

ABSTRACT

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Criminologists frequently identify parenting as a significant influence in adolescents' decisions to conform to or deviate from normative expectations. Often, these scholars examine processes by which parental attachment, supervision, and coercion either inhibit or encourage adolescent delinquency. However, despite its prominence in scholarship on child development and its potential applicability to criminological theory, few criminologists have considered the part that autonomy-supportive parenting, or parenting practices that foster an adolescent's capacity for independent decision-making, might play in encouraging or inhibiting delinquent behavior. I propose specific hypotheses linking parental autonomy support to adolescent delinquency through theoretical mechanisms that are well-known to criminologists, including self-control, reactance, and peer processes. Multilevel regressions are then presented that model linkages between adolescents' reported exposure to early autonomy-supportive parenting (at ages 10-12) and their self-reported participation in common delinquency from ages 10 to 17, using data from the Children of the National Longitudinal Survey of Youth 1979 (C-NLSY79). Overall, the findings suggest that early autonomy-supportive parenting is related to adolescent delinquency; however, the nature of this relationship depends upon whether the type of autonomy-supportive parenting is behavioral, communicative, or psychological, and depends upon the stage of adolescence examined. Finally I conclude with a brief discussion of implications and limitations of the findings and directions for future research.

Autonomy-supportive Parenting and Adolescent Delinquency

by
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DEDICATION

To my daughter, Audrey Elise. You inspire me daily to grow as a person, a father, and a scholar. I do and will forever love you, without condition.

BIOGRAPHY

Jonathan Richard Brauer was born on August 17, 1981 in Rockford, Illinois. After graduating from Guilford High School in 1999, he remained in Rockford to attend Rock Valley College, where he earned an Associate of Arts degree (with Honors) in 2001. He then received a Bachelor of Science degree in Sociology and Anthropology (Magna Cum Laude) with a minor in Philosophy from Rockford College in 2003. In 2004, Jonathan began pursuing a graduate education at North Carolina State University, where he earned a Master of Science degree in Sociology in March 2007 under the direction of Dr. Charles R. Tittle. He taught several sociology courses at NC State while pursuing a Doctor of Philosophy degree in Sociology. Jonathan married Sara Gunderson in March 2010, and their daughter Audrey was born in December 2010. Starting in the fall of 2011, Jonathan will be an assistant professor of criminology and criminal justice at The University of Nebraska at Omaha.

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CHAPTER 1

INTRODUCTION

1.1 Prologue

Criminologists frequently identify “parenting” as a significant influence on adolescents’ decisions to conform to or deviate from normative expectations. Often, these scholars examine the processes by which parental attachment, supervision, and coercion either inhibit or encourage adolescent delinquency (e.g., Agnew, Rebellon, and Thaxon 2000; Hirschi 1969; Gottfredson and Hirschi 1990; Patterson and Dishion 1985; Rankin and Kern 1994; Sampson and Laub 1993; Snyder and Patterson 1995; Straus and Kantor 1994; Unnever, Colvin, and Cullen 2004; Unnever, Cullen, and Agnew 2006; Warr 1993; Wilson 1987; Wong 2005). However, despite its prominence in scholarship on child development and its potential applicability to criminological theory, few criminologists have considered the part that autonomy-supportive parenting, or parenting practices that foster an adolescent’s capacity for independent decision-making, might play in encouraging or inhibiting delinquent behavior.

Thus, the primary purpose of the research to be reported is to examine the relationship between autonomy-supportive parenting and adolescent delinquency. I begin with a brief review of criminological literature on parenting and delinquency, and follow by discussing how this literature can be enriched by integrating the concept of parental autonomy support. I will examine potential linkages between adolescents’ reported exposure to autonomy-supportive parenting during adolescence and their self-reported participation in common delinquency, using data from the Children of the National Longitudinal Survey of

Youth 1979 (C-NLSY79). Specifically, these analyses will examine (1) the extent to which autonomy-supportive parenting influences adolescent delinquency, and (2) the processes by which this might occur.

1.2 Parenting and Delinquency

Criminologists consistently find that youths' crime or delinquency is negatively related to parental attachment and to parental supervision, and positively related to parental coercion (e.g., Patterson and Dishion 1985; Rankin and Kern 1994; Sampson and Laub 1993; Snyder and Patterson 1995; Straus and Kantor 1994; Unnever, Colvin, and Cullen 2004; Unnever, Cullen, and Agnew 2006; Warr 1993; Wilson 1987). In addition, the criminological literature is rife with explanations for how and why parental attachment, supervision, or coercion might foster or inhibit adolescent delinquency. For example, theorists have posited that youths who share strong attachments with their parents are less likely to engage in delinquent activity because they fear that delinquency will damage these important relationships (Hirschi 1969; 2004). Alternatively, highly attached youths may weigh the typically conventional normative expectations of their parents more heavily than they do the expectations of other less salient, and perhaps less conventional, reference groups when considering whether or not to offend (Akers 1998; Sutherland and Cressey 1966).

Parental supervision is theorized to constrain adolescent delinquency through several different mechanisms. Some hypothesize that parental supervision indirectly reduces youths' tendencies to deviate by playing a crucial role in the development of self-control (Gottfredson and Hirschi 1990; Unnever, Cullen, and Agnew 2006). Others argue that

parental supervision reduces an adolescent's opportunities for deviance by minimizing the youth's time spent in unstructured socializing with peers (Agnew and Petersen 1989; Osgood and Anderson 2004).

Finally, several theorists have suggested that coercive parenting practices can produce socio-emotional or social-psychological deficits (e.g., anger; low self-control) that cause youths to commit delinquency under some conditions (Agnew, Rebellon, and Thaxton 2000; Colvin 2000; Crosswhite and Kerpelman 2009). Coercive parenting has also been posited to reinforce aggressive or otherwise criminogenic interaction patterns that can foster youths' later delinquency (Patterson, Dishion, and Bank 1984).

1.3 Parenting and Child Development

These empirical regularities and theoretical explanations regarding parenting and delinquency are supported by developmental research that has identified similar linkages between parenting and child well-being (see Hoeve, Dubas, Eichelsheim, van der Laan, Smeenk, and Gerris 2009; Hoeve, Smeenk, Loeber, Stouthamer-Loeber, van der Laan, Gerris, and Dubas 2007; Jang and Smith 1997; Leschied, Chiodo, Nowicki and Rodger 2008; Loeber and Stouthamer-Loeber 1986). Many developmental researchers focus on identifying those parenting styles or practices that have harmful or beneficial effects on children's psychosocial development, as measured by outcomes such as antisocial behavior, mental health, and cognitive development. In general, this body of research indicates that parental support (e.g., attachment, involvement, warmth, or responsiveness) and parental behavioral control strategies (e.g., supervision, rule setting and enforcement) are associated with

desirable child outcomes, while coercive parenting practices, or psychologically controlling techniques, are associated with undesirable child outcomes (e.g., Aquilino and Supple 2001; Barber, Olsen, and Shagle 1994; Bean, Barber, and Crane 2006; Beveridge and Berg 2007; Coley, Votruba-Drzal, and Schindler 2008; Conger, Ge, Elder, Lorenz, Simons. 1994; Gray and Steinberg 1999; Grolnick 2003; Simons, Chen, Simons, Brody, and Cutrona 2006; Simons, Lin, and Gordon 1998).

In addition to affirming the importance of parental attachment, supervision, and coercion, developmental research also has identified another parenting factor – *parental autonomy support* – that is associated with child development and that may be relevant to adolescent delinquency as well. Autonomy-supportive parenting refers to practices that foster a child's capacity for autonomous decision-making. Researchers typically measure autonomy-supportive parenting using questionnaires or observations that capture the extent to which parents explain their decisions, are empathetic to children's perspectives, provide children a say in decision-making, or encourage children to act upon their own interests and values. This research demonstrates that children exposed to autonomy-supportive parenting practices have greater levels of creativity, better academic performance, stronger relational attachments, and fewer internalized and externalized problem symptoms compared to children who are not exposed to such practices (e.g., Allen, Hauser, Bell, and O'Connor 1994; Dobkin, Tremblay, and Sacchitelle 1997; Grolnick 2003; Grolnick, Gurland, DeCoursey, and Jacob 2002; Grolnick, Ryan, and Deci 1991; Ng, Kenny-Bensen, and Pomerantz 2004; Soenens and Vansteenkiste 2005; see also Deci and Ryan 1987; Beveridge and Berg 2007).

While multiple theoretical perspectives have touted the importance of autonomy-supportive parenting for child development (c.f., Arnett 2000; Baumrind 1966, 1978; Blos 1979; Grolnick, Deci, and Ryan 1997; Maccoby and Martin 1983), one particularly intriguing perspective is *self-determination theory* (see Deci and Ryan 1985; 2000). Self-determination theory (SDT) has garnered much empirical support, and likewise it is relied upon frequently to predict and interpret the effects of parental autonomy support on child developmental outcomes (e.g., Deci and Ryan 1987; Grolnick 2003; Grolnick, Gurland, DeCoursey, and Jacob 2002; Soenens and Vansteenkiste 2005). Further, as I will discuss later, some of SDT's hypothesized causal mechanisms connecting parental autonomy support to adolescent delinquency are readily compatible with mechanisms found in existing theories of crime and delinquency.

1.4 Self-determination Theory

Self-determination theory focuses on human motivation and development. It assumes that people have intrinsic needs, including the need for autonomy, and that behaving in a self-determined or autonomous manner is critical to one's optimal functioning (Deci and Ryan 1987, 2000; Ryan and Deci 2006; for a summary, see Soenens and Vansteenkiste 2005). In SDT, autonomy refers to the "experience of integration and freedom," or to the "desire to self-organize experience and behavior and to have activity be concordant with one's integrated sense of self" (Deci and Ryan 2000: 231). According to the theory, intentional or goal-directed human behaviors can be classified as more or less autonomous, or as falling somewhere on a continuum that ranges from *controlled* to *self-determined*. Self-

determined, or autonomous, behaviors are those that “are initiated and regulated through choice as an expression of oneself” (Deci and Ryan 1987: 1024), or that are “endorsed by the whole self and experienced as action for which one is responsible” (1025). At the other end of the continuum are *controlled* behaviors, which are described as being “pressured and coerced by intrapsychic and environmental forces,” and that likewise fail to leave the actor with an experience of autonomy or with a sense that the action was the result of true choice (1024).

