crocs (TOMY no. 1009), involving the child and the visiting coordinator. Then, the visiting coordinator began a waiting period by telling the child that s/he is able to play by him/herself during this period with toys that he/she had already played with during an earlier procedure, but that s/he should not touch the prohibited toy (crocodile toy) until told to do so. The toy was then placed at arm's length from the child while the visiting coordinator did paperwork in a corner of the room in the same manner as the mother. During this task, mothers were instructed not to give their children any instructions about what to do if children seem to want mother's help or ask questions. Mothers could only answer their children by saying that "I'm busy right now."

After 150 seconds, the child was given permission to play with the crocodile toy and the visiting coordinator played with the child for 2 additional minutes after the child had a chance to play with the toy. Child behaviors during the waiting period were coded from videotapes of the procedure by coders who were blind to the predictor and outcome measures, at a central location. Computer-based coding allowed a running account of eight behaviors coded in continuous 1-second intervals. From this record, durations of the eight behaviors were calculated (maximum = 150 seconds). The behaviors were coded as mutually exclusive and rated continuously over the period of time following the prohibition given by the experimenter not to touch the toy. In the current report, only one behavior - latency to first active engagement - was examined and raw scores of latency to first active engagement were used in the analyses.

Clean-up episode (36 months). At the end of a 15 minute free play session that opened each laboratory session, the visiting coordinator handed the mother containers for the toys. Mothers were instructed to have children participate in picking up the toys. Mothers and children were

videotaped for the following 5 minutes or until all of the toys had been placed in the containers. Coding for child compliance and three forms of noncompliance (i.e., assertive noncompliance, defiance, passive noncompliance) was completed by coders blind to child-care status (and to attachment security and maternal sensitivity) after observing the clean-up session. Then, ratings were done to characterize the behaviors based on a 5- point global scale, ranging from 1 = not at all characteristic to 5 = very characteristic.

First, child compliance captured the degree to which the child willingly follows or cooperates with the adult's requests. This behavior happened in any of several ways. For instance, the child negotiated a satisfactory course of action that also coincided with the adult's wishes. Or, the child was about to do, or was already doing what the adult asked.

Second, assertive noncompliance captured reasonable attempts by toddlers to distinguish their own needs and requires from others around them. Assertive noncompliance is not hostile, angry, or otherwise high in resistance or negative affect. It was manifested in several ways by simple refusals to do what is requested, statements or explanations of the child's own preference or desire, excuses, delaying tactics, or attempts to negotiate/argue. Examples of assertive noncompliance behaviors are as follows.

1. Outright refusals when asked to do something: saying "no" or shaking head for "no"; "I won't"; "uh-uh"; "no, thank you."
2. Statements/explanations of own preference or desire: "I don't want to"; "I want to play"; "I don't like to"; "I don't feel like it."
3. Excuses/Delaying tactics: "I'm too tired"; "I can't"; "I'm too little"; "I'm still playing."
4. Negotiation attempts: "Why?"; "You do it"; "I'll do it later"; "Do I have to?"

Sometimes assertive noncompliance and defiance occurred in the same behavioral episode and mixed. For example, a child delivered an assertive verbalization ("no") accompanied by angry affect. In this case, the behavior was coded as defiant, not as autonomous. Other times, though autonomy and defiance occurred sequentially - the child started out being assertive, but became defiant with further pressure to comply from the adult. In this case, the child received scores for both autonomy and defiance.

Third, the rating of child defiant noncompliance indexed the toddler's hostile, angry or affectively negative resistance or opposition to the mother's requests for demands. Defiant behavior included doing exactly the opposite of what is requested, intensifying the behavior that is "off limits," and angry or aggressive responses to requests, including yelling, throwing things, hitting and kicking, having a temper tantrum, etc. If a verbalization that might be considered an autonomy bid ("No," "I don't want to") was delivered with anger, it was coded as defiance.

Lastly, while both assertive noncompliance and defiance are active forms of noncompliance in which children make their unwillingness to cooperate with adult requests unequivocal, passive noncompliance is when child failed to comply, but did so without overt defiance or refusal. This mostly took the form of ignoring the request. It also included changing the subject or changing activity to one not requested (but not directly contradictory--e.g., taking toys out of basket or throwing them is defiance; playing with a different toy is passive noncompliance).

Reliability of the ratings was determined according to procedures outlined by Winer (1971) yielding estimates of .93 for compliance, .79 for assertive noncompliance, .86 for passive noncompliance, .91 for defiance.

Analyses Strategy

Using the Statistical Package for the Social Science (SPSS) analytical software, five separate analyses were performed. First, to determine the need to include control variables and to examine significant differences in frequencies with which total samples earned, I examined associations between the model variables (i.e., maternal sensitivity, intrusiveness, child's inhibitory capacity, and the three forms of noncompliance) and basic demographic variables by using Pearson correlation for continuous variables, a Two-tailed Independent Samples t-Tests for gender and continuous variables, and One way Analyses of Variance (ANOVAs) for categorical and continuous variables. Second, Pearson correlation was conducted to address bivariate correlations among parenting behaviors, child inhibitory capacity, compliance, and the three forms of noncompliance. Third, Hierarchical multiple regression was conducted to examine the mediational effect of child inhibitory capacity on the relationship between parenting behaviors and child compliance/noncompliance. Lastly, One way repeated measure ANOVA were performed to provide evidence showing a significant difference in the average use of children's noncompliance in the clean-up episode between 24- and 36- month-old toddlers.

CHAPTER 5. RESULTS

Preliminary Analyses

The mothers' and children's mean scores and standard deviations on all the measures are shown in Table 2-1. When I examined the normality of distribution for all the main variables, child inhibitory behavior (mediator) was substantially negatively skewed. Thus, I performed a log-transformation ($\log_{10}$) to eliminate the negative skew and non-normal distribution for the child inhibition variable. The procedure described in the studies of Tabachnick and Fidell (2007) and Howell (2007) was used to construct this transformation. Specifically, the original inhibition scores were subtracted from a constant number, which is equal to the largest raw score +1, before performing log transformation, in order to gain reversed scores larger than 1. As seen in the zero-order correlation table (Table 3), the correlation scores between the transformed child's inhibitory behavior and other variables were reversed. A previous interpretation was that a lower score indicate a lower ability to delay gratification, and a higher score means a higher rate of delay gratification. However due to the log transformation, the interpretation was reversed; the lower the child's inhibitory behavior score is, the more the child has self-regulation capacity.

To determine the need to include control variables in the main analyses testing mediation, I examined associations between the model variables (i.e., parenting behaviors, child's inhibitory capacity, compliance, and three types of noncompliance) and basic demographic variables (i.e., child age, child's gender, mothers' depression, mothers' education, mothers' ethnicity, marital status, family income at 24/36 months, and income-to-need ratio at the first month of age).

