MEDIATING MECHANISMS: UNDERSTANDING THE LINK BETWEEN

PARENTING AND ADOLESCENT DEVIANCE

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Jennifer M. Crosswhite-Gamble

Certificate of Approval:

_____	_____
Joe F. Pittman Professor Human Development and Family Studies	Jennifer L. Kerpelman, Chair Associate Professor Human Development and Family Studies
_____	_____
Gregory S. Pettit Professor Human Development and Family Studies	Francesca Adler-Baeder Assistant Professor Human Development and Family Studies

_____

Stephen L. McFarland
Dean
Graduate School

MEDIATING MECHANISMS: UNDERSTANDING THE LINK BETWEEN PARENTING AND ADOLESCENT DEVIANCE

Jennifer M. Crosswhite-Gamble

A Dissertation

Submitted to

the Graduate Faculty of

Auburn University

in Partial Fulfillment of the

Requirements for the

Degree of

Doctor of Philosophy

Auburn, Alabama
December 16, 2005

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Jennifer M. Crosswhite-Gamble

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Signature of Author

_____

Date of Graduation

VITA

Jennifer Marie Crosswhite-Gamble, daughter of John and Kathy Crosswhite, was born on April 21st, 1975, in Rapid City, South Dakota. She graduated from Apollo High School in St. Cloud, MN, in 1993. She attended St. Cloud State University in St. Cloud, MN, for four years and graduated magna cum laude with a Bachelor of Science in Applied Psychology in August 1998. She entered Graduate School, Auburn University, in August, 2000, and obtained a Master of Science degree in Human Development and Family Studies in August, 2002. One May 31, 2003, she married Bradley D. Gamble, son of David and Sandy Gamble. Sierra Evelyn Gamble was born to Jennifer and Brad on April 12, 2004.

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Jennifer M. Crosswhite-Gamble

Doctor of Philosophy, December 16, 2005
(M.S., Auburn University, 2002)
(B.S., St. Cloud State University, 1998)

164 Typed Pages

Directed by Jennifer L. Kerpelman

Coercion theory suggests that a coercion process between parent and child is associated with development of deviance, thus, a direct association is suggested in the parent-deviance link. Coercion theory also has argued that parenting constructs such as discipline, monitoring, problem solving, positive reinforcement, and positive parenting are important to protect against the development of deviant behaviors. While the coercion theory has argued for a direct association, the general theory of crime has argued for an indirect association (i.e., self-control mediates the parent-deviance link). The general theory of crime suggests that parenting constructs such as attachment, supervision, and recognition and punishment of deviance are associated with the development of self-control and, in turn, deviance. Overall, each theory notes the importance of similar parenting constructs, as well as, additional parenting constructs that the other theory does not. Thus, it is unknown, specifically, by which parenting constructs self-control or

deviance are developed. Further, limited research has explored whether self-control mediates the relation between parenting and adolescent deviance.

The purpose of the present longitudinal investigation was to examine (a) whether and how individual parenting constructs (at age 8-9) from both the coercion theory and the general theory of crime were associated with the development of self-control (at age 12-13) and deviance (at age 16-17), and (b) whether self-control mediated the relation between parenting and deviance. Data were drawn from 736 mother and child participants via questionnaires and observations during three time periods. Child participants were split almost evenly by sex (males: $n = 369$, females: $n = 367$).

Results from structural equation modeling indicated that an overall parenting construct characterized by parenting variables from both theories was associated with self-control and deviance. Further evidence indicated that parenting and self-control additively explained more variance in the engagement of deviance rather than self-control mediating the link. Finally, results indicated that deviance was best explained when three measures of self-control (i.e., at ages 8-9, 12-13, and 16-17) were added to the model along with effective parenting.

Overall, results allude to the importance of examining parenting constructs as described by both the general theory of crime and the coercion theory. Further, while evidence was not found indicating mediation, self-control was found to be important in the explanation of deviance. As such, evidence was provided to support specific tenets of both the general theory of crime and the coercion theory. Future examinations of deviance should include elements from each theory (e.g., parenting constructs and self-control).

ACKNOWLEDGMENTS

The author would like to thank Dr. Jennifer L. Kerpelman for her continuous guidance, mentoring, patience, and support. The author would also like to thank her committee members, Drs. Gregory Pettit, Joe Pittman, and Francesca Adler-Baeder, for contributing their feedback in pursuit of this investigation, as well as, Dr. Leanne Lamke for her feedback and guidance which led up to the current investigation. Further, the author would like to thank her husband, Bradley Gamble, for his unconditional love, patience, support, and understanding throughout these past five years. Finally, the author would like to thank her parents, John and Kathy Crosswhite, as well as, her father and mother-in-law, David and Sandy Gamble, for their unconditional support, encouragement, and love in helping me reach my goals.

Style manual or journal used Publication Manual of the American Psychological Association (5th ed.)

Computer software used Wordperfect 11.0, SPSS 13.0, AMOS 5.0

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I. LITERATURE REVIEW

The current review of literature examines the nature by which parents influence the development of adolescent deviance. Two theories that each speak to the parenting-adolescent deviance link, coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987) and the general theory of crime (Gottfredson & Hirschi, 1990), will be reviewed. Following will be a discussion of theoretical convergence, and distinctive contributions of each theory. As will be demonstrated, the two theories together add additional insight regarding how parents influence the development of adolescent deviance.

Coercion Theory

According to the coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987), whether an individual engages in deviant behaviors as a child or an adolescent depends on a reciprocal coercion process that occurs between the parent and child. Coercion is defined by an aversive event that leads to a positive outcome (Kiesner, Dishion, & Poulin, 2001). The degree to which the coercion process occurs between parent and child influences whether the child engages in deviant behaviors as a child or adolescent. The coercion process is a series of feedback loops that escalate overtime whereby the parent influences the child and the child influences the parent (Patterson, 1996; Snyder & Patterson; 1987).

For example, when a parent tries to discipline his/her child, the child responds in an aversive manner (e.g., whining, crying, throwing a temper tantrum). The parent returns with an escalated attempt (e.g., scolding, threats) at disciplining the child. However, the child then responds in an escalated aversive manner. Eventually, the parent desists in trying to discipline the child and ignores future deviant behaviors (Dishion & Patterson, 1997; Snyder & Patterson, 1987). In a second coercive process, the parent terminates discipline attempts at the first sign of the child engaging in aversive behaviors (Snyder & Patterson, 1987). In both instances, the child "gets away" with the first negative behavior and is reinforced for his/her aversive behaviors. Each time this sequence of behaviors occurs, the behaviors are further elicited, maintained, and exacerbated as the child is reinforced for the aversive behaviors (Snyder & Patterson, 1987). Finally, it should be noted that some levels of the coercion process occur within every family, however, those children who engage in the coercion process at high rates and begin at a young age are reinforced for aversive behaviors, and are more likely to engage in subsequent deviant behaviors for longer durations (Kiesner et al., 2001).

Interestingly, more serious forms of deviant behaviors are not evident until after age 12 (Patterson & Yoerger, 2002). When the child is young (i.e., under age 12), s/he engages in overt aversive behaviors such as whining, crying, and throwing temper tantrums. However, as the child becomes older (i.e., after age 12) and interacts with other aversive/deviant peers, the behaviors change from overt to covert behaviors that are considered more serious (e.g., theft, vandalism, drug and alcohol use; Patterson & Yoerger, 1993; 2002; Snyder, Reid, & Patterson, 2003). In essence, because the individual

interacts with other deviant peers who reinforce and teach additional deviant behaviors, a child's negative aversive behaviors of whining and crying change into more serious forms of deviant behaviors (Patterson, 1996; 1997).

Coercion Theory Research

Research conducted using the coercion theory has primarily consisted of the influence that the coercion process has on aversive/deviant behaviors in the home and at school, as well as, duration of deviant behaviors. This influence appears to be the same whether the coercion process is experienced during the early years or during preadolescence. More recent analyses on the coercion theory have provided support for the very important aspect of bidirectional influences between parent and child, and that the coercion process is a learned process across generations, which can be applied equally well to both males and females, and to older and younger samples. Finally, when the coercion process is experienced within the family, it appears to influence all rather than specific types of deviant behaviors.

The majority of research conducted thus far has been on the same sample of 210 male participants longitudinally followed from the 4th through 12th grade (i.e., Oregon Youth Study; OYS). The majority of these male participants were Caucasian (86%) and from two parent families (70%; Patterson, Forgatch, Yoerger, & Stoolmiller, 1998; Stoolmiller, Duncan, & Patterson, 1995). Data were collected via observation, interview, and self-reported questionnaires from both parents and the child participant. Additional data were collected via teacher reports and juvenile court record documents. Further, studies on this sample have been conducted using cross-sectional and longitudinal designs. Finally, the

coercion process was most often operationalized as the parent's use of ineffective discipline and monitoring (e.g., Loeber & Dishion, 1984; Patterson et al., 1998; Snyder, Dishion, & Patterson, 1986; Stoolmiller et al., 1995). Included in the measurement of discipline was "nattering"; that is, coercive statements (e.g., "Stop hitting or I will spank you"; Patterson et al., 1998).

Research with the OYS sample has yielded a number of findings that support coercion theory. First, varying levels of the coercion process (i.e., typically indicated by ineffective parenting such as threatening, yelling, spanking the child) experienced within the family influence the number of settings in which deviant behaviors occur and their duration, as well as, the timing of the initiation of deviant behaviors (i.e., early childhood versus preadolescence). For example, males who have experienced high levels of the coercion process within their families were more likely to engage in deviance at home and school, and engage in more severe levels of deviance for longer durations (i.e., early starters). Those who experienced moderate levels of the coercion process within the family engaged in deviance in one social setting, and engaged in moderate levels of deviance for shorter durations (i.e., later starters; Loeber & Dishion, 1984; Patterson et al., 1998; Snyder et al., 1986; Stoolmiller et al., 1995). Further, whether an individual began experiencing the coercion process early in life or during preadolescence, the result was the same (i.e., the individual was more likely to engage in deviant behaviors; Kiesner et al., 2001). Second, when both the parents' and child's coercive behaviors were examined, results indicated the coercion process is bidirectional and escalates over time as hypothesized; parents' level of coercion influences the child's level of coercion, which in turn, escalates the parent's level

of coercion and so on (Patterson, Bank, & Stoolmiller, 1990). Further, it has been found that the coercion process operates across generations; that is, males engage in the same type of coercive behaviors with their own children as they experienced with their own parents (Capaldi, Pears, Patterson, & Owen, 2003). Finally, the coercion process appears to be influential in the development of both violent offenses (e.g., assault, robbery, rape) and non-violent offenses (all arrests excluding status and traffic offenses; Capaldi & Patterson, 1996).

Research conducted on samples other than the OYS has suggested that coercion also produces negative child outcomes in females, as well as, in children under age 5. For example, when the coercion process existed between mothers and their children (males, females; 10-34 months old; 27% African American, 38% Caucasian, 18% Hispanic, 14% mixed ethnicity), the children were more angry and more non-compliant than children in non-coercive families (Strassberg & Treboux, 2002). Fagot and Leve (1998) also suggested that the use of coercive behaviors (i.e., parental use of nagging, criticizing, and aggression towards the child) during the child's early years (males, females; under age 5; 95% Caucasian) predicted an increase in aggression and externalizing behavior problems when the child entered kindergarten. Additional evidence suggested that when parents engage in coercive behaviors (i.e., whining, criticizing, and aggression) towards the child, the child was more likely to engage in deviant behaviors (e.g., destroy property, threaten people, verbal aggression), and this was found to be true for both males and females at age 5 and during the 1st and 5th grades (predominantly Caucasian samples; Dishion, Duncan, Eddy, Fagot, & Fetrow, 1994; Eddy, Leve, & Fagot, 2001).

Taken together, it is evident that parental use of coercive behaviors (i.e., ineffective monitoring and discipline; parental use of nagging, whining, criticism, and aggression) are influential in the development of deviant behaviors regardless of whether the coercion begins early or later in life. Similar results are found for males and females, regardless of the type of deviant behavior (e.g., violent and non-violent offenses). Additionally, the coercion process is bidirectional, can be influential across generations, and depending on the timing of onset can predict how long an individual will engage in deviance. Finally, the evidence is quite robust as the results come from both cross-sectional and longitudinal research over several decades. Overall, the coercion process is a dynamic process that occurs between the parent and child which influences child/adolescent deviance over time.

Coercion Theory: Parenting Constructs

Thus far, it is evident that parents influence the development of deviant behaviors through a coercion process. However, the coercion process between parent and child can be used to elucidate how parents are influential in the development of deviant behaviors as parents who engage in the coercion process are engaging in specific ineffective parenting behaviors (e.g., ineffective discipline and monitoring; nagging, whining, criticism, and aggression). Therefore, the coercion process, itself, inspires researchers to think about the individual parenting constructs that may be influential in the development of deviant behaviors. Several investigators have suggested that effective family management is the key to eliminating, or protecting against, the coercion process within a family, and thus eliminating deviant behaviors (Dishion & Patterson, 1997; Patterson, 1996; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987). For example,

Patterson and colleagues suggest in several reviews of literature that parents must use effective discipline, monitoring, and problem solving practices in addition to positive parenting and reinforcement to protect against the development of deviant behaviors. As such, when a lack of effective family management exists, a child is more likely to engage in deviant behaviors. Therefore, it is important to consider the individual parenting constructs theorized to be influential in the development of deviant behaviors.

First, effective discipline consists of recognizing inappropriate or deviant behaviors, consistently tracking behaviors across settings, and using consistent appropriate discipline when deviant behaviors are performed. Ineffective discipline techniques consist of lax, inconsistent, and harsh discipline (Snyder & Patterson, 1987). Second, monitoring involves (in)direct parental awareness of the child's whereabouts, peer group affiliations, and free time activities (Dishion & McMahon, 1998; Patterson & Yoerger, 1997; Snyder & Patterson, 1987). Monitoring also involves communication regarding rules, regulations, and consequences. Without effective monitoring the child is more likely to become friends with deviant peers, learn about, and be reinforced for deviant behaviors (Snyder et al., 2003). Third, teaching appropriate social problem solving skills matter, as these skills are particularly important during verbal and physical conflicts. Inappropriate social problem solving includes: a lack of communication, poor compromising strategies, rejection of responsibilities, poor problem solving, and increased anger, blaming, and defensiveness (Snyder & Patterson, 1987). Fourth, positive parenting practices include allowing age-appropriate autonomy, demonstrating support and closeness, and encouraging values, as well as, communicating "clear expectations and standards of mature behavior" (Snyder &

Patterson, 1987 p. 225). Further, positive parenting involves communication that is positive and indicates interest, caring, and support of the child, and an emotional attachment between parent and child (Patterson, 1996; Snyder & Patterson, 1987). In the absence of positive parenting, children are more likely to develop a lack of social skills and engage in deviant behaviors (Dishion, 1990; Stoolmiller et al., 1995). Finally, it is necessary for parents to consistently acknowledge prosocial behaviors with positive reinforcement (Patterson, 1996). Patterson and Yoerger (1993) suggest that families who do not reinforce positive behaviors, do not effectively punish deviant behaviors, and reinforce deviant behaviors are more likely to engage in coercion within the family.

Empirical research supports the relevance of these five parenting practices. In the only study to examine the relationship between all five parenting practices and the development of deviant behaviors, Patterson, Reid, & Dishion (1992), from the OYS sample, found that monitoring, discipline, positive reinforcement, and problem solving were negatively associated with deviant behaviors. However, positive parenting, as an individual construct, was not associated with deviant behaviors. The authors suggested two possible reasons for this lack of finding; there may have been problems with the measurement of positive parenting, or positive parenting may not be as important as the authors originally theorized. Further, parenting practices as an overall construct, that included positive parenting, accounted for 36% of the variance in deviant behaviors, with monitoring and discipline accounting for 24-32% when measured separately. Thus, results allude to the possibility that an overall construct of effective parenting characterized by all theorized parenting constructs explains more variance in the development of deviance than

individual parenting constructs, and as such, suggests that positive parenting may influence deviance when examined in conjunction with other parenting constructs.

Additionally, a number of studies have found empirical evidence linking ineffective monitoring and discipline with an increase in deviant behaviors (e.g., argues, lies, physical fighting, vandalism, substance abuse). For example, Dishion (1990) assessed the association between family management skills (i.e., parental monitoring and discipline) and deviant behaviors (e.g., argues, lies) on the OYS sample. Results indicated that inept monitoring and discipline within the family appeared to lead to more deviant behaviors. Additionally, Patterson, Dishion, and Bank (1984) assessed early and mid-adolescent Caucasian males and their families in a sample of adolescents other than the OYS, and found that inept discipline led to an increase physical fighting. In a more recent study, Fletcher, Darling, and Steinberg (1995) found, via adolescent self-reports, that when there was a decrease in parental monitoring, male and female adolescents (i.e., 9-12th grades; 65% Caucasian) were more likely to engage in substance use. Finally, Bank, Forgatch, Patterson, and Fetrow (1993) studied a young sample of children (males, females; K-6th grade; 91% Caucasian), and found that antisocial mothers were less capable of monitoring and discipline with children in grades 3-6, but not children in grades K-2. In this study, ineffective discipline was predictive of deviant behaviors in younger children,

but both ineffective discipline and monitoring were predictive of deviant behaviors in older children. These findings held for both males and females.

In summary, what is known from these empirical studies is that parental discipline, monitoring, problem solving, and positive reinforcement all are associated with deviant behaviors independently, cross-sectionally and longitudinally. Unfortunately, there has been only one study in which all five parenting practices were empirically studied independently and as an overall construct of effective parenting (Patterson et al., 1992). The majority of empirical work has been conducted solely on the association between monitoring and discipline with deviant behaviors. However, because of Patterson et al.'s work, evidence does suggest that positive reinforcement and problem solving are associated with deviance, as is positive parenting when part of an overall effective parenting construct. Further, the Patterson et al. study did find that an overall construct of effective parenting explained more variance in deviance as compared to individual parenting constructs.

Overall, there appear to be two important gaps in the literature reviewed. First, the two main parenting practices that Patterson and colleagues assessed were that of ineffective discipline and monitoring (e.g., Dishion, 1990; Patterson et al., 1984). Future research needs to further explore the relations between positive parenting, problem solving, and positive reinforcement with deviance as independent parenting practices, as well as, part of an overall construct of effective parenting that is combined with monitoring and discipline.

Second, Snyder et al. (2003) also suggest coercion theory research is limited, as it has focused only on the direct influence ineffective parenting has on deviant behaviors, and has ignored other potentially important factors. For example, any potential mediating mechanisms to help explain the link between parenting and adolescent deviance. Snyder et al. further suggested that self-regulation could be a potential mediating link between ineffective parenting and deviance. However, because self-regulation has just been introduced into the coercion theory, no known empirical work within this theoretical perspective has addressed whether self-regulation serves as a mediating mechanism. Therefore, it seems vitally important that future research address whether any variables account for the link between parenting and the development of deviant behaviors.

Although Snyder et al. (2003) only recently suggested the idea that self-regulation could mediate the link between ineffective parenting and deviance, Gottfredson and Hirschi (1990), in their general theory of crime, have introduced the idea that low self-control mediates the link between parenting and deviance. In spite of different names being used, the concepts of self-regulation and self-control overlap considerably. Someone who has self-control is able to problem solve, plan, have a future orientation, guides planful goal directed behavior, restrain their behaviors, and delay gratification (Moffitt, 1993; 1997; Snyder et al., 2003; Vollmer, Borrero, Lalli, & Daniel, 1999; Wills, Sandy, & Yaeger, 2002). Similarly, someone who has self-regulation is able to set and attain goals, plan actions, refrain from engaging in problematic behaviors, and focus on long term goals (Brody & Ge, 2001; Brody, Dorsey, Forehand, & Armistead, 2002; Weinberger & Schwartz, 1990). Thus, the concept of self-control appears synonymous with the concept

of self-regulation. In the following section, the concept of self-control will be explored.

Self-control as a Mediating Mechanism

Putting forward the general theory of crime, Gottfredson and Hirschi (1990) hypothesized that adolescent deviance and adult crime can be explained by low levels of self-control. The authors contend that an individual's level of self-control is influential on the level of deviance in which that individual engages. Gottfredson and Hirschi further suggest that differences in individuals' levels of self-control are influenced by differences in levels of effective parenting; that is, a *lack* of effective parenting influences whether an individual will engage in deviant behaviors. The authors further contend that individuals with low self-control will engage in many forms of deviant behavior, rather than one specific type.

In describing self-control, Gottfredson and Hirschi have suggested that self-control is an individual difference (i.e., a stable "trait-like") characteristic that crystallizes by age 10, ranges on a continuum from low to high, and remains relatively stable throughout one's life after crystallization. Additionally, the authors indicated that an individual with low self-control engages in behaviors that provide immediate gratification, is looking for easy or simple ways to receive gratification, engages in behaviors that are exciting, risky, or thrilling, lacks long-term goals, engages in behaviors
that require little thought processing, and engages in behaviors which result in the victim(s) feeling pain or discomfort.

Although Gottfredson and Hirschi (1990) suggest that self-control is a stable "trait-

like" characteristic, Turner and Piquero (2002) argue that the stability of self-control is not in the level of self-control in which each individual carries with him/her, but rather in the relative differences between offenders and non-offenders. In essence, Turner and Piquero argue that individual levels of self-control will increase with age due to continued socialization (i.e., develop more self-control), however the differences between offenders and non-offenders will remain the same. The authors suggest that the relative level of self-control in offenders will change as the same relative level of self-control in non-offenders. Further, the authors argue that there should be larger differences (i.e., be less stable) before than after crystallization (i.e., before age 10).

While self-control is theorized to become crystallized by age 10 and thereafter stable, limited research has explored this aspect of the general theory of crime (Gottfredson & Hirschi, 1990). Of the few studies that have been conducted, mixed support has been generated regarding the stabilization of self-control. For example, both Polakowski (1994) and Brody and Ge (2001) found evidence for the stability of self-control over a 1 and 4 year period. However, in both cases, beta coefficients were in the .32-.35 range. Given the smaller coefficient, evidence suggests there is actually more instability in self-control than stability. However, Arneklev, Cochran, and Gainey (1998) found mean level differences of self-control within individuals to be highly stable over a four month period (i.e., no significant differences in mean levels over four months). Finally, Turner and Piquero found that levels of self-control within individuals changed over a 12 year period, as well as, significant differences in levels of self-control between offenders and non-offenders with offenders having less self-control. Over time, however, these

differences became less indicating that individual levels of self-control increased over time. Thus, the evidence suggests that self-control may have some form of stability over time, however, there also appears to be change or an increase in levels of self-control over time. As such, the limited research conducted thus far does not provide substantial evidence to indicate that self-control is a stable construct. Further, no known work has been conducted to examine whether self-control crystallizes by age 10. Future empirical work will need to further explore these tenets of the general theory of crime.

Next, to further explain the idea of effective parental teaching, Gottfredson and Hirschi (1990) suggest that the level of parental teaching influences whether an individual will commit deviant behaviors. In effect, it is up to the parents to properly teach the child how to suppress impulsive behaviors, think about long-term consequences, and be sensitive toward the needs and feelings of others. The authors do not suggest that inappropriate behaviors are being reinforced or taught by the parents, as the coercion theory would suggest (Snyder & Patterson, 1987). Rather, it is the *lack* of effective parental teaching that influences whether an individual will engage in deviant behaviors. As part of an effective parental teaching process, Gottfredson and Hirschi hypothesized that four parenting constructs are influential in the development of self-control: 1) an attachment between parent and child, 2) parental supervision, 3) recognition of deviant behaviors, and 4) punishment of deviant acts. According to Gottfredson and Hirschi, if all four elements of effective parenting occur, an adequate level of self-control is most likely to develop resulting in a lower likelihood of the child engaging in deviant behaviors. However, if one of the four elements is missing, the child is less likely to form an adequate

level of self-control, and in turn, engage in deviant behaviors. Thus, a general sense of effective parenting characterized by these four parenting practices (i.e., an overall effective parenting construct) may be more important than the individual parenting practices (i.e., attachment, supervision, recognition and punishment of deviant behaviors) in the development of self-control. Finally, because Hirschi and Gottfredson (2001) suggested that self-control should crystallize by age 10 and because children fail to form self-control due to a lack of effective parenting, it appears that early forms of parenting (i.e., before the age 10) are important for the development of self-control.