Autonomy-supportive contexts

SDT argues that events and contexts can be more or less supportive of self-determined or autonomous action. Deci and Ryan define “autonomy-supportive” events or contexts as those that “encourage the process of choice and the experience of autonomy” (1987: 1027). Likewise, the theory claims that people who are exposed to autonomy-supportive contexts will “experience a greater sense of choice about their actions, and these actions are characterized by integration [with one’s own value system] and an absence of conflict and pressure” (Deci and Ryan 1987: 1033). In contrast, those who are least exposed to autonomy-supportive contexts (or are more exposed to controlling contexts) presumably are less likely to feel autonomous, and more likely to feel pressured to act in particular ways.

The parent-child relationship, a particularly important context during childhood and adolescence, is one that may be more or less autonomy-supportive for youths. In less autonomy-supportive parenting, parents might rarely explain decisions, empathize with a child’s perspective, offer children any say in decision-making, or encourage children to act

upon their own interests and values. Rather, parents may rely primarily on the threat of punishment or the promise of reward to pressure children to behave in particular ways. In contrast, Ryan and colleagues describe autonomy-supportive parents as those who attempt “to grasp and acknowledge the child’s perspective, use minimal controls to foster behavior, and provide choice when possible” (Ryan, Deci, Grolnick, and LaGuardia 2006: 815). As mentioned previously, autonomy-supportive parenting is theoretically expected to result in, and has been linked empirically to, a host of desirable child outcomes, including greater levels of creativity, better academic performance, stronger relational attachments, and fewer internalized and externalized problem symptoms (e.g., Grolnick et al. 1991; Grolnick, Gorland, DeCoursey, and Jacob 2002; LaGuardia, Ryan, Couchman, and Deci 2000; Soenens and Vansteenkiste 2005; for reviews, see Deci and Ryan 1987; Grolnick 2003; Ryan et al. 2006).

Self-regulation

Consistent with operant and cognitive learning theories (e.g., Skinner 1953; Bandura 1977; Akers 1998), SDT recognizes that external reinforcement or punishment contingencies, which are frequently used in controlling parenting contexts, often operate as effective behavioral control mechanisms in the short term. However, the theory claims that this type of behavioral control strategy produces a form of contingency-dependent, controlled compliance, or *controlled self-regulation*, that is unlikely to be maintained in the absence of anticipated rewards or punishments; for instance, a child may comply unwillingly with parental demands only as long as she thinks her parents are watching. Further, SDT warns

that such behavioral control attempts may be perceived by the child as a challenge to the youth's autonomy, and as such are likely to be met with a defiant response. Finally, SDT asserts that reliance on coercive pressures to generate compliance from a child ultimately may undermine that child's inner motivation or capacity for *autonomous self-regulation* (see Deci and Ryan 1987; 2000).

In contrast, SDT posits that autonomy-supportive practices should foster autonomous self-regulation, or action that reflects inner motivations and that is fully endorsed by one's self. Autonomy-supportive parenting practices, then, should be more likely than controlling methods of parenting to result in a form of volitional or self-determined conformity among children that reflects the child's acceptance of norms or behavioral expectations as one's own. Further, this self-determined behavioral conformity should be more resistant to long-term extinction than the behavioral compliance produced by controlled self-regulation because, unlike the latter, the former does not require the continued presence of salient external reinforcement or punishment contingencies for maintenance. That is, this self-determined behavioral conformity is not "controlled" by, or contingent upon, anticipated external consequences of behavior; rather, it is motivated by an internalized desire to conform that should continue to be present even in contexts where parental sanctions are no longer salient or anticipated.¹

¹ In addition, autonomous self-regulation may be governed by different neural mechanisms than those governing controlled self-regulation (see Ryan and Deci 2006: 1565).

Applying SDT to explain adolescent delinquency

SDT's arguments regarding the effects of autonomy-supportive parenting on child development also may be relevant to adolescent's decisions to participate in or refrain from delinquent behaviors. Recall that autonomy-supportive parenting practices are thought to foster willful, autonomous, or self-determined behavior among children. SDT also assumes that a person's behavioral conformity to conventional expectations, at least in autonomy-supportive contexts, is a reflection of that individual's own internalized conventional motivations, values, or goals. This is because internalized motivations are posited as the product of exposure to autonomy-supportive contexts, and because in these contexts people presumably feel minimal pressure to act in ways that are inconsistent with their own values. Thus, adolescents who are exposed to autonomy-supportive parenting practices are expected to internalize motivations to conform to normative behavioral expectations and, assuming parents hold conventional normative values, therefore should choose to resist temptations to deviate.

Note, though, that a lack of exposure to autonomy-supportive parenting does not necessitate that adolescents will engage in delinquency, as these adolescents, at least in the short term, still may comply with parental pressures to conform. However, adolescents who are not exposed to autonomy-supportive parenting also might engage in delinquency as a defiant response to a perceived lack of autonomy. Furthermore, these adolescents presumably are less likely to internalize motivations to conform, and thus would be expected in the long term to engage in delinquency at greater rates than their autonomy-supported counterparts.

1.5 Criminological Research on Autonomy-supportive Parenting

Despite these theoretical expectations and the consistent findings regarding autonomy-supportive parenting's relationship with other child outcomes, autonomy-supportive parenting has received relatively little attention in the criminological literature. Furthermore, the few studies in criminology that have explored the link between parental autonomy support and adolescent delinquency have not provided consistent support for the notion that such parenting practices inhibit delinquency (c.f., Goldstein, Davis-Kean, and Eccles 2005; Petts 2009; Turner, Irwin, Tschan, and Millstein 1993). For example, Turner and colleagues (1993) examined the link between parental autonomy support and youths' risky behaviors using a sample of 189 sixth and seventh graders from a public middle school in the San Francisco Bay area. These authors did not find an association in early adolescence between parental autonomy support, measured using a scale that captured the degree to which parents accept and encourage a child's independence and self-reliance, and problem behaviors such as fighting or substance use. However, they did find that those sixth and seventh graders who were exposed to greater levels of parental autonomy support exhibited lower levels of sexual intercourse relative to their less autonomy-supported counterparts.

Goldstein, Davis-Kean, and Eccles (2005) used longitudinal data from the Maryland Adolescent Development in Context Study to examine the relationship between autonomy-supportive parenting, measured using a scale that captured the extent to which a child had a say in decisions affecting his/her day-to-day life, risky peer contexts, and adolescent delinquency. These authors actually found a *positive* correlation between youths' reports of early autonomy-supportive parenting (i.e., as reported in the 7th grade) and early delinquency.

Further, although they failed to find a bivariate correlation or a direct net effect of early autonomy-supportive parenting on later delinquency (i.e., as reported in the 11th grade), Goldstein and colleagues did find an indirect, positive effect of early autonomy-supportive parenting on later adolescent delinquency. Specifically, their results showed that early autonomy-supportive parenting was associated with more time spent in unstructured socializing with peers in the following year, which in turn predicted higher levels of later delinquency.

Petts (2009) used longitudinal data from a subsample of 2,472 youths born before 1984 in the C-NLSY to explore the influence of family and religious characteristics on delinquency during adolescence and young adulthood. Petts began by identifying three distinct delinquency-related trajectories across the ages of 10 to 25 using group-based trajectory modeling: a low-level delinquent trajectory; an early adolescent-limited delinquent trajectory; and late adolescent-limited delinquent trajectory. After identifying these trajectories, he employed multinomial logistic regression to examine whether family and religious characteristics predicted the likelihood of entering into each of these delinquency trajectory groups. In these regressions, Petts included a measure of child involvement in decision-making processes as a family process variable; as noted earlier, this measure may be conceptualized as an indicator of parental autonomy-support. Petts interpreted his findings as providing limited support for the idea that autonomy-supportive parenting reduces the likelihood of following an early adolescent-limited trajectory of delinquency (as compared to a low-level delinquent trajectory; see 2009: 475). However, the multinomial logistic regression coefficient for this finding was marginally statistically significant (at $p < .10$);

further, his child decision-making measure failed to distinguish between the likelihood of entering a late adolescent-limited delinquent trajectory versus a low-level offending trajectory.

Finally, some scholars have examined the relationship between parenting and delinquency using parenting measures that incorporate elements of parental autonomy support within conceptually broader parenting scales, such as *democratic discipline*, *parental efficacy*, *authoritative parenting*, or *effective parenting* (e.g., Aquilino and Supple 2001; Hoeve, Blokland, Dubas, Loeber, Gerris, and van der Laan 2008; Perrone, Sullivan, Pratt, and Margaryan 2004; Simons, Simons, Burt, Brody, and Cutrona 2005; Simons, Wu, Conger, and Lorenz 1994; see also Hoeve et al. 2009). Although these parenting scales frequently are found to be negatively correlated with adolescent delinquency, it is often unclear whether these parenting effects primarily reflect the association between delinquency and any particular element in the scale, such as autonomy support, or some combination of the incorporated elements. Further, it is possible that separate parenting elements used in such scales, such as autonomy support, supervision, or attachment, operate through different causal mechanisms to influence delinquency, and likewise may have distinct effects on adolescent delinquency (for a related argument, see Gray and Steinberg 1999).

Thus, from the existing research on this topic, it is unclear exactly what relationship, if any, autonomy-supportive parenting shares with adolescent delinquency. While it remains possible that parental autonomy support and adolescent delinquency are unrelated, this seems unlikely given the consistent associations reported in developmental research between parental autonomy-support and child well-being. Instead, the mixed results described above

may suggest that the relationship between these two constructs is more complex than straightforward. That is, autonomy-supportive parenting may have an indirect influence on adolescent delinquency, and may even operate through countervailing mechanisms. Additionally, adolescents' decisions to engage in or refrain from delinquency may be affected by the timing as well as the amount of exposure to parental autonomy support. If so, then explicit theoretical specification aimed at delineating precisely how and why autonomy-supportive parenting might influence adolescent delinquency would be necessary before such an association can be modeled adequately.