First, as seen in the Table 2-2, Pearson correlations indicated that maternal depression was positively related to maternal intrusiveness and associated with lower maternal sensitivity and poor child inhibitory capacity. There were no significant relationships between mothers'

depression and child compliance and three types of noncompliance. Total family incomes at 24 and 36 months had positive associations with two parenting behaviors (i.e., sensitivity and intrusiveness) and child inhibitory capacity. Especially, total family income at 36 months was negatively related to child passive noncompliance. The amount of mothers' education showed positive relationships with maternal sensitivity and child inhibitory capacity and negative associations with maternal intrusiveness and child passive noncompliance. Interestingly, child's age showed a significant relationship with only child assertive noncompliance by presenting that older children displayed more assertiveness.

Second, Two-tailed Independent Samples t-Tests were also conducted to determine whether there were gender differences among the children in the main variables (Table 2-3). There were significant effects for gender on parenting behaviors, child's inhibitory capacity, compliance, and passive noncompliance. Mothers tended to be more sensitive to girls ($M=3.09$, $SD=.74$) than boys ($M=2.99$, $SD=.74$), $t(960)=-1.98$, $p<.05$ and intrusive with boys ($M=1.55$, $SD=.78$) than with girls ($M=1.34$, $SD=.60$), $t(928)=4.65$, $p<.001$. In the delay episode, girls ($M=.78$, $SD=1.01$) were more likely to wait until being allowed to engage with the prohibited toy than were boys ($M=1.05$, $SD=1.06$), $t(960)=4.03$, $p<.001$. In the clean-up situation, boys ($M=4.18$, $SD=1.02$) scored significantly lower on compliance than girls ($M=4.32$, $SD=.966$), $t(960)=-2.16$, $p<.05$. Moreover, boys ($M=1.71$, $SD=.88$) showed significantly higher levels of passive noncompliance than girls ($M=1.49$, $SD=.71$), $t(942)=4.34$, $p<.001$.

Third, One way Analyses of Variance (ANOVAs) were performed to examine whether all the main variables differed by mothers' ethnicity and marital status. There were significant effects for these mothers' demographic factors on parenting behaviors and children's inhibitory behaviors. Specifically, white mothers showed higher levels of sensitivity than black mothers,

and also both white and Asian mothers scored lower levels of intrusiveness than black mothers. Moreover, children with white mothers displayed longer latency in the delay gratification context than children with black mothers. In terms of marital status, mothers who married and lived with their partner showed higher sensitivity and lower intrusiveness, and children who have two married parents showed greater inhibitory capacity.

Thus, I controlled for mothers' education, mothers' ethnicity, mothers' depression, marital status, total family income, and income to need ratio when examining parenting behaviors and child inhibitory capacity and controlled for gender in analyses including mothers' sensitivity, intrusiveness, child inhibitory capacity, compliance, and passive noncompliance.

Testing Bivariate Relationships among Model Variables

The Pearson correlation analyses (Table 3) were performed to examine the relationships among parenting behaviors, child inhibitory capacity, compliance, and the three types of noncompliance. First, in terms of the relationships between parenting styles and child ability to delay gratification (Hypotheses 1/ Path a), as expected, maternal sensitivity was positively related to child inhibitory capacity, $r(967)=.19$, $p<.01$, while maternal intrusiveness was negatively related to child inhibitory capacity $r(967)=-.17$, $p<.01$. Thus, the first hypotheses were supported.

Second, with regard to the relationships between child inhibitory capacity and child compliance and noncompliance (Hypotheses 2/Path b), child inhibitory capacity showed a positive relationship to compliance, $r(967)=.15$, $p<.01$, and a negative association with assertive noncompliance, $r(967)=-.11$, $p<.01$, defiant noncompliance, $r(967)=-.11$, $p<.01$, and passive noncompliance, $r(967)=-.17$, $p<.01$. Thus, the hypothesized positive relationship between child inhibitory capacity and child assertive noncompliance was not supported in this study.

Third, with regard to relationships between parenting styles and child (non)compliance (Hypotheses 3/Path c), as predicted, the maternal sensitivity was positively related to child's compliance, $r(967)=.10$, $p<.01$, but negatively associated with child defiance, $r(967)=-.08$, $p<.01$, and passive noncompliance, $r(967)=.12$, $p<.01$. However, contrary to my prediction, maternal sensitivity did not show a significant relationship with assertive noncompliance, $r(967)=.06$, *ns*. Moreover, maternal intrusiveness and child passive noncompliance were positively associated, $r(967)=.11$, $p<.01$. On the other hand, maternal intrusiveness also did not show any significant associations with child compliance $r(967)=.06$, *ns*, assertive noncompliance, $r(967)=.01$, *ns*, and defiance noncompliance, $r(967)=.05$, *ns*.

Testing Mediated Effect of Child Inhibitory Capacity

Following the criteria laid out by Baron and Kenny (1983) and by Frazier, Tix, and Barron (2004), I tested the hypothesized mediation models using hierarchical multiple regression. The first criterion to be met to establish a mediated relationship is that the predictor variables (i.e., maternal sensitivity and intrusiveness), the criterion variables (i.e., compliance and the three types of noncompliance), and the proposed mediator (i.e., inhibitory capacity) should all be inter-correlated. Among those variables, mothers' sensitivity, intrusiveness, children's inhibitory behavior, compliance, and passive noncompliance were inter-correlated with controlling for significant demographic factors. Thus, these variables were included in an examination of the mediational model, while assertive noncompliance and defiant noncompliance were excluded. The second criterion indicates that the association between the predictor and criterion variable should be substantially reduced ($c - c'$) when the effect of the mediator variable on the criterion variable is controlled. To assess whether this decrease from c to c' is significant, the Sobel test was conducted. Since the drop from c to c' is equal to the product of Paths a and b , the Sobel test

estimated the significant difference between c and c' by testing the significant of the products of Paths a and b (Sobel, 1982).

Accordingly, three equations for the mediation test were produced: 1) each child compliance and the three types of noncompliance was regressed on the maternal sensitivity or intrusiveness (see Path c in Figure 1); 2) child inhibitory behavior was regressed on maternal sensitivity or intrusiveness (see Path a in Figure 1); 3) In the third equation, each child compliance and three types of noncompliance scores were regressed on both the parenting behaviors and child's inhibitory behavior (see Path c' in Figure 1). Among multiple models in which each of the compliance/noncompliance variables represented the criterion variable, three hypothesized mediational models were confirmed.