Looking in depth at the four elements of effective parenting, attachment is viewed as a parental concern for the child's well-being, the level of warmth and closeness parents feel toward their children, and time spent with their children (i.e., parental involvement; Gottfredson & Hirschi, 1990). Additionally, the higher the levels of communication (e.g., the sharing of thoughts and feelings, and talking about activities engaged in during the day) and affectional identification (i.e., love, respect) between parent and child, the stronger the parent-child attachment (Hirschi, 1969). Next, parental supervision not only keeps a child from engaging in deviant behaviors, but also teaches the child how to avoid engaging in deviant behaviors when s/he is not under direct supervision. The authors suggest that supervision as an external control produces a level of internal control within the child. This internal control is what keeps an individual from engaging in deviant behaviors when s/he is not being directly supervised (Gottfredson & Hirschi, 1990). Third, parents also must recognize deviant behaviors when they occur, at all ages (e.g., talking back, yelling, pushing vs. vandalism, theft; Gottfredson & Hirschi, 1990). Finally, effective

punishment includes setting limits, having age-appropriate consequences, and enforcing the consequences when a rule is broken (Gottfredson & Hirschi, 1990). In addition, the most effective form of punishment is disapproval by individuals close to the child (Hirschi, 1969). When parents feel indifference or hostility toward the child, have lax, inadequate, or poor supervision skills, fail to recognize early forms of deviant behaviors, or are too lenient, inconsistent, or harsh (e.g., physical punishment/abuse) with discipline, they are more likely to have children with low self-control. In effect, it is up to the parents to properly teach the child how to suppress impulsive behaviors, think about long-term consequences, and be sensitive toward the needs and feelings of others.

Empirical research guided by the general theory of crime has found that low self-control (a) is predictive of deviant behaviors in young children, adolescents, and adults (Normandeau & Guay, 1998; Pulkkinen & Hamalainen, 1995; Tremblay, Boulerice, Arseneault, & Junger, 1995; Vazsonyi, Pickering, Junger, & Hessing, 2001), (b) predicts similarly for male and females, African American and Caucasian adolescents, and cross-nationally (Keane, Maxim, & Teevan, 1993; LaGrange & Silverman, 1999; Pulkkinen & Hamalainen, 1995; Vazsonyi & Crosswhite, 2004; Vazsonyi et al., 2001), and (c) is predictive of a number of different types of deviant behaviors, such as skipping class, vandalism, theft, cigarette and alcohol/drug use, assault, arguing, and rape in adolescents, property and violent crime, drug use, larceny, shoplifting, gambling, risky sexual behaviors, risky driving, academic dishonesty, and thrill and adventure seeking behaviors (e.g., skydiving) in college students/young adults, and criminal behaviors (e.g., carrying a weapon) in adults (Arneklev, Grasmick, Tittle, & Bursik, 1993; Baron, 2003; Brody,

Stoneman, & Flor, 1996; Burton, Evans, Cullen, Olivares, & Dunaway, 1999; Gibbs & Giever, 1995; Jones & Quisenberry, 2004; Keane et al., 1993; LaGrange & Silverman, 1999; Longshore & Turner, 1998; Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996; Stone, 2004; Stylianou, 2002; Vazsonyi et al., 2001).

As such, there appears to be robust empirical evidence suggesting that self-control is associated with whether an individual engages in deviant or criminal behaviors. However, much of the empirical work that has been conducted using the general theory of crime has focused on the relationship between low self-control and deviance (Cochran, Wood, Sellers, Wilkerson, & Chamlin, 1998). Very little empirical work has examined whether and how the four elements of effective parenting (individually or as an overall construct of effective parenting) influence self-control, or whether additional parenting constructs also are influential. Further, limited research has examined whether parenting prior to age 10 is important for the development of self-control and deviance after age 10.

To date, only seven studies have been conducted to examine the link between parenting and self-control (Cochran et al., 1998; Hay, 2001; Hope & Chapple, 2005; Gibbs, Griever, & Martin, 1998; Perrone, Sullivan, Pratt, & Margaryan, 2004; Polakowski, 1994; Pratt, Turner, & Piquero, 2004). Of these studies, four specifically examined whether low self-control mediated parenting and deviance, and only three studies examined these relations longitudinally. First, in a cross-sectional sample of male and female undergraduate students (52.2% female; 76.1% Caucasian), Cochran et al. (1998) found that parental supervision did not predict self-control however, parental attachment did. In addition, only 14.2% of the variance in self-control was explained by

parental attachment suggesting that other factors (i.e., other parenting and non-parenting variables) are needed to more fully explain the development of self-control. Results further revealed that low self-control predicted fraudulent behaviors (e.g., academic dishonesty). Thus, evidence does suggest that effective parenting (i.e., parental attachment) is at least partially responsible for the development of self-control, and in turn, self-control does predict fraudulent behaviors. Unfortunately, however, specific analyses were not conducted to ascertain whether low self-control mediated the relationship between parenting and fraudulent behaviors.

Gibbs et al. (1998) examined, cross-sectionally, a sample of male and female undergraduate students (18-22 years; 55.5% female; 91.6% Caucasian) to ascertain whether self-control mediated parenting and deviance. The authors found little support indicating that parental management (i.e., monitoring, recognition and punishment of deviant behaviors) had a direct influence on deviance. Instead, support was found to indicate that poor parental management predicted low self-control, and in turn, low self-control predicted deviant behaviors. Thus, evidence exists suggesting that low self-control concurrently mediates the relationship between parental management and deviance, as Gottfredson and Hirschi (1990) theorized. However, the analysis only examined parental management as one broad parental construct and did not examine whether individual parenting variables also influenced the development of self-control.

To examine whether self-control mediated individual parenting behaviors and deviance, Hay (2001) explored a cross-sectional sample of male and female adolescents (ages 14-18 years; equally divided by sex; 41% Caucasian, 32% Hispanic, 20% African

American). Evidence suggested that parental discipline and monitoring additively predicted self-control. Hay, further, found that by adding parental acceptance-involvement and psychological autonomy to the equation, the relationship between parenting and self-control dramatically increased. Analyses were not conducted to determine whether an overall construct of effective parenting explained more variance in self-control than did the individual parenting behaviors. It is also important to note that Hay suggested that parental acceptance-involvement and psychological autonomy are outside the scope of Gottfredson and Hirschi's (1990) conceptualization. However, Hay defines acceptance-involvement as "parents' acceptance of their children and involvement in their lives" (p. 721), which appears to fit with Gottfredson and Hirschi's conceptualization of attachment. As such, the increase in predicting self-control appears to be a function of including a variable that taps into Gottfredson and Hirschi's conceptualization of attachment, and offering psychological autonomy, an additional parenting variable outside of their conceptualization. Further, adding self-control into the regression slightly decreased the relationship between parenting and delinquency suggesting that self-control did not fully mediate the relation between parenting and delinquency. However, self-control directly explained both predatory delinquency (e.g., stealing, damaging/destroying property) and substance abuse. Thus, the evidence lends partial support for Gottfredson and Hirschi's conceptualization. It does appear, however that their conceptualization of parenting may be limited in the explanation of self-control.

In the final study that examined whether self-control mediated the link between parenting and deviance cross-sectionally, Perrone et al. (2004) analyzed the first wave of

the Add Health Study to examine whether low self-control meditated relations between parenting and adolescent deviance. The Add Heath Study included in-class and in-home assessments of over 13,000 male and female adolescents in grades 7-12 (Caucasian and ethnically diverse sample with an oversampling of Chinese Americans, Cuban Americans, Puerto Rican Americans, and African American adolescents whose parents held a college degree). Perrone et al. focused on the in-home data as this data included information from both the participants and their parents. Findings suggested that poor parental efficacy (i.e., low attachment, lack of recognition and punishment of deviant behaviors) predicted low self-control, low self-control predicted deviance, and low self-control partially mediated the link between poor parental efficacy and deviance. While the advantage of this study is that evidence has been provided to suggest self-control at least partially mediates the parent-deviance link, it is not evident which parenting construct individually influenced the development of self-control, as these parenting constructs were not examined separately. Additionally, although longitudinal analysis was possible using the Add Health data, it was not performed (i.e., this study focused on concurrent parenting, self-control, and deviance).

Thus far, it is evident that self-control at least partially mediates the relationship between parenting and deviance concurrently. The final three studies examined the longitudinal relations between parenting, self-control, and deviance. First, to examine the specific etiology of self-control cross-sectionally and longitudinally, Pratt et al. (2004) used data from the National Longitudinal Study of Youth (52% male; 38% Caucasian; 62% Hispanic and African American). Analyses revealed that poor parental supervision at

age 10 predicted low self-control at ages 10 and 12. However, evidence suggested that higher levels of discipline at age 10 were associated with lower levels of self-control at ages 10 and 12. Similar results were found when comparing across race. Interestingly, the authors did not provide a rationale for why high levels of discipline were associated with low levels of self-control. Although opposite of what Gottfredson and Hirschi (1990) would hypothesize, it is possible that the nature of the discipline was harsh, and therefore, could explain why self-control was underdeveloped. Despite the unexpected findings, additional support is provided that supervision and discipline, at least in some manner, are associated with self-control concurrently and longitudinally. Unfortunately, deviance was not measured in the current study.

Next, to examine the relation between parenting, self-control, and deviance longitudinally, Polakowski (1994) analyzed data from the Cambridge Study in Delinquent Development. Data were collected from 411 males in Great Britain over a period of 20 years (interviewed at ages 8-9, 10, 14, 16, 18, 21, and 24 years). Additional data were collected via parental, teacher, and peer reports until the adolescent was age 15. Results indicated that a lack of effective parental training at ages 8-10 predicted lack of self-control at age 12-14. Results further suggested that a lack of self-control at age 8-10 predicted delinquency for individuals ages 10-13, 14-16, and 17-21. Further, low self-control at age 12-14 predicted delinquency when the individuals were ages 14-16 and 17-21. Overall, the findings suggested that poor parental teaching predicted a lack of self-control, which in turn predicted delinquency. Although Polakowski examined an important theoretical element of Gottfredson and Hirschi's (1990) theory (i.e., whether

parenting prior to age 10 was associated with self-control and deviance after age 10), Polakowski did not operationalize effective parental teaching in a manner fully consistent with their conceptualization. Instead, he operationalized parental teaching as commitment, involvement, conventional qualities, and supervision. Further analyses were not conducted to determine whether self-control mediated the link between parenting, and deviance cross-sectionally or longitudinally, nor were individual parenting behaviors examined.

In a final study to examine the longitudinal relation between parenting, self-control, and risky sexual behaviors, Hope and Chapple (2005) used data from the National Longitudinal Survey of Youth (52% male; 52% Caucasian). Specifically, the authors examined maternal attachment and monitoring[1] and adolescent self-control when the adolescent was age 11-13, and engagement in risky sexual behaviors (i.e., ever had sex, number of sexual partners, type of relationship to sexual partners) at age 15-17. Results revealed that poor maternal attachment and monitoring were associated with lower self-control. Further, individuals with poor self-control were more likely to engage in sex, have more sexual partners, and engage in sex with partners whom they had recently met. Finally, low self-control did partially mediate the relation between maternal attachment and ever having sex, number of sexual partners, and type of relationship to sexual partner. Interestingly, self-control did not mediate the relation between monitoring and engagement in sexual behaviors which is contrary to the general theory of crime (Gottfredson & Hirschi, 1990). Overall, according to the results, a lack of effective parenting (i.e., low attachment) was associated with low self-control concurrently, but not necessarily longitudinally as poor parenting and low self-control were measured at the

same age. The advantage of this study, however, is that evidence suggests low self-control predicts later engagement of risky behaviors. Additional research is still needed to elucidate the longitudinal relations between earlier parenting (individual parenting constructs and an overall parenting construct), later self-control, and even later engagement in deviant behaviors.

Overall, the research does provide limited evidence that a lack of effective parenting predicts low self-control, and that low self-control partially mediates the link between ineffective parenting and deviance concurrently. Additional evidence from longitudinal analyses suggest that earlier forms of ineffective parenting lead to low self-control, that low self-control leads to later deviance, and that low self-control mediates ineffective parenting and risky behaviors when parenting and self-control are measured concurrently. However, only one of the three longitudinal studies specifically examined whether self-control mediated the link between parenting and deviance. Additionally, only two of the longitudinal studies operationalized parenting similar to how Gottfredson and Hirschi (1990) conceptualized effective parenting. As such, evidence is inconclusive regarding whether earlier parenting (prior to age 10) is influential in the development of self-control and deviance after age 10, and whether self-control mediates earlier parenting and later engagement in deviant behaviors.

Further, all four elements of effective parenting (i.e., attachment, supervision, recognition and punishment of deviant behaviors) appear to influence the development of self-control. However, mixed results were generated regarding monitoring, opposite findings were found with respect to discipline, and recognition of deviant behaviors was

never examined individually. Furthermore, there may be other parenting constructs, beyond what Gottfredson and Hirschi (1990) theorized, that also are influential in the development of self-control (e.g., psychological autonomy; Hay, 2001). Thus, because so few studies have been conducted to examine the link between parenting and self-control, conclusions regarding how parents (i.e., by which individual parenting construct or an overall level of effective parenting that encapsulates all four elements of parenting) influence the development of self-control can only be speculative.

Additional Evidence Regarding the Associations Between Parenting, Self-Control, and Deviance

Although limited research guided by the general theory of crime has been conducted examining the link between parenting, self-control, and deviance, additional insight regarding these associations is provided with work conducted by Brody and colleagues who have focused on "self-regulation" (Brody et al., 2002; Brody & Flor, 1997; Brody & Ge, 2001; Brody, Kim, Murry, & Brown, 2003; Brody, Murry, Kim, & Brown, 2002; Brody et al., 1996; Brody, Stoneman, Smith, & Gibson, 1999; Kim, Brody, & Murry, 2003; Wills, Gibbons, Gerrard, & Brody, 2000). Although Brody and colleagues' work was not framed within the context of the general theory of crime, their research is quite consistent with the theory (e.g., parental influences on the development of self-control, and whether self-control mediated the parental-deviance link). Further, their concept of self-regulation overlaps with the concept of self-control, and is measured using the Children's Self-Control Scale. As such, self-regulation will be referred to as self-control.

Cross-sectional studies on rural African American children and adolescents ages 6-15 revealed that parenting practices such as parental involvement, support, monitoring, communication, family routines, family cohesion, close and supportive family relationships, and appropriate discipline positively influence the development of self-control (for exception, see Brody & Ge, 2001). Interparental conflict, harsh parent-child conflict, and parental nagging (findings for nagging are consistent with the coercion theory) were found to negatively influence the development of self-control. Additionally, self-control most often fully mediated the link between parenting practices and child and adolescent deviance in these cross-sectional studies. However, parental support continued to predict negatively a willingness to use substances, and parent-child conflict positively predicted being friends with peers who used substances, thus, indicating only partial mediation of these two parenting behaviors.

In a longitudinal study using a sample of Caucasian adolescents (58 female, 42 male) from intact families, Brody and Ge (2001) found that nurturant-involved parenting positively, and harsh-conflicted parenting negatively, predicted the development of self-control concurrently in two different age groups (ages 12 and 13). Earlier levels of self-control also were related to hostility and alcohol use one year later, and a lack of self-control fully mediated the link between parenting practices (at the same age as self-control) and adolescent hostility and alcohol use one year later. Thus, results seem to provide support for Gottfredson and Hirschi's contention that self-control mediates the relation between parenting and deviant behaviors, at least, when parenting and self-control were measured concurrently and deviance was measured one year later. Although this

study does push the field forward, it is still not apparent as to whether earlier forms of parenting (and which individual parenting constructs) are associated with self-control at a later time, or whether self-control mediates the link between earlier forms of parenting and later engagement in deviance (i.e., over longer periods of time).

Finally, in two longitudinal studies conducted by Brody and colleagues (Brody et al., 2002; Kim et al., 2003) examining the same rural African American participants as described above, competence promoting parenting (i.e., parental nurturance, involvement, monitoring, and communication) was found to be associated with self-control concurrently and one year later. Further, self-control was found to mediate the link between competence promoting parenting and adolescent adjustment (i.e., aggressive, delinquent, and inattentive behaviors). This association held up when parenting was measured during the same point as self-control and when parenting was measured one year prior to self-control. Overall, these two studies provide evidence indicating that communication is related to the development of self-control, at least when combined with other parenting practices. However, evidence was not provided as to whether communication uniquely is influential in the development of self-control. Finally, evidence is provided that self-control mediates the link between parenting from one year prior and engagement in deviance one year after. Unfortunately, when these analyses were conducted parenting and adolescent outcomes were both examined as single latent constructs. Thus, evidence is not provided as to which parenting practices individually are influential in the development of self-control and deviance overtime, or whether

self-control mediates the link between individual parenting practices and specific deviant behaviors longitudinally.

Taken together, Brody and colleagues' work (Brody et al., 2002; Brody & Flor, 1997; Brody & Ge, 2001; Brody et al.; 2003; Brody et al., 2002; Brody et al., 1996; Brody et al., 1999; Kim et al., 2003; Wills et al., 2000) demonstrate that self-control is influenced by a number of parenting practices. All of the constructs that Brody and colleagues have studied can be linked to Gottfredson and Hirschi's (1990) theoretical ideas of how to effectively teach self-control. First, nurturant-involved parenting, supportive parenting/family, predictable family routines, and family cohesion can be identified as parents who are involved, and therefore attached, to their children. Second, the link between monitoring and self-control provides support for the second step in effectively teaching self-control; supervision. Third, appropriate discipline and harsh-conflicted parent-child relationships can provide empirical evidence for the final step in effectively teaching self-control; punishment. Overall, Brody and colleagues' work does lend support for Gottfredson and Hirschi's theoretical conceptualization of how parents effectively teach self-control to children and adolescents.

In summary, evidence from both the general theory of crime (Cochran et al., 1998; Gibbs et al., 1998; Gottfredson & Hirschi, 1990; Hay, 2001; Polakowski, 1994) and Brody and colleagues (Brody et al., 2002; Brody & Flor, 1997; Brody & Ge, 2001; Brody et al.; 2003; Brody et al., 2002; Brody et al., 1996; Brody et al., 1999; Kim et al., 2003; Wills et al., 2000) suggests that self-control does predict different forms of deviant and criminal behaviors. Further, it is evident that parenting is associated with the development

of self-control. However, it is not fully clear as to which parenting constructs are individually associated with the development of self-control, or whether an overall construct of effective parenting that encapsulates multiple types of parenting constructs is more strongly associated with the development of self-control versus individual parenting constructs. Additionally, limited research has been conducted to examine whether self-control mediates the relation between parenting and deviance, and even less has measured these associations longitudinally. Of the studies conducted, the majority of results revealed only partial mediation and very few were longitudinal examinations. Hence, only nondefinitive conclusions can be made regarding one of the core premises of the general theory of crime (i.e., that self-control fully mediates the relation between parenting and deviance). Further, limited studies have examined whether self-control was stable across time (e.g., Arneklev et al., 1998; Brody & Ge, 2001; Polakowski, 1994, Turner & Piquero, 2002). Thus, overall, it is unknown as to whether (a) self-control is stable as Gottfredson and Hirschi hypothesized, (b) earlier forms of parenting influence the development of self-control, (c) earlier levels of self-control are predictive of later acts of deviance, and whether self-control mediates the relation between earlier parenting (e.g., prior to age 10) and later engagement in deviance.

Overall, two theories have been explored; coercion theory and the general theory of crime. First, according to the coercion theory, there are five parenting practices that are related to deviant outcomes; that is, discipline, monitoring, positive parenting, positive reinforcement, and problem solving practices (Dishion & Patterson, 1997; Patterson, 1996; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987).

However, the research conducted within this area has focused solely on the direct influence that parenting has on deviant behavior, and has not considered any indirect associations between parenting and deviance (Snyder et al. 2003). Second, according to the general theory of crime (Gottfredson & Hirschi, 1990), there are four elements of parenting that are associated with the development of deviance; that is, attachment, supervision, recognition and punishment of deviant behaviors. Further, Gottfredson and Hirschi suggest that low self-control mediates the relationship between parenting and deviance. In the section that follows, three main areas in which coercion theory and the general theory of crime converge will be described; that is, the (a) types of parenting practices that influence the development of self-control and deviant behaviors, (b) mediational link between parenting and deviant behaviors, and (c) types of deviant behaviors influenced. Once an understanding of where coercion theory and the general theory of crime converge, a proposed model that incorporates the two theories will be explored.

Contributions, Potential Model Integration, and Goals of the Current Conceptualization

From the research examined and discussed thus far, a number of contributions to the current field can be made and should be explored in future research. First, from examining the coercion theory and the general theory of crime, there appear to be five parenting variables that overlap which suggests their importance for the development of self-control and deviance (i.e., supervision/monitoring, discipline/punishment, attachment, communication, and recognition of deviant behaviors; see Table 1). Future research should examine these parenting constructs, (i.e., as an overall construct of effective parenting that

encompasses multiple types of parenting constructs, as well as, each of the parenting constructs individually), to determine how parents influence self-control, as well as, deviant behaviors. Further, it is possible that other parenting variables also are influential in the development of self-control, and in turn, deviance (e.g., positive parenting, positive reinforcement, problem solving; see Table 1). Relatedly, coercion theory suggests that ineffective parenting at all ages is influential in the development and duration of deviant behaviors. The general theory of crime also suggests that early ineffective parenting (i.e., before age 10) is influential in the development of self-control and deviance. Thus, both theories appear to agree that early ineffective behaviors (i.e., at least prior to age 10) are important in the development of deviance and potentially self-control.

Second, it is possible that self-control could potentially provide a mediating mechanism for coercion theory; specifically the link between ineffective parenting and deviance. Coercion theory has long been without a mediating mechanism. However, recently self-regulation has emerged as a possibility (Snyder et al, 2003). Based on evidence conducted on the development of self-control and self-regulation, similar elements of parenting appear to be influential in the development of self-control and self-regulation (Brody et al., 2002; Brody & Ge, 2001; Brody et al., 1999; Hay, 2001; Hope & Chapple, 2005; Pratt et al., 2004). Therefore, empirical work should further examine whether self-control mediates the link between parenting and deviant behaviors.

Third, it is apparent that coercion theory and the general theory of crime are both predictive of similar types of deviant behaviors despite differences in participant age and

the different methodologies used (Dishion, Loeber, Stouthamer-Loeber, & Patterson, 1984; Vazsonyi et al., 2001). For example, both theories are associated with alcohol/drug use, vandalism, physical aggression/assault, verbal aggression, sexual assault (e.g., rape), and theft/stealing (Brody et al., 1996; Capaldi & Patterson, 1996; Dishion, 1990; LaGrange & Silverman, 1999; Vazsonyi et al., 2001). Gottfredson & Hirschi (1990) also suggested that low self-control should be predictive of several different types of deviant behaviors (Jones & Quisenberry, 2004). Thus, it is important to examine specific types of deviance rather than one latent construct, and how parenting (individually and as an overall construct of effective parenting) is associated with the development of specific types of deviance. Finally, it is important to note that not all parenting variables may lead to self-control, or that self-control may not fully mediate the parent-deviance relationship.

Therefore, the current investigation will examine (a) parenting constructs from both coercion theory and the general theory of crime in relation to self-control and deviance, (b) whether individual parenting constructs versus an overall parenting construct that encapsulates multiple elements of parenting are more important in the development of self-control and deviance, (c) whether self-control partially or fully mediates the link between several different elements of parenting and several different types of deviance, (d) examine these associations over an eight year period (i.e., from preadolescence to middle adolescence), and (e) at the exploratory level, the stability of self-control.

To examine these empirical questions, data from the National Longitudinal Survey of Youth 1979 (NLSY79) will be analyzed; specifically the Child and Young Adult dataset. Fortunately, the nature of this dataset permits longitudinal analysis, and as such, the

current investigation will examine the longitudinal associations between individual parenting constructs, self-control, and specific types of deviance. Unfortunately, however, the dataset does not provide measures for each of the parenting constructs as identified by the coercion theory and the general theory of crime. Therefore, only five parenting constructs will be examined (i.e., individual parenting behaviors: discipline, communication, and positive reinforcement, as well as, elements of good parenting: attachment and positive parenting; see Figure 1 for conceptual model).