Therefore, in the following section, I will draw from the logic of SDT and from theoretical ideas found in the criminological literature to posit specific pathways by which parental autonomy support might be expected to influence adolescent delinquency. Specifically, drawing from SDT's arguments, I will hypothesize that exposure to autonomy-supportive parenting generally should inhibit delinquency by increasing an adolescent's capacity for self-regulation (or self-control), by reducing the potential influence of peer pressures to deviate, and by reducing an adolescent's defiance (or reactance) motives. However, drawing from extant criminological research, I will also hypothesize that autonomy-supportive parenting might provide adolescents with the freedom to socialize with delinquent peers, thereby potentially exacerbating adolescent delinquency.

CHAPTER 2

AUTONOMY-SUPPORTIVE PARENTING AND THEORETICAL PATHWAYS TO DELINQUENCY

2.1 Introduction

Although parental autonomy support has received relatively little attention in the criminological literature, SDT's arguments regarding autonomy-supportive parenting and child well-being can be readily integrated with causal processes found in existing criminological theories to help explain adolescent delinquency. In fact, the theoretical mechanisms outlined in SDT by which autonomy-supportive parenting is expected to influence adolescent delinquency, such as self-regulation, defiance, and pressures to conform, are well-known to criminologists.

2.2 Self-control

First, the concept of “self-regulation” in SDT is similar to the concept of “self-control” as found in Gottfredson and Hirschi’s (1990) *self-control theory* of deviance (Logue 1996; Vohs and Baumeister 2004; see also Hay 2001). Both “self-regulation” and “self-control” refer generally to relatively stable individual differences in one’s capacity to resist impulses to deviate from normative behavioral standards. In addition, both theories hypothesize that socialization processes are the primary means by which individuals ultimately internalize (or fail to internalize) this capacity to regulate or control their own behavior.

Self-control theory (SCT – not to be confused with SDT) conceptualizes “self-control” as an individual’s ability or tendency to calculate the consequences of his or her actions (see Gottfredson and Hirschi 1990: 89-91; see also Dodson 2009; Hirschi 2004). Thus, individuals with low self-control are characterized as having a tendency to act on impulse, presumably due to their failure to consider fully the consequences of engaging in immediately gratifying behaviors such as delinquency. In contrast, those with high self-control presumably can and do resist the temptation to act impulsively, out of fear of undesirable consequences that are likely to follow such actions. Further, SCT theorizes that children develop high self-control early in life primarily through specific parental socialization processes involving love, monitoring, recognition of misbehavior, and punishment of wrongdoing. According to the theory, a child will develop high self-control if she has parents (or caregivers) who care enough about her to monitor her behavior closely, and who correct her wrongdoing in a consistent manner, assuming the parents themselves can recognize misbehavior (Gottfredson and Hirschi 1990: 97-100; see also Hirschi 1994; Latimore, Tittle, and Grasmick 2006). In other words, SCT argues that children who are consistently supervised and punished for wrongdoing will tend to choose to conform when opportunities to deviate arise because they have learned that the costs of nonconformity are high.

Empirical status of SCT

SCT’s arguments regarding the relationship between self-control and crime have received widespread empirical support (for a review, see Pratt and Cullen 2000). However,

the theory's assertions regarding the sources of self-control have received relatively less attention (Cullen, Unnever, Wright, and Beaver 2008). In addition, while research on this topic often shows that some parenting measures are related to levels of self-control, this body of research also suggests that the sources of self-control may be more complex or more numerous than the theory predicts (Cullen et al. 2008). For example, in his test of SCT, Hay also examined the empirical relevance of Baumrind's (1966) concept of authoritative parenting to self-control, and found that psychological autonomy-granting (among other parenting factors) was associated with higher levels of self-control (Hay 2001: 722). Thus, Hay concluded that SCT's "exclusive focus on the extent of control ignores the vast parenting literature that suggests that the context and manner in which parental control is delivered significantly affects social-psychological and behavioral outcomes, including self-control" (2001: 725), and that SCT therefore would benefit from a broader conceptualization of parenting. Accordingly, SCT's arguments about the parental sources of self-control may be improved by integrating some of SDT's insights regarding the nature of self-control and its sources.

Expanding upon SCT's conceptualization of 'self-control'

Recall that SDT's concept of self-regulation is similar to SCT's concept of self-control, since both can be thought of as referring to an individual's relatively stable capacity to constrain his or her impulses and conform to conventional behavioral standards. However, SDT goes beyond SCT's conceptualization of self-control by asserting that self-regulation varies on a continuum from controlled to autonomous. The concept of self-control may be

thought of as capturing *whether* one is likely to refrain, or as capturing the probability that one refrains, from impulsive behavior. SDT's types of self-regulation (i.e., autonomous or controlled), then, may be thought of as additionally capturing *why* one might refrain, or as capturing two different mechanisms responsible for causing one to refrain, from impulsive behavior – that is, as a result of anticipated consequences (as in controlled self-regulation), or due to an internalized desire to act accordingly (as in autonomous self-regulation). Further, recall SDT also asserts that whether a person develops controlled or autonomous self-regulation primarily depends upon differences in the contexts in which behavioral expectations are presumably generated (Deci and Ryan 1987; 2000; Ryan and Deci 2002). For instance, people are posited to develop controlled self-regulation through consistent exposure to controlling contexts, and autonomous self-regulation through exposure to autonomy-supportive contexts.

Note that SDT's description of controlled self-regulation, which theoretically produces compliant behaviors that are contingent upon anticipated external rewards or punishments associated with conformity, closely mirrors SCT's description of self-control and its parental sources. If SDT is correct, then the controlled form of self-control described by SCT might be expected to result, at best, in a youth's short-term behavioral compliance. In contrast, SDT posits that a youth's long-term conformity is more likely to result from autonomous self-regulation, which reflects willful behavioral constraint stemming from internalized motivations to conform. Further, this autonomous form of self-control (i.e., autonomous self-regulation) presumably develops through exposure to autonomy-supportive parenting contexts. In addition, autonomy-supportive parenting also might be expected to

bolster one's capacity for self-regulation in general (i.e., regardless of type), because such practices explicitly encourage youth to think about the consequences of their potential actions.

Although SCT's current formulation neither recognizes differences in types of self-control nor identifies autonomy-supportive parenting as a key source of self-control, the theory would not require substantial modification to incorporate each of these possibilities into its causal arguments. After all, SCT's logical structure does not forbid the possibility that individuals with high self-control conform not only because they perceive the costs of crime to be high, but also because they have internalized a desire to conform.² In other words, a person who perceives the costs of nonconformity to be high might also *assent* to rather than comply with pressures to conform, or might *willfully* choose to conform, because that person has integrated conventional standards into her sense of self (Ryan and Deci 2006).³

² In fact, SCT does imply that individuals with high self-control are those who have internalized the conventional value system (or the social bond) to the greatest extent (Hirschi 2004; see also Dodson 2009: 70-74). Although SCT does not make an explicit distinction between internal (autonomous) and external (controlled) sources of self-regulation, similar distinctions were made in early theorizing on the sources of behavioral control in criminology (e.g., Reckless, Dinitz, and Murry 1956; Reiss 1951; Nye 1958; for a similar discussion, see Akers 1991: 205-6). Furthermore, this idea that some people willfully conform because each has integrated normative behavioral expectations into one's sense of self can be found in several criminological theories (c.f., *normative self-concepts* or *internalized moral beliefs*; e.g., Akers 1998; Etzioni 1988; Grasmick and Bursik 1990; Grasmick and Green 1980).

³ Put differently, Ryan and Deci note that "autonomy is not defined as the absence of external influences but rather by one's assent to such influences" (2006: 1561). Elsewhere, Deci and Ryan (1987) also point out that

Furthermore, although SCT's current formulation places a great deal of emphasis on parental supervision and punishment, the theory's socialization arguments are not at odds with the possibility that autonomy-supportive parenting practices also might be important to the development of self-control in general, or to the development of autonomous self-regulation specifically.⁴

Thus, drawing upon SDT and expanding upon SCT, autonomy-supportive parenting practices are expected to produce higher levels of self-control in youth, as such practices may encourage youth to consider the consequences of their potential actions. In addition, youth exposed to autonomy-supportive parenting practices should be less likely than their

behaviors can be aligned simultaneously with external pressures and with internal desires, and that external regulation often forms the basis of internalized values and subsequent autonomous self-regulation. SDT's main assertion, then, is that some intentional or self-regulated behaviors are *more* autonomous than are others; a person's behavior is considered more autonomously self-regulated when that behavior is experienced as more willful or as more in line with one's internalized value system. Thus, autonomous or self-determined conformity, which is posited as a product of exposure to autonomy-supportive contexts, is thought to reflect more than a hedonic calculus in which each individual weighs that which he or she stands to lose or to gain – it also presumably reflects one's identity or one's sense of self.

⁴ In fact, to incorporate these possibilities, SCT would not even be required to relinquish its assumption that everyone is motivated to deviate because such acts are inherently gratifying, without their being taught to want to deviate. Recall, the theory does not completely discount learning processes – rather, it explicitly claims that some people are taught to recognize the costs of crime through exposure to specific parenting practices. Thus, the theory would merely need to recognize that individuals may be swayed not only by their recognition of the costs of deviance, which presumably are learned through parental socialization, but also by their recognition of the competing allure of conformity, which theoretically also may be learned via parental socialization processes.

counterparts to engage in delinquency throughout adolescence, because autonomy-supportive parenting theoretically encourages youth to integrate normative expectations into their sense of self, thereby producing an autonomous form of self-control that fosters conformity even in the absence of reinforcement or punishment contingencies.

2.3 Peer Influence

Thus far, parental autonomy support has been posited to inhibit adolescent delinquency by fostering the development of self-control. In discussing this connection, it was posited that autonomy-supportive parenting practices inhibit delinquency by encouraging the development of an autonomous form of self-regulation (or self-control) that fosters self-determined conformity among youth. That is, youth exposed to autonomy-supportive parenting are theorized to conform because they *want* to conform, or because each has integrated conventional behavioral expectations into his or her sense of self (i.e., each has developed a *normative self-concept*). In addition to providing a person with an inner motivation to conform, this normative self-concept supposedly fostered by autonomy-supportive parenting also may inhibit delinquency by reducing a person's exposure and susceptibility to external motivations to deviate.