The first proposed mediational model (see Figure 2-1) was whether child's inhibitory behavior would mediate the relationship between mothers' sensitivity and compliance. Table 4-1 and 4-2 present each regression analysis to examine the mediational hypothesis. Following the steps outlined earlier for testing mediation, I first established that mothers' sensitivity was related to compliance by regressing compliance on the mothers' sensitivity. The standardized regression coefficient ($\beta = .106$) associated with the effect of mothers' sensitivity on passive noncompliance was significant ($p < .01$). Thus, Path c was significant, and the requirement for mediation in Step 1 was met. To establish that sensitivity was associated with child's inhibitory behavior, I regressed inhibitory behavior on mothers' sensitivity. The standardized regression coefficient ($\beta = -.135$) related to this path was also significant, $p < .001$, and thus the condition for Step 2 was met. To examine whether children's inhibitory behavior was related to compliance, I regressed child compliance simultaneously on both mothers' sensitivity and children's inhibitory behavior. The coefficient associated with the relation between mothers' sensitivity and

compliance (controlling for children's inhibitory behavior) was also significant ($\beta=.088$, $p < .05$). Path c' was $.088$ and still significant ($p < .05$), even though it was smaller than Path c , which was 1.06 . As Figure 2 illustrates, the standardized regression coefficient between parent's sensitivity and child compliance substantially decreased when controlling for child inhibitory behavior. The Sobel test indicated that the child's inhibitory behavior ($z= 2.88$, $p=.002$) is a significant partial mediator of the mothers' sensitivity-child compliance relationship. Thus, the relationship between mothers' sensitivity and child compliance was partially mediated by the children's inhibitory behavior.

The second hypothesized mediation model assessed whether children's inhibitory behavior would mediate the relationship between mothers' sensitivity and passive noncompliance. As can be seen in Figure 2-2, children's inhibitory behavior appears to partially mediate the association between mothers' sensitivity and children's passive noncompliance. Specifically, Table 5-1 and 5-2 indicate the standardized regression coefficient ($\beta=-.100$) associated with the effect of mothers' sensitivity on passive noncompliance was significant ($p < .01$). The coefficient associated with the relation between mothers' sensitivity and passive noncompliance (controlling for child inhibitory behavior) was also significant ($\beta=-.084$, $p < .05$). As Figure 3 illustrates, the standardized regression coefficient between mothers' sensitivity and children's passive noncompliance decreased when controlling for children's inhibitory behavior, although the relationship is still significant. The Sobel test confirmed that the children's inhibitory behavior ($z= -3.60$, $p=.000$) is a significant partial mediator of the influences of mothers' sensitivity on children's passive noncompliance.

In the third proposed mediated model, the complete mediator effect was found in the relationship between mothers' intrusiveness and passive noncompliance controlling for

children's inhibitory behavior (Figure 2-3). Table 6-1 and 6-2 indicate that before controlling children's inhibitory behavior the relationship between mothers' intrusiveness and children's passive noncompliance was statistically significant ($\beta = .080$, $p < .05$). However, once children's inhibitory behavior is added to the equation, the relationship between mothers' intrusiveness and children's passive noncompliance becomes nonsignificant ($\beta = .067$, ns), although it did not reach zero. The Sobel test confirmed the significance of the fully mediated effect, $z = 2.39$, $p = .008$.

Developmental changes in noncompliance use

A one-way repeated measure ANOVA was conducted to examine whether there are significant differences in the use of noncompliance between 24- and 36-month-old toddlers. As a result, the test provided evidence indicating a significant difference in the average use of children's assertive noncompliance in the clean-up episode between 24- and 36-month-old toddlers. The 36-month-old children used more self-assertion when mothers asked them to clean-up toys ($M = 1.71$, $SD = .825$) than 24-months-old children ($M = 1.51$, $SD = .825$), $p < .001$. However, there were no significant changes in use of compliance, defiance, and passive noncompliance between these two age groups.

CHAPTER 6. DISCUSSION

Summary of the Present Study

The primary goal of this study was to examine the mediation effects of child inhibitory capacity, conceptualized as a component of self-regulation, on the relationship between parenting style and child compliance/noncompliance in toddlerhood from 24 to 36 months of age. Analyses of the present data indicated that not only were mothers' behaviors (i.e., sensitivity and intrusiveness) and children's capability to delay touching an attractive toy each significantly related to children's compliance and passive noncompliance, but children's inhibitory capacity also partially and fully mediated the relation of maternal behaviors to children's compliance and passive noncompliance.

The Parenting Styles and Child Compliance/Noncompliance Links

Regarding the effect of maternal behaviors on child compliance and noncompliance, greater maternal sensitivity in a semi-structured play at 24 months predicted higher levels of child compliance and lower levels of passive noncompliance at 36 months when asked to clean up toys. These findings are consistent with previous studies showing that child compliance is positively associated with general maternal sensitivity in non-disciplinary settings (Laible, Panfile, & Makariev, 2008; Stayton et al., 1971), and parental warmth and responsiveness to child cues in disciplinary settings (Feldman & Klein, 2003; Crockenberg & Litman, 1990; Maccoby & Martin, 1983). In a review of the literature on parenting and child compliance, Dix, Stewart, Gershoff, and Day (2007) suggested that children's reactions to maternal requests rely on the attachment relationship and reflect the history of the relationship between mother and child. In fact, the importance of maternal sensitivity in early childhood has been repeatedly emphasized in the attachment literature. According to attachment theory (Ainsworth, 1969; Ainsworth, Blehar,

Waters, & Wall, 1978; Bowlby, 1982), when mothers are sensitive, warm, and noncoercive, and form parent-child relationships that are based on reciprocity, their children show committed compliance at higher rates, and negative opposition and defiance at lower rates. Moreover, some researchers supported this view showing that toddlers have the wish to comply – committed compliance – which is more likely to occur in the context of a positive mother-child relationship (Dix et al., 2007). Given those findings, one possible interpretation of these findings is that if sensitive and warm mothers build a positive relationship with their children, then children are motivated to maintain the mutually positive relationship by conforming to the mothers' wants. Or the children may also willingly comply with their requests to please their parents. Additionally, Feldman and her colleagues further indicated that the influence of maternal sensitivity on child compliance expands to encompass relationships with significant adults outside of the home. In their study, maternal sensitivity affected child compliance to parents as well as to familiar adults (e.g., teachers) outside the family setting (Feldman et al., 2003).