II. UNDERSTANDING THE LINK BETWEEN PARENTING AND ADOLESCENT DEVIANCE: A LONGITUDINAL EXAMINATION

Despite the encouraging trend that overall juvenile crime rates have decreased 11% between 1999 and 2003, there were still approximately 2.3 million adolescent arrests for various crimes within the United States (OJJDP Statistical Briefing Book, 2005; Snyder, 2004). Further, there has been an increase in arrests between 2002 and 2003 for assault, vandalism, weapons use, and drug abuse violations (OJJDP Statistical Briefing Book, 2005). Given how prevalent delinquent behaviors are, understanding the etiology of deviance is crucial. A number of factors have been examined to gain a better understanding of deviance, such as biological predisposition (e.g., neurological deficits; Moffitt, 1997; 2003), contextual factors (e.g., low socioeconomic status; Sampson, 2000), an association with deviant peers (e.g., Dishion & Skaggs, 2000), and ineffective parenting (e.g., Capaldi & Patterson, 1996). While there are many different factors that influence the development of adolescent deviance, evidence indicating a parental influence on adolescent deviance is quite robust and has been demonstrated for decades (Loeber & Stouthamer-Loeber, 1986).

Currently in the developmental field, one well known theory is aimed specifically at understanding how parents are influential in the development of child or adolescent

deviance; coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987). The coercion theory suggests that when both parent and child engage in a reciprocal coercion process, the child is more likely to engage in deviant behaviors. Generally, the coercion process between parent and child begins during early childhood. The theory suggests further that there are five elements of ineffective parenting influential in the development of child/adolescent deviance, namely poor discipline, monitoring, and the inability to use appropriate problem solving skills, positive parenting, and positive reinforcement (Dishion & Patterson, 1997; Patterson, 1996; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987). Further, communication matters for effective monitoring, and social problem solving (Snyder & Patterson, 1987).

In the only study to examine the relationship between all five parenting practices and the development of deviant behaviors, Patterson et al. (1992), found that monitoring, discipline, positive reinforcement, and problem solving were negatively associated with deviant behaviors. However, positive parenting, as an individual construct, was not associated with deviant behaviors. Further, parenting practices as an overall construct, that included positive parenting, accounted for 36% of the variance in deviant behaviors, with monitoring and discipline accounting for 24-32% when examined separately. Thus, results allude to the possibility that an overall construct of effective parenting characterized by all theorized parenting constructs explains more variance in the development of deviance than individual parenting constructs, and as such, suggests that positive parenting may influence deviance when examined in conjunction with other parenting constructs. However, some

of the specific parenting variables, such as monitoring and discipline, appear to matter more than others do. In fact, the majority of research conducted on the coercion theory has examined monitoring and discipline almost exclusively, and virtually has ignored positive parenting and positive reinforcement. Consistent evidence has indicated that ineffective monitoring and discipline lead to an increase in deviant behaviors (e.g., argues, lies, physical fighting, vandalism, substance abuse; Dishion; 1990; Bank et al., 1993; Fletcher et al., 1995; Patterson et al., 1984). These findings have held for both males and females. Although the findings are consistent, the scope of parenting constructs examined has been quite narrow.

Snyder et al. (2003) also suggest coercion theory research is limited, as it has focused only on the direct influence ineffective parenting has on deviant behaviors, and has ignored other potentially important factors. For example, any potential mediating mechanisms to help explain the link between parenting and adolescent deviance. Snyder et al. further suggested that self-regulation could be a potential mediating link between ineffective parenting and deviance. However, because self-regulation has just been introduced into the coercion theory, no known empirical work within this theoretical perspective has addressed whether self-regulation serves as a mediating mechanism.

Although Snyder et al. (2003) only recently suggested the idea that self-regulation could mediate the link between ineffective parenting and deviance, Gottfredson and Hirschi (1990), in their general theory of crime, have introduced the idea that low self-control mediates the link between parenting and deviance. Although different names, the concepts of self-regulation and self-control overlap considerably. Someone who has

self-control is able to problem solve, plan, have a future orientation, guide planful goal directed behavior, restrain behaviors, and delay gratification (Moffitt, 1993; 1997; Snyder et al., 2003; Vollmer et al., 1999; Wills et al., 2002). Similarly, someone who has self-regulation is able to set and attain goals, plan actions, refrain from engaging in problematic behaviors, and focus on long term goals (Brody & Ge, 2001; Brody et al., 2002; Weinberger & Schwartz, 1990). Thus, the concept of self-control appears synonymous with the concept of self-regulation.

Putting forward the general theory of crime, Gottfredson and Hirschi (1990) hypothesized that adolescent deviance and adult crime can be explained by low levels of self-control. They suggest that when an individual has low self-control and has an opportunity for deviance, s/he is more likely to engage in deviant behaviors. The authors contend that an individual's level of self-control is influential in the level of deviance in which an individual engages. Gottfredson and Hirschi further suggest that differences in an individual's level of self-control are influenced by differences in levels of parental teaching; that is, a *lack* of effective parental teaching determines whether an individual will engage in deviant behaviors. The theory suggests there are four elements of parenting important for the development of an "appropriate" level of self-control: (a) parental attachment (i.e., parental involvement, warmth), (b) parental supervision, (c) recognition of deviant behaviors, and (d) punishment of deviant behaviors. Parent-child communication, also, was theorized by Hirschi (1969) to be essential for effective parental teaching. Further, Gottfredson and Hirschi argue that self-control mediates the relation between parenting and adolescent deviance.

In describing self-control, Gottfredson and Hirschi (1990) have suggested that self-control is a stable "trait-like" characteristic that crystallizes by age 10, and remains relatively stable throughout one's life. However, Turner and Piquero (2002) argue that rather than the individual levels of self-control remaining stable after crystallization, the relative difference in levels of self-control between offenders and non-offenders is what remains stable. Limited research has been conducted to examine the crystallization and stability tenets of the general theory of crime, and has thus far resulted in mixed support. For example, both Polakowski (1994) and Brody and Ge (2001) found evidence for the stability of self-control over a 1 and 4 year period. However, in both cases, beta coefficients were only in the .32-.35 range. Given the smaller coefficient, evidence suggests there is actually more instability in self-control than stability. However, Arneklev et al. (1998) found mean level differences of self-control within individuals to be highly stable over a four month period (i.e., no significant differences in mean levels over four months). Turner and Piquero also found that levels of self-control within individuals increased over a 12 year period, but that the difference in levels of self-control between offenders and non-offenders remained relatively stable. Thus, the evidence suggests that self-control may have some form of stability, however, there also appears to be change in levels of self-control within individuals. As such, the limited research conducted thus far does not provide substantial evidence to indicate that self-control is a stable construct. Additionally, no known work has examined whether self-control truly crystallizes at or around age 10. Future empirical work will need to further explore these tenets of the general theory of crime.

Finally, because Hirschi and Gottfredson (2001) suggested that self-control should crystallize by age 10 and because children fail to form self-control due to a lack of effective parenting, it appears that early forms of parenting (i.e., before the age 10) are important for the development of self-control. However, limited research has examined whether parenting prior to age 10 is important for the development of self-control and deviance after age 10. Additionally, although one of the main premises of the general theory of crime (Gottfredson & Hirschi, 1990) is that parents are influential in the development of self-control, very little empirical work has examined whether and how the four elements of effective parenting (i.e., as an overall construct of effective parenting that encapsulates all four hypothesized parenting variables or each of the four parenting constructs individually) influence self-control, and whether additional parenting constructs also are influential.

From the limited research examining linkages between parenting and self-control (Cochran et al., 1998; Hay, 2001; Hope & Chapple, 2005; Gibbs et al., 1998; Perrone et al., 2004; Polakowski, 1994; Pratt et al., 2004), cross-sectional results have indicated that parental attachment, monitoring, and discipline are additively associated with self-control (Cochran et al., 1998; 1998; Hay, 2001). Also found to be associated with self-control were overall parenting constructs, such as parental management (i.e., monitoring, recognition and punishment of deviant behaviors) and parental efficacy (i.e., attachment, recognition and punishment of deviant behaviors; Gibbs et al., 1998; Perrone et al., 2004). Parenting constructs outside the scope of the general theory of crime also were associated with self-control (e.g., psychological autonomy; Hay, 2001). In addition, there has been

some evidence that low self-control partially mediates relations between parenting (as individual parenting constructs and overall effective parenting constructs) and deviance (Gibbs et al., 1998; Hay, 2001; Perrone et al., 2004).

Longitudinal analyses revealed that (a) poor parental supervision and discipline were associated with self-control one and two years later, (b) attachment and monitoring were associated with self-control four years later, (c) competence promoting parenting (i.e., parental nurturance, involvement, monitoring, and communication) was associated with self-control concurrently and one year later, and (d) self-control partially mediated parenting and deviance when parenting and self-control were measured concurrently (Brody et al., 2002; Kim et al., 2003; Hope & Chapple, 2005; Pratt et al., 2004). In the only study to examine whether parenting prior to age 10 was associated with subsequent self-control and deviance, Polakowski (1994) found evidence indicating that parental training (i.e., commitment, involvement, conventional qualities, and supervision) was associated with self-control four years later and with deviance two-to-nine years later.

In summary, it is evident that parenting is associated with the development of self-control. However, it is not fully clear whether (a) parenting constructs outside the scope of the general theory of crime (Gottfredson & Hirschi, 1990) also are influential in the development of self-control, (b) studying an overall construct of effective parenting that encapsulates multiple types of parenting constructs would explain more variance in self-control versus examining each parenting construct individually, or (c) self-control mediates the relation between parenting and deviance. Of the studies conducted, the majority of results revealed only partial mediation and very few were longitudinal

examinations. Hence, only tentative conclusions can be made regarding whether self-control mediates the relation between parenting and deviance. Further, limited studies have examined whether self-control was stable across time, and whether parenting prior to age 10 was important for the development of self-control and deviance longitudinally (e.g., Polakowski, 1994).

Overall, coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987) and the general theory of crime (Gottfredson & Hirschi, 1990) offer theoretical arguments and empirical evidence in how ineffective parenting is associated with deviant outcomes. Used together, coercion theory and the general theory of crime may provide additional insight into the explanation of how parents influence adolescent deviance. For example, there appear to be five overlapping parenting constructs that are important to examine in relation to self-control and deviance (supervision/monitoring, discipline/punishment, attachment, communication, and recognition of deviant behaviors; see Table 1). However, it also appears that there may be additional parenting variables outside the scope of the general theory of crime that may be influential in the development of self-control (e.g., positive parenting, positive reinforcement). It also seems apparent that parenting during a child's early life (i.e., prior to age 10) is important for the development of self-control and deviance. Finally, self-control may serve as another potentially important factor for understanding the development of deviance.

Therefore, the goals of the current investigation are to examine (a) parenting constructs from both coercion theory and the general theory of crime in relation to

self-control and deviance, (b) whether individual parenting constructs versus an overall parenting construct that encapsulates multiple types of parenting constructs are more important in the development of self-control and deviance, (c) whether self-control partially or fully mediates the link between several different elements of parenting and several different types of deviance, (d) associations among parenting, self-control, and deviance variables over an eight year period (i.e., from preadolescence to middle adolescence), and (e) at the exploratory level, the stability of self-control. By exploring these empirical associations, researchers can begin to have a better understanding with respect to the types of parenting constructs influential in the development of self-control, and whether self-control mediates the link between parenting and deviance longitudinally.

To examine these empirical questions, data from the National Longitudinal Survey of Youth 1979 (NLSY79) will be analyzed. The advantage of this dataset is that data were collected both from mothers and children beginning when the children were very young. For the purposes of this study, data will be analyzed when the children were 8-9, 12-13, and 16-17 years of age.

METHOD

Participants

Data were drawn from the Child and Young Adult data of the National Longitudinal Survey of Youth (NLSY79). Originally in 1979, data were collected from a nationally representative cohort of women ages 14 to 21 (Center for Human Resource Research, 2004). Data were collected on an annual basis until 1994 when data collection moved to a biennial basis. In 1986 biological children of the female respondents also were included in the study on a biennial basis. Data collected were reported by both mother and child, as well as, from interviewer administered assessments (see Appendix A). Starting in 1988, children ages 10 and over who lived with their mothers also began to self-report through an interview process. Beginning in 1994, once some of the children in the study began reaching the age of 15, data were no longer collected via mother reports or interviewer administered assessments. However, the adolescent participants completed individual self-report questionnaires on a biennial basis that were similar to their mothers' questionnaires in the original study.

Data analyzed for the current longitudinal investigation included mother reported child assessments and background characteristics from when her children were ages 8-9 and 12-13, as well as, child self-reports from when the children were ages 12-13 and 16-17. Also included were reports based on interviewer observations when the children were ages 8-9.

Data for the current study were limited to ages 8-9, 12-13, and 16-17 for three reasons. First, Hirschi and Gottfredson (2001) suggested that self-control starts to become crystallized during the early elementary school years (i.e., by approximately age 10) and that parenting is influential in the development of self-control. Secondly, by the time children reach the age of 12-13, self-control should theoretically have become crystallized. Therefore, the current investigator wanted to examine the association between parenting that occurred before self-control was crystallized (i.e., prior to age 10) and self-control after crystallization. Third, because the frequency with which individuals engage in deviant behaviors begins to peak at approximately age 16-17, the current investigator wanted to ensure that participants were being assessed at a time when a variety of deviant behaviors at higher frequencies were likely to be occurring. For example, based on national statistics, 69% of adolescents ages 10-17 arrested in 2002 were ages 16-17 (Snyder, 2004). Finally, all participants were from the same cohort; that is, all children reached the ages of 8-9, 12-13, and 16-17 at the same time.

Initially, 859 participants were considered for possible inclusion. Thirty cases were dropped because mother and child reported across several items that there was no father (father-figure) present in the child's life. An additional 32 cases were dropped because there was no reported parenting data at age 8-9. Finally, 61 cases were dropped because there was no reported self-control data at age 12-13. Thus, 736 participants had data available during the three time periods (i.e., ages 8-9, 12-13, and 16-17). In 2002 when the participants were age 16-17, the sample was split almost evenly by sex

(males: n = 369, females: n = 367) and by age (16 years: n = 356, 17 years: n = 380; see Table 2 for additional descriptive information on the sample demographics).

Procedure

During all data collection time periods, data were collected in the participant's home. Trained staff collected data through questionnaires, interviews, and standardized child assessments. Data were collected from both the mother and the child until the child was age 14 (see Appendix A). Mothers reported on information regarding the child's background characteristics, parenting, and completed child assessments such as the Home Observation for Measurement of the Environment (HOME) and the Behavior Problem Index (BPI). Children ages 10 to 14 completed a self-report questionnaire, and reported on a variety of topics including parent-child relations and attitudes. Between the ages of 4 and 14, interviewers' observations regarding the child's home environment also were collected. Generally, data from the mother and the child, as well as, the interviewer's observations were collected within one month of each other. Once participants reached the age of 15, mothers no longer reported information regarding their children nor were any interviewer administered assessments conducted. Instead, only child participants completed a self-report questionnaire, and reported on attitudes, risk taking behaviors, and deviant behaviors, for example.

Measures

Mothers and their children completed a series of items that were related to individual parenting constructs, the child's level of self-control and engagement in deviant behaviors, as well as, background information.

Background Variables

Sex. A sex variable was provided within the NLSY data. Child sex was identified as (1) male and (2) female.

Age. An age variable was provided within the NLSY data, and was based on the child's birth month and year in relation to the month and year the respondent completed his/her interview administered assessments and self-report questionnaires.

Race. Race was identified by an interviewer during the mother's original 1979 interview. This information was then extrapolated to her child, and was identified as: (1) Hispanic, (2) African American, or (3) Caucasian (non-Hispanic).

Mother's education. Mother's education was determined by a single item during each wave of data collection in which the mother was asked to report the highest level of education she has received: (0) none, (1) 1st grade, (2) 2nd grade, (3) 3rd grade, (4) 4th grade, (5) 5th grade, (6) 6th grade, (7) 7th grade, (8) 8th grade, (9) 9th grade, (10) 10th grade, (11) 11th grade, (12) 12th grade, (13) 1st year of college, (14) 2nd year of college, (15) 3rd year of college, (16) 4th year of college, (17) 5th year of college, (18) 6th year of college, (19) 7th year of college, and (20) 8th year of college or more.

Family structure. The family structure of the child was determined by two items during wave one and two of data collection: (1) Is the spouse of the mother present in the household of mother, and (2) Does the father of the child live in the household. Both items were scored as a (0) no or (1) yes. A crosstab analysis was performed to define the specific family structure and included: child lives with (1) both biological parents, married, (2) biological parents, unmarried, (3) biological mother, only and (4) biological mother

and step-father. As noted earlier, all children were living with their biological mothers during data collection time points.

During wave three, respondents were not asked whether their fathers lived in the same household. Therefore, this question was replaced with a constructed variable indicating the type of residence in which the respondent lived. A crosstab analysis was performed to define the family structure and included: (1) child does not live at home, mother unmarried, (2) child does not live at home, mother married, (3) parent's have joint custody, mother unmarried, (4) parents have joint custody, mother married, (5) child lives at father's house, mother unmarried, (6) child lives at father's house, mother married, (7) child lives at mother's house, mother unmarried, (8) child lives at mother's house, mother married, (9) child lives with mother and father, unmarried, and (10) child lives with mother and father, married.

Parenting

Of the eight parenting constructs outlined by the general theory of crime (Gottfredson & Hirschi, 1990) and coercion theory (Patterson, 1996; Snyder & Patterson, 1987), five could be examined with the current dataset (i.e., individual parenting behaviors: discipline, communication, and positive reinforcement, as well as, elements of good parenting: attachment and positive parenting; see Table 1). Indices of parenting at ages 8-9 were available via mother reports and interviewer observation (i.e., only communication). All items used to measure parenting as reported by mothers and interviewers were items from the HOME (i.e., parent and interviewer versions, respectively). It should be noted that some parenting items examined mothers only, others examined fathers only, while still

others examined parents generally. Finally, each parenting construct was operationalized in a manner consistent with the definitions of each parenting construct described earlier (see Table 1).

Closeness/Involvement. According to the general theory of crime (Gottfredson & Hirschi, 1990), an attachment between the parent and child is defined as a parent who spends time with their child and demonstrates a sense of support/closeness to the child. Coercion theory researchers (Patterson, 1996; Snyder & Patterson, 1987) also suggested that an attachment between parent and child is defined as a sense of support and closeness. However, so as not to confuse this idea with how Bowlby (1969) defined the term attachment, attachment in the current investigation will be renamed to closeness/involvement.

Five items based on mother reports were used to measure closeness/involvement. First, three items were used to measure involvement: (1) How often child spends time with father (CI 1), (2) How often child spends time with father outdoors (CI 2), and (3) How often child eats with both mother and father (CI 3). Each item was scored on a Likert type scale: (1) once a day or more often, (2) at least 4 times a week, (3) about once a week, (4) about once a month, (5) a few times a year or less, and (6) never. Each item also was reversed scored so that higher responses indicated higher involvement. Next, two items were used to measure closeness: (1) How close child feels toward mother (CI 4) and (2) How close child feels toward father (CI 5). Both items were scored on a Likert type scale: (1) extremely close, (2) quite close, (3) fairly close, and (4) not at all close. Each item was reversed scored so that higher responses indicated higher closeness. Because the

involvement and closeness portions of the construct were on different measurements, items were standardized for the purposes of examining reliability. The standardized composite of closeness/involvement was a reliable measure (α = .74). A latent construct of closeness/involvement also fit the data well (chi-square = 13.10, *df* = 4, *p* = .011, CFI = .99, RMSEA = .056).

Communication. Based on interviewer's observations, four items measured communication between mother and child. Items included: Did interviewer observe the mother (1) Encourage the child to talk (Com 1), (2) Answer the child's questions verbally (Com 2), (3) Converse with child without scolding (Com 3), and (4) Mother's voice convey positive feelings about child (Com 4). Items were selected yes if the interviewer observed each behavior. Higher additive responses indicated more communication between parent and child that was open, warm, and positive. The interviewer's assessment of communication was moderately reliable (α = .67). A latent construct of communication provided a good fit with the data when one correlated error was added (chi-square = 4.434, *df* = 2, *p* = .109, CFI = .99, RMSEA = .041).

Support for Autonomy. According to coercion theory, positive parenting is important for the protection against engaging in deviant behaviors. However, the definition of positive parenting is quite large and encompasses many dimensions. As part of the definition, investigators have defined positive parenting as encouraging autonomy, as well as, communicating "clear expectations and standards of mature behavior" (Patterson, 1996; Snyder & Patterson, 1987 p. 225). Therefore to be more precise, positive parenting

was measured as allowing autonomy and having expectations for mature behavior, and will be referred to as support for autonomy.

Three items based on mother reports were used to form a composite measuring support for autonomy: (1) How often is the child expected to make own bed, (2) How often is child expected to clean own room, and (3) How often is the child expected to pick up after self. Responses were scored on a Likert type scale with higher scores indicating more support for autonomy: (1) almost never, (2) less than ½ the time, (3) ½ the time, (4) more than ½ the time, and (5) almost always. Mother reports of support for autonomy were reliable (α = .75). Because a latent construct of support for autonomy was just-identified, parameters could not be calculated without constraining the variance of each observed variable to be equal. Once the variance was constrained to be equal, the model did not provide a good fit with the data. Thus, as the support for autonomy construct was reliable, a single composite of support for autonomy (SFA) was used for the current analyses.

Discipline. Six items based on mother reports were used to assess appropriate types of discipline mothers would engage in if her child received low grades[2]: mother would (1) Contact teacher or principle (Dis 1), (2) Supervise her child more closely (Dis 2), (3) Talk with her child (Dis 3), (4) Tell her child to study more (Dis 4), (5) Help her child with homework more (Dis 5), and (6) Limit non-school activities (play/sports; Dis 6). Responses were scored on a Likert type scale with higher responses indicating higher use of appropriate types of discipline in response to low grades: (1) not at all likely, (2) somewhat likely, (3) not sure how likely, (4) somewhat likely, and (5) very likely.

Mothers' reports of how likely she would use appropriate types of discipline techniques were moderately reliable (α = .63). A latent construct of discipline provided an excellent fit with the data when three correlated error terms were added (chi-square = 11.49, *df* = 6, *p* = .074, CFI = .99, RMSEA = .035).

Positive Reinforcement. Three items were used to form a composite measuring how often the child received positive reinforcement from the mother: How many times in the past week have you (1) Praised the child for doing something worthwhile, (2) Shown the child physical affection, and (3) Complimented child to another. Mothers reported an the actual number of positive reinforcement provided to her child during the last week. Higher additive responses indicated that the child received higher frequencies of positive reinforcement. Mother reports of positive reinforcement were reliable (α = .75). Because a latent construct of positive reinforcement was just-identified, parameters could not be calculated without constraining the variance of each observed variable to be equal. Once the variance was constrained to be equal, the model did not provide a good fit with the data. Thus, as positive reinforcement was a reliable construct, a single composite of positive reinforcement (PR) was used for the current analyses.

Self-Control

Since the development of the general theory of crime (Gottfredson & Hirschi, 1990), Grasmick, Tittle, Bursik, and Arneklev (1993) developed a self-control measure based on Gottfredson and Hirschi's very specific descriptions. For example, Gottfredson and Hirschi suggested that individuals with a lack of self-control engage in deviant behaviors that provide (a) immediate gratification, (b) are easy or simple ways to receive

gratification, (c) are exciting, risky, or thrilling, (d) require little thought processing, (e) result in the victim(s) feeling pain or discomfort, and (f) the individual lacks long-term goals. The Grasmick et al. measure of self-control has been used consistently in studies to examine the relationship between self-control and deviant behaviors (e.g., Arneklev, Grasmick, & Bursik, 1999; Longshore & Turner, 1998; Piquero & Rosay, 1998; Vazsonyi et al., 2001). As a result of this measure, self-control is defined by six dimensions namely, impulsivity, simple tasks, risk seeking, physical activity, self-centeredness, and temper. Therefore, the Grasmick et al. scale was used as a reference when items were selected to measure self-control.

The NLSY data allows for the examination of both mother and child reports of child self-control at age 12-13, whereas mother reports only are available at age 8-9 and only child reports are available at age 16-17. A composite measuring mother's reports of child self-control at ages 8-9 and 12-13 were comprised of nine items from the Behavior Problem Index (BPI; Zill & Peterson, 1986; see Appendix B). Examples of items used in to measure self-control include: (1) Child argues too much (2) Child has difficulty concentrating, and (3) Child does not seem to feel sorry after misbehaving. Each item was measured on a three point Likert type scale with higher responses indicating higher self-control: (1) often true, (2) sometimes true, and (3) not true. Mother's reports of child self-control were reliable at ages 8-9 (α = .82) and 12-13 (α = .82). A latent construct of self-control (used for analyses examining the stability of self-control) provided an good fit with the data at both ages and with the same ten correlated error terms (age 8-9:

chi-square = 30.51, *df* = 17, *p* = .023, CFI = .99, RMSEA = .033; age 12-13: chi-square = 36.80, *df* = 17, *p* = .004, CFI = .99, RMSEA = .040).