First, research indicates that youth tend to socialize with peers who share similar normative beliefs and behaviors as themselves (Cairns and Cairns 1994; Matsueda and Anderson 1998; Warr 2002). Likewise, youth who associate with delinquent peers tend to commit the most delinquency (Akers 1998: 115-17; see also Agnew 1991; Warr and Stafford 1991; Warr 2002), and this link at least partially appears to reflect adolescents' tendencies to

conform to the normative expectations of their peer groups (for a detailed discussion and review, see Akers 1998: 114-26). Following this logic, adolescents who are exposed to autonomy-supportive parenting (and thus develop normative self-concepts) may be less likely to socialize with delinquent peers than their counterparts, and therefore may experience fewer peer pressures to deviate.

Second, recall that the normative self-concept presumably fostered by exposure to autonomy supportive parenting should be present and should provide inner motivation to conform *irrespective* of whether one faces external pressures to conform or to deviate in a given situation (i.e., as mentioned previously, autonomous self-regulation is not contingency-dependent). Therefore, when faced with peer pressures to deviate, adolescents exposed to autonomy-supportive parenting may be better able to resist these pressures because they will be motivated to act in a manner consistent with their normative self-concept.

2.4 Reactance

In addition to fostering self-control and possibly reducing one's exposure and susceptibility to delinquent peer influences, SDT suggests that parents who attempt to elicit compliance from their adolescents without adopting autonomy-supportive practices may risk invoking defiant reactions instead (Deci and Ryan 1987). This is because parents who do not employ autonomy-supportive practices presumably may fail to meet their adolescent's intrinsic needs for autonomy. Additionally, adolescents may experience parental attempts to elicit compliance as challenges to their autonomy if such parental control attempts are not made in autonomy-supportive parenting contexts.

These ideas are reminiscent of scholarship on “reactance” processes found in the criminological literature. The concept of reactance originates from Brehm’s (1966) *reactance theory*, which argues that people believe they have specific freedoms, and if a person perceives that a freedom is threatened, then he or she experiences psychological reactance, or the motivation to restore that freedom or to regain a sense of control (for a summary, see Brehm 1993). Following a similar logic, some criminological theories argue that delinquent behaviors represent defiant or “reactive” behavioral attempts to assert autonomy, achieve control, or vent frustrations in response to denials of individual autonomy or losses of control (Agnew 1997; Greenberg 1977; Katz 1988; Moffitt 1993; Tittle 1995; see also Brezina 2000; 2008). Also, consistent with these arguments, a growing body of research findings seem to indicate that at least some criminal or delinquent behaviors stem from individuals’ perceived needs for autonomy or control (e.g., Agnew 1984; Brezina 2000, 2008; Curry and Piquero 2003; Jacobs and Wright 2006; Piquero and Hickman 1999; Van Gundy 2002).

Tittle’s control balance theory (Tittle 1995; 2004) is perhaps the most explicit criminological application of these reactance ideas, and some of its arguments parallel SDT’s arguments regarding defiance. Control balance theory (CBT) starts with the assumption that all people have an intrinsic need or desire to escape control over themselves and to exercise more control over the social and physical world than they experience (1995:145-6). The theory argues that situational provocations, such as acts of degradation or challenges to one’s authority, can arouse feelings of humiliation and other negative emotions and, likewise, can result in one’s experiencing an acute awareness of lack of control. When this occurs, CBT asserts that people will be motivated to act in an effort to gain control.

According to the theory, a provoked individual will balance cognitively the potential control gained by any behavior with the potential counter-control likely to result from that action, and choose, perhaps subconsciously, the action that will result in the most favorable outcome in control gained. Further, CBT posits that one's ultimate choice of behavioral response to provocation depends largely upon that person's overall control ratio, or the average amount of control the individual can apply relative to the amount of control she experiences. People with balanced control ratios (i.e., those who can exert about as much control as they experience) usually are expected to find that acts of conformity provide the most favorable outcomes; conversely, those with imbalanced control ratios (i.e., relative deficits or surpluses of control) are anticipated to perceive deviance as providing the most desirable option for gaining or maintaining control.

The original formulation also described specific types of deviance (e.g., defiance; predation; exploitation) that an individual is most likely to commit depending upon her relative level of control (see Tittle 1995: 188-92). For example, the theory posits that people with moderate control deficits will be motivated to commit some form of deviance in an effort to gain control and rectify the imbalance; however, these people also have limited ability to exert control or to escape the counter-controls associated with serious forms of deviance. Thus, CBT predicts that those with moderate control deficits are most likely to respond to provocations with "defiant" forms of deviance. Defiant acts include a wide range of behaviors, such as disobedience, status offenses, vandalism, sullenness, protests, exaggerated overconformity, and excessive substance use, that are meant to challenge authority or express discontent, contempt, or hostility toward an individual or a normative

system (Tittle 1995: 138-9). These acts presumably allow individuals “to escape unfavorable control without running the risk that the full force of counter-control will be brought down upon them” (1995: 190).

In addition, Tittle suggests that adolescents, especially, are prone to react with defiant acts of deviance when facing challenges to their autonomy or control (1995: 241-9). He argues that although people “typically gain more ability to control as well as to escape control as they move from childhood to adulthood” (1995: 196), adolescence nonetheless is a transitional stage in which youth still are subjected to a great deal of control. As a result, adolescence may be a stage in the life-course that is typified by moderate overall control deficits (and likewise defiance).

Thus, both CBT and SDT postulate that some adolescents will react to a perceived lack of autonomy or control by committing defiant behaviors. SDT adds to this by asserting that autonomy-supportive parenting may reduce a youth’s perceived need for autonomy (or desire for control). Additionally, CBT offers a more complete explanation for why adolescents typically would choose defiant acts over conformity or other forms of deviance (i.e., due to their moderate control deficits). Drawing on both theoretical accounts, then, adolescents who are not exposed to autonomy-supportive parenting are expected to experience and act upon reactance motives to deviate when faced with challenges to their autonomy or control (such as parental demands); these youth also are expected to find defiant acts to be particularly desirable for rectifying a perceived lack of autonomy or control. In contrast, adolescents who are exposed to autonomy-supportive parenting are expected to have more balanced control ratios than their counterparts; as a result, these adolescents may

be less likely to perceive parental control attempts as challenges to their autonomy or control, and also should be less likely to perceive defiant deviance (and its associated counter-control) as a desirable response to provocation.

2.5 Alternative Pathways

In contrast to the arguments presented above, which are drawn from the logic of SDT, the criminological research literature seems to provide some reasons to expect a *positive* association between autonomy-supportive parenting and adolescent delinquency. First, recall that parental supervision has been consistently linked to lower levels adolescent delinquency (e.g., Patterson and Dishion 1985; Wells and Rankin 1988). Though it is not traditionally considered an indicator of autonomy-supportive parenting, parental supervision typically is viewed as form of parental control; as such, a *lack* of such control may be conceptualized as a form of autonomy-supportive parenting. That is, children exposed to low levels of parental supervision are essentially granted the autonomy to act as they desire, without the constant pressure or fear of sanctions that can result from parental monitoring.

Conceptualized in this manner, the prior research discussed earlier, linking greater parental supervision to lower levels of delinquency, seems to be at odds with the arguments derived from SDT. Furthermore, recall that some scholars have suggested that parental supervision, a form of parental control, may reduce delinquency indirectly, by fostering the development of self-control (Gottfredson and Hirschi 1990; Unnever, Cullen, and Agnew 2006), or by minimizing youth's time spent in unstructured socializing with peers (Agnew and Petersen 1989; Osgood and Anderson 2004). Similarly, recall that Goldstein and

colleagues (2005) found that autonomy-supportive parenting in early adolescence actually exacerbates delinquency, by increasing time spent in unstructured socializing with peers (see also Beveridge and Berg 2007). Thus, it follows from this literature that autonomy-supportive parenting, the opposite of controlling parenting, might actually increase adolescent delinquency, by reducing self-control, or by increasing a youth's exposure to delinquent peers.

2.6 Summary and Hypotheses

In this section, I described specific theoretical pathways by which autonomy-supportive parenting is expected to inhibit adolescent delinquency. Several of these pathways are reworded below as testable hypotheses; each hypothesis is also relisted in Table 2.1.

On a general level, autonomy support is thought to promote child well-being and inhibit adolescent delinquency, and therefore may be conceptualized as one form of social support that parents provide for their children. In other words, like parental provisions of emotional and instrumental support (see Wright and Cullen 2001), autonomy-supportive parenting may be expected to act in most cases as a “protective factor” that restricts youths’ participation in delinquency. Likewise, the first hypothesis states this posited general relationship between parental autonomy support and adolescent delinquency.

H₁: Autonomy-supportive parenting will be negatively associated with adolescent delinquency.

With regard to specific theoretical pathways, self-control is first identified as a potential mediator of the relationship between autonomy-supportive parenting and adolescent

delinquency. Recall, since autonomy-supportive parenting practices presumably encourage a youth to consider the consequences of her potential actions and to integrate normative expectations into her sense of self, these practices are predicted to inhibit adolescent delinquency by producing higher levels of self-control. As a result, the second, third, and fourth hypotheses address this mediating relationship.

H₂: Autonomy-supportive parenting will be positively associated with adolescent self-control.

H₃: Adolescent self-control will be negatively associated with adolescent delinquency.

H₄: Adolescent self-control will partially mediate the relationship between autonomy-supportive parenting and adolescent delinquency

The second pathway involves potential linkages between autonomy-supportive parenting, adolescent delinquency, and peer pressures to deviate. First, autonomy-supportive parenting is expected to inhibit delinquency by fostering the development of a normative self-concept; this, in turn, is expected to encourage a youth's selection into conventional peer groups and likewise reduce a youth's exposure to delinquent peer pressures. Given the lack of specific measures of youths' normative self-concepts, the fifth, sixth, and seventh hypotheses explore the possibility that autonomy-supportive parenting inhibits delinquency by reducing youths' exposures to delinquent peer pressures.

H₅: Autonomy-supportive parenting will be negatively associated with delinquent peer pressures.