In terms of mothers with low sensitivity, on the other hand, the present data indicate that children whose mothers showed lower sensitivity when toddlers were 24 months old were more likely to be passive in clean-up when they were 36 months old. This finding is consistent with numerous researchers suggesting that if the children are raised in an unresponsive parenting environment, they may fail to build the belief that the relationship with parents can be reciprocal. As a result, they respond to parental control with passivity and low assertion (Dodge, 1990; Goodman, 1992; Leadbeater, Bishop, & Raver, 1996; Field, Healy, Goldstein, & Guthertz, 1990; Zekoski, O'Hara, & Wills, 1987). Moreover, considering the fact that the present data indicated a negative association between maternal sensitivity and maternal depression, the history of depression should be considered to understand the relationship between maternal sensitivity and

child passivity. One study found that mothers with depressive symptoms tended to show greater insensitivity and emotional unavailability toward their children (Campbell, Brownell, Hungerford, Spieker, Mohan, & Blessing, 2004). Based on attachment theory, understanding infant's cues and needs may be an especially difficult task for mothers who experience postpartum depression (Campbell & Cohn, 1997). Also, those mothers would not be able to respond to their infants in both a sensitive and consistent manner to promote children's optimal socio-emotional development. They may feel overwhelmed by the responsibilities required during the transition to motherhood and the depressed emotion can decrease their sensitivity to children's cues (Belsky, Rovine, & Fish, 1989; Klaus, Kennell, & Klaus, 1995). In addition, a number of researches have reported the association that 2-1/2- to 4- year-old children with depressed mothers reacted to parental control with greater passive noncompliance (Dix et al., 2007; Kuczynski & Kochanska, 1990; Kuczynski et al., 1987). Even though the current study did not examine mothers' depression scores as a main model variable in regression models, it is possible to hypothesize that maternal insensitivity due to depressive symptoms may have caused the higher levels of passive noncompliance and lower levels of child compliance we observed in the children of the less sensitive mothers in the current study.

Mothers' intrusiveness when children were 24 months old showed positive association with children's passivity at 36 months, which is consistent with previous research showing that maternal intrusiveness is associated with passive noncompliance (Braungart-Rieker et al., 1997; Kuczynski & Kochanska, 1990; Power & Chapieski, 1986). In fact, parents may begin to use higher levels of power assertion, accompanied by intrusive control over their children's behavior to assure that children comply with social and moral norms, since parent/child conflicts peak in the toddler years, when children become able to assert their own wills. However, parents would

have experienced that the intrusive way of parenting cannot guarantee children's willing compliance. Based on the findings of the present data, instead, children reacted passively to their requests. Therefore, one possible interpretation is that if mothers exceed the appropriate control range, to the point of impeding children's playing, children may lose interest or motivation in their activities and then become more passive later.

In sum, mothers' sensitivity and intrusiveness played influential roles in child compliance and passive noncompliance, and this might best be explained in the context of mother and child interaction. Accordingly, the positive and reciprocal mother-child relationships led by maternal sensitivity and allowance of free exploration with constant limits from unintrusive parenting might help children display more compliance and prevent them from showing passive responses.

Furthermore, in contrast to my assumption, mothers' sensitivity and intrusiveness failed to predict assertive and defiant noncompliance of children in the clean-up situation. Since the occurrences of assertive and defiant noncompliance in this study were less frequent than other behaviors, there may be low variability in the measure in which to accurately examine the relationship among parenting behaviors, child assertiveness, and defiance. It is also possible that 36 months old children did not fully develop the adaptive type of noncompliance, assertive noncompliance, for attaining their goals. Additionally, defiant noncompliance may be relatively domain specific in nature, depending on the contexts in which maternal intrusive behaviors were presented. For example, according to Braungart-Rieker et al., (1997), child defiant noncompliance was shown to have a significant association with maternal intrusiveness behaviors in the clean-up context, but not in the delay context. Therefore, since the current study measured maternal behaviors in a semi-structured play session, it might not have been the ideal situation in which to elicit or demonstrate a significant relationship between maternal

intrusiveness and child defiant noncompliance.

Partial and Full Meditational Paths

With regard to the meditational effect of child inhibitory capacity on the relationship between maternal behaviors and (non)compliance, children's internalized inhibitory capacity showed partial mediation of the relation of mother's sensitivity to compliance and passive noncompliance. More specifically, these findings indicated that children whose mothers have been sensitive during a semi-structured play session at 24 months were more likely to refrain from engaging with a prohibited toy alone at 36 months, and in turn tended to embrace mothers' requests more willingly in the clean-up situation. On the other hand, children whose mothers have scored low in sensitivity were quicker to touch the prohibited toy and were then more likely to display passive noncompliance in the clean-up situation. These partial mediations imply that although child compliance and passive noncompliance can be directly influenced by early sensitive parenting, the children's reactions to mother's requests can also be affected by their own inhibitory capacity. Not only does early maternal sensitivity directly affect child (non)compliance, but the impact of the sensitive parenting can be overruled by the effect of children's inhibitory capacity on child (non)compliance.

These results are consistent with the previous research asserting that children whose mothers are highly responsive and attentive, exert little control, and encourage independence are better able to promote the development of delay ability and self-regulation skills (Silverman & Ippolito, 1995; Raver, 1995). Mother's warmth and positive expression have been related to a secure attachment (Contreras, Kerns, Weimer, Gentzler, & Tomich, 2000), and this security is regarded to foster children's regulated behavior (Cummings & Davies, 1996), in part because the children have greater psychological resources for dealing with negative emotions and events. It is also

possible to that sensitive mothers may facilitate their children's ability to self regulate by promoting the predictability of the environment (Brody & Ge, 2001). Considering that maternal sensitivity was measured in the present study based on maternal responsiveness, facilitating child activity, and supporting autonomy while permitting dependence, these mothers' child rearing styles promote the children's delay ability, and in turn increased children's compliance.

In the case of maternal intrusiveness, however, a strong path from maternal intrusiveness through child inhibitory capacity to child passive noncompliance was seen. According to the criteria mentioned earlier, this result shows that children's inhibitory capacity fully mediated the relation of maternal intrusiveness to children's passive noncompliance. The full mediation signifies that intrusive parenting was no longer a significant predictor of children's passive noncompliance once children's inhibitory behavior was included in the model. Specifically, these findings indicated that children whose mothers have been intrusive during a semi-structured play session at 24 months were less able to delay gratification, and in turn are more likely to passively ignore mother's request in the clean-up situation. This finding is notable in that a pathway between mother's intrusiveness and child passivity through child inhibitory capacity was confirmed, despite the fact that previous studies showed just a simple relationship between intrusiveness and passivity (Braungart-Rieker et al., 1997; Kuczynski & Kochanska, 1990; Power & Chapieski, 1986).

One possible explanation of these findings is that mothers' previous intrusiveness hindered the children's ability to delay gratification, and more generally interfered with the development of inhibitory capacity. In fact, intrusive mothers do not attend to children's wishes and interests well, and tend to take the lead in structuring both task and play situations. Thus, maternal intrusiveness may be considered as stressful for children because it intrudes on their ability to

exercise control over interactions with the mothers and interrupts the opportunities to practice self regulation (Malatesta, Culver, Tesman, & Shepard, 1989; Tronick, 1989). The present data further supported this view, showing that children whose mothers showed higher levels of intrusiveness tended to have low self regulation skills and be more passive to mothers' requests as they grew older. Moreover, young children may experience maternal intrusiveness as an overload of information processing demands, and it may cause them to shut down or become avoidant as a way of protecting themselves and/or controlling the incoming stimulation (Ainsworth et al., 1978; Belsky, Rovine, & Taylor, 1984). Therefore, children who have intrusive mothers may fail to develop some competencies, and adopt passive interpersonal styles (Kahen, Katz, & Goffman, 1994; Pettit, Harrist, Bates, & Dodge, 1991; Tronick, 1989). From this perspective, children who did not demonstrate the ability to delay gratification due to maternal intrusiveness in the early childhood would show higher levels of passivity later.