To form a composite measuring child's self-reports of self-control at ages 12-13 and 16-17, six items were examined (see Appendix B). Examples of items used in to measure self-control include: (1) I often get in a jam because I do things without thinking, (2) I think that planning takes the fun out of things, and (3) I have to use a lot of self-control to keep out of trouble. While the same items were used to measure self-control at ages 12-13 and 16-17, item responses were in opposite directions (i.e., age 12-13 strongly agree to strongly disagree; age 16-17 strongly disagree to strongly agree). Thus, item responses were reversed scored at age 16-17 to match the same direction as mother reported self-control. After reverse scoring the items, higher responses indicated higher self-control and were measured on a four point Likert type scale: (1) strongly agree, (2) agree, (3) disagree, and (4) strongly disagree. Child's self-reported self-control were moderately reliable for both ages 12-13 (α = .64) and 16-17 (α = .61). A latent construct of self-control (used to examine the stability of self-control) provided an excellent fit with the data at both ages (age 12-13 with three correlated error terms: chi-square = 11.14, *df* = 6, *p* = .084, CFI = .99, RMSEA = .034; age 16-17 with four correlated error terms: chi-square = 7.40, *df* = 5, *p* = .192, CFI = .99, RMSEA = .026). As a note, at no point were the mother and child reports of self-control at age 12-13 combined to create one measure of self-control.

Deviance

The decision regarding which deviant behaviors to examine was based on what was available within the dataset. As such, three types of deviance were available (i.e., less serious offenses, violence, alcohol use), and were measured via child self-reports at age 16-17. As a note, only child self-reports were available for this age group.

Alcohol use. Two items were used to measure the frequency with which respondents engaged in alcohol consumption. First, "On average, how often in the last 12 months have you had any alcoholic beverages, that is, beer, wine, or liquor?" Responses were scored on Likert type scale: (1) did not drink alcohol in the past 12 months, (2) 1 to 2 days in the past 12 months, (3) 3 to 5 days in the past 12 months, (4) every other month or so (6 to 11 days a year), (5) 1 to 2 times a month (12 to 24 days a year), (6) several times a month (25 to 51 days a year), (7) about 1 to 2 days a week, (8) almost daily or 3 to 6 days a week, and (9) daily (AU 1). Higher scores indicated higher rates of alcohol consumption per year. Second, respondents were asked to indicate in the last year, how many times they got drunk. Responses were scored on a Likert type scale with higher responses indicating higher rates of being drunk: (1) never, (2) once, (3) twice, and (4) more than twice (AU 2). Because each item is measured differently, responses to the alcohol use items were standardized for the purposes of examining reliability. The standardized alpha coefficient indicated that alcohol use was a reliable measure ($\alpha = .81$). Fit for a latent construct of alcohol use could not be determined as the model was unidentifiable.

Less Serious Offenses. Four items were used to assess the frequency with which respondents engaged in less serious offenses: In the last year, about how many times have

you (1) stayed out later than your parent(s) said you should (LSO 1), (2) lied to your parent(s) about something important (LSO 2), (3) skipped a day of school without permission (LSO 3), and (4) stayed out at least one night without permission (LSO 4). Responses were scored on a Likert type scale with higher responses indicating higher engagement of less serious offenses: (1) never, (2) once, (3) twice, and (4) more than twice. The less serious offense composite was moderately reliable ($\alpha = .69$). A latent construct of self-control provided a good fit with the data (chi-square = 6.15, $df = 2$, $p = .046$, CFI = .99, RMSEA = .053).

Violence. Two items were used to form a composite measuring more serious forms of deviance, specifically violence against people and property: In the last year, about how many times have you: (1) hurt someone badly enough to need bandages or a doctor (VI 1) and (2) damaged school property on purpose (VI 2). Responses were scored on a Likert type scale with higher responses indicating higher engagement of violence: (1) never, (2) once, (3) twice, and (4) more than twice. When examined, the reliability was $\alpha = .45$[3]. Fit for a latent construct of alcohol use could not be determined as the model was unidentifiable.

RESULTS

Preliminary Analyses

Initially, descriptive statistics were computed on all parenting, self-control, and deviance constructs. Results suggested that many of the variables were skewed (see Table 3). The decision to transform skewed data was based on whether the skew was significant, and the direction and severity of the skew. To determine significance, the skew coefficient was divided by the standard error of skew. A non-significantly skewed variable would result in a coefficient of < 1.0. However, Tabachnick and Fidell (1996) suggested that if variables are skewed >1.0 but fall between +/- 2.0, transforming the variables would result in minimal changes in the results. Additionally, they noted that in large datasets, minor deviations from normality are likely to be significant, and that the size and visual depiction of the distribution is more important in the decision to transform data in large datasets. Using these guidelines, it was determined that many of the parenting items and most of the deviance items needed to be transformed (see Appendix C for types of transformations used on specific items). After transformation, most of the variables had normal distributions (see Table 3). Transformed variables were used for all subsequent analyses.

Next, bivariate correlations were computed to examine relations between parenting (age 8-9), self-control (age 12-13), and deviance (age 16-17), and demographic variables. In order to examine the bivariate correlations between the demographic and key variables,

race and family structure were first dummy coded (e.g., Caucasian adolescents and two biological parent married families were the comparison groups). Overall, bivariate associations indicated that some associations existed between sex, race, and family structure (i.e., single mother headed families) and key variables (see Appendices D1- D3)[4]. Results also revealed that several of the individual parenting constructs were associated with one another (see Appendices E1, E2, E4). However, the associations were small thus indicating that each of the parenting variables were distinct constructs. While the associations indicated distinct constructs, the associations also were smaller then expected (e.g., there were many non-significant associations between the closeness/involvement and communication items). Next, when examining the bivariate associations between mother reported self-control (ages 8-9 and 12-13) and child reported self-control (age 16-17), results revealed that self-control was significantly associated across age groups and respondents (i.e., mother and child; see Appendix E6). Finally, less serious offenses, violence, and alcohol use also were associated with one another (see Appendix E6).

Upon further examination, closeness/involvement, communication, support for autonomy, and positive reinforcement were found to be associated with mother reported self-control (ages 8-9 and 12-13), whereas discipline was not associated with self-control at either age (see Appendices E3, E5). No significant bivariate associations were found between parenting variables and child reported self-control. Bivariate results also suggested that only closeness/involvement was related to less serious offenses. Finally, mother and child reported self-control (all ages) were associated with violence, mother reported self-control (age 12-13) and child reported self-control (age 16-17) were

associated with less serious offenses, and child reported self-control (age 16-17) was associated with alcohol use (see Appendix E6).

Stability of Self-Control

A series of structural equation models (SEMs) were performed to explore the stability of self-control from ages 8-9 to 12-13 (mother reported), from ages 12-13 to 16-17 (child reported), and from ages 8-9 to 16-17 (across respondents). Model fit was evaluated by examining the chi-quare fit statistic, the root mean square of approximation (RMSEA), and the Comparative Fit Index (CFI). To determine the fit of the model, an acceptable fit for the RMSEA is between .08 and .10, a moderate fit is between .05 and .08, whereas, an excellent fit is below .05 (Browne & Cudeck, 1993). Additionally, an acceptable fit for the CFI is between .90 and 1.0 (Crowley & Fan, 1997). Finally, when necessary for the purposes of missing data, full information maximum likelihood (FIML) was used to impute estimates. Because FIML is associated with the least amount of bias in parameter estimates, it is considered the most reliable method of handling missing data and a current state of the art procedure (Enders, 2001).

To examine the stability of self-control (mother reported) from ages 8-9 to 12-13, a path was drawn between the two initial CFA models. Results indicated that mother reported self-control was highly stable ($\beta = .74$) and provided a moderate fit with the data (CFI = .90, RMSEA = .07, $\chi = 540.91$, $df = 114$, $p = .000$). Next, to examine the stability of child reported self-control from ages 12-13 to 16-17, a path was again indicated between the two initial CFA models. Additional correlated error terms (a total of 6, which were the same for each model) needed to be added. Final results suggested a

moderate stability (β = .45), as well as, a good fit with the data (CFI = .94, RMSEA = .04, χ = 84.394, *df* = 41, *p* = .000; see Table 4 for the factor loadings on each mother and child reported CFA self-control model).

To examine stability of self-control across respondents, the relation between mother reported self-control age 8-9 and child reported self-control age 12-13 was examined. The same latent constructs with correlated error terms as in previous analyses were examined with a path drawn between the two constructs. Results suggested self-control was only slightly stable across respondents (β = .18), and to a lesser extent than the stability of self-control measured by the same respondent (CFI = .96, RMSEA = .04, χ = 159.71, *df* = 73, *p* = .000). Next, to examine the relation between mother reported self-control age 12-13 and child reported self-control age 16-17, a path was indicated between the two latent constructs with the same correlated error terms used in prior analyses. Results indicated that self-control was minimally stable across respondents (β = .24), again however, the association was weaker than the associations between the same respondents (CFI = .96, RMSEA = .04, χ = 159.60, *df* = 73, *p* = .000). Finally, to examine the stability of mother reported self-control from age 8-9 and child reported self-control age 16-17, a path was drawn from the two initial CFA models with the same correlated error terms as in the previous models. Results indicated there was no stability between mother and child reported self-control over eight years[5]. Overall, self-control was a stable construct between the same and different respondents over a four year period, but not directly over an eight period. Further, because the associations across respondents was

quite weak, one could argue for the instability of self-control rather than the stability (i.e., that self-control changes).

Longitudinal Relations Between Parenting, Self-Control, and Deviance

To examine whether an overall construct of effective parenting that encapsulates all five parenting variables explained more variance in self-control and deviance as compared to the direct association of individual parenting constructs (e.g., the direct association between closeness/involvement and deviance), a second-order latent construct of effective parenting was created with each of the parenting constructs as indicators. Overall, a latent construct of effective parenting at age 8-9 indicated a good fit with the data (CFI = .95, RMSEA = .04, χ = 229.603, *df* = 112, *p* = .000). Further, each of the parenting constructs loaded significantly and similarly onto the latent construct (see Table 5 for factor loadings; however, the loadings were functionally identical across the model). This latent construct will be referred to as effective parenting throughout the remaining analyses. Next, a series of SEMs were employed to examine the longitudinal relations between (a) early parenting (age 8-9) and self-control (age 12-13), (b) early parenting (age 8-9) and deviance (age 16-17), and (b) self-control (age 12-13) and deviance (age 16-17). The individual parenting constructs were examined separately and as a second-order construct of effective parenting. Additionally, due to child reported self-control at age 12-13 not having significant associations with any of the key variables, only mothered reported self-control at age 12-13 was used for analyses. The same criteria for determining fit when conducting CFAs were used when conducting SEMs.

Parenting and self-control

When examining the direct relations between each of the parenting constructs and self-control, results revealed that only closeness/involvement (β = .10) had a direct positive relation with self-control (total R^2 = 1.8%; CFI = .98, RMSEA = .06, χ = 28.20, *df* = 8, *p* = .00). However, the association between effective parenting and self-control, explained more variance in self-control (total R^2 = 7.7%) and had a larger direct association with self-control (β = .28; CFI = .94, RMSEA = .04, χ = 257.503, *df* = 128, *p* = .000). Further, each of the parenting constructs were significantly associated with effective parenting (see Table 5 for factor loadings).

Parenting and deviance

The direct examination between early parenting and later deviance revealed that only closeness/involvement was associated with less serious offenses (β = -.12; CFI = .95, RMSEA = .04, χ = 231.00, *df* = 119, *p* = .04), but explained only 1.9% of the variance in less serious offenses. Results further indicated that effective parenting was more strongly associated with and explained more of the variance in less serious offenses (β = -.21; Total R^2 = 4.3%; CFI = .94, RMSEA = .03, χ = 332.24, *df* = 181, *p* = .000). Furthermore, each of the parenting constructs loaded significantly onto effective parenting (see Table 5 for factor loadings). Next, results indicated that only support for autonomy was associated with, and explained 3.2% of the variance in, alcohol use (β = .16; CFI = .91, RMSEA = .05, χ = 356.869, *df* = 137, *p* = .000). Effective parenting was not significantly associated with alcohol use. Finally, both the individual parenting variables and effective parenting were not significantly associated with violence.

Self-control and deviance

Results regarding the relation between self-control (age 12-13) and deviance (age 16-17) indicated that self-control was significantly associated with less serious offenses (β = -.17; CFI = .99, RMSEA = .02, χ = 76.07, *df* = 54, *p* = .03) and violence (β = -.24; CFI = .98, RMSEA = .04, χ = 70.15, *df* = 33, *p* = .000, respectively). Self-control explained 2.7% of the variance in less serious offenses, and 5.8% of the variance in violence. Self-control was not significantly associated with alcohol use.

Overall, a number of significant associations emerged between effective parenting, self-control, and less serious offenses. Closeness/involvement also was positively associated with self-control and less serious offenses. Results suggested that support for autonomy was associated with alcohol use. To test whether mediation exists between variables, Baron and Kenny (1986) suggests that significant associations must be present between the independent variable (IV) and the dependent variable (DV), between the IV and the mediating variable, and between the mediating variable and the DV in order for a true mediational test to occur. The relations between (a) effective parenting, self-control, and less serious offenses and (b) closeness/involvement, self-control, and less serious offenses followed this logic, and as such, were tested within a mediational model.

Mediation: Effective Parenting, Self-Control, and Less Serious Offenses

A series of SEMs examined whether self-control (age 12-13) mediated the link between effective parenting (age 8-9) and less serious offenses (age 16-17). To test for mediation, each of the variables were entered into the model. Two SEMs for each

mediation was ran; one that examined the direct link from the IV to the mediating variable, and a direct path from the mediating variable to the DV. The second SEM also included a path directly from the IV to the DV. By analyzing the two models in this manner, it was possible to determine whether preliminary associations decreased upon the inclusion of all three variables into the model. That is, evidence for mediation exists when the association between the IV and the DV becomes weaker or non-significant in the presence of a third mediating variable.

Recall that the association between effective parenting and less serious offenses prior to testing for mediation was $\beta = .21$, the association between effective parenting and self-control was $\beta = .28$, and the association between self-control and less serious offenses was $\beta = -.17$. After testing for mediation, results suggested that effective parenting remained associated with less serious offenses ($\beta = -.19$; see Figure 2), and with self-control ($\beta = .28$). However, self-control was no longer associated with less serious offenses. Further, results indicated that the model provided a good fit with the data (CFI = .94, RMSEA = .03, $\chi = 364.93$, $df = 100$, $p = .000$), and explained 5.2% of the variance in less serious offenses. Thus, the results showed that self-control did not mediate the relation between early parenting and later engagement in less serious offenses, and that effective parenting age 8-9 was more important than mother reported self-control age 12-13 for explaining the etiology of less serious offenses age 16-17.

The fact that mother reported self-control did not mediate the relation between early parenting and later deviance, was contrary to expectations. As such, thoughts regarding

how parenting during pre-adolescence and deviance during middle adolescence were associated via self-control had to be revised and re-analyzed. Past research indicated that self-control partially mediated the relation between parenting and deviance when measured concurrently (Gibbs et al, 1998; Hay, 2001; Perrone et al., 2004). Therefore, to further examine whether self-control linked early effective parenting and later engagement in less serious offenses in any manner, mother reported self-control (age 8-9) and child reported self-control (age 16-17) were added to the model (see Figure 3). Recall that self-control was slightly to moderately stable between and across respondents over a four year period, and effective parenting was associated with self-control ages 8-9 and 12-13. Additionally, results examining concurrent relations between self-control and less serious offenses indicated that self-control age 16-17 explained 40% of the variance in less serious offenses (β = -.63; CFI = .95, RMSEA = .04, χ = 63.23, *df* = 28, *p* = .000). Thus, by adding in three measures of self-control, SEM was able to ascertain whether self-control measured at three time points added any additional information in the explanation of deviance during middle adolescence.

Results suggested that (a) effective parenting was significantly associated with self-control at age 8-9, (b) self-control was slightly to moderately stable between each four year measurement, and (c) self-control (age 16-17) was significantly associated with less serious offenses (see Figure 3). Further, effective parenting continued to be significantly associated with self-control (age 12-13) and less serious offenses. However, the association between effective parenting and less serious offenses did not weaken (e.g., β = -.21 before and after testing for mediation). Overall, the model provided a good fit

with the data (CFI = .94, RMSEA = .03, χ = 423.93, *df* = 240, *p* = .000), and explained 22.8% of the variance in less serious offenses. Thus, results suggested that prior levels of self-control were associated with the development of subsequent levels of self-control, and in turn, only the concurrent level of self-control (child reported) was associated with the engagement of less serious offenses. Further, it appears that a lack of self-control and a lack of effective parenting are additively associated with less serious offenses rather than self-control mediating the link between parenting and engagement in less serious offenses.

Mediation: Closeness/Involvement, Self-Control, and Less Serious Offenses

Next, a series of SEMs were conducted in the same manner to further understand the relation between closeness/involvement (age 8-9), self-control (age 12-13; mother reported), and less serious offenses (age 16-17). Because initial tests to examine the direct associations between parenting and deviance (and self-control) were conducted with all of the parenting variables in the model, the association between closeness/involvement and less serious offenses (and self-control) was reexamined individually. Results indicated that the association between (a) closeness /involvement and less serious offenses was β = -.18 (CFI = .98, RMSEA = .04, χ = 48.83, *df* = 25, *p* = .003), and (b) closeness/ involvement and self-control was β = .14 (CFI = .98, RMSEA = .06, χ = 28.20, *df* = 8, *p* = .000). Also recall that prior to testing for mediation the association between self-control and less serious offenses was β = -.17. After testing for mediation, results revealed that (a) closeness/involvement remained associated with less serious offenses (β = -.16),

(b) that closeness/involvement was associated with self-control (β = .13), (c) self-control was associated with less serious offenses (β = -.11), and (d) explained 4.4% of the variance in less serious offenses (CFI = .98, RMSEA = .04, χ = 69.04, *df* = 32, *p* = .000; see Figure 4). Thus results indicated that self-control did not mediate the relation between closeness/involvement and less serious offenses. Rather it appears that closeness/ involvement age 8-9 and self-control age 12-13 (mother reported) are additively associated with less serious offenses age 16-17.

Again because the finding regarding a lack of mediation is inconsistent with the general theory of crime (Gottfredson & Hirschi, 1990), self-control at ages 8-9 and 16-17 were added to the model to determine whether self-control as a stable construct mediated the relation between earlier closeness/involvement and later engagement of less serious offenses. Again, recall that (a) self-control was slightly to moderately stable between each four year period, (b) closeness involvement was associated with self-control at ages 8-9 and 12-13, and (c) self-control and less serious offenses were associated concurrently. Results revealed that (a) closeness/involvement was associated with self-control (age 8-9), (b) self-control was slightly to moderately stable between each of the four year time periods, and (c) only a concurrent measure of self-control (age 16-17) was associated with less serious offenses (see Figure 5). Further results indicated that the model was a good fit with the data (CFI = .97, RMSEA = .04, χ = 106.59, *df* = 48, *p* = .000), and explained 21.4% of the variance in less serious offenses. Thus, results revealed that less serious

offenses are explained more fully by the additive nature of early closeness/involvement (age 8-9) and concurrent levels of self-control (age 16-17).

Residualized Findings

Up to this point, no controls have been entered into the model to determine whether variables such as sex, race, mother's education, or family structure were affecting the relations found. Recall that preliminary analyses indicated that various demographic variables were associated with various parenting, self-control, and deviance constructs (see Appendices E1-E3). Therefore, a second set of analyses were conducted controlling for sex, race, mother's education, and family structure by partialling out the effects each demographic variable (i.e., residualizing each variable) through the use of hierarchical regressions. When controlling for the effects of mother's education and family structure, the data that were collected during the corresponding year was used for residualization (e.g., mother's education and family structure for when the child was age 8-9 were used when residualizing other variables for when the child was age 8-9). These new residualized variables were used in further analyses.

Stability of Self-Control

Residualized results suggested that mother reported self-control from ages 8-9 to 12-13 was highly stable ($\beta = .74$; CFI = .90, RMSEA = .07, $\chi = 496.63$, $df = 114$, $p = .000$). However, child reported self-control from ages 12-13 to 16-17 was no longer significant, thereby, suggesting that the demographic variables did have an effect on the stability of self-control (child reported)[6]. Further, self-control was only slightly stable between mother reported self-control age 8-9 and child reported self-control 12-13

(β = .14; CFI = .97, RMSEA = .04, χ = 143.65, *df* = 73, *p* = .000), as well as, between mother reported self-control age 12-13 and child reported self-control age 16-17 (β = .20; CFI = .97, RMSEA = .04, χ = 141.73, *df* = 73, *p* = .000). Finally, no stability was found directly between mother reported self-control at age 8-9 and child reported self-control at age 16-17. Thus, results suggest there may be more change in levels of self-control than stability once the effects of age, sex, and family structure are accounted for (see Appendix G for a comparison of pre- and post-residualization results).

Longitudinal Relations Between Parenting, Self-Control, and Deviance

Initial results indicated that a latent construct of effective parenting at age 8-9 fit the data well (CFI = .94, RMSEA = .04, χ = 220.62, *df* = 112, *p* = .000), and each of the parenting constructs loaded significantly and similarly onto the latent construct (see Table 6 for factor loadings). Further, none of the individual parenting constructs were directly associated with self-control. Effective parenting, however, was significantly associated with, and explained 4.7% of the variance in, self-control (β = .22; CFI = .93, RMSEA = .04, χ = 248.875, *df* = 128, *p* = .000). Next, effective parenting and each individual parenting constructs were not significantly associated with any of the deviance measures, with one exception. Support for autonomy was directly related with, and explained 2.8% of the variance in, alcohol use (β = .14; CFI = .93, RMSEA = .04, χ = 268.11, *df* = 137, *p* = .000). Finally, there was no significant relationship between self-control (mother reports) and any of the deviance measures. Overall, a number of significant relations prior to controlling for the demographic variables became non-significant after residualizing the

variables (see Appendix H for a comparison of pre- and post-residualization results). As a result, it appeared that the demographic variables of sex, race, mother's education, and family structure were accounting for the initial findings.

Mediation: Effective Parenting, Self-Control, and Deviance

Because residualizing the variables resulted in many associations becoming non-significant, a number of changes needed to occur in the current analyses. First, recall that mother reported self-control age 12-13 was no longer associated with any of the deviance measures after residualization, nor was there significant associations between effective parenting and any of the deviance measures. Rather than concluding that a link between early parenting and later engagement in deviance did not exist, an alternative method for assessing this link was examined; child reported self-control age 12-13 was examined in place of mother reported self-control age 12-13. Additionally, because residualizing the variables changed many associations and an alternative measure of self-control was being utilized, it was decided to reexamine relations with alcohol use and violence. Results indicated that effective parenting and each of the parenting constructs were not associated with child reported self-control age 12-13. However, child reported self-control age 12-13 was associated with less serious offenses and alcohol use, and explained 3.2% of less serious offenses (CFI = .99, RMSEA = .04, χ = 9.65, *df* = 5, *p* = .086) and 2.9% of alcohol use (CFI = .99, RMSEA = .06, χ = 3.66, *df* = 1, *p* = .06). Secondly, as demonstrated in earlier analyses, effective parenting and self-control were associated concurrently; mother reported self-control age 8-9 and child reported self-control 12-13 also were associated. As such, self-control age 8-9 was added to the model. Finally,

previous analyses indicated that when three measures of self-control were added to the model, effective parenting and deviance were associated. Thus, child reported self-control age 16-17 also was added to the current analyses[7].

Results indicated that when self-control was measured at all three ages, self-control linked earlier parenting to less serious offenses, alcohol use, and violence (see Figures 6-8), and that self-control age 12-13 continued to be associated with less serious offenses and alcohol use. However, in no case was earlier parenting directly associated with less serious offenses. Further, all models provided a good fit with the data (less serious offenses: CFI = .94, RMSEA = .03, χ = 384.82, *df* = 243, *p* = .000; alcohol use: CFI = .93, RMSEA = .03, χ = 342.41, *df* = 202, *p* = .000; violence: CFI = .92, RMSEA = .03, χ = 340.82, *df* = 202, *p* = .000), and explained 14.9% of the variance in less serious offenses, 8.5% of the variance in alcohol use, and 7.6% of the variance in violence. Thus, although self-control linked earlier parenting with later engagement of deviant behaviors, results can not conclude that self-control mediated this link.