H₆: Delinquent peer pressures will be positively associated with adolescent delinquency.

H₇: Delinquent peer pressures will partially mediate the relationship between autonomy-supportive parenting and adolescent delinquency.

By fostering the development of a normative self-concept, autonomy-supportive parenting is also expected to bolster a youth's ability to resist temptation when faced with peer pressures to deviate. Thus, the eighth hypothesis explores the possibility that autonomy-supportive parenting moderates the relationship between delinquent peer pressures and adolescent delinquency.

H₈: Delinquent peer pressures will interact with autonomy-supportive parenting in predicting adolescent delinquency, such that delinquent peer pressures will share a weaker positive association with delinquency among adolescents exposed to greater levels of autonomy support.

In a third theoretical pathway, adolescent delinquency is conceptualized as one specific manifestation of general defiant behavior resulting from an adolescent's perceived lack of autonomy or control. Further, autonomy-supportive parenting is theorized to reduce the likelihood of adolescent delinquency by reducing a youth's perceived need for autonomy or desire for control. Given the lack of specific measures of control ratios or reactance motives in the current study, the ninth, tenth, and eleventh hypothesis explore the possibility that autonomy-supportive parenting inhibits delinquency by reducing youths' general defiance, as indicated by the extent of a youth's dishonesty with parents. This indicator, then, is expected to act as a proxy for a youth's level of reactance or motivation to defy parents.

H₉: Autonomy-supportive parenting will be negatively associated with defiance.

H₁₀: Defiance will be positively associated with adolescent delinquency.

H₁₁: Defiance will partially mediate the relationship between autonomy-supportive parenting and adolescent delinquency.

Finally, in contrast to the above hypotheses, some criminological literature provides a basis for expecting autonomy-supportive parenting to *increase* adolescent delinquency. Specifically, drawing from research on parental supervision and from Goldstein and colleagues' (2005) research, autonomy-supportive parenting may provide youth with the autonomy required to commit delinquency, perhaps by freeing them from the internalized inhibitions that are typically produced by parental control (i.e., by impeding the development of self-control), or by granting youth the freedom to socialize with delinquent peers.

H_{A1}: Autonomy-supportive parenting will be positively associated with adolescent delinquency.

H_{A2}: Autonomy-supportive parenting will be negatively associated with self-control.

H_{A3}: Autonomy-supportive parenting will be positively associated with delinquent peer pressures.

H_{A4}: Self-control and delinquent peer pressures will partially mediate the positive relationship between autonomy-supportive parenting and delinquency.

CHAPTER 3

DATA AND METHODS

3.1 Data

An adequate assessment of the hypotheses described above requires data with certain features. First, the data must include measures of key theoretical constructs, such as autonomy-supportive parenting, self-control, defiance, peer pressures to deviate, and adolescent delinquency. Second, longitudinal data are preferred to permit examination of autonomy-supportive parenting's potential long-term effects on adolescent delinquency.

The Children of the National Longitudinal Survey of Youth 1979 (C-NLSY79) is a data source well suited for these purposes. The original National Longitudinal Survey of Youth 1979 (NLSY79) is a panel study administered to 12,686 individuals between the ages of 14 to 21 years old in 1979 and included an oversample of Black and Hispanic respondents. The C-NLSY79, which is sponsored by the US Bureau of Labor Statistics and the National Institute for Child Health and Human Development, started in 1986 and continues on a biennial schedule. It is comprised of all children born to the 6,283 original women of the NLSY79; at the 2006 wave, the subjects of the C-NLSY79 were estimated to represent more than 90% of all children ever to be born to these women (Bureau of Labor Statistics 2009).

Starting with the 1994 survey, children between the ages of 10-14 responded to a consistent set of questions in the Child Self-Administered Supplement about a wide range of topics, including parenting practices and self-report delinquency. Also, starting in 2002, children age 15 and over responded to a set of self-report delinquency questions in the Young

Adult Survey that were consistent with those responded to in earlier waves (i.e., in the Child Self-Administered Supplement). Due to the nature of these data collection procedures, children born between 1986 and 1992 have between three and five potential observation occasions between the ages of 10 and 17 (collected from 1996-2008). Table 3.1 displays the typical data observation occasions for this subsample by child's year of birth.⁵

Respondents were retained in the analytic sample if: (1) their first delinquency observation occurs between ages 10 to 12, and (2) they have a corresponding observation for each of the key independent variables in this study (i.e., autonomy supportive parenting and the theoretical mechanisms) at the first measurement occasion. These data are exceptionally complete on the key variables in this study – of the 2,158 respondents whose first delinquency observation occurs between ages 10 and 12, 89% (n=1,919) also have corresponding data on the key independent variables at the first measurement occasion. Furthermore, the average respondent has 3.3 delinquency observations between 10 and 17. Specifically, of the 1,919 respondents with complete data on the delinquency, autonomy-supportive parenting, and theoretical mechanism measures, 1,837 have a second delinquency observation; 1,611 have a third delinquency observation; 840 have a fourth delinquency

⁵ Children born before 1986 were not asked to respond to key parenting questions during ages 10-14, and/or they were not consistently asked the same set of delinquency questions throughout all observation occasions (i.e., during ages 10-17). Similarly, children born after 1993 had not yet reached age 15 (i.e., the age at which youths respond to the Young Adult Survey) by the last available wave, and thus have fewer than three potential observation occasions for self-report delinquency.

observation; and 46 have a fifth delinquency observation. This sampling procedure yields an analytic sample of 6,253 observation occasions for 1,919 children born to 1,477 mothers.

In this study, all models are estimated using a multilevel modeling approach that uses available time points from any participant who has been observed at least once (see Raudenbush and Bryk 2002; Singer and Willett 2003). An advantage of this approach is that it ensures unbiased estimation, even when using an unbalanced longitudinal dataset (i.e., where individuals have different numbers of observations), as long as data are missing at random (for a discussion, see Raudenbush & Bryk, 2002: 199-200). Further, listwise deletion of missing data produces reliable estimates in these designs when the sample size is large and the proportion of missing data is relatively low (Gibson and Olejnik, 2003).

Although the proportion of missing data is low across the key independent variables, multivariate listwise deletion across these variables and all control variables would result in substantial data loss – about 24% of subjects and 33% of total person-time observations are missing on at least one covariate in this study.⁶ Parameter estimates may be biased when listwise deletion is used and substantial data are missing. Therefore, after listwise deleting cases that were missing observations on the key variables representing delinquency, autonomy-supportive parenting, and theoretical mechanisms, a multiple imputation procedure was then performed to replace missing values on all control variables. Multiple imputation uses information from all variables in a study to substitute missing observations

⁶ In addition to arbitrary missingness due to attrition and item non-response, some observations are missing because a random subset of children of mothers from the original NLSY79 oversample of Blacks and Hispanics were not surveyed in 2000 due to budgetary restrictions.

with a set of plausible values that account for the uncertainty of missing values, while simultaneously preserving the intercorrelations between variables (for a detailed discussion of multiple imputation, see Schafer and Graham 2002). Specifically, the Markov Chain Monte Carlo (MCMC) method in SAS PROC MI was used to construct five imputed datasets; for the few cases with imputed values that fell outside the range of observed values, the imputed values were truncated to fit the observed range of plausible values (e.g., imputed values for binary variables below 0 or above 1 were rounded 0 or 1, respectively). SAS procedures (e.g., PROC MEANS for descriptive statistics, PROC CORR for bivariate correlations, PROC GLIMMIX for multilevel models, and PROC SURVEYREG for cross-sectional models) were then performed across all five datasets, and parameters were subsequently combined using PROC MIANALYZE (for a description of this procedure, see Yuan 2010).⁷

3.2 Measurement

General measurement strategies

Table 3.2 displays the survey items used to measure theoretical constructs and exogenous control variables.

In constructing scales and indices, factor analysis with oblique (promax) rotation was performed to assess whether constituent items form a single underlying dimension. Given the pooled longitudinal nature of the data, these analyses were limited to the response values for

⁷ Additional models estimated after listwise deletion on all variables produced identical substantive conclusions.

each item at a subject's initial observation occasion (i.e., at age 10 to 12). Unless otherwise noted, items that are included in the final scales or indices all loaded satisfactorily on only one dimension, using a cutoff of .400, and each improved the reliability of the scale, as demonstrated by an increase in Cronbach's alpha. Cronbach's standardized alpha reliability coefficients for multi-item scales and indices are reported in table 3.2.

For scales or indices comprised of three or more items, scores were computed as the person-mean of available items if 60% or more of the items were answered. Although mean substitution is often discouraged at the variable level because it can lead to biased estimates, person-mean imputation at the item level preserves a great deal of information while yielding efficient and unbiased results when a multi-item scale is unidimensional and has a relatively high reliability (e.g., alpha = .50; see Graham 2009; Jeličić, Phelps, and Lerner 2010; Roth, Switzer, and Switzer 1999).

Table 3.3 presents descriptive statistics for all primary variables in their original metrics (i.e., before centering).⁸ All non-dummy independent variables were grand-mean centered in multivariate analyses to aid interpretation of the intercept and to reduce

⁸ Other researchers analyzing these data have used weights to correct for bias resulting from oversampling in the NLSY's survey design (e.g., Parcel and Menaghan 1994). However, using weighted data in longitudinal regression analyses may result in substantial miscalculations of standard errors (Vander Ven et al. 2001). Instead, bias is reduced in this study by introducing controls for overrepresented characteristics in each analytic model (e.g., race/ethnicity, SES, maternal education, mother's cognitive ability; see Guo 1998; Vander Ven et al. 2001; Winship and Radbill 1994).

nonessential multicollinearity associated with the introduction of cross-product interaction terms (Jaccard et al. 1990; Aiken and West 1991; Cohen et al. 2003).