Aforementioned partial and perfect mediational paths can be understood by viewing the results from both developmental and situational perspectives: 1) the emergence and development of self-regulation ability in toddlerhood and 2) different processes in children's use of self-regulation between 'Do' and 'Do not' contexts. First, based on literatures supporting the assertion that internalization of parental demands and children's self-regulation begin to emerge in the second years of life (Feldman & Klein, 2003; Kagan, 1984; Piaget, 1952), 36-month-old toddler's compliance and noncompliance should be examined considering whether children have self-regulation ability without external support at that time period. If once children are capable to cope with a stressful situation alone showing inhibitory capacity at a high rate in the delay context, they may not mainly rely on early maternal sensitivity in the clean-up situation. At the same time, children's inhibitory abilities may also assist parents in eliciting compliance in the

clean-up context. Furthermore, on the basis of the autonomy theory, children's ability to self-regulate develops when they are raised in an environment in which they experience an event where they are in control and have at least some opportunities for free exploration. If mothers are intrusive on children's activities, children may not have opportunities to build up self-regulatory capacity. Therefore, it would be possible that when maternal intrusiveness prevents children from developing the ability to self-regulate on their own, children low in self-regulation ability displayed passive noncompliance at higher rates. They in turn become passive or show retardation in self-regulatory development. From this perspective, these mediational results imply that when mothers provide high sensitivity and low intrusiveness in play time with children, children would enhance the child inhibitory capacity. Also, the children's ability to delay gratification helps to increase committed compliance and reduce passive noncompliance in the clean-up situation.

Second, the mediational chains can be clarified with regard to the two different situations ('Do' and 'Do not' context), in which the children's behaviors were measured. It is noteworthy to mention that the children's self-regulation ability that was measured in the delay of gratification ('Do not' context) predicted children's compliance and noncompliance observed in the clean-up situation ('Do' context). Actually, inhibiting a desired activity (e.g., 'Do not' context) and engaging in an undesirable activity (e.g., Do context) require different self regulation skills for children. In the study by Kochanska and Akans (1995), it has been revealed that the 'Do' context (e.g., clean-up) is a harder situation for toddlers to embrace adults' requests than the 'Do not' context (e.g., delay of gratification). Stopping ongoing behavior and then sequentially engaging in a new behavior in the 'Do' situation would be a harder task for children than simply inhibiting an unacted upon desire. If we take the view that the ability to comply in Do and Do not tasks is

based on the child's self regulation skills, we must assume that there is an overlap in the type of self-regulation skills required for both tasks. Therefore, children who have experienced how to delay gratification to meet the external demands in the 'Do not' context might have an advantage when embracing mother's request later in a 'Do' context. In the previous study, Kochanska et al. (2001) confirmed the fact that children's internalized inhibitory ability at 12 months old in the 'Do not' context predicted committed compliance in the 'Do' context at 22 months. However, no significant associations between these factors were shown in the older age groups. From this perspective, this study extended the age range of children up to 36 months of age who showed the significant relationship between the internalized inhibitory capacity and compliance. Based on the results of the current study, children became more able to conform to mothers' requests or and were less passive in the 'Do' context, if mothers promote children's inhibition capacity first in the 'Do not' context by providing sensitive and non-intrusive parenting. This finding is consistent with the view showing that parents enforce prohibitions to children earlier than requests (Gralinski & Kopp, 1993). Therefore, if mothers were to first provide children opportunities to postpone what they want to do and then to ask them to engage in a new activity, it would be much easier for children to display greater compliance and less passive noncompliance.

Developmental Changes in Use of Child Noncompliance and Gender Differences

As expected, a significant increase in children's assertive noncompliance from 24 to 36 months of age was found. A one-way repeated measure ANOVA provided evidence indicating a significant difference in the average use of children's assertive noncompliance in the clean-up episode between 24- and 36- month-old toddlers. This finding is consistent with the proposition that once children reach 24 to 36 months of age, children's motivations to be autonomous by

simply saying “no” without affect or negotiation to an adults’ requests increase (Dix et al., 2007; Crockenberg et al., 1990; Kopp, 1982; Sroufe, 1995). On the other hand, there were no significant changes from 24 to 36 month old in use of compliance, defiance, and passive noncompliance. Moreover, the finding on gender differences in one domain of self-regulation ability, inhibitory capacity, was consistent with previous studies. In several studies, toddler girls showed more compliance and less passive noncompliance with mothers’ requests than toddler boys in clean-up episodes, and displayed longer latencies to engage in playing with a prohibited toy than did boys (Feldman & Klein, 2003; Kochanska et al., 2001; Kochanska & Aksan, 1995).

Strengths and Limitations

Several strengths were evident in the current study. First, this study is worthwhile in that pathways between parenting behaviors and child compliance/passive noncompliance through child inhibitory capacity were confirmed, although previous studies showed just a simple relationship between parenting and child compliance/noncompliance (Braungart-Rieker et al., 1997; Kuczynski & Kochanska, 1990; Power & Chapieski, 1986). Based on the results, the pathways were clarified; when mothers show higher sensitivity and lower intrusive in the interaction with their children earlier, the children would foster inhibitory capacity later, and in turn be able to show committed compliance or less passivity to other adults’ requests.

Second, although most previous researchers examined parenting behaviors as contemporaneous variables correlated with child compliance and noncompliance during the same period, the present study strengthened this previous research in a longitudinal perspective by examining the relationship between early parenting behaviors at 24 months and later child compliance at 36 months. Thus, the important role of early parenting behaviors in shaping child compliance later was addressed in the study.

Third, the present study used observational based data from a large number of samples. The maternal sensitivity, intrusiveness, child behavioral inhibition, compliance, and the three types of noncompliance were measured not by self report, but by observation in naturalistic contexts. Therefore, these measured behaviors showed various aspects of natural parent-child interaction in an ecologically valid environment.

Lastly, most significant demographic variables (i.e., child gender, mothers' education, mothers' ethnicity, marital status, total family income at 24/36 months, and income-to-need ratio at 1 month) were included in the mediational model. Thus, the results from this study can be translated to the general population.