DISCUSSION

The main goal of the current investigation was to examine whether self-control during early adolescence mediated relations between parenting during preadolescence and engagement in deviance during middle adolescence. To this author's knowledge, no studies have examined whether self-control mediated the effects of parenting and deviance over such a long period of time. Additional questions addressed included (a) whether parenting (i.e., both individual parenting constructs and a latent construct of effective parenting that encapsulated five parenting constructs) during preadolescence was directly related to the development of self-control during early adolescence and the engagement in deviant behaviors during middle adolescence, (b) whether parenting constructs outside the scope of the general theory of crime (Gottfredson & Hirschi, 1990) were influential in the development of self-control, and (c) an exploratory examination of the stability of self-control.

A number of findings were generated that speak to each of these questions, both in support of and against hypotheses. First, it was found that self-control is only slightly to moderately stable over a four year time period. Second, a general sense of effective parenting during preadolescence, characterized by parenting elements theorized by the general theory of crime and coercion theory (Dishion & Patterson, 1997; Gottfredson & Hirschi, 1990; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993;

Snyder & Patterson, 1987), is important when examining the etiology of self-control and deviance. However, being close and involved with the child during preadolescence also emerged as an important parenting constructs that contributed to the development of self-control and deviance. Further, similar amounts of variance were explained when examining the relations between closeness/involvement, concurrent measures of self-control, and less serious offenses as when examining the relations between effective parenting, concurrent measures of self-control, and less serious offenses (21.4% and 22.8%, respectively). It is important to note, that it was the concurrent assessment of self-control that explained the majority of the variance in each model. Third, although self-control did not mediate the link between effective parenting and deviance, both effective parenting and self-control are additively associated with the development of deviance over an eight year time period. Deviance also appeared to be best explained when three measures of self-control, as well as, early parenting were added to the model. This same finding emerged when considering only closeness/involvement in relation to self-control and less serious offenses. Fourth, many of these relations changed once the effects of sex, race, mother's education, and family structure were accounted for indicating such factors are important.

Stability of Self-Control

Overall, self-control was found to be slightly to moderately stable over four year time periods. For example, mother reports of self-control tended to be highly stable from ages 8-9 to 12-13, whereas, child reports of self-control tended to be moderately stable from ages 12-13 to 16-17. However, when examining the stability of self-control across respondents, the association was weak. Further, a direct association between self-control

from ages 8-9 to 16-17 was not significant. One potential reason this lack of association occurred may be due to the lengthy time span between the two measurements of self-control. For example, it is possible that self-control at age 8-9 simply does not have a direct association on self-control at age 16-17. However, it is not surprising a lack of association occurred between self-control age 8-9 and 16-17 given that Gottfredson and Hirschi (1990) argued self-control would not be have been formed at age 8-9, however, self-control should have theoretically been crystallized by age 16-17. A second potential reason for this lack of association may have been the result of differences in measurement scales and respondents. Had measurements of self-control from the same respondent been available using the same measurement scales, results may have provided stronger evidence for the stability of self-control. While the difference in measurement scales and respondents may explain the lack of association over the eight year period, evidence indicated that self-control was significantly associated over a four year time period despite the differences. Evidence further indicated that when the respondents were the same, there was a stronger association between two points of self-control than when the respondents were different (see Appendix G for comparisons across respondents, pre- and post-residualization). Additional results suggested that the association between mother reported self-control age 12-13 and child reported self-control age 16-17 was stronger than the association between mother reported self-control age 8-9 and child reported self-control age 12-13. Finally, these associations held after controlling for the effects of sex, race, mother's education, and family structure.

Thus, findings regarding the stability of self-control are consistent with past research and the theorizing of Gottfredson and Hirschi (1990). For example, self-control was found to be stable over one and four year periods (Brody & Ge, 2001; Polakowski, 1994). Further, because evidence suggested a stronger association occurred when the participants were older, it appears that an individual's level of self-control becomes more stable during adolescence (i.e., after the age of 10, as theorized). Again, this is consistent with past research in that Turner and Piquero (2002) also found stronger associations between later measurements of self-control when compared to measurements of self-control when the respondent was younger. However, because there were only moderate associations between each measurement of self-control in the current study and in the previous research, evidence also suggested that self-control continued to change during adolescence. Thus, only slight support is provided for the general theory of crime's assertion that self-control is a stable construct (Gottfredson & Hirschi, 1990). Further research is warranted before any conclusions are made regarding the stabilization of self-control.

Longitudinal Relations Between Parenting, Self-Control, and Deviance

Overall, each of the parenting constructs (i.e., discipline, communication, closeness/involvement, support for autonomy, and positive reinforcement) loaded significantly onto the effective parenting latent construct, and in turn, predicted self-control and less serious offenses (before and after residualization). Given that parenting constructs conceptualized from both the general theory of crime and the coercion theory (e.g., positive reinforcement, support for autonomy (i.e., positive parenting); Dishion &

Patterson, 1997; Gottfredson & Hirschi, 1990; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987) were indicators of effective parenting, parenting constructs outside the scope of the general theory of crime appear important for providing a general sense of effective parenting, and may matter for the development of self-control and deviance. This finding is not surprising given that past research also found parenting constructs such as psychological autonomy was important for the development of self-control (Hay, 2001). Thus, when studying the etiology of deviance, researchers should examine parenting variables outside the scope of the general theory of crime, and also include elements from both theories in order to gain a stronger understanding of specifically how parents are associated with the development of adolescent deviance.

Evidence also suggested that the latent construct of effective parenting was strongly associated with the development of self-control (i.e., before and after residualization) and the engagement in less serious offenses over time (i.e., before residualization) in comparison to individual parenting constructs. However, closeness/involvement, alone (before residualization), also was associated with the development of self-control and less serious offenses. The fact that the latent construct of effective parenting and closeness/involvement, only, explained similar amounts of variance in less serious offenses (prior to residualization) suggests that parenting variables beyond closeness/involvement, or an overall effective parenting construct, may not be as important as how close and involved parents are with their children when considering the etiology of deviance. However, when considering the etiology of self-control, evidence did suggest that an

overall construct of effective parenting did explain more variance in self-control than closeness involvement, and as such, may be more important for the development of self-control (Total R^2 = 7.7% and 1.8%, respectively). Thus, strong conclusions can not be made as to whether an overall effective parenting construct versus individual parenting variables (i.e., closeness/involvement) is more important for understanding the etiology of self-control and deviance.

In addition to the findings for effective parenting and closeness/involvement, support for autonomy and closeness/involvement were directly associated with alcohol use prior to residualization. After residualization, however, only the association between support for autonomy (i.e., positive parenting) and alcohol use remained. The fact that some individual parenting constructs were associated with self-control and deviance, while others were not, provides both consistent and inconsistent support with past research. First, the finding between support for autonomy and deviance adds support to the coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987) which originally suggested that positive parenting was associated with deviance. However, the finding also is inconsistent with Patterson et al. (1992) who found that positive parenting was not associated with deviance. Second, research has found consistently an association between attachment (i.e., closeness/involvement) and self-control (e.g., Cochran et al., 1998; Hay, 2001; Hope & Chapple, 2005). Thus, the current study adds to the growing literature regarding the importance attachment has for the development of self-control. Interestingly, as the attachment measure in the current study focuses mostly on fathers, evidence suggests that

fathers are important for whether a child engages in deviance. However, because there were too few items regarding mothers, conclusions can not be made about the importance of maternal attachment or the differential influences mothers and fathers have on self-control and deviance.

Third, past research also found that discipline individually was associated with the development of self-control (Hay, 2001; Pratt et al., 2004). The fact that discipline was not directly associated with self-control in the current study may be a factor of how discipline was measured. For example, while discipline in relation to low grades may be an indicator of effective parenting, it may not be a good indicator of the type of discipline parents need to engage in to develop a high level of self-control and to prohibit their children from engaging in deviant behaviors. Additionally, the current measure of discipline may not be an indicator of whether discipline is actually occurring within the family.

Finally, evidence suggested that self-control (prior to residualization) was negatively associated with the engagement of less serious forms of deviance and violence, but not alcohol use suggesting that children who have low self-control at age 12-13 are more likely to engage in less serious forms of deviance and violence four years later. However, low self-control is not a precursor for an individual to engage in alcohol use. These findings also add to the growing body of literature suggesting that when individuals have lower levels of self-control, they are more likely to engage in deviant behaviors (e.g., Pratt & Cullen, 2000). However, the fact that low self-control was not associated with the use of alcohol is inconsistent with past research (e.g., Burton et al., 1999; Gibbs & Griever,

1995; Vazsonyi & Crosswhite, 2004). The lack of association is perhaps associated with the time between when parenting and alcohol use were measured. It is also possible that use of alcohol is becoming more mainstream during adolescence.

Mediation: Effective Parenting, Self-Control, and Deviance

Past research has demonstrated that self-control at least partially mediated the relation between parenting and deviance concurrently (Gibbs et al., 1998; Hay, 2001; Perrone et al., 2004). Partial mediation also occurred when parenting and self-control were measured concurrently, and deviance was measured one and four years later (Brody & Ge, 2001; Brody et al., 2002; Hope & Chapple, 2005; Kim et al., 2003). Current findings examining whether self-control (age 12-13) mediated the relation between effective parenting and deviance over an eight year time span, did not find evidence of mediation. Rather evidence suggested that self-control (age 12-13) and effective parenting (age 8-9) were additively influential on later engagement in less serious offenses (prior to residualization, only), and explained 5.2% of the variance in less serious offenses. Similar findings also resulted when examining closeness/involvement, alone; that is, self-control (age 12-13) and closeness/involvement (age 8-9) were additively associated with later engagement in serious offenses (prior to residualization, only), and explained 4.4% of the variance.

Similarly, when levels of self-control at all ages were accounted for in the model (prior to residualization), self-control and effective parenting continued to be associated additively with the development of less serious offenses, however, four times the amount of variance in less serious offenses was accounted for (21.8% compared to 5.2% with only one measurement of self-control entered into the model). This same finding emerged when

examining whether mediation occurred with closeness/involvement. Further, 21.4% of the variance in less serious offenses was explained (compared to 4.4% with only one measurement of self-control). Thus, evidence suggests, after accounting for previous and concurrent levels of self-control, self-control adds value in the explanation of less serious offenses, and appears to be accounting for most of the variance explained.

Overall, results provided evidence for the general theory of crime (Gottfredson & Hirschi, 1990) in that self-control is an important factor when explaining the etiology of deviance. However, results are also contrary to the general theory of crime in that self-control did not mediate the link between earlier parenting and later engagement of deviance. The lack of mediation in the current study points back to the coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987). Patterson and colleagues have traditionally argued against mediating mechanisms between parenting and deviance, but rather have argued that deviance emerges as a result of the coercive exchange between parent and child. It was only more recently that Snyder et al. (2003) suggested that self-control may mediate the relation. What these findings suggest is that over an eight year time period self-control does not mediate the parenting-deviance link, as argued by Patterson and colleagues. However, the fact that self-control and parenting were additively influential in the development of deviance also supports the tenets of the general theory of crime. Thus, it appears that both the general theory of crime and the coercion theory provide important elements for the explanation of deviance. Further, because the current investigation found individual parenting constructs theorized by both theories to be influential in the

development of self-control, there may be value in the integration of these two theories for explaining adolescent deviance.

Residualization Effects

Many of the relations discussed thus far, disappeared after the effects of sex, race, mother's education, and family structure were accounted for (e.g., the relation between effective parenting and closeness/involvement with less serious offenses). Recall that preliminary analyses indicated that sex, race, and family structure were most strongly associated with the key variables. For example, (a) males were more likely to have lower self-control and engage in deviance, (b) Hispanic adolescents, were more likely to engage in less serious offenses, and (c) African American and single mothers reported lower levels of closeness/involvement or use of positive reinforcement[8]. What these findings suggest is that depending on the child's sex, race, and family structure, the longitudinal relations between parenting, self-control, and deviance change.

The fact that sex, race, and family structure were found to be significantly associated with key variables is both consistent and inconsistent with previous research addressing associations between parenting, self-control, and deviance. For example, when controlling for family structure, Perrone et al. (2004) found significant associations between family structure and self-control, as well as, family structure and deviance. Further, past research controlling for sex and race indicated that sex was influential in the associations between parenting, self-control, and deviance, although, race was not (Cochran et al.,1998; Gibbs et al., 1998). However, Perrone et al. (2004) found that both sex and race were associated with each of the links between parenting, self-control, and deviance. Additional research

examining whether sex and race moderated these associations indicated that moderation did not exist (Pratt et al., 2004; Vazsonyi & Crosswhite, 2004). In each of these studies, associations remained after controlling for sex and race, whereas in the current study, associations became non-significant. The fact that associations became non-significant in the current study, whereas the associations in past research remained, suggests that there may be some unmeasured variable(s) accounting for these relations. That is, sex and race may be performing as proxies for some unmeasured variable that would significantly explain the associations between parenting, self-control, and deviance. In fact, in all but one of the above mentioned studies examining parenting, monitoring was measured (Cochran et al.,1998; Gibbs et al., 1998; Pratt et al., 2004) and race was not associated with key variables. However, in the one study that did not measure monitoring, race was associated with key variables (Perrone et al., 2004). Therefore, it is possible that had monitoring also been measured in the current study, associations between parenting, self-control, and deviance may have remained after residualizing the variables. This possibility, therefore, suggests that monitoring may be a highly important factor for understanding how parents are associated with the development of self-control and deviance. In fact, monitoring was determined to be highly influential in the development of deviance decades ago (Loeber & Stouthamer-Loeber, 1986), and should be included in the examination of deviance whenever possible.

Lack of Associations

A number of associations did not emerge as hypothesized (e.g., mediation) or expected (e.g., bivariate relations between parenting variables). Thus far, possible reasons for the lack of associations emerging may be due to (a) no such association exists or (b) demographic variables accounting for the associations suggesting there may be unmeasured variables that are important for the link between parenting, self-control, and deviance. It also is possible that the lack of associations were due to (c) the lengthy time between when the parenting and deviance occurred. For example, it is possible that parenting at age 8-9 simply does not have any direct association with deviance at age 16-17. Rather, it is possible the quality of parenting remains stable over time (much like self-control), and only parenting that occurs concurrently with deviant behaviors is directly associated with deviance. If this is correct, it would seem that larger amounts of variance in deviance would be explained by taking into account not only self-control at each age, but the quality of parenting occurring at each age.

To begin to examine whether concurrent parenting, or parenting that occurs closer in time, would explain more variance in deviance, one final SEM was performed in which an overall parenting construct of parenting at age 12-13 was added to Figure 3 (i.e., three measures of self-control with effective parenting and less serious offenses). Results indicated that 23.7% of the variance in less serious offenses was accounted for (1.9% variance more than without accounting for effective parenting age 12-13). As such, there does appear to be some importance to examining concurrent measures of parenting, as well as, multiple measurements of parenting in understanding the etiology of deviance.

Similarly, if other important parenting variables were accounted for (e.g., monitoring, recognition of deviant behaviors, problem solving), it is possible that parenting may have been more strongly associated with self-control and deviance, and self-control may have been found to mediate some of the effects parenting has on deviance, before and after controlling for demographics.

A fourth and final reason for a lack of association may be due to how each of the constructs were measured. It is possible that items used to create each variable may not have adequately captured the full meaning of the constructs, despite every effort to form the constructs according to their theoretical definitions. For example, the discipline measure was a hypothetical measure regarding low grades. Had the discipline measure measured types of discipline used most often with respect to various types of deviant behaviors, an association between discipline and deviance may have emerged. Further, had there been more reliable measures (i.e., $\alpha > .80$), more associations may have emerged. Relatedly, the effective parenting construct measured an overall sense of effective parenting, but not ineffective or harsh parenting. Past research has indicated that when a child was physically abused, s/he behaved aggressively four years after the abuse (Dodge, Pettit, Bates, & Valente, 1995). Similarly, Patterson et al. (1992) found that their measure of discipline (i.e., nattering, threatening, and abuse towards child) was associated with deviance. Had a measure of harsh parenting or physical abuse been measured in the current investigation, it is possible that the negative effects of such parenting would be observed over an eight year period.

Limitations and Future Directions

Although a number of important findings emerged from the current study, a few limitations must be kept in mind. As discussed in the previous section, limitations of the current study include the available data for creating the study constructs and the lack of monitoring measure. Gottfredson and Hirschi (1990) suggested that all four elements of parenting (i.e., attachment, supervision/monitoring, recognition and punishment of deviant behaviors) must be present in order for an adequate level of self-control to develop. Unfortunately, because the current investigation relied on secondary data, not all parenting constructs suggested by Gottfredson and Hirschi were available within the dataset (i.e., monitoring, recognition of deviant behaviors), and the measurement of some of the behaviors that were available had limitations. Had all four parenting constructs been available for analysis in the current study, a stronger relation between parenting and self-control and between self-control and deviance may have emerged, as well as, evidence of mediation over the eight year span. Relatedly, Gottfredson and Hirschi also suggested that someone must have an opportunity for deviance before one can engage in deviant behaviors. Although examining how "opportunity" might moderate the current findings would be intriguing, it is not the scope of the current investigation. Future explorations regarding the validity of the general theory of crime will need to examine how opportunity moderates the parenting-self-control-deviance link, and ensure that each of the four parenting constructs outlined by Gottfredson and Hirschi are included in the investigation.

Similarly, due to data constraints, the current investigation was unable to examine all of the parenting constructs theorized by the coercion theory to be of importance (Dishion

& Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987). Given the parenting constructs used to describe the coercion process are examples of ineffective or harsh parenting (e.g., nagging, whining, criticism, aggression/abuse), it is possible that ineffective or harsh parenting may have a different effect on the formation of self-control that is separate from how a lack of effective parenting is associated with deviance. Thus, it would be important to explore how harsh versus a lack of effective parenting is influential in the development of self-control.

Relatedly, the current investigation was unable to examine the coercion process between parent and child as outlined by the coercion theory. In order to begin to ascertain truly whether self-control could provide a mediating mechanism within the coercion theory, the coercion process must also be examined. Additionally, research must set out to examine how low self-control plays into the coercion process. For example, Gottfredson and Hirschi (1990) suggested that children who develop low self-control also have parents with low self-control. It is possible that parents who initiate the coercion process with their child are those same parents with low self-control. In turn, the coercion process may be influential in the development of the child's low self-control. Therefore, it is imperative to examine the relation between self-control and the coercion process, as well as, the relation between parenting constructs theorized by coercion theory and self-control. By examining these potential relations, research may be able to ascertain more fully whether (a) self-control does mediate the relation between the coercion process and deviant behaviors, (b) more variance in deviance is explained with the inclusion of self-control and

the coercion process, and (c) parenting constructs outlined by Gottfredson and Hirschi play into the development or continuation of the coercion process.

Thus, because the current investigation was unable to examine all parenting constructs defined by both the coercion theory and the general theory of crime (i.e., the current investigation was unable to examine all eight parenting constructs thought to be of importance) nor the specific coercion process between parent-child, the current investigation was unable to truly examine whether these two theories could be integrated. While the potential does appear to be present, without a specific study that examines the coercion process, all eight parenting constructs, self-control, and deviance, a true test of integration or the importance of each of the hypothesized parenting constructs cannot be examined. As such, future examinations should attempt to include all of the key variables for a true test of integration and understanding of which parenting constructs are truly important.

Further, the current investigation did not assess parenting at each of the time points examined. Given that adding a measure of self-control at all three age groups explained more variance in deviance, it is possible that by adding in a measure of parenting at each time also would explain more variance in deviance. Having measures of parenting across the time points would make it possible to determine whether parenting in relation to self-control and deviance is stable over time. Relatedly, if a measure of deviance at each time point also was added into the model, it would be possible to determine more fully whether (a) self-control mediates the parent-deviance link concurrently and (b) the stability of deviance in relation to parenting and self-control. As such, future research should examine

the longitudinal relations between parenting, self-control, and deviance simultaneously with concurrent examinations of the relations between parenting, self-control, and deviance.

Additionally, the current analyses did not examine whether other factors were associated with the development of self-control, or whether there were additional factors that mediated the relation between parenting and deviance. For example, Moffitt (1997; 2003) found evidence linking neurological deficits with low self-control. Snyder et al. (2003) also defined self-regulation (i.e., self-control) as someone who has executive attentional control, motivational inhibition, and negative emotional reactivity. Research has further found evidence suggesting when individuals have a deficit in their social information processing, they are more likely to engage in deviant behaviors (Crick & Dodge, 1994; Dodge, Pettit, McClaskey, & Brown, 1986). In all cases, researchers have suggested that poor parenting skills are associated in some manner with the neurological deficits, poor self-regulation, and the development of biases in social information processes, and the outcomes produced by neurological deficits, low self-regulation, and biases in social information processing (Dodge, 1993; Dodge & Pettit, 2003; Moffitt, 1997; 2003; Pettit, 1997; Pettit, Polaha, & Mize, 2001). Dodge, Lochman, Harnish, Bates, and Pettit (1997) also suggested there may be an association between low self-control and deficits in social information processing. Therefore, it appears that the link between parenting and deviance may be better explained with the inclusion of measures of neurological deficits and social information processing, as well as, self-control. As such, it is imperative that future work examine multiple mediating mechanisms to understand

relations between parenting and deviance, and other potential factors that lead to a lack in self-control.

Whether factors such as sex, race, mother's education, and family structure may moderate the relations between parenting, self-control, and deviance was not examined. As demonstrated in the current analyses, these factors are important. However, research conducted thus far on the general theory of crime (Gottfredson & Hirschi, 1990) has suggested minimal differences in how sex and race moderate relations between parenting, self-control, and deviance (Vazsonyi & Crosswhite, 2004). Unfortunately, the same cannot be said with respect to coercion theory as there is limited research conducted on female samples and with individuals of other racial/ethnic groups (for exception see Fletcher et al., 1995). Therefore, it is important that future research further examine whether and how sex, race, and other demographic variables moderate associations between parenting, self-control, and deviance.

A final limitation is that the current investigation was only able to examine mother's reports of parenting. Additionally, within these reports of parenting, there were too few items to disentangle any specific effects that father or mother parenting behaviors may have had on the relations between parenting, self-control, and deviance. It is possible that parenting behaviors engaged in by mothers and fathers differ, and in turn, have different associations with the development of self-control and deviance. Whether the data is collected from mothers or fathers also may influence the relations between parenting, self-control, and deviance. Future research should examine elements of parenting that both mothers and fathers engage in as reported by both mothers and fathers.

In addition to the above directions for future research, one additional promising direction includes examining the etiology of deviance through the perspective of both the general theory of crime (Gottfredson & Hirschi, 1990) and the coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987). As the current investigation indicated, parenting constructs from both theories were important when considering an overall construct of effective parenting (i.e., discipline, attachment, communication, positive parenting, positive reinforcement), and in turn, the development of self-control and deviance. Evidence also suggested that parenting and self-control were additively influential in the development of deviance, thus indicating, that self-control should not be excluded from future examinations regarding deviance. Further, past research on the coercion theory has demonstrated robust findings regarding the coercion process also is important in the development of deviance. Finally, it is quite possible that self-control plays an integral part in the development of the coercion process. Therefore, future research would be remiss not to include elements of both the coercion theory and the general theory of crime to understand the true etiology of deviance.

By examining the etiology of deviance through the lens of both theories, the etiology of deviance could be better explored by examining (a) multiple parenting constructs in relation to deviance, yet remaining within the confines of theory, and (b) whether self-control mediates the relation between the coercion process and deviance or whether the coercion process and self-control are additively influential in the development of deviance. It also may be possible to determine whether a parent's lack of self-control is influential in

the coercion process, and in turn, a child's lack of self-control. For example, it is possible that parents who engage in the use of coercion (i.e., nagging whining, threatening) to gain a child's compliance may have a lower level of self-control themselves. Further, the coercion theory (Dishion & Patterson, 1997; Patterson, 1997; Patterson & Bank, 1989; Patterson & Yoerger, 1993; Snyder & Patterson, 1987) emphasizes bidirectional influences between parent and child, as well as, a developmental perspective to understanding deviance both of which could help to explain the associations between parenting, self-control, and deviance. For example, if a child has low self-control, s/he is more likely to engage in deviant behaviors. If a parent has low self-control, s/he may be more apt to engage in the coercion process, and in turn, the child may be more apt to respond in an aversive manner. Thus, when coercion exists between a parent and child, it may be that both the parent and child have low self-control. Finally, by utilizing the idea of developmental trajectories, one could examine whether adolescents with varying levels of self-control engaged in varying levels of deviance. The general theory of crime and coercion theory have the potential to guide work that accounts for more variance in deviance if researchers were to begin examining elements from both theories simultaneously.