Delinquency

The primary dependent variable – *adolescent's self-reported delinquency* – is a scale constructed as a sum of the counts of the number of times a youth committed each of six different acts of delinquency in the past year. Each original item ranges from 0 = none, to 3 = more than two times. These acts include a range of violent, property, and status offenses that are commonly studied in criminological research, including staying out past a parental curfew, seriously hurting someone, shoplifting, vandalizing school property, getting drunk, and staying out all night without permission.⁹

Additional analyses were performed to check for robustness of findings across alternate measurement specifications for the dependent variable. First, since the primary measurement strategy essentially grants greater weight to higher frequency items, models were re-estimated using an alternative “variety” delinquency index created as a sum of dichotomous versions of the original six items, thereby representing the number of delinquent acts that a youth reported committing at least once in the past year. Second, a delinquency measure comprised only of the four items pertaining to vandalism and status offenses (staying out past a parental curfew, vandalizing school property, getting drunk, and

⁹ The factor loading for the first curfew item was .31, which is below the .4 cutoff. However, the item was retained because all items loaded on only one factor, and removal of this item would not have significantly improved the scale's reliability.

staying out all night without permission) was also used because these items most closely resemble Tittle's (1995) definition of defiant acts of deviance.

Autonomy-supportive parenting

Autonomy-supportive parenting is measured by three variables that tap the extent to which (1) a youth perceives parents as treating him/her as capable of making important decisions by granting him/her a say in family rules; (2) a youth perceives parents as communicating with him/her as an individual capable of independent and meaningful thought by talking to him/her about important issues and by listening to his/her side in an argument; and (3) a youth feels parents allow him/her to act according to his/her own desires as opposed to feeling pressured by his/her parents to act in particular ways. The items used to construct these three variables are similar to those found in the Autonomy Support portion of Grolnick, Ryan, and Deci's (1991) Perceptions of Parents Scale (see also Soenens, Vansteenkiste, Lens, Luyckx, Goossens, Beyers, and Ryan 2007).

The first variable, *autonomy-supportive rule-setting*, is created as the mean of two items that ask how much say a youth has in family rules regarding doing homework and hanging out with friends.¹⁰ The second variable, *autonomy-supportive communication*, is created as the mean of two separate measures that tap the extent to which (a) parents talk to the youth about important issues and (b) parents listen to the youth's side in an argument.

¹⁰ An additional item, representing how much say a youth has in rules about watching television, was not included because it failed to load above the .4 cutoff in factor analysis and because it lowered the reliability of the overall scale and of the rule-setting subscale.

Following Soenens and colleagues (Soenens et al. 2007; Soenens, Vansteenkiste, and Sierens 2009), in cases where a father or stepfather is in the household and responses on these items are also available for the father figure, each measure is constructed as the mean of responses regarding mom's and dad's (or stepdad's) parenting practices. The third variable, *psychological autonomy support*, is measured using one global indicator of the extent to which a youth feels pressured by his/her parents (reversed so that higher scores indicate more autonomy-supportive parenting).

Factor and reliability analyses suggested that these variables may represent qualitatively unique forms of autonomy support. Specifically, a factor analysis of all five items theoretically tapping autonomy supportive parenting did not produce an interpretable factor (i.e., the analysis failed to identify a dimension with an eigenvalue greater than one), and a scale reliability analysis of all five items produced a low Cronbach's alpha of .36. In addition, after constructing the three separate autonomy-supportive parenting measures that appear to have face validity (i.e., rule-setting, communicative, and psychological autonomy support), a scale reliability analysis of these three variables produced a very low Cronbach's alpha of .10. Based upon these analyses, each of these three variables tapping autonomy-supportive parenting is included separately in multivariate analyses.

Theoretical mechanisms

Self-control is measured as an additive scale comprised of five items that assess a youth's impulsivity and risk-seeking behavior (see table 3.2).¹¹ While the Cronbach's alpha coefficient is relatively low for this scale (.60), factor analysis indicated the existence of only one factor, with the lowest factor loading at 0.4, and alpha reliability would not have been improved by eliminating any of the items. *Delinquent peer pressure* is constructed as an additive index consisting of five items that assess the extent to which a youth feels pressure from peers to engage in various deviant behaviors (see table 3.2). The third process measure, *defiance*, is tapped using an indirect indicator that assesses the extent to which a youth lies to or withholds information from his/her parents, created as the mean of five separate items (see table 3.2).

¹¹ This measure captures two important cognitive dimensions of self-control (Gottfredson and Hirschi 1990; Grasmick, Tittle, Bursik, and Arneklev 1993; see also Arneklev, Grasmick and Bursik 1999; Arneklev, Grasmick, Tittle and Bursik 1993). While previous research in criminology has used items from the Behavior Problems Index (BPI) to construct behavioral measures of self-control (e.g., Chapple 2005; Nozfinger 2008; Turner & Piquero 2002), cognitive measures are used in this study to avoid tautology concerns raised by the conceptual overlap between these BPI items and the minor forms of delinquency examined here. Further, despite some debate concerning whether cognitive or behavioral indicators should be used to tap self-control (Hirschi and Gottfredson 1993; 1995; 2008; see also Higgins 2007; Piquero 2008), recent evidence suggests that overall results largely are unaffected by authors' measurement or scaling procedures (see Pratt and Cullen 2000; Tittle, Ward, and Grasmick 2003).

Control variables

Numerous exogenous sources of potential influence over adolescent behavior are also explicitly controlled for in all models (see Table 3.2). Since each of these control variables either represents a known correlate of crime and delinquency (Ellis, Beaver, and Wright 2009), or has been previously associated with youths' behavioral development (Parcel and Menaghan 1994), the inclusion of these control variables should minimize bias caused by unmeasured characteristics at each level of analysis.

First, prior research has consistently shown higher rates of delinquency among male youth (Cernkovich and Giordano 1987; Heimer and De Coster 1999), as well as among those who are less religious (Baier and Wright 2001; Evans et al. 1995), those living in urban areas (Elliott et al. 1989; Heimer 1997), and those whose parents previously engaged in delinquency (McCord 1979). *Sex* is included as a time-invariant youth (level-2, or L2) characteristic, and is represented by a dummy variable indicating the youth is male or female (baseline). *Religiosity* is a L2 variable indicating how frequently the youth attends religious services (ranging from 0 = *not at all* to 5 = *more than once a week*). *Urban residence* is a L2 dummy variable indicating the youth lives in an urban area or a rural area (baseline). *Mom's crime/delinquency* is included as a time-invariant family (level-3, or L3) characteristic in 1980, and is measured by an index comprised of twelve items representing various violent, property, and drug offenses that the child's mother engaged in during 1979.¹²

¹² Three items, representing gambling, selling hard drugs, and use of force, were not included because their respective factor loadings were below the .4 cutoff and because removing them improved the scale's reliability.

Research has also documented lower rates of delinquency among youth with married parents (Demuth and Brown 2004), those with older parents (Morash and Rucker 1989), youth from smaller families (Tygart 1991), and those born earlier than their siblings (e.g., firstborn versus second-born, etc.; LeFlore 1988). *Parents' marital status* is measured as a time-varying (level-1, or L1) dummy variable indicating the youth's mother is married or unmarried (baseline) in the current wave. *Mother's age at child's birth* and *family size* are L2 variables that are measured at the child's first observation. *Birth order* is measured using L2 dummy variables indicating that the youth is either the firstborn child (baseline), or the second-born, third-born, or fourth-born or later child.

In addition, race/ethnicity, socioeconomic status, and maternal employment are controlled for in this study, although past research has found these to be inconsistent predictors of self-reported general delinquency (c.f., *race/ethnicity*: Elliott et al. 1989; Felson and Staff 2006; Heimer 1997; Vazsonyi and Flannery 1997; Weber et al. 1995; *socio-economic status*: Cernkovich and Giordano 1992; Tittle, Villemez, and Smith 1978; Wright et al. 1999; *maternal employment*: Broidy 1995; Hirschi 1969; Nye 1958; Vander Ven et al. 2001). *Race/ethnicity* is measured using dummy variables indicating the youth is black, Hispanic, or white, non-Hispanic (baseline). Socioeconomic status is tapped by entering two separate L1 indicators into each model: *mother's highest grade completed* and *total family income* (in constant 2008 dollars). Following Parcel and Menaghan (1994), *maternal employment* is measured using L1 dummy variables indicating the youth's mother either did not work (baseline), or worked a low part-time (less than 20 hours per week), a moderate part-time (20-34 hours), a full-time (35-40 hours), or an overtime (more than 40 hours) work

schedule in the previous year.

Mother's cognitive skills and mother's perceived mastery are also controlled for in this study. Prior research has conceptualized mother's cognitive skills and mother's perceived mastery as individual resources that can affect parenting and child well-being, and each has been linked to child antisocial behavior or delinquency (Parcel and Menaghan 1994; Vander Ven et al. 2001). *Mother' cognitive skills* are measured with a percentile score from the Armed Forces Qualification Test (AFQT), an aptitude test given to all NLSY79 subjects in 1980. *Maternal mastery* is measured using the Pearlin Mastery scale (Pearlin et al. 1981), which was administered to all respondents in 1992, and is scored so that higher values indicate the respondent perceives having greater control over his or her life.¹³

Finally, parental supervision is also treated as a control variable in this study. However, while all other controls are treated as exogenous and entered into models prior to the inclusion of autonomy-supportive parenting, parental supervision is entered afterwards. This is because the lack of parental supervision, as discussed earlier, logically may be conceptualized as a behavioral form of autonomy-supportive parenting. As a result, treating parental supervision as an exogenous control may result in attenuation bias (i.e., due to conceptual and empirical overlap, its prior inclusion may attenuate the effects of the autonomy-supportive parenting variables). *Parental supervision* is a L2 variable indicating

¹³ The factor loading for the item representing one's perceived control over what happens in the future was .38, which is below the .4 cutoff. However, the item was retained because all items loaded on only one factor, and removal of this item would not have improved the scale's reliability.

how often the youth's mother (and father/stepfather where applicable) knows who he or she is with when away from home (ranging from $0 = \text{hardly ever}$ to $2 = \text{often}$).