It should be noted that the current study found significant relationships, but the effect sizes of these relationships were small. Even though the estimates were significant and they dropped significantly in mediational models, and the Sobel tests were significant, small effect sizes were detected, especially in a large sample.

Future study

In terms of causality, a strong argument can be made that the parenting behaviors (predictor) precede children's inhibitory behavior (mediator). Thus, further investigation would need to be conducted to examine the interaction effect of mothers' behavior and child's inhibitory capacity on compliance. Moreover, this study did not focus on differences in exhibiting later behavioral problems or social competence between children who showed greater levels of defiance and passive noncompliance and those who displayed greater self-assertion. To clarify developmental patterns among the several types of child noncompliance behaviors, then the relationships between noncompliance behaviors and later behavioral problems or social competence needs to be examined.

APPENDIX

Tables and Figures

Table 1. *Demographic characteristics*

Demographic variables	Frequency	Percent
<i>Child Gender</i>		
Male	498	48.2
Female	464	51.8
<i>Mother's ethnicity</i>		
American Indian, Eskimo, Aleut	3	0.3
Asian or Pacific Islander	20	2.1
Black or Afro-American	92	9.6
White	834	86.7
Other	13	1.4
<i>Maternal Education</i>		
No High School Degree	62	6.4
High School degree/GED	192	20.0
Some College but no degree, AA/ VOC	321	33.4
Bachelor's Degree from college or university	233	24.2
Post-graduate Education	154	16.0
<i>Marital Status</i>		
Two parents	810	84.2
Non two parents	152	15.8
<i>Income-to-Needs Ratio</i>		
Poverty	190	19.8
Near poverty	180	18.7
Non poverty	592	61.5

Table 2-1. *Descriptive Statistics for model variables*

	Range	Mean	SD
<i>Predictors (24 months): Parenting Measures</i>			
Sensitivity to non-distress	1 - 4	3.04	0.74
Intrusiveness	1 - 4	1.45	0.71
<i>Mediator (36months): Child Measures</i>			
Inhibitory Capacity	0 -151	93.80	68.34
Log Inhibitory Capacity*	0 – 2.18	0.92	1.04
<i>Outcome Variables (36 months): Child Measures</i>			
Compliance	1 - 5	4.22	1.02
Assertive noncompliance	1 - 5	1.75	0.90
Defiant noncompliance.	1 - 5	1.16	0.56
Passive noncompliance	1 - 5	1.62	0.82

Note. Higher scores on log inhibitory capacity* indicate lower levels of behavioral inhibition seen in children in the delay of gratification episode.

Table 2-2. *Pearson correlations between demographic variables and model variables*

	Child age	Mother's education years	Maternal depression	Income-to- Needs ratio	Family income 24 months	Family income 36 months
<i>Predictors</i>						
Sensitivity	-.052	.303**	-.165**	.233**	.244**	.249**
Intrusiveness	.006	-.262**	.179**	-.176**	-.196**	-.182**
<i>Mediator</i>						
Inhibitory capacity	-.022	.156**	-.095**	.131**	.121**	.166**
Log inhibitory capacity*	.019	-.152**	.095**	-.130**	-.118**	-.164**
<i>Outcome</i>						
Compliance	.015	.047	.048	-.008	-.019	.014
Assertive noncompliance	.079*	-.009	-.027	.024	.010	-.026
Defiant noncompliance	-.015	.039	-.009	.014	.037	.009
Passive noncompliance	.039	-.066*	.002	-.022	-.042	-.072*

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. (2-tailed).

Table 2-3. *Descriptive statistics for independent t-test by gender (N=969)*

Variable	Female		Male		<i>t</i> -values	P
	Mean	SD	Mean	SD		
Sensitivity	3.09	0.74	2.99	0.74	-1.98*	.048
Intrusiveness	1.34	0.60	1.55	0.78	4.65***	.000
Log inhibitory capacity*	0.78	1.01	1.05	1.06	4.03***	.000
Compliance	4.32	0.97	4.18	1.02	-2.16*	.031
Assertive noncompliance	1.78	0.93	1.70	0.81	-1.38	.169
Defiant noncompliance	1.15	0.56	1.17	0.54	0.45	.654
Passive noncompliance	1.49	0.71	1.71	0.88	4.34***	.000

Note. Higher scores on log inhibitory capacity* indicate *lower* levels of behavioral inhibition seen in children in the delay of gratification episode.

Table 3. *Zero-order correlations among model variables*

	1	2	3	4	5	6	7	8
1. Sensitivity		-.525**	.192**	-.185**	.099**	-.059	-.084**	-.118**
2. Intrusiveness			-.169**	.165**	-.055	-.010	.045	.108**
3. Inhibitory capacity				-.977**	.151**	-.109**	-.110**	-.168**
4. Log inhibitory capacity*					-.150**	.112**	.103**	.167**
5. Compliance						-.694**	-.513**	-.698**
6. Assertive noncompliance							.394**	.344**
7. Defiant noncompliance								.162**
8. Passive noncompliance								

Note. Higher scores on log inhibitory capacity* indicate *lower* levels of behavioral inhibition seen in children in the delay of gratification episode. ** $P < .01$ (Two-tailed)

Table 4-1. Mediation regression result for the effect of child inhibitory behavior on the relationship between Maternal sensitivity and child compliance (model 1).

Testing steps in mediation model	<i>B</i>	<i>SE B</i>	β	<i>R</i>	<i>R</i> ²	<i>F</i>	Sobel
Testing Step 1 (Path c)							
Outcome: Compliance							
Predictor: Sensitivity to non-distress	.143	.046	.106**	.150	.016	3.644	
Testing Step 2 (Path a)							
Outcome: Log Inhibitory behavior*							
Predictor: Sensitivity to non-distress	-.190	.047	-.135***	.262	.063	11.698	
Testing Step 3 (Path b and c')							
Outcome: Compliance							
Mediator: Log Inhibitory behavior * (Path b')	-.127	.031	-.133***				
Predictor: Sensitivity to non-distress	.119	.046	.088*	.197	.032	5.509	2.88**

Note. Covariate: child gender, marital status, maternal depression, and family total income at 24 and 36 months. Include not on reverse scoring of inhibitory behavior. Higher scores on log inhibitory capacity* indicate lower levels of behavioral inhibition seen in children in the delay of gratification episode.*p < .05. **p < .01. ***p < .001

Table 4-2. *Hierarchical multiple regression results (Dependent variable: Child compliance)*

Variable	Step1 β	Setp2 β	Step3 B
Child gender	-.072*	-.066*	-.051
Marital status	.038	.016	.008
Maternal depression	.060	.069*	.074*
Family total income at 24 months	-.102	-.109	-.094
Family total income at 36 months	.097	.084	.058
Maternal sensitivity (Predictor)		.106**	.088*
Log inhibitory capacity* (Mediator)			-.133***
Adjusted R ²	.007	.016	.032
ΔR^2	.012	.010	.016

Note. Mediation regression result for the effect of child inhibitory capacity on the relationship between maternal sensitivity and child compliance. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5-1. Mediation regression result for the effect of child inhibitory behavior on the relationship between Maternal sensitivity and child passive noncompliance (model 1).