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Table 1: Parenting Constructs and Definitions

Parenting Construct	Definition of Parenting Construct:
Attachment	An emotional attachment (i.e., love, concern, warmth, closeness, support) and parental involvement between the parent and the child. For the current study, an aspect of closeness/involvement was measured.
Monitoring/ Supervision	Consists of (in)direct knowledge regarding the child's whereabouts, peer group affiliations, and activities.
Discipline/ Punishment	Consistently dispensing age appropriate limits and consequences when rules are broken, and being neither too lenient nor too harsh. For the current study, a positive aspect of discipline was measured.
Communication	A conversation between parent and child that is positive and indicates a sense of openness and warmth; essential for effective, positive parenting, and can be observed through multiple parenting behaviors such as supervision, punishment of deviant behaviors, teaching effective problem solving skills, providing positive feedback, and forming an attachment (see e.g., Brody & Ge., 2002).
Recognition of Deviant Behaviors	Includes being able to understand and recognize that different types of deviant behaviors can occur at all ages.
Positive Reinforcement*	Consistent positive reinforcement for socially appropriate and competent behaviors is important in effective parenting.
Positive Parenting*	Allowing autonomy and having clear expectations of mature behaviors. For the current study, support for autonomy was measured.
Problem Solving*	When the parent teaches the child to have effective social problem solving skills.

Note. * indicates which parenting constructs are associated with only coercion theory. Bolded parenting constructs are examined in the current investigation.

Table 2: Descriptive Statistics on Demographics Age 8-9.

	n	Percentage
Race		
Hispanic	163	22.1
African American	224	30.4
Caucasian	349	47.4
Mother Education		
< 12 years	154	20.9
12 years	301	40.9
1 - 3 years of college	193	26.3
4 + years of college	86	11.7
Family Structure		
Biological parents, married	412	57.0
Biological parents, unmarried	24	3.3
Biological mother, only	235	32.5
Biological mother and step-father	52	7.2

Note: Of the 736 participants, only 734 participants indicated mother's education and only 723 participants indicated their family structure. For the purposes of data description, data was recoded to (a) < 12 years, (b) 12 years, (c) 1-3 years of college, and (d) 4+ years of college.

Table 3: Descriptive Statistics on Parenting Age 8-9, Self-Control, and Deviance Measures Before and After Transformation

		Before Transformations			After Transformations		
	N	M	SD	skew *(SE)*	M	SD	skew *(SE)*
CI 1	719	5.13	1.44	-1.60 *(.09)*	-.18	.26	-1.08 *(.09)*
CI 2	702	4.29	1.45	-.67 *(.09)*	-1.59	.44	-.20 *(.09)*
CI 3	716	4.13	1.72	-.77 *(.09)*	-.38	.27	-.02 *(.09)*
CI 4	715	3.78	.46	-2.03 *(.09)*	-.06	.13	-1.72 *(.09)*
CI 5	679	3.26	.99	-1.14 *(.09)*	-.18	.22	-.69 *(.09)*
Com 1	678	.83	.38	-1.74 *(.09)*	--	--	--
Com 2	678	.91	.29	-2.84 *(.09)*	--	--	--
Com 3	678	.87	.34	-2.19 *(.09)*	--	--	--
Com 4	730	.94	.23	-3.81 *(.09)*	--	--	--
Dis 1	709	4.42	1.03	-1.96 *(.09)*	-.14	.21	-1.30 *(.09)*
Dis 2	708	4.73	.69	-3.42 *(.09)*	-.07	.15	-2.23 *(.09)*
Dis 3	710	4.87	.46	-5.07 *(.09)*	-.03	.11	-3.44 *(.09)*
Dis 4	706	4.58	.81	-2.50 *(.09)*	-.11	.18	-1.54 *(.09)*
Dis 5	715	4.78	.57	-3.72 *(.09)*	-.06	.14	-2.31 *(.09)*
Dis 6	703	3.80	1.24	-.86	--	--	--

Note. Transformations did not change the skew of communication coefficients. SC 1 = self-control age 8-9 mother reported, SC 2 = self-control age 8-9 mother reported, SC 3 = self-control age 8-9 child reported. Additional abbreviations noted in the methods section. Table continues.

Table 3 Continued: Descriptive Statistics on Parenting, Self-Control, and Deviance Measures Before and After Transformation

		Before Transformations			After Transformations		
	N	M	SD	skew *(SE)*	M	SD	skew *(SE)*
SFA	723	4.09	.98	-.95 *(.09)*	--	--	--
PR	717	29.40	36.95	3.70 *(.09)*	1.30	.40	-.13 *(.09)*
SC 1	727	2.47	.41	-.87 *(.09)*	--	--	--
SC 2	725	2.50	.40	-.88 *(.09)*	--	--	--
SC 3	418	2.48	.42	-.33 *(.12)*	--	--	--
LSO 1	733	2.40	1.28	.12 *(.09)*	--	--	--
LSO 2	733	2.04	1.19	.63 *(.09)*	--	--	--
LSO 3	735	1.52	1.02	1.73 *(.09)*	-.84	.29	1.31 *(.09)*
LSO 4	734	1.45	.92	1.93 *(.09)*	-.85	.27	1.38 *(.09)*
AU 1	405	2.87	1.93	.99 *(.12)*	.36	.29	.16 *(.12)*
AU 2	735	1.54	1.06	1.67 *(.09)*	-.84	.29	1.33 *(.09)*
VI 1	735	1.23	.67	3.12 *(.09)*	-.92	.21	2.33 *(.09)*
VI 2	734	1.11	.47	4.91 *(.09)*	-.96	.15	3.98 *(.09)*

Note. Transformations did not change the skew of communication coefficients. SC 1 = self-control age 8-9 mother reported, SC 2 = self-control age 8-9 mother reported, SC 3 = self-control age 8-9 child reported. Additional abbreviations noted in the methods section.

Table 4: Factor Loadings for Each CFA Self-Control Model; Mother and Child Reported

Item	Age 8-9 (mom)	Age 12-13 (mom)	Age 12-13 (child)	Age 16-17 (child)
1	.61	.62	.36	.27
2	.50	.49	.37	.40
3	.35	.41	.15	.21
4	.45	.48	.69	.56
5	.63	.64	.44	.39
6	.60	.59	.62	.56
7	.66	.66	--	--
8	.62	.61	--	--
9	.53	.48	--	--

Note. Recall that mother reported self-control was measured by nine items, whereas, child reported self-control was measured by six items. Refer to the methods section for specific item details. All loadings were significantly associated $p < .05$.

Table 5: Standardized Regression Weights of Parenting Age 8-9 onto Effective Parenting, Self-Control, and Deviance Measures

	Dis	Com	CI	SFA	PR
EP (latent construct)	.35	.29	.35	.31	.55
EP associated with Self-Control	.37	.29	.38	.31	.50
EP associated with LSO	.35	.28	.38	.30	.54
EP associated with Alcohol Use	.36	.25	.34	.32	.54
EP associated with Violence	.35	.29	.35	.30	.56

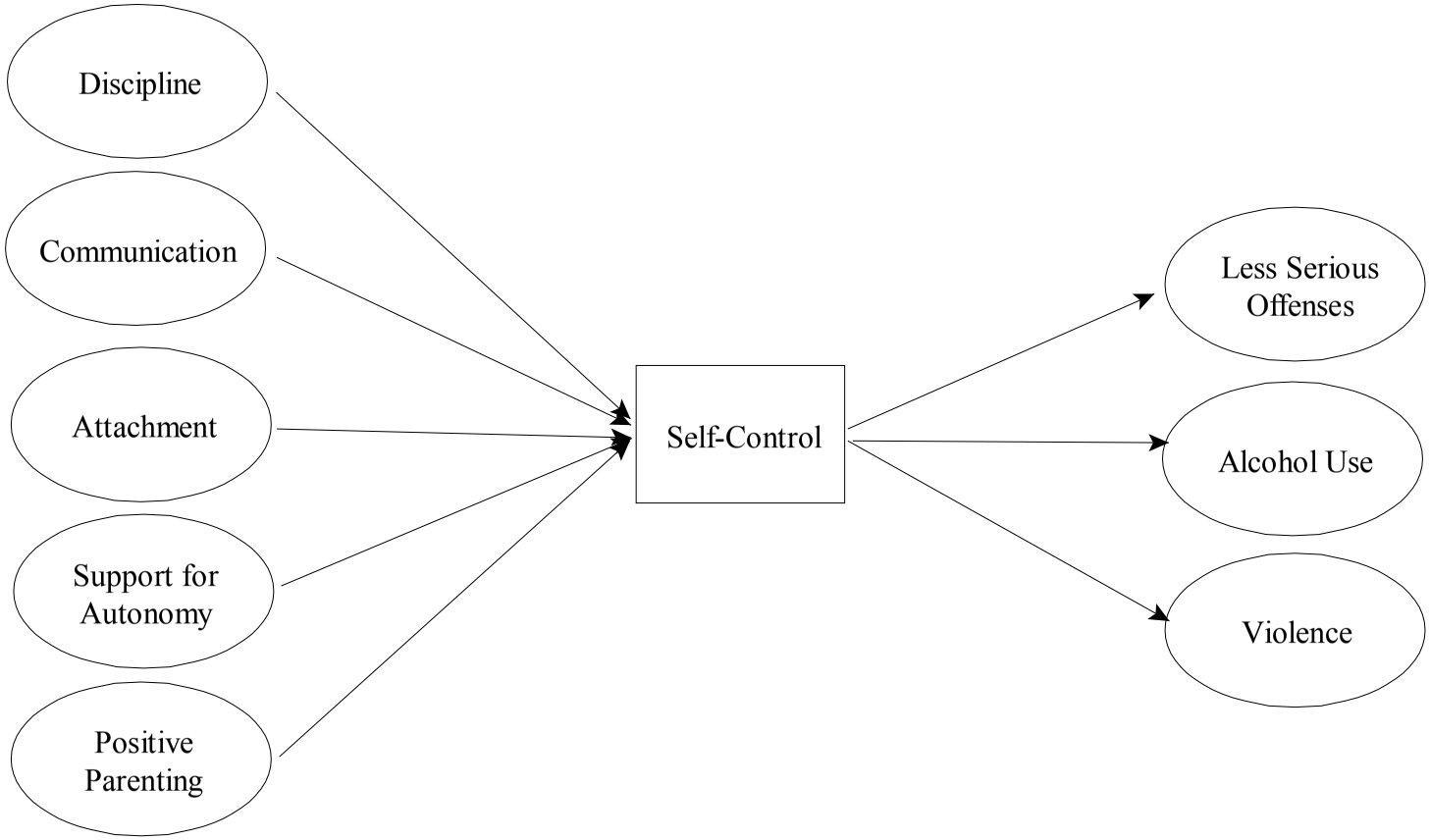
Note: EP = effective parenting. LSO = less serious offenses; Dis = discipline; Com = communication, CI = closeness/involvement, SFA = support for autonomy, PR = positive reinforcement. Only significant coefficients were reported.

Table 6: Standardized Regression Weights of Parenting Age 8-9 onto Effective Parenting, Self-Control, and Deviance Measures: Residualized Variables

	Dis	Com	CI	SFA	PR
EP (latent construct)	.44	.25	.30	32	.50
EP associated with Self-Control	.45	.26	.31	.33	.47
EP associated with LSO	.42	.25	.31	.32	.50
EP associated with Alcohol Use	.45	.23	.30	.33	.49
EP associated with Violence	.44	.27	.31	.32	.50

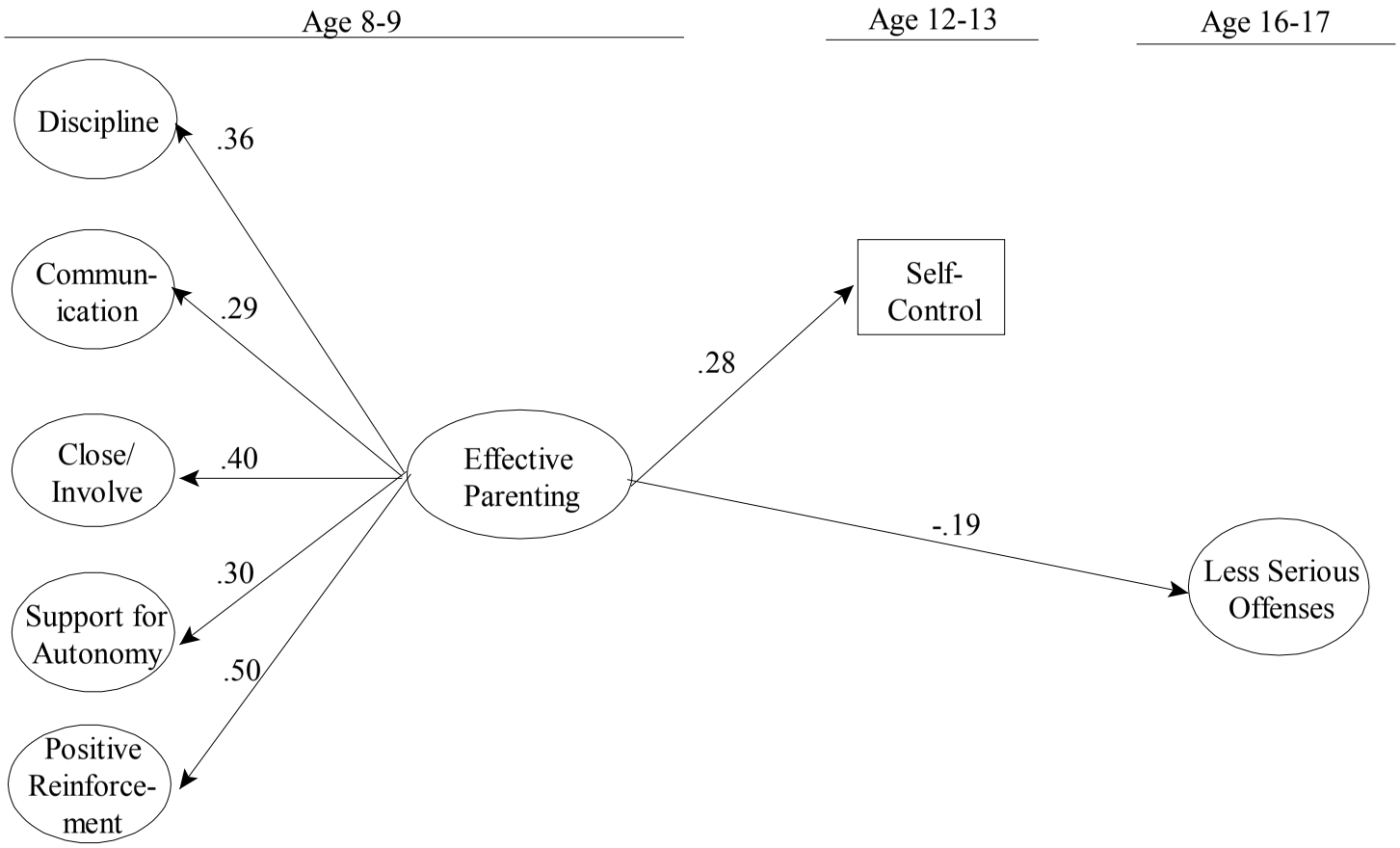
Note: EP = effective parenting. LSO = less serious offenses; Dis = discipline; Com = communication, CI = closeness/involvement, SFA = support for autonomy, PR = positive reinforcement. Only significant coefficients were reported.

Figure 1: Conceptual Model



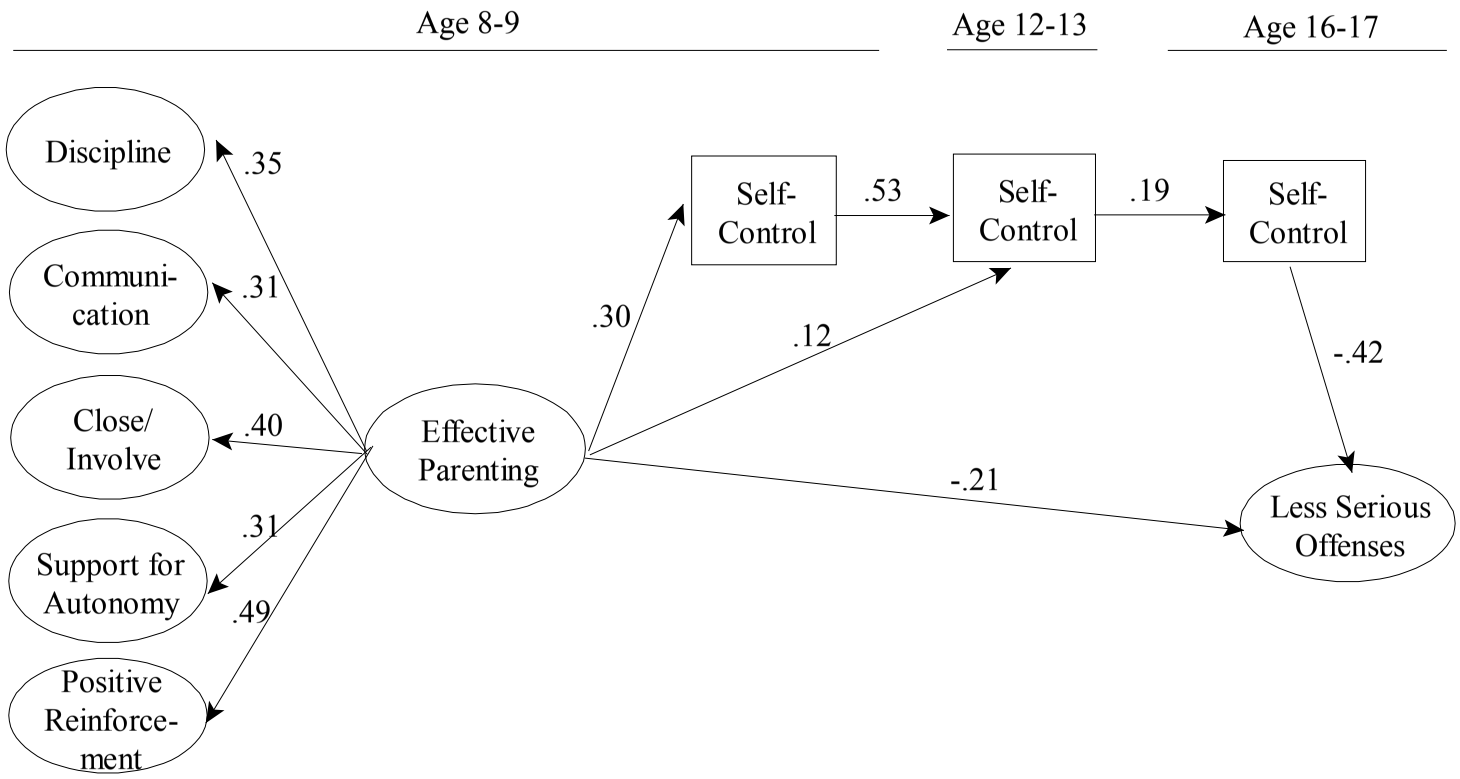
Note. The more elaborate model does examine the direct relations between each of the parenting constructs with each of the deviance measures.

Figure 2: Test for Mediation: Effective Parenting, Self-Control Age 12-13, and Less Serious Offenses



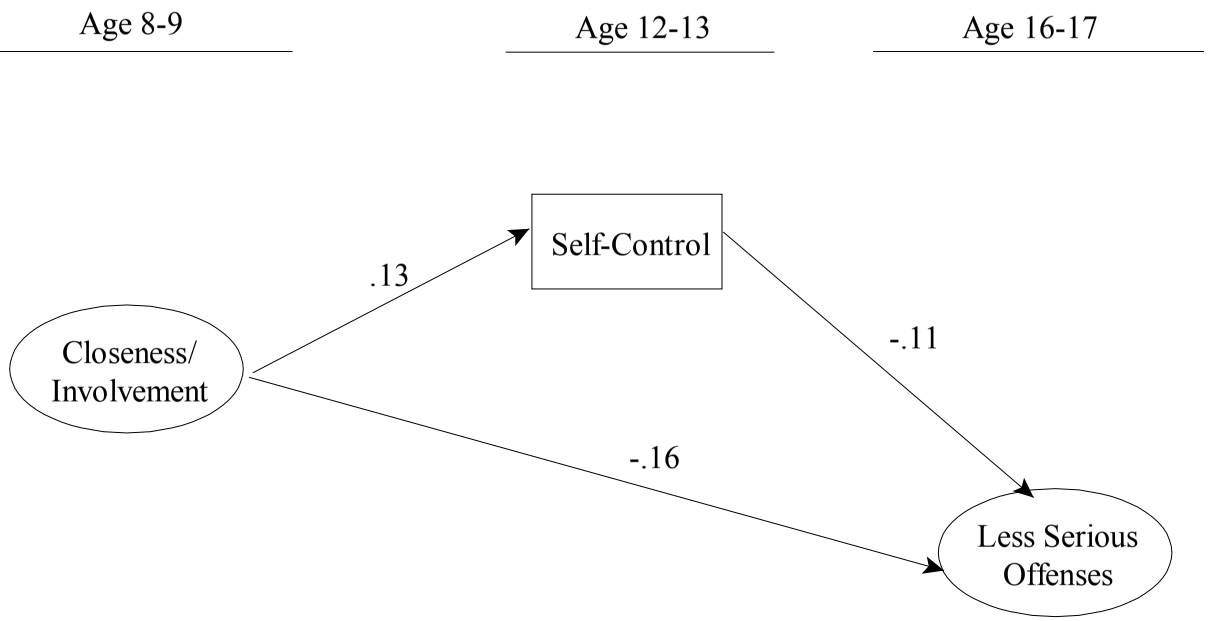
Note. All other possible paths were non-significant. Self-control was measured by mother reports at age 8-9.

Figure 3: Test for Mediation: Effective Parenting, Self-Control Ages 8-9, 12-13 and 16-17, and Less Serious Offenses



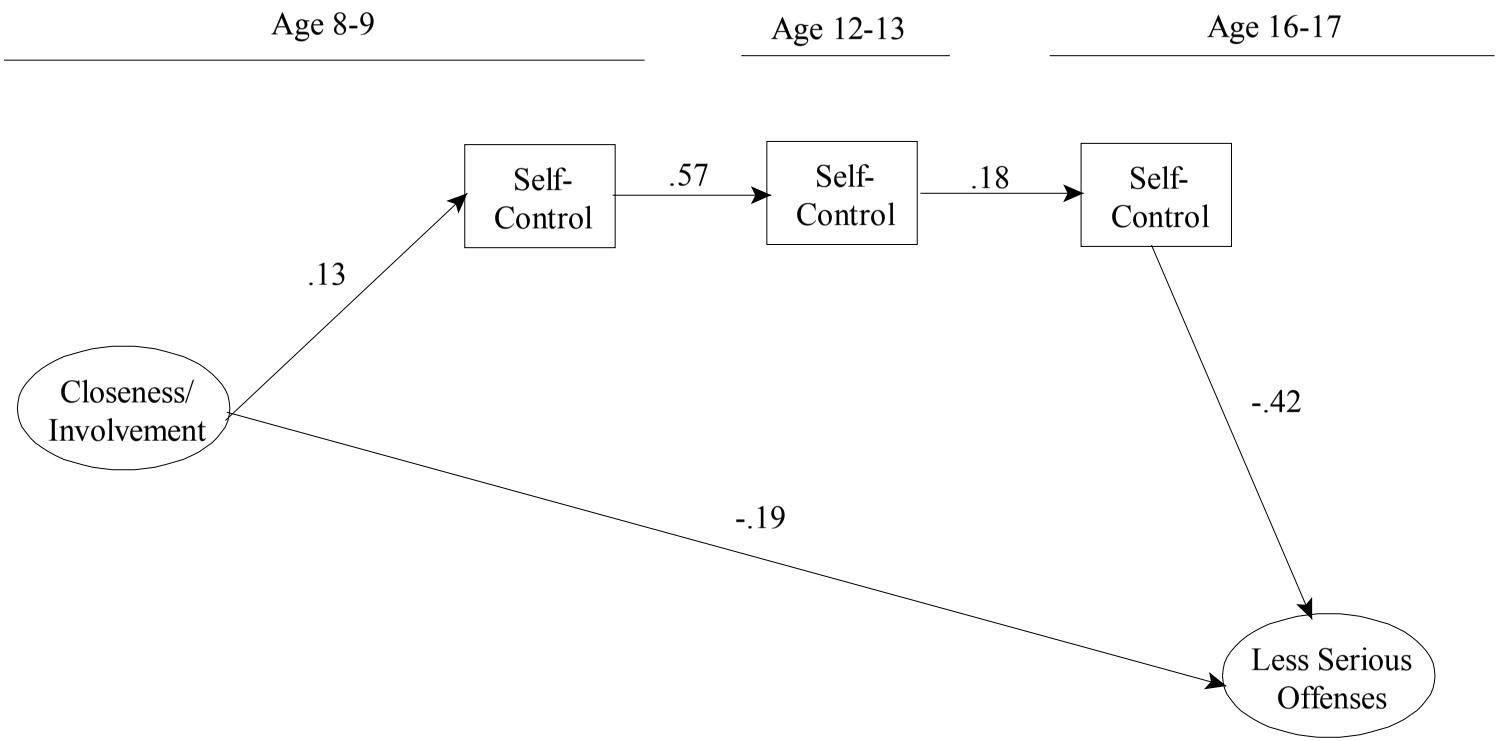
Note. All other possible paths were non-significant. Self-control was measured by mother reports at ages 8-9 and 12-13, and by child reports at age 16-17.