3.3 Analytic Strategy

Multi-level modeling

The hypotheses pertaining to delinquency are tested using a multi-level modeling (MLM) approach that assesses all available data across individuals and at multiple points in time using a person-period data format. Specifically, the MLM procedure used in this research employs maximum likelihood estimation to model fixed effects coefficients and variance/covariance structures of random effects simultaneously (see Raudenbush and Bryk 2002; Singer and Willet 2003). While the fixed effects coefficients produced by these models are similar to the coefficients produced by OLS regression, the random effects estimation allows a researcher to account for the nested structure of longitudinal data by nesting observations hierarchically in conceptually meaningful clusters, or levels. In this study, youth-wave observations are nested within youth, and youth are nested within families (or mothers); thus, data observations from a given adolescent at a given wave of data are at the first level (L1), adolescents are at the second level (L2), and families (or mothers) are at the third level (L3). Figure 3.1 provides a graphical display of the hierarchical data structure of these C-NLSY data.

Since the dependent variable in this study is constructed from count data that contain many zeros, models predicting delinquency are specified with a Poisson sampling

distribution and log-link function to normalize the distribution of residuals; these models were estimated using PROC GLIMMIX in SAS 9.2. Unconditional growth models of adolescent delinquency were estimated by including a linear slope term for age, centered at age 13, as the measure of time and by including a quadratic term for age. A series of preliminary models were then estimated to determine whether coefficients should be treated as random or fixed. Based on the significance of random variance components in these models, the L3 intercept, L2 intercept, and linear age coefficient are specified with random variance components (see procedure described in Raudenbush and Bryk 2002). In addition, a random residual variance component is included in models predicting delinquency to adjust for over-dispersion.

Testing mediation and moderation hypotheses

A series of models were estimated to determine whether the observed relationships among variables in the data are consistent with the theoretical mediation processes described above. Specifically, these models examine (a) whether autonomy-supportive parenting is correlated with later delinquency, (b) whether autonomy-supportive parenting is correlated with the potential mediating variables (e.g., self-control), (c) whether the potential mediating variables are correlated with later delinquency, and (d) whether the total effect of autonomy-supportive parenting is reduced (suggesting partial mediation) or rendered statistically non-significant (suggesting complete mediation) after including the potential mediators into models predicting later delinquency. The logic underlying this modeling strategy is based upon Baron and Kenny's (1986) classic "causal steps" procedure, which is commonly used to

examine mediation hypotheses (see MacKinnon, Lockwood, Hoffman, West, and Sheets 2002; Wu and Zumbo 2008).¹⁴ Models predicting delinquency were estimated using PROC GLIMMIX as described above. Alternatively, since autonomy-supportive parenting, self-control, peer pressure, and defiance are measured with time-invariant variables gathered at the first observation, models predicting the hypothesized mechanisms are estimated with cross-sectional data from the first observation using PROC SURVEYREG. This procedure is preferable to standard ordinary least squares regression when using data such as the NLSY, which employed a complex survey design, because it adjusts standard errors to account for bias possibly resulting from the clustering of youths within families.

¹⁴ It is important to note that the approach used here is not intended to provide a direct test of the statistical significance of a mediation effect; rather, it uses data analysis to provide statistical evidence for whether a theoretically specified mediation effect is in place (for a detailed discussion, see Wu and Zumbo 2008). Alternative tests for mediation are inhibited by the multilevel nature of these data, the distributional differences across delinquency and its predictors, and the complex nature of the “total effects” examined in this study (which include effects on both intercepts and slopes of growth curves). However, if a precise test of the statistical significance of mediation effects were the primary goal, then the procedure used here should provide a reasonably accurate and relatively conservative test compared to alternative procedures, especially given the large sample sizes that will be used in this research. For instance, in their comparison of 14 methods to test the statistical significance of mediating effects, MacKinnon and colleagues note that, relative to other procedures, “the causal steps methods described by Kenny and colleagues are the most likely to miss real effects but are very unlikely to commit a Type I error” (2002: 13). They also note that the estimates produced by nearly all procedures examined (including the “causal steps” approach) had minimal bias, and that “relative bias decreased as sample size and effect size increased for all estimates” (2002: 11).

Note that another requirement for establishing mediation is proper temporal ordering among variables (Wu and Zumbo 2008). Items comprising the measures of autonomy-supportive parenting and its potential mediators are taken from the same waves of data, leaving doubts about the true causal ordering of these variables. Thus, lagged cross-sectional mediation models are re-estimated for all respondents who have a second observation on self-control, peer pressure, and defiance to examine whether autonomy-supportive parenting predicts lagged versions of these potential mediating variables. Furthermore, since delinquency is comprised of one-year retrospective items and the predictor variables are current measures, temporal ordering is unclear at the first observation occasion in growth curve models. Therefore, to minimize concerns regarding reverse causation or spurious correlation due to simultaneous measurement at the first dependent variable observation, additional lagged cross-sectional models are estimated with PROC GLIMMIX using delinquency measures at different lag specifications (i.e., concurrent, one-wave lag, two-wave lag; three-wave lag, and four-wave lag).

In examining the hypothesized moderating effect of autonomy-supportive parenting, product term variables are used to identify whether statistically significant interactions exist net of the conditional effects of constituent variables (see Jaccard, Wan, and Turisi 1990; Cohen, Cohen, West, and Aiken 2003). Specifically, the separate (additive) effects of autonomy-supportive parenting and deviant peer influence are first included in models predicting delinquency; these additive models are then followed by the inclusion of corresponding multiplicative product terms that model any conditional (non-additive) effects of these variables.

CHAPTER 4

RESULTS

4.1 Bivariate Associations

Table 4.1 reports bivariate correlation coefficients for all study variables at the respondent's first observation.

First, in contrast to theoretical expectations, these preliminary results suggest young adolescents (i.e., ages 10-12) whose parents grant them more autonomy in rule-setting engage in general delinquency to a slightly greater extent compared to young adolescents that are granted less of a say in rules. Also in contrast to expectations, these results suggest that young adolescents who are granted more say in rules have lower levels of self-control, experience more delinquent peer pressure, and exhibit more defiance towards parents.

Alternatively, consistent with theoretical expectations, young adolescents whose parents grant more communicative autonomy and more psychological autonomy participate in modestly lower levels of general delinquency than do their less autonomy-supported counterparts. Also consistent with expectations, these young adolescents appear to have greater levels of self-control, experience fewer delinquent peer pressures, and exhibit less defiance towards parents compared to their less autonomy-supported counterparts.

In addition, the bivariate results report several correlates of autonomy-supportive parenting; a few of these correlates will be relevant in later substantive discussions and thus are identified here. First, young adolescents in families with higher socioeconomic status (SES), as measured by mother's education and by total family income, are granted less

autonomy in rule-setting yet more communicative and psychological autonomy than their counterparts in lower-SES families. Second, female adolescents report experiencing slightly less autonomy in rule-setting yet more psychological autonomy compared to male adolescents. Third, young adolescents who are highly supervised exhibit less delinquency, and are granted less rule-setting autonomy yet more communicative and psychological autonomy, compared to their less supervised counterparts.

Finally, these bivariate findings also show links between delinquency and each of the hypothesized mechanisms that are consistent with theoretical expectations and with prior research. Specifically, early adolescent delinquency shares a statistically significant negative association with self-control and significant positive associations with delinquent peer pressure and defiance.

4.2 Autonomy-supportive Parenting and Trajectories of Delinquency

Table 4.2 presents Poisson regression coefficients from multilevel models examining linkages between autonomy-supportive parenting and delinquency. Models 1, 2, and 3 explore the separate effects of each autonomy-supportive parenting indicator on delinquency event rates after controlling for other potential covariates of adolescent delinquency. Model 4 includes all three indicators of autonomy-supportive parenting to estimate the net effects of each indicator on delinquency after controlling for other potential covariates.

Model 1 shows a statistically significant, modest effect of autonomy-supportive rule-setting on the slope of delinquency event trajectories; this effect is displayed graphically in panel A of figure 4.1. As the figure shows, this finding provides mixed support for the first

hypothesis. Contrary to *hypothesis 1* (yet consistent with the first alternative hypothesis), adolescents who have a greater say in household rules commit slightly more delinquency than do their less autonomy-supported counterparts during early adolescence; however, consistent with *hypothesis 1*, these autonomy-supported youths commit slightly lower rates of delinquency in later adolescence relative to their counterparts.

According to models 2 and 3, autonomy-supportive communication and psychological autonomy support both are correlated, net of controls, with delinquency event trajectories in adolescence; these associations are displayed graphically in panels B and C, respectively, of figure 4.1. These models provide support for *hypothesis 1* (and contradict the first alternative hypothesis), as each of these forms of autonomy-supportive parenting is associated with moderately lower average delinquency event rates. In addition, these findings suggest that exposure to greater communicative and psychological autonomy support in early adolescence (i.e., between ages 10-12) may result in long-term reductions in delinquency during adolescence. First, both effects remain statistically significant at age 13, or the model intercept of delinquency trajectories; furthermore, the protective effect of these forms of autonomy support on adolescent delinquency persists into the mid-teenage years before diminishing to non-significance.

After simultaneously including all three forms of autonomy-supportive parenting along with parental supervision in model 4, the coefficients for rule-setting and psychological autonomy, though slightly attenuated, maintain the same direction and significance levels from the previous models; thus, these two forms of autonomy support appear to operate independently in their influences on delinquency trajectories during adolescence. In contrast,

the coefficient for communication is rendered statistically non-significant net of the other autonomy-supportive parenting measures. Examination of the bivariate correlation matrix (see Table 4.1) indicates that autonomy-supportive communication is unrelated to autonomy-supportive rule-setting, yet positively associated with psychological autonomy support ($b=.12$) and parental supervision ($b=.31$). In other words, young adolescents who feel that their parents communicate with them in an autonomous manner also are less likely to feel pressured by their parents and more likely to be highly supervised. Given these bivariate associations, the lack of a significant effect for autonomy-supportive communication in model 4 might indicate that the communicative autonomy support, psychological autonomy support, and parental supervision measures each partially tap the same underlying theoretical construct.

Overall, these findings provide mixed support for *hypothesis 1*, as the relationship between autonomy-supportive parenting and delinquency appears to depend upon the type of autonomy support examined and, at least for rule-setting, on the period of adolescence examined.