Testing steps in mediation model	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>R</i>	<i>R</i> ²	<i>F</i>	Sobel
Testing Step 1 (Path c)							
Outcome: Passive noncompliance							
Predictor: Sensitivity to non-distress	-.110	.038	-.100**	.199	.030	4.348	
Testing Step 2 (Path a)							
Outcome: Log Inhibitory behavior*							
Predictor: Sensitivity to non-distress	-.173	.048	-.123***	.272	.065	8.454	
Testing Step 3 (Path b and c')							
Outcome: Passive noncompliance							
Mediator: Log Inhibitory behavior* (Path b)	.101	.025	-.131***	.235	.045	5.566	-3.60***
Predictor: Sensitivity to non-distress	-.092	.038	-.084*				

Note. Covariate: child gender, mothers' education, mothers' ethnic, marital status, maternal depression, income to need ration at 1 month, and family total income at 24 and 36 months. Higher scores on log inhibitory capacity* indicate lower levels of behavioral inhibition seen in children in the delay of gratification episode. * $p < .05$. ** $p < .01$. *** $p < .001$

Table 5-2. *Hierarchical multiple regression result (Dependent variable: Child passive noncompliance)*

Variable	Step1 B	Setp2 β	Step3 β
Child gender	.136***	.130***	.115***
Mother's education	.003	.016	.015
Marital status	-.012	.002	.007
Mother's ethnicity	-.059	-.043	-.033
Maternal depression	-.028	-.034	-.037
Income to needs ration at 1 month	.050	.054	.059
Family total income at 24 months	.056	.057	.040
Family total income at 36 months	-.147**	-.136*	-.112
Maternal sensitivity (Predictor)		-.100**	-.084*
Log inhibitory capacity*(Mediator)			.131***
Adjusted R ²	.023	.030	.045
ΔR^2	.031	.008	.016

Note. Mediation regression result for the effect of child inhibitory capacity on the relationship between maternal sensitivity and child passive noncompliance. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6-1. *Mediation regression result for the effect of child inhibitory behavior on the relationship between maternal intrusiveness and child passive noncompliance (model 3)*

Testing steps in mediation model	<i>B</i>	<i>SE B</i>	β	<i>R</i>	<i>R</i> ²	<i>F</i>	Sobel
Testing Step 1 (Path c)							
Outcome: Passive noncompliance							
Predictor: Intrusiveness	.092	.039	.080*	.191	.027	4.011	
Testing Step 2 (Path a)							
Outcome: Log Inhibitory behavior*							
Predictor: Intrusiveness	.146	.050	.099**	.264	.061	7.918	
Testing Step 3 (Path b and c')							
Outcome: Passive noncompliance							
Mediator: Log Inhibitory behavior* (Path b)	.104	.025	.134***				
Predictor: Intrusiveness	.077	.039	.067	.231	.043	5.345	2.39**

Note. Covariate: child gender, mothers' education, mothers' ethnic, marital status, maternal depression, income to need ration at 1 month, and family total income at 24 and 36 months. Higher scores on log inhibitory capacity* indicate lower levels of behavioral inhibition seen in children in the delay of gratification episode. * $p < .05$. ** $p < .01$. *** $p < .001$

Table 6-2. *Hierarchical multiple regression results (Dependent variable: Child passive noncompliance)*

Variable	Step1 β	Setp2 B	Step3 β
Child gender	.136***	.124***	.110***
Mother's education	.003	.010	.010
Marital status	-.012	-.002	.003
Mother's ethnicity	-.059	-.043	-.033
Maternal depression	-.028	-.035	-.038
Income to needs ration at 1 month	.050	.051	.057
Family total income at 24 months	.056	.061	.043
Family total income at 36 months	-.147*	-.146*	-.120*
Maternal intrusiveness (Predictor)		.080*	.067
Log inhibitory capacity* (Mediator)			.134***
Adjusted R ²	.023	.027	.043
ΔR^2	.031	.006	.017

Note. Mediation regression result for the effect of child inhibitory capacity on the relationship between maternal intrusiveness and child passive noncompliance. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 1. *Conceptual model*

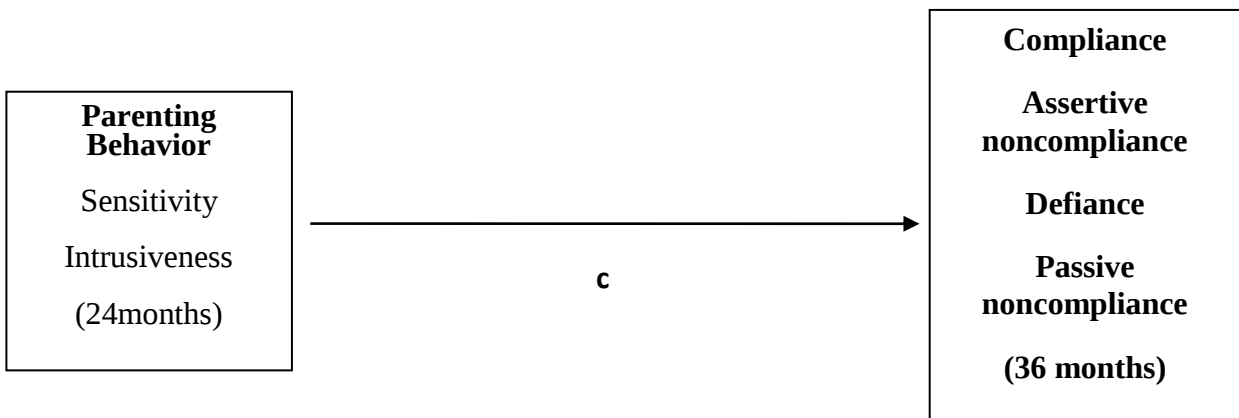


Figure 1. Panel A. The simple relationship between parenting behaviors and child compliance and three types of noncompliance