Figure 4: Test for Mediation: Closeness/Involvement, Self-Control Age 12-13, and Less Serious Offenses



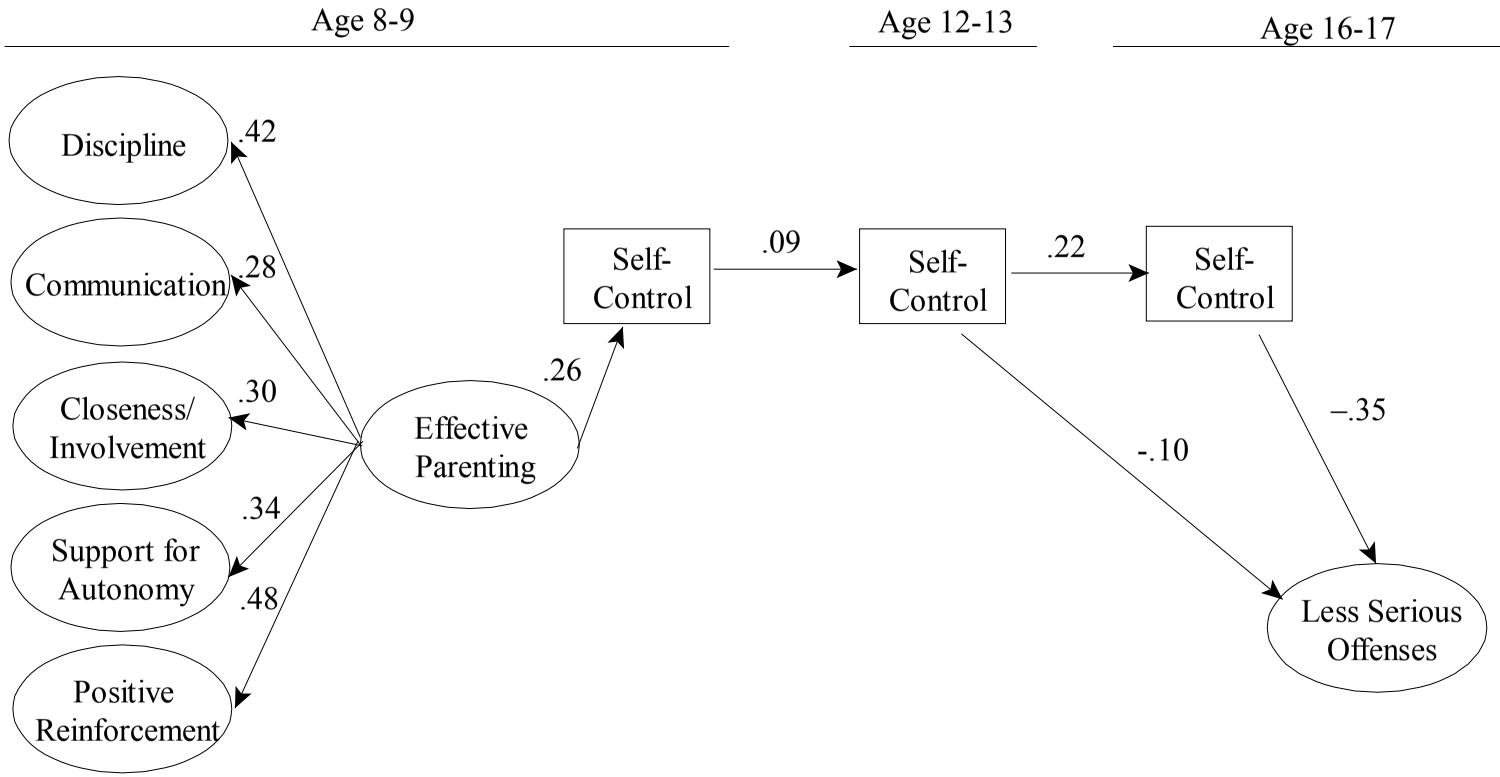
Note. Self-control was measured by mother reports at age 8-9.

Figure 5: Test for Mediation: Closeness/Involvement, Self-Control Ages 8-9, 12-13, and 16-17, and Less Serious Offenses



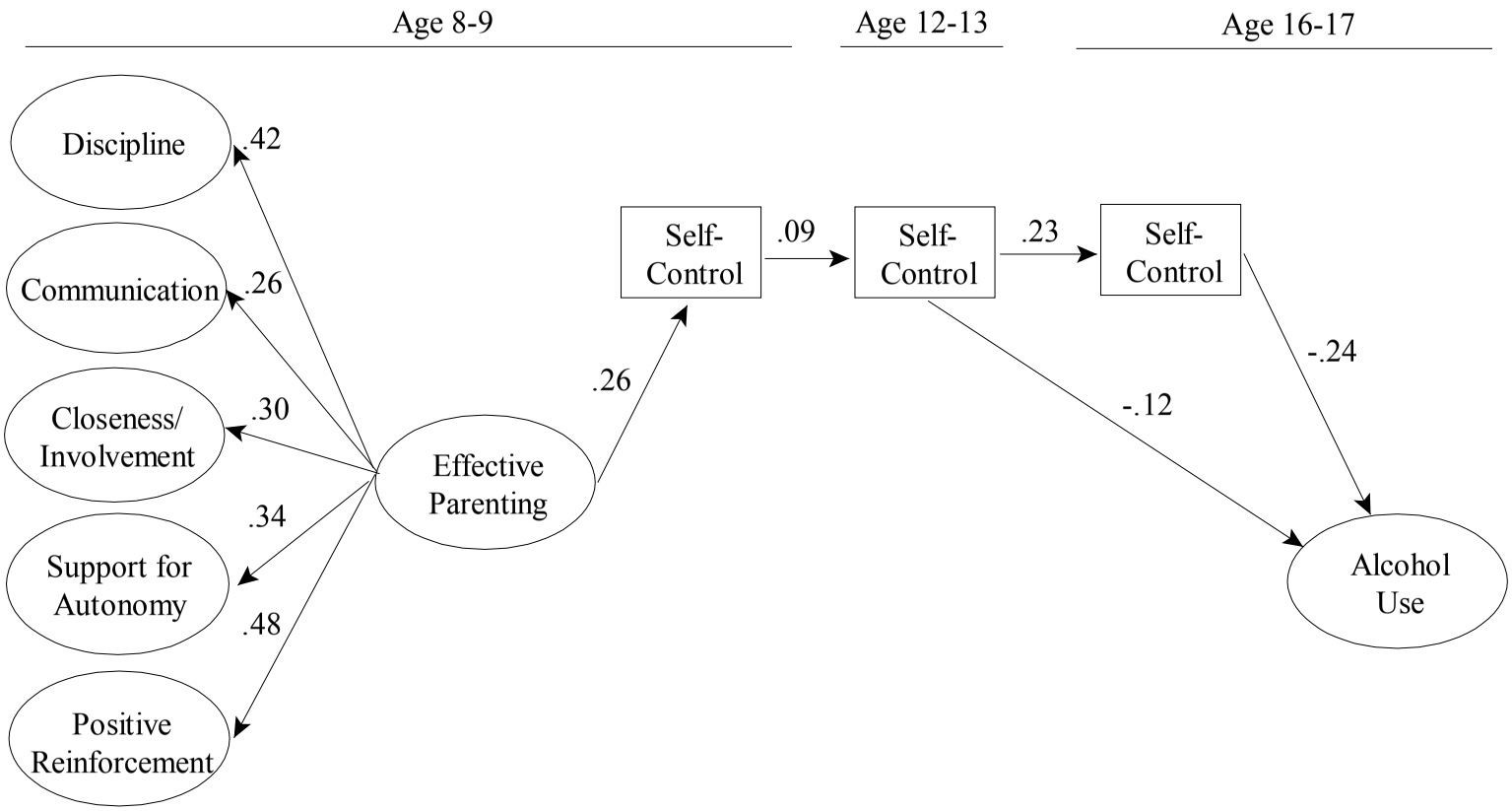
Note. All other possible paths were non-significant. Self-control was measured by mother reports at ages 8-9 and 12-13, and by child reports at age 16-17.

Figure 6: Test for Mediation: Effective Parenting, Self-Control Ages 8-9, 12-13, and 16-17, and Less Serious Offenses (Residualized Effects)



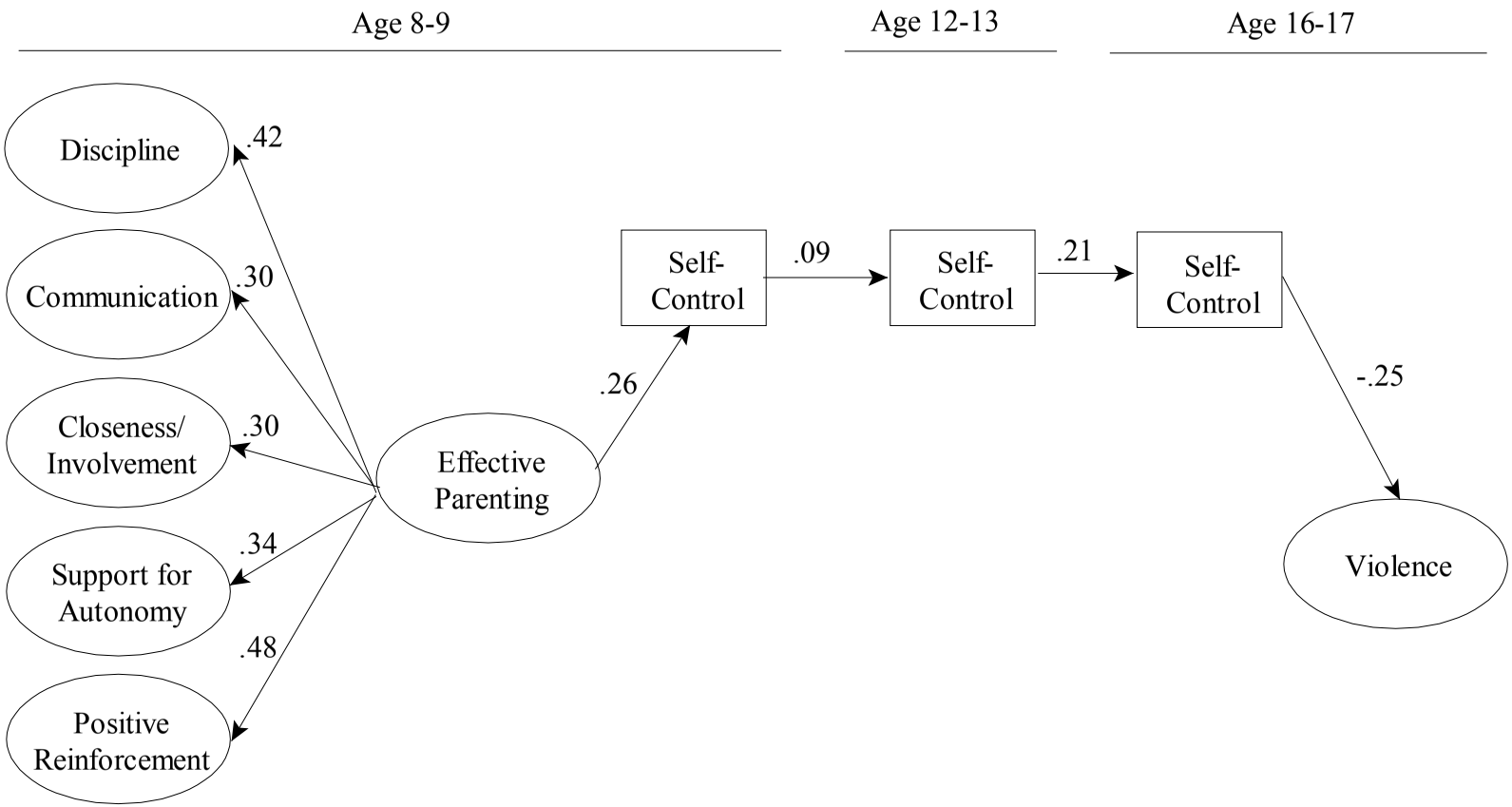
Note. All other possible paths were non-significant. Self-control was measured by mother reports at age 8-9, and by child reports at ages 12-13 and 16-17.

Figure 7: Test for Mediation: Effective Parenting, Self-Control Ages 8-9, 12-13, and 16-17, and Alcohol Use (Residualized Effects)



Note. All other possible paths were non-significant. Self-control was measured by mother reports at age 8-9, and by child reports at ages 12-13 and 16-17.

Figure 8: Test for Mediation: Effective Parenting, Self-Control Ages 8-9, 12-13, and 16-17, and Violence (Residualized Effects)



Note. All other possible paths were non-significant. Self-control was measured by mother reports at age 8-9, and by child reports at ages 12-13 and 16-17.

IV. APPENDICES

Appendix A: Instrument Collection by Respondent, Age, and Data Collection Years

	Ages Instruments were Collected	Years Data Collected	Types of Instruments Collected
Mother Supplement	Birth through Age 14	1986-2002	Background characteristics The HOME Behavior Problem Index
Child Supplement	Ages 4-14	1988-2002	Interviewer Administered Assessments
Child Self-Administered Supplement	Ages 10 and up Ages 10 through 14	1988-1993 1994-2002	Parent-child relations Attitudes
Young Adults Survey	Ages 15 and up	1994-2002	Attitudes Deviant behaviors Risk taking behaviors

Appendix B*:* Description of Items Used in the Self-Control Constructs

Mother Reports of Child Self-Control at Ages 8-9 and 12-13

1. Child argues too much
2. Child has difficulty concentrating
3. Child is easily confused, seems in a fog
4. Child does not seem to feel sorry after misbehaving
5. Child is impulsive or acts without thinking
6. Child is restless, overly active, cannot sit still
7. Child is stubborn, sullen, or irritable
8. Child has a strong temper and loses it easily
9. Child demands a lot of attention

Child Self-Reports of Self-Control at Ages 12-13 and 16-17

1. I often get in a jam because I do things without thinking
2. I think that planning takes fun out of things
3. I have to use a lot of self-control to keep out of trouble
4. I enjoy taking risks
5. I enjoy new and exciting experiences, even if they are a little frightening or unusual
6. Life with no danger in it would be too dull for me

Appendix C: Types of Transformations Used for Specific Items

Variable	Transformation Type	Transformation Formula
CI 1 age 8-9	Reflect and Logarithm	(lg10(7-C1408700))*-1
CI 2 age 8-9	Reflect and Square Root	(sqrt(7-C1408800))*-1
CI 3 age 8-9	Reflect and Logarithm	(lg10(7-C1408900))*-1
CI 4 age 8-9	Reflect and Logarithm	(lg10(5-C1409100))*-1
CI 5 age 8-9	Reflect and Logarithm	(lg10(5-C1409200))*-1
Dis 1 age 8-9	Reflect and Logarithm	(lg10(6-C1410400))*-1
Dis 2 age 8-9	Reflect and Logarithm	(lg10(6-C1410600))*-1
Dis 3 age 8-9	Reflect and Logarithm	(lg10(6-C1410800))*-1
Dis 4 age 8-9	Reflect and Logarithm	(lg10(6-C1411000))*-1
Dis 5 age 8-9	Reflect and Logarithm	(lg10(6-C1411100))*-1
PR age 8-9	Logarithm	lg10(pr94 +1)
LSO 1	Inverse	(1/Y1416500)*-1
LSO 2	Inverse	(1/Y1416600)*-1
AU 1	Logarithm	lg10(Y1404600)
AU 2	Inverse	(1/Y1416300)*-1
VI 1	Inverse	(1/Y1415900)*-1
VI 2	Inverse	(1/Y1416200)*-1

Note. Not all items of each construct are listed. Those that did not need transformation are excluded from the present table. CI = closeness/involvement, Dis = discipline; PR = positive reinforcement, LSO = less serious offenses, AU = alcohol use, VI = violence. Only significant coefficients were reported.

Appendix D1: Bivariate Correlations Between Demographic with Parenting and Self-Control Variables Age 8-9.

	Sex	Race_1	Race_2	Educ	Fam_1	Fam_2	Fam_3
CI 1	-.05	.01	-.15***	.02	.03	.04	-.65***
CI 2	-.05	.04	-.17***	-.02	.01	.01	-.44***
CI 3	-.03	.09*	-.22***	-.05	.03	.10**	-.55***
CI 4	*.07*	-.01	.03	.02	.02	.02	.04
CI 5	-.01	-.02	-.19***	.05	*.07*	-.17***	-.49***
Com 1	-.03	.03	.02	.10*	-.03	.02	.03
Com 2	.03	-.03	-.09*	.06	-.09*	.05	-.06
Com 3	-.00	-.09*	-.04	.04	-.08*	.01	-.02
Com 4	.03	.02	-.16***	-.13***	-.09*	.02	-.05
Dis 1	-.01	-.01	.06	.04	-.06	.02	.02
Dis 2	-.02	-.07*	*.07*	.05	.00	.03	-.04
Dis 3	-.03	-.02	-.02	.03	-.11**	.04	-.02
Dis 4	.04	.01	.12***	-.05	.04	.03	-.03
Dis 5	.01	-.03	.05	.03	-.12***	.03	-.08*
Dis 6	-.01	.04	.17***	.03	-*.07*	.09*	.03
SFA	.05	.00	-.03	.01	-.05	.06	-.06
PR	-.03	-*.07*	-.28***	.06	-.04	.01	-.18***
SC	.15***	-.02	-.09*	*.07*	-.08*	-.04	-.12***

Note. Race_1 = Hispanic, Race_2 = African American (Caucasian omitted); Fam_1 = mother father live together unmarried, Fam_2 = mom and step-dad, Fam_3 = single mother (mother father married omitted.. Additional abbreviations noted in the methods section.

Appendix D2: Bivariate Correlations Between Demographic and Self-Control Variables Age 12-13

	Sex	Race_1	Race_2	Educ	Fam_1	Fam_2	Fam_3
SC (mom)	.10**	-.05	-.06	.08*	-.09*	.01	-.13***
SC (child)	.23***	-.03	-.03	-.02	-.01	-.07	-.06

Note. Race_1 = Hispanic, Race_2 = African American (Caucasian omitted); Fam_1 = mother father live together unmarried, Fam_2 = mom and step-dad, Fam_3 = single mother (mother father married omitted); SC = self-control.

Appendix D3: Bivariate Correlations Between Demographic with Self-Control and Deviance Variables Age 16-17

	Sex	Race_1	Race_2	Educ	Fam_1	Fam_2	Fam_3
SC	.23***	-.13**	.12*	.08	-.07	-.04	.00
LSO 1	-.19***	.08*	-.11**	.06	.02	.04	.05
LSO 2	-.13***	.08*	.02	-.01	.06	-.03	.06
LSO 3	-.09*	.19***	-.03	-.06	.05	.03	.08*
LSO 4	-.14***	*.06*	.06	.02	.10**	-.01	*.07*
AU 1	.05	.11*	-.15**	.04	.04	-.03	.04
AU 2	-.05	.10**	-.17***	-.03	.03	.02	.08*
VI 1	-.26***	.02	.05	*.07*	*.07*	.02	.08*
VI 2	-.13***	-.00	-.01	-.01	-.04	.05	-.01

Note. Race_1 = Hispanic, Race_2 = African American (Caucasian omitted). Fam_1 = don't live at home, mother unmarried, Fam_2 = don't live at home, mother married, Fam_3 = joint custody, mother unmarried, Fam_4 joint custody, mother married, Fam_5 = live at father's house, mother unmarried, Fam_6 live at father's house, mother married, Fam_7 = live at mother's house, mother unmarried, Fam_8 = live at mother's house, mother married, Fam_9 = living with mother and father, unmarried (mother father married omitted); SC = self-control; LSO = less serious offenses; AU = alcohol use; VI = violence. See methods section for specific items.

Appendix D3 Continues

Appendix D3 Continued: Bivariate Correlations Between Demographic with Self-Control and Deviance Variables Age 16-17

	Fam_4	Fam_5	Fam_6	Fam_7	Fam_8	Fam_9
SC	-.08	-.05	-.01	.02	.04	-.02
LSO 1	.01	.09*	.03	.02	-.02	.03
LSO 2	.09*	-.01	-.06	.02	.04	.01
LSO 3	.00	*.07*	.00	*.07*	.03	*.06*
LSO 4	.01	-.01	.02	*.07*	.01	.03
AU 1	.10*	.06	-.04	-.10*	.02	-.00
AU 2	.06	.10*	.02	-.03	.04	.04
VI 1	.10**	.01	.03	.10*	-.04	-.05
VI 2	.08*	-.10	-.02	-.02	-.04	*.07*

Note. Race_1 = Hispanic, Race_2 = African American (Caucasian omitted). Fam_1 = don't live at home, mother unmarried, Fam_2 = don't live at home, mother married, Fam_3 = joint custody, mother unmarried, Fam_4 joint custody, mother married, Fam_5 = live at father's house, mother unmarried, Fam_6 live at father's house, mother married, Fam_7 = live at mother's house, mother unmarried, Fam_8 = live at mother's house, mother married, Fam_9 = living with mother and father, unmarried (mother father married omitted); SC = self-control; LSO = less serious offenses; AU = alcohol use; VI = violence. See methods section for specific items.

Appendix E1: Bivariate Correlations on Parenting Age 8-9, Self-Control, and Deviance Measures

	CI 1	CI 2	CI 3	CI 4	CI 5	Com 1	Com 2	Com 3	Com 4
CI 1	1.0								
CI 2	.67***	1.0							
CI 3	.66***	.59***	1.0						
CI 4	-.03	*.07*	.01	1.0					
CI 5	.45***	.40***	.35***	.22***	1.0				
Com 1	-.02	-.02	-.01	.08*	-.03	1.0			
Com 2	.08*	.06	.04	*.07*	.02	.40***	1.0		
Com 3	.03	.03	.00	.12**	.01	.35***	.51***	1.0	
Com 4	.09*	*.07*	*.07*	.09*	.04	.27***	.24***	.29***	1.0

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. SC 1 = self-control age 8-9 reported by mother, SC 2 = self-control age 8-9 reported by mother, SC 3 = self-control age 8-9 reported by child, LSO = less serious offences, AU = alcohol use, VI = violence.

Appendix E2: Bivariate Correlations on Parenting Age 8-9, Self-Control, and Deviance Measures

	CI 1	CI 2	CI 3	CI 4	CI 5	Com 1	Com 2	Com 3	Com 4
Dis 1	.08*	.10**	.08*	.13***	.03	.00	.08*	-.02	.01
Dis 2	*.07*	*.07*	.00	.13***	.09*	.01	.02	-.02	-.02
Dis 3	.04	.09*	.06	.10**	.04	.14***	.16***	.17***	.11**
Dis 4	-.04	-.01	.01	*.07*	.03	-.01	.03	.01	-.05
Dis 5	.12**	.14***	.14***	.08*	*.07*	.00	.08*	*.07*	.05
Dis 6	-.03	.02	.00	-.01	-.05	-.09*	-.03	-.03	-.05
SFA	.08*	.11**	.08*	.11**	.03	-.01	.08*	-.02	.05
PR	.18***	.17***	.10**	.20***	.12**	.05	.15***	.12***	.14***

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. SC1 = self-control age 8-9 reported by mother, SC2 = self-control age 8-9 reported by mother, SC3 = self-control age 8-9 reported by child, LSO = less serious offences, AU = alcohol use, VI = violence.