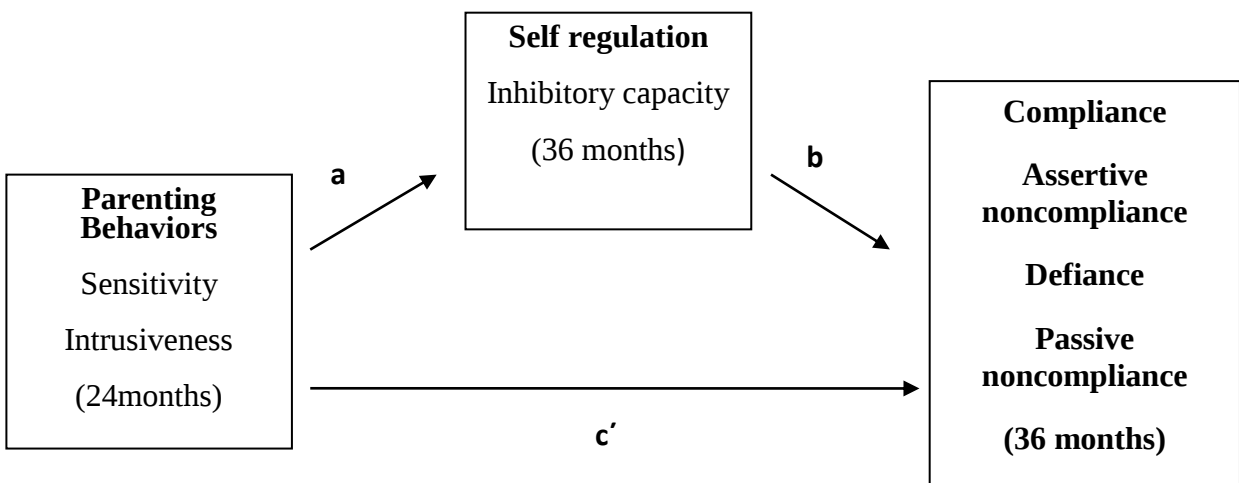


Figure 1. Panel B. The mediational path between parenting behaviors and child compliance and three types of noncompliance controlling for child inhibitory capacity

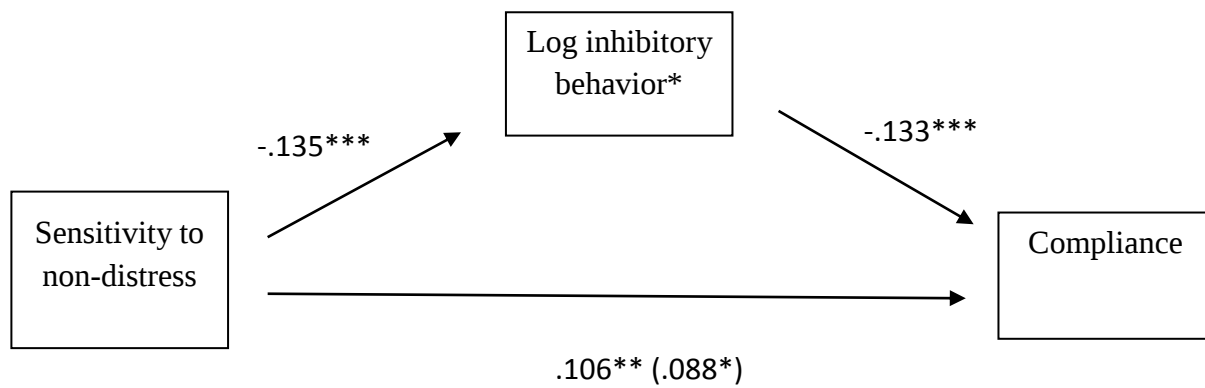


Figure 2-1. The standardized regression coefficients for the relationships among sensitivity, child inhibitory capacity, and compliance are shown next to the appropriate paths. The standardized regression coefficients for the paths between sensitivity and compliance, controlling for child inhibition, are shown in parentheses.

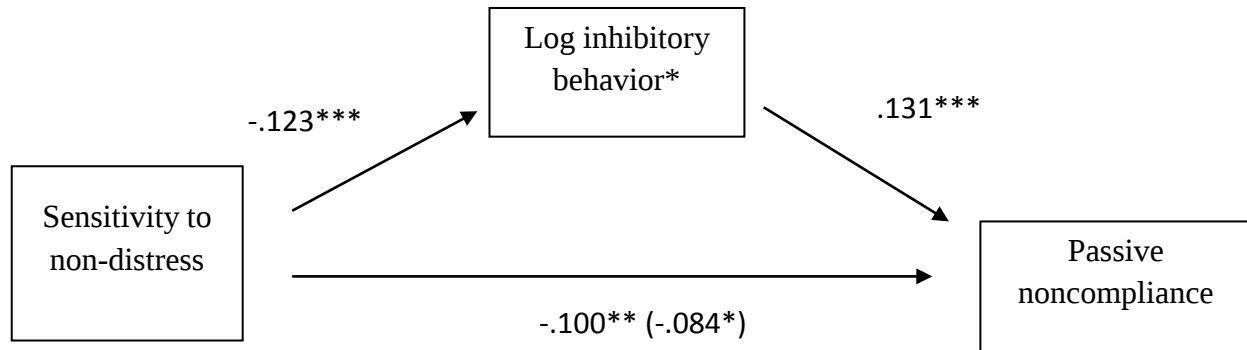


Figure 2-2. The standardized regression coefficients for the relationships among sensitivity, child inhibitory capacity, and passive noncompliance are shown next to the appropriate paths. The standardized regression coefficients for the paths between sensitivity and passive compliance, controlling for child inhibition, are shown in parentheses.

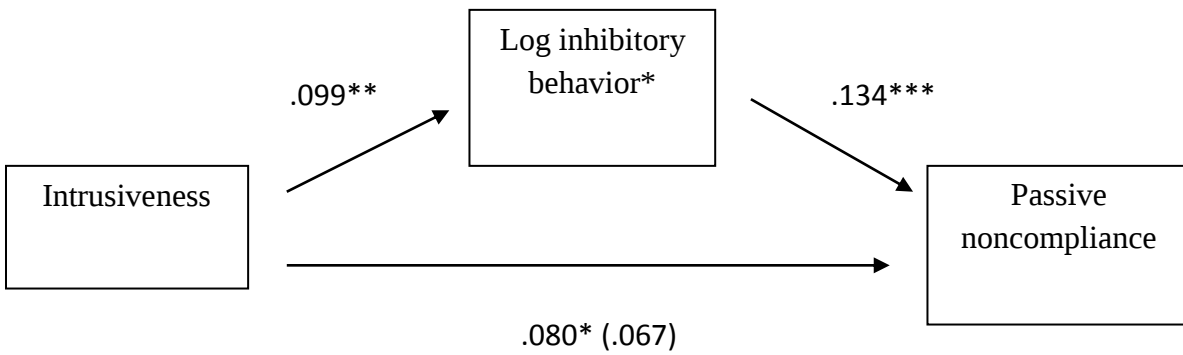


Figure 2-3. The standardized regression coefficients for the relationships among intrusiveness, child inhibitory capacity, and passive noncompliance are shown next to the appropriate paths. The standardized regression coefficients for the paths between intrusiveness and passive compliance, controlling for child inhibition, are shown in parentheses.

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