Appendix E3: Bivariate Correlations on Parenting Age 8-9, Self-Control, and Deviance Measures

	CI 1	CI 2	CI 3	CI 4	CI 5	Com 1	Com 2	Com 3	Com 4
SC 1	.12**	.12***	.08*	.18***	.10**	.05	.07	.13***	.14***
SC 2	.10**	.12***	.10**	.13***	.14***	.11	.06	.13***	.10**
SC 3	-.04	.00	-.05	.06	.04	.03	-.06	-.02	-.06
LSO 1	-.04	-.02	-.06	-.01	-.01	-.02	.00	.03	-.04
LSO 2	-.04	-.02	-.02	-.01	-.00	.02	.05	-.04	.02
LSO 3	-.16***	-.10**	-.05	-.03	-.10**	.02	-.01	.01	-.02
LSO 4	-.16***	-.15***	-.07*	-.03	-.08*	-.00	-.05	-.06	-.06
AL 1	.01	-.02	.01	.05	.05	.03	-.00	-.02	.08
AL 2	-.03	-.02	.01	.03	-.04	.04	.01	.00	.08*
VI 1	-.05	-.04	-.03	.01	-.02	.01	.00	.03	-.09*
VI 2	-.06	-.02	-.05	*-.07*	-.12**	-.02	-.03	-.04	-.06

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. SC1 = self-control age 8-9 reported by mother, SC2 = self-control age 8-9 reported by mother, SC3 = self-control age 8-9 reported by child, LSO = less serious offences, AU = alcohol use, VI = violence.

Appendix E4: Bivariate Correlations on Parenting Age 8-9, Self-Control, and Deviance Measures

	Dis 1	Dis 2	Dis 3	Dis 4	Dis 5	Dis 6	SFA	PR
Dis 1	1.0							
Dis 2	.26***	1.0						
Dis 3	.26***	.32***	1.0					
Dis 4	.12**	.32***	.21***	1.0				
Dis 5	.33***	.34***	.45***	.32***	1.0			
Dis 6	.17***	.21***	.14***	.33***	.26***	1.0		
SFA	.08*	.10*	*.06*	.01	.09*	.05	1.0	
PR	.14***	.11**	.13***	-.05	.10**	-.04	.17***	1.0

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. SC1 = self-control age 8-9 reported by mother, SC2 = self-control age 8-9 reported by mother, SC3 = self-control age 8-9 reported by child, LSO = less serious offences, AU = alcohol use, VI = violence.

Appendix E5: Bivariate Correlations on Parenting Age 8-9, Self-Control, and Deviance Measures

	Dis 1	Dis 2	Dis 3	Dis 4	Dis 5	Dis 6	SFA	PR
SC 1	.05	.04	.03	-.04	.08*	-.06	.13***	.13***
SC 2	.04	.12	.06	.01	.08*	-.01	.09*	.12**
SC 3	.04	.03	-.04	-.01	-.01	.02	-.03	.00
LSO 1	-.03	.02	.05	-.01	.02	-.04	-.01	-.00
LSO 2	-.01	-.00	-.03	*.07*	-.01	.05	-.01	-.02
LSO 3	-.04	-.05	-.03	.09*	*-.07*	.03	.03	-.11**
LSO 4	-.00	-.01	-.03	.03	.03	.03	-.05	-.08*
AL 1	-.02	.04	.03	.05	-.03	-.09	.08	-.01
AL 2	.05	.03	*.07*	.05	.00	-.04	.11**	.05
VI 1	.08*	.01	.10**	.03	.02	.03	.04	-.05
VI 2	.02	*-.07*	.04	-.05	.02	-.05	-.05	-.01

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. SC1 = self-control age 8-9 reported by mother, SC2 = self-control age 8-9 reported by mother, SC3 = self-control age 8-9 reported by child, LSO = less serious offences, AU = alcohol use, VI = violence.

Appendix E6: Bivariate Correlations on Parenting Age 8-9, Self-Control, and Deviance Measures

	SC 1	SC 2	SC 3	LSO 1	LSO 2	LSO 3	LSO 4	AU 1	AU 2	VI 1	VI 2
SC 1	1.0										
SC 2	.57***	1.0									
SC 3	.13**	.17***	1.0								
LSO 1	-.02	*-.07*	-.22***	1.0							
LSO 2	.00	-.10**	-.31***	.31***	1.0						
LSO 3	-.05	-.11**	-.26***	.32***	.22***	1.0					
LSO 4	-.07	-.06	-.19***	.42***	.27***	.41***	1.0				
AU 1	.01	.03	*-.12*	.19***	.21***	.23***	.16***	1.0			
AU 2	-.02	-.06	-.24***	.33***	.23***	.37***	.28***	.89***	1.0		
VI 1	-.14***	-.12**	-.16***	.23***	.19***	.15***	.24***	.19***	.18***	1.0	
VI 2	-.05	*-.06*	-.16***	.13***	.17***	.18***	.19***	.11*	.13***	17***	1.0

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. SC1 = self-control age 8-9 reported by mother, SC2 = self-control age 8-9 reported by mother, SC3 = self-control age 8-9 reported by child, LSO = less serious offences, AU = alcohol use, VI = violence.

Appendix F: Factor Loadings for Each CFA Self-Control Model; Mother and Child Reported (After Residualization).

Item	Age 8-9 (mom)	Age 12-13 (mom)	Age 12-13 (child)	Age 16-17 (child)
1	.63	.64	.35	.21
2	.48	.47	.36	.29
3	.33	.40	.17	.18
4	.43	.48	.69	*ns*
5	.62	.64	.45	*ns*
6	.58	.56	.60	*ns*
7	.66	.67	--	--
8	.59	.59	--	--
9	.54	.48	--	--

Note. Recall that mother reported self-control was measured by nine items, whereas, child reported self-control was measured by six items. All loadings were significantly associated $p < .05$. Refer to methods section for specific items.

Appendix G: Pre- and Post-Residualization Comparisons on Self-Control Across Age and Respondents

	Before	After
Same Respondents		
Mom SC Ages 8-9 to 12-13	.74	.74
Child SC Ages 12-13 to 16-17	.45	*ns*
Across Respondents		
Mom SC Age 8-9 to Child SC Age 12-13	.18	.14
Mom SC Age 12-13 to Child SC Age 16-17	.24	.20
Mom SC Age 8-9 to Child SC Age 16-17	*ns*	*ns*

Note. SC = self-control; Mom or Child indicates who reported on the child's self-control; age indicates the age in which self-control was assessed; *ns* = non-significant. For a comparison of pre- and post-residualization findings across parenting, self-control, and deviance relations, see figures 2-8.

Appendix H: Pre- and Post-Residualization Comparisons on Longitudinal Relations

	SC	LSO	AU	VI
CI	.10/*ns*	-.12/*ns*	*ns/ns*	*ns/ns*
SFA	*ns/ns*	*ns/ns*	.16/.14	*ns/ns*
EP	.28/.22	-.21/*ns*	*ns/ns*	*ns/ns*
SC	---	-.17/*ns*	*ns/ns*	-.24/*ns*

Note. SC = self-control age 12-13 (mother reported), LSO = less serious offenses, AU = alcohol use, VI = violence, CI = closeness/involvement, SFA = support for autonomy, EP = effective parenting, ns = non-significant. Parenting age 8-9 was reported by mothers and deviance age 16-17 was reported by child. Pre-residualization results / post-residualization results. Paths not reported were non-significant. For a comparison of mediational results pre- and post-residualization, see Figures 2-8.

Appendix I: Additional Analyses Examining Parenting Variables Age 12-13.

Descriptive statistics were also conducted on the parenting constructs at age 12-13; before and after transformation results.

		Before Transformations			After Transformations		
	N	M	SD	skew *(SE)*	M	SD	skew *(SE)*
CI 1	694	5.00	1.46	-1.30 *(.09)*	-.21	.27	-.79 *(.09)*
CI 2	681	3.97	1.52	-.42 *(.09)*	-1.68	.45	.03 *(.09)*
CI 3	693	3.80	1.77	-.50 *(.09)*	-1.72	.50	-.20 *(.09)*
CI 4	704	3.62	.63	-1.62 *(.09)*	-.10	.16	-1.15 *(.09)*
CI 5	644	3.07	1.04	-.76 *(.09)*	-.23	.23	-.30 *(.09)*
Com 1	649	.82	.38	-1.71 *(.10)*	--	--	--
Com 2	649	.89	.31	-2.56 *(.10)*	--	--	--
Com 3	649	.88	.32	-2.39 *(.10)*	--	--	--
Com 4	722	.93	.25	-3.49 *(.09)*	--	--	--
Dis 1	697	4.28	1.13	-1.64 *(.09)*	-.16	.23	-1.02 *(.09)*
Dis 2	702	4.73	.57	-2.67 *(.09)*	-.07	.15	-1.75 *(.09)*
Dis 3	700	4.87	.45	-4.93 *(.09)*	-.04	.11	-3.25 *(.09)*
Dis 4	696	4.71	.69	-3.25 *(.09)*	-.08	.16	-2.02 *(.09)*
Dis 5	704	4.65	.70	-2.59 *(.09)*	-.09	.17	-1.59 *(.09)*
Dis 6	697	4.01	1.15	-1.13	--	--	--
SFA	712	4.32	.99	-1.52 *(.09)*	-.17	.21	-.92 *(.09)*
PR	696	25.29	31.85	4.21 *(.09)*	1.24	.39	-.13 *(.09)*

Note. Transformations did not change any of the communication the skew coefficients. Refer to methods section for abbreviations.

Types of Transformations Used for Parenting Variables Age 12-13

Variable	Transformation Type	Transformation Formula
CI 1 age 12-13	Reflect and Logarithm	(lg10(7-C1956600))*-1
CI 2 age 12-13	Reflect and Square Root	(sqrt(7-C1956700))*-1
CI 3 age 12-13	Reflect and Square Root	(sqrt(7-C1956800))*-1
CI 4 age 12-13	Reflect and Logarithm	(lg10(5-C1957000))*-1
CI 5 age 12-13	Reflect and Logarithm	(lg10(5-C1957100))*-1
Dis 1 age 12-13	Reflect and Logarithm	(lg10(6-C1958400))*-1
Dis 2 age 12-13	Reflect and Logarithm	(lg10(6-C1958600))*-1
Dis 3 age 12-13	Reflect and Logarithm	(lg10(6-C1958800))*-1
Dis 4 age 12-13	Reflect and Logarithm	(lg10(6-C1959000))*-1
Dis 5 age 12-13	Reflect and Logarithm	(lg10(6-C1959100))*-1
SFA age 12-13	Reflect and Logarithm	(lg10(6-pospar98))*-1
PR age 12-13	Logarithm	lg10(pr98 +1)

Note. Not all items of each construct are listed. Those that did not need transformation are excluded from the present table. CI = closeness/involvement, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Bivariate Correlations Between Demographic and Parenting Age 12-13

	Sex	Race_1	Race_2	Educ	Fam_1	Fam_2	Fam_3
CI 1	-.03	*.06*	-.29***	.01	.04	.01	-.66***
CI 2	-.03	.04	-.22***	-.02	.02	-.03	-.43***
CI 3	.00	.13***	-.26***	-.06	.08*	.06	-.60***
CI 4	.00	-.05	.05	-.04	-.02	.03	.05
CI 5	-.04	.00	.14***	.00	.01	-.22***	-.35***
Com 1	*.07*	.05	-.08*	.04	.02	-.05	-.15***
Com 2	.01	-.06	-.04	.04	*-.07*	.00	-.13***
Com 3	.01	-.02	-.09**	.03	.00	.02	-.12**
Com 4	.01	-.05	-.01	.03	-.03	.00	-.09**
Dis 1	-.06	-.05	.09**	.05	-.01	-.04	.02
Dis 2	-.02	.01	.03	.05	-.04	-.03	.06
Dis 3	-.02	-.02	-.01	.05	-.08*	.09*	-.02
Dis 4	.01	.06	.12***	.01	-.01	.03	.06
Dis 5	-.02	*-.07*	.08*	.05	-.03	.03	-.03
Dis 6	-.09*	-.03	.18***	.03	.03	-.02	.02
SFA	.05	.00	.13***	-.04	-.04	-.00	.03
PR	-.06	-.16***	-.19***	.04	-.06	-.03	-.10**

Note. Race_1 = Hispanic, Race_2 = African American (Caucasian omitted); Fam_1 = mother father live together unmarried, Fam_2 = mom and step-dad, Fam_3 = single mother (mother father married omitted). Refer to methods section for abbreviations.

Bivariate Correlations Between Parenting Variables Age 12-13

	CI 1	CI 2	CI 3	CI 4	CI 5	Com 1	Com 2	Com 3	Com 4
CI 1	1.0								
CI 2	.65***	1.0							
CI 3	.66***	.51***	1.0						
CI 4	.01	.11**	.02	1.0					
CI 5	.41***	.41***	.29***	.31***	1.0				
Com 1	.12**	.06	.11**	-.02	.09*	1.0			
Com 2	.11**	.02	.07	.04	.12***	.43***	1.0		
Com 3	.11**	.06	.05	-.02	.05	.35***	.53***	1.0	
Com 4	*.07*	.01	.10*	.06	.03	.35***	.18***	.28***	1.0

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Table Continues.

Bivariate Correlations Between Parenting Variables Age 12-13

	CI 1	CI 2	CI 3	CI 4	CI 5	Com 1	Com 2	Com 3	Com 4
Dis 1	.01	.06	.01	.11**	.12**	-.01	.04	*.07*	.06
Dis 2	-.00	.01	-.05	.11**	.04	-.02	-.01	.05	.02
Dis 3	-.02	-.05	-.05	.05	.06	.04	.03	.10*	*.07*
Dis 4	-.03	-.05	*-.07*	.04	-.00	-.02	*.08*	-.06	.01
Dis 5	.02	.03	.03	.23***	.11**	-.01	-.03	-.02	.09*
Dis 6	-.01	.05	-.03	.00	.01	-.05	-.03	.01	-.03
SFA	-.02	-.00	-.00	.10**	.01	-.05	-.03	-.10*	-.03
PR	.10**	.14***	.10**	.33***	.18***	*.08*	.06	.06	.06

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Table Continues.

Bivariate Correlations Between Parenting Variables Age 12-13

	Dis 1	Dis 2	Dis 3	Dis 4	Dis 5	Dis 6	SFA	PR
Dis 1	1.0							
Dis 2	.32***	1.0						
Dis 3	.15***	.36***	1.0					
Dis 4	.11**	.28***	.28***	1.0				
Dis 5	.22***	.37***	.24***	.29***	1.0			
Dis 6	.17***	.23***	.15***	.26***	.21***	1.0		
SFA	.06	.16***	.10**	.05	*.07*	.11**	1.0	
PR	.12***	.12***	.06	*-.07*	.20***	.00	.09*	1.0

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Bivariate Correlations Between Parenting Ages 8-9 and 12-13

	CI 1 (8-9)	CI 2 (8-9)	CI 3 (8-9)	CI 4 (8-9)	CI 5 (8-9)	Com 1 (8-9)	Com 2 (8-9)	Com 3 (8-9)	Com 4 (8-9)
CI 1 (12-13)	.55***	.38***	.45***	.02	.30***	.03	.06	.06	.13
CI 2 (12-13)	.40***	.44***	.34***	.08*	.29***	.01	.06	.09*	.08*
CI 3 (12-13)	.37***	.29***	.45***	.01	.25***	-.04	-.02	-.00	.08*
CI 4 (12-13)	.02	*.07*	.03	.38***	.05	-.01	-.01	.11**	.03
CI 5 (12-13)	.35***	.28***	.23***	.10**	.54***	-.02	.02	.08*	-.00
Com 1 (12-13)	.10*	.09*	.10*	-.06	.09*	.20***	.01	.01	.08*
Com 2 (12-13)	.08*	.08*	.12**	.02	.07	-.02	.02	.01	-.04
Com 3 (12-13)	.08*	.08*	.10*	.01	.04	-.03	-.02	.01	-.01
Com 4 (12-13)	.03	.03	.03	.04	.02	.08*	.03	.14***	.13***

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Table Continues.

Bivariate Correlations Between Parenting Ages 8-9 and 12-13

	CI 1 (8-9)	CI 2 (8-9)	CI 3 (8-9)	CI 4 (8-9)	CI 5 (8-9)	Com 1 (8-9)	Com 2 (8-9)	Com 3 (8-9)	Com 4 (8-9)
Dis 1 (12-13)	-.02	-.04	-.02	.06	.03	.03	.05	.05	.02
Dis 2 (12-13)	-.05	-.05	-.06	.14***	.05	.05	.08*	.04	.02
Dis 3 (12-13)	-.02	-.09*	-.09*	.10**	.04	.04	.11**	.02	.05
Dis 4 (12-13)	-.06	-.09*	-.09*	.08*	-.02	.03	.05	.02	.02
Dis 5 (12-13)	.08*	.09*	.03	.10**	.10**	*.07*	.06	.10**	.02
Dis 6 (12-13)	-.02	-.03	-.02	.01	-.05	.10**	.03	.04	.00
SFA (12-13)	-.00	.05	-.02	.11**	-.03	.04	.15***	.03	.02
PR (12-13)	.13***	.14***	.04	.16***	.13***	-.00	.05	.10**	*.07*

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Table Continues.

Bivariate Correlations Between Parenting Ages 8-9 and 12-13

	Dis 1 (8-9)	Dis 2 (8-9)	Dis 3 (8-9)	Dis 4 (8-9)	Dis 5 (8-9)	Dis 6 (8-9)	SFA (8-9)	PR (8-9)
CI 1 (12-13)	.03	-.02	.06	-.02	.03	*-.07*	.06	.17***
CI 2 (12-13)	.02	-.06	-.01	-.04	.00	.01	.03	.21***
CI 3 (12-13)	-.02	*-.08*	-.02	-.05	-.02	-.08*	.04	.13***
CI 4 (12-13)	.02	.06	-.01	.08*	.05	.01	-.01	.16***
CI 5 (12-13)	-.03	-.01	-.02	.03	-.04	-.08	.01	.10**
Com 1 (12-13)	.03	-.06	-.00	-.09*	-.02	-.06	-.00	.08*
Com 2 (12-13)	.05	-.02	.04	-.05	*.07*	-.03	-.00	.02
Com 3 (12-13)	.06	-.01	.10*	-.03	.03	.01	-.06	-.01
Com 4 (12-13)	.02	.02	-.00	.00	.05	-.03	-.06	.04

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

Table Continues.

Bivariate Correlations Between Parenting Ages 8-9 and 12-13

	Dis 1 (8-9)	Dis 2 (8-9)	Dis 3 (8-9)	Dis 4 (8-9)	Dis 5 (8-9)	Dis 6 (8-9)	SFA (8-9)	PR (8-9)
Dis 1 (12-13)	.27***	.09*	.06	.03	.09*	.13***	.01	.09*
Dis 2 (12-13)	.11**	.24***	.23***	.14***	.15***	.08*	.05	.06
Dis 3 (12-13)	.11**	.15***	.23***	.05	.16***	.05	.06	.03
Dis 4 (12-13)	.06	.20***	.14***	.35***	.10**	.13***	-.01	.08*
Dis 5 (12-13)	.09*	.19***	.09*	.10**	.15***	.06	-.02	.10**
Dis 6 (12-13)	*.08*	.11**	.13***	.16***	.19***	.28***	.02	-.01
SFA (12-13)	.11**	.15***	.13***	*.08*	.16***	.10**	.38***	.09*
PR (12-13)	.11**	.10**	.09*	-.03	.09*	*-.07*	.11**	.52***

Note. * p <.05, ** p < .01, *** p < .001. Italicized estimates indicated a trend (p <.1). CI = closeness/involvement, Com = communication, Dis = discipline, SFA = support for autonomy, PR = positive reinforcement. Refer to methods section for specific items.

END NOTES

1. Because Hope and Chapple (2005) utilized child self-reports of parenting, the authors were able to examine monitoring within their study utilizing the NLSY data. The current investigation utilized mother reports of parenting whom were not asked about monitoring, and as such, monitoring was not examined in the current investigation.

2. Although the measure of discipline is technically a hypothetical scenario, past research also examining the NLSY has used this same measure to examine discipline (see e.g., Pratt et al., 2004). Further, alternative items such as how often in the past week was the child grounded were considered. However, the items were unclear as to why the child was receiving discipline, and as such, could be measuring harsh discipline. Further, the items only examined discipline during the past week instead of over time/past year. It is possible that the child may have engaged in more or less appropriate behaviors than average. Using the current measure of discipline controls for harshness of and reason for receiving discipline, and provides a more general sense of discipline use over time.

3. I do acknowledge that the measure of violence is less than what is typically considered reliable. However, these two items were the only items within the dataset that did not have problems with the data (e.g., no variance, low respondents) and that captured a more serious form of deviance.

4. Results indicated that sex was not associated with any of the parenting variables. However, sex was associated with self-control and deviance, thereby indicating that females were more likely to have higher self-control and males were more likely to engage in less serious offenses and violence. Next, results indicated that race was significantly associated with a majority of the key variables, thus, suggesting that when compared to Caucasian adolescents, African American parents were less likely to be as close or involved with their children, use as much positive or warm communication, or positive reinforcement. However, African American parents were more likely to use appropriate discipline with respect to grades than Caucasian parents. Further, Hispanic adolescents were more likely than Caucasian adolescents to engage in less serious offenses and alcohol use, whereas, Caucasian adolescents were more likely than African American adolescents to use alcohol. Finally, single mother headed families were less likely to be as close/involved or use positive reinforcement with children when compared to two parent biological families. Two parent biological families also were more likely to use warm positive communication when compared to two parent unmarried families.

5. A SEM was conducted in which all three measures of self-control (i.e., at ages 8-9, 12-13, and 16-17) were added to the model; once with mother reported self-control age 12-13 and once with child reported self-control age 12-13. Results indicated that mother reported self-control age 8-9 was associated with mother reported self-control age 12-13 (β = .70 before and after residualization), and in turn, was associated with child reported self-control age 16-17 before and after residualization (β = .27 and .19, respectively). However, the fit was poor in both cases (before residualization: CFI = .87, RMSEA =

.06, χ = 749.31, *df* = 224, *p* = .000; after residualization: CFI = .88, RMSEA = .06, χ = 732.67, *df* = 224, *p* = .000). When child reports of self-control age 12-13 were examined, self-control age 8-9 was associated with self-control age 12-13 before and after residualization (β = .20 and .13, respectively), and in turn, was associated with self-control age 16-17 before residualization (β =.52) but not after residualization. In both cases, the models fit the data (before residualization: CFI = .94, RMSEA = .04, χ = 317.75, *df* = 165, *p* = .000; after residualization: CFI = .95, RMSEA = .03, χ = 289.45, *df* = 165, *p* = .000). In none of the reported SEMs did self-control age 8-9 become statistically significant with self-control age 16-17.

6. The structure of each CFA mother and child reported self-control model at ages 8-9, 12-13, and 16-17, after residualization, also were examined. Recall that each CFA mother reported self-control model had the same correlated error terms, as well as, each CFA child reported self-control model. Results suggested similar loadings for each item between each CFA model for the same respondents (see Appendix F). However, only half of the items loaded significantly at age 16-17, whereas, all items loaded significantly at age 12-13. Thus, results suggest after residualization the structure of self-control between ages 12-13 and 16-17 was different.

7. While the latent constructs of child reported self-control at ages 12-13 and 16-17 after residualization were not found to be stable, the composites of child reported self-control at age 12-13 and 16-17 after residualization were correlated. As such, analyses continued to determine whether the constructs of child reported self-control after

residualization were stable from 12-13 to 16-17. Results indicated the composites were stable.

8. Given that the majority of items used to measure closeness/involvement were regarding fathers, does little to tap into how close or involved mothers may be with their children. It also is possible there is limited father involvement (e.g., in the case of single mothers). As such, the manner with which closeness/involvement is measured in the current analyses may account for why African American and single mothers reported lower levels of closeness/involvement.