4.3 Theoretical Mechanisms

Tables 4.3 and 4.4 provide results of models exploring the hypothesized processes by which autonomy-supportive parenting is theorized to influence delinquency. Table 4.3 reports a series of Poisson multilevel regression models in which parenting (model 1; results reproduced from model 4 of table 4.2), self-control (model 2), delinquent peer pressure (model 3), and defiance (model 4) are introduced sequentially to predict delinquency; these

models test *hypothesis 3, 4, 6, 7, 10, and 11*. Table 4.4 presents clustered survey regression models predicting each theoretical mechanism – self-control (model 1), delinquent peer pressure (model 2), and defiance (model 3) – as outcome variables at the respondent's first observation; these models are designed to test *hypothesis 2, 5, and 9*.

Theoretical mechanisms and adolescent delinquency

According to table 4.3, self-control, delinquent peer pressure, and defiance are significantly associated with adolescent delinquency in the theoretically expected directions. First, consistent with *hypothesis 3*, self-control retains a robust negative correlation with delinquency across the period of adolescence examined, demonstrating that self-control has a relatively time-stable, direct negative effect on delinquency. However, the significant positive age interaction in model 2 indicates that the negative association between self-control and delinquency is strongest at the earliest ages (i.e., when self-control is measured). Also, this age interaction is reduced to non-significance after introducing delinquent peer pressure and defiance (see model 4); this finding might suggest that, in addition to its direct effect, self-control indirectly inhibits delinquency to a greater extent during early adolescence by reducing youths' susceptibility to delinquent peer pressures and restraining defiant reactions at this developmental stage.

Second, consistent with *hypothesis 6*, exposure to delinquent peer pressure in early adolescence is positively associated with adolescent delinquency (model 3 and 4 of table 4.3). However, the significant negative age interaction indicates that this relationship diminishes in later adolescence, perhaps indicating that older adolescents, as a result of

having developed more stable identities, are better able to resist peer pressures to deviate (Warr 2002: 105, 108). Alternatively, the finding that early adolescent peer pressure is a poor predictor of delinquency in later adolescence may not be surprising in light of research showing that even relatively close adolescent friendships are characterized by uncertainty, shifting alliances, and fluidity and that, likewise, few adolescent friendships last longer than a year (Cairns and Cairns 1994; Cairns et al. 1995; Connolly, Furman, and Konarski 2000; Degirmencioglu et al. 1998; Giordano 2003; Ryan 2001). Thus, measures of delinquent peer pressure experienced in early adolescence might be less relevant to delinquency in later adolescence because youth's friendship networks could have changed dramatically over the course of adolescence.

Third, as predicted in *hypothesis 10*, defiance in early adolescence is positively associated with adolescent delinquency (model4 in table 4.3). Additionally, the significant, negative age-interaction indicates that this relationship is strongest in earlier adolescence. A more proximate measure of defiance may be better able to predict delinquency during later adolescence, as the nature and extent of youth defiance may vary across adolescence. For instance, during later adolescence, youth typically strive for individuality or independence from their parents while simultaneously attempting to maintain close relationships or connectedness with parents (Allen et al. 1994; Buhl 2008; Grotevant and Cooper 1985; Youniss and Smollar 1985). As part of this process of individuation, conflict with parents is theorized to be an important mechanism by which youths increase independence from parents, while the relative permanence of parent-youth ties assures youths that the relationship will continue regardless of outcome (Laursen 1995; Laursen and Collins 1994;

Laursen, Wilder, Noack, and Williams 2000). Given this, it is possible that instead of defiantly withholding information from their parents, young adolescents might lie about acting against parents' expectations in an attempt to maintain a close relationship with their parents during this stage of development. Alternatively, in later adolescence, youth may be more forthright with their parents about defying their expectations in an attempt to assert their autonomy, while relying on the relative stability of the parent-youth relationship to ensure connectedness with their parents; if this were the case, it would account for the diminishing empirical relevance of the defiance measure to delinquency that was observed during these later ages.

Linking autonomy-supportive parenting to adolescent delinquency

First, according to the results of cross-sectional clustered regressions at the first observation in table 4.4, autonomy-supportive rule-setting is not significantly associated with self-control, delinquent peer pressure, or defiance in early adolescence, net of controls and the other indicators of autonomy support. These results challenge *hypotheses 2, 5, and 9* respectively (and challenge the second and third alternative hypotheses as well).

Furthermore, model 4 of table 4.3 shows that autonomy-supportive rule-setting retains its significant effect on the delinquency trajectory's slope after introducing each theoretical mechanism; this effect is displayed graphically in panel A of figure 4.2. However, as the figure shows, the positive association between autonomy-supportive rule-setting and delinquency in early adolescence reported earlier is slightly diminished net of the theoretical mechanisms, and after introducing delinquent peer pressure specifically (see model 3 of table

4.3). It may be that youth who are granted more of a say in household rules in early adolescence also are more likely to hang out with delinquent peers relative to their more controlled counterparts; delinquent peer pressure, in turn, is associated with higher levels of delinquency as noted above.

While these results concerning early adolescent autonomy support and delinquency are inconsistent with theoretical expectations derived from SDT, they do provide some support for the third alternative hypothesis. Likewise, these results are consistent with Goldstein and colleagues' (2005) finding that decision-making autonomy support in early adolescence produces delinquency indirectly, by increasing time spent in unstructured socializing with peers (see also Beveridge and Berg 2007). However, in contrast to Goldstein and colleagues' (2005) findings, the results of this study indicate that youth who have greater say in household rules in early adolescence commit less delinquency in later adolescence compared to their counterparts, even after controlling for self-control, delinquent peer pressure, and defiance (see panel A in figure 4.2). In other words, these findings suggest that early autonomy-supportive rule setting is directly associated with a long-term reduction in delinquency.

Although this reduction is not accounted for by the theoretical mechanisms examined here, it is possible that it is accounted for by additional mechanisms discussed above yet unavailable in this research (e.g., youth's normative self-concept). In any case, in contrast to *hypothesis 4, 7, and 11*, these results suggest that the effects of autonomy-supportive rule-setting on delinquency are not mediated by self-control, delinquent peer pressure, or defiance as predicted. Rather, autonomy in rule-setting appears to operate in theoretically unexpected

ways, exacerbating delinquency in early adolescence by increasing exposure to delinquent peers (as predicted in the fourth alternative hypothesis), and subsequently reducing delinquency in later adolescence through unknown mechanisms.

Second, table 4.4 indicates that autonomy-supportive communication is not related to self-control or delinquent peer pressure in early adolescence (models 1 and 2); these results present a challenge to *hypotheses 2 and 5* (as well as to the second and third alternative hypotheses). In contrast, this form of autonomy support is significantly associated with defiance in the predicted direction (model 3). Specifically, consistent with *hypothesis 9*, youths whose parents grant them more of a say in household rules also report more openness and honesty with their parents, relative to their less autonomy-supported counterparts. Furthermore, as table 4.3 shows, autonomy-supportive communication is unrelated to adolescent delinquency before (model 1) and after (models 2 through 4) introducing theoretical mechanisms into the model; thus, lacking an original association to mediate, these findings contradict *hypotheses 4, 7, and 11* (as well as contradict the fourth alternative hypothesis).

Third, table 4.4 provides support for *hypothesis 2, 5, and 9* (and contradicts the second and third alternative hypotheses), as psychological autonomy support is associated with greater self-control, fewer delinquent peer pressures, and less defiance.¹⁵ In addition, models 2, 3, and 4 in table 4.3 show that psychological autonomy-support's association with delinquency is reduced after introducing each of these theoretical mechanisms. For instance,

¹⁵ Additional analyses predicting lagged versions of self-control, delinquent peer pressure, and defiance confirmed each of these expected associations (see appendix 4.1).

psychological autonomy support's coefficient at the intercept (i.e., at age 13) is reduced by 42% from model 1 to model 4 (from $b = -.174$ to $b = -.101$). This reduction can be seen by comparing the graph of the “total effects” model (see panel C of figure 4.1) with the graph of the mediation model, which is found in panel B of figure 4.2. Taken together, these results provide support for *hypothesis 4, 7, and 11* (yet challenge the fourth alternative hypothesis). However, it is noteworthy that psychological autonomy support retains a statistically significant negative effect on the delinquency event trajectory net of all controls and theoretical mechanisms.

Finally, additional models were also estimated to test the possibility of a moderating effect of autonomy-supportive parenting on the relationship between delinquent peer pressure and adolescent delinquency. In contrast to *hypothesis 8*, these models failed to provide evidence of an interaction between delinquent peer pressure and any of the three measures of autonomy-supportive parenting. (Due to the lack of statistically significant interactions and the substantive similarity between these results and the findings presented in model 4 of table 4.3, these moderation models are not reported here.) Recall, it was hypothesized that delinquent peer pressure would have a weaker exacerbating effect on delinquency among youth exposed to autonomy-supportive parenting practices, since these practices theoretically should foster a normative self-image that reduces one's susceptibility to such pressures. Thus, such evidence might have been uncovered if a direct proxy for one's normative self-concept were used; unfortunately, a measure of this construct is unavailable in these data.

In sum, these results provide mixed support for the mediation hypotheses described in this study.¹⁶ First, autonomy-supportive rule-setting seems to exacerbate early adolescent delinquency as predicted in the fourth alternative hypothesis, while subsequently reducing later adolescent delinquency in theoretically unknown ways. Second, autonomy-supportive communication is not associated as hypothesized with adolescent delinquency trajectories net of the other two indicators of parental autonomy support, nor is it consistently associated with self-control or delinquent peer pressure. Third, psychological autonomy support is associated with lower levels of adolescent delinquency and, as predicted in *hypotheses 4, 7, and 11*, this relationship appears to be partially mediated by self-control, delinquent peer pressure, and defiance. Finally, the results of this study also provide no evidence that autonomy-supportive parenting moderates the relationship between delinquent peer pressure and adolescent delinquency.

¹⁶ General substantive conclusions were confirmed in additional growth curve analyses examining alternate measures of delinquency (i.e., a delinquency index and a defiant delinquency scale; see appendix 4.2) and in additional cross-sectional, clustered regression analyses predicting concurrent and lagged versions of the original delinquency scale (see appendix 4.3).

CHAPTER 5

CONCLUSIONS

5.1 General Conclusions

Autonomy-supportive parenting practices, which include explaining decisions to children, being empathetic to children's perspectives, providing children a say in decision-making, and encouraging children to act upon their own interests and values, have been linked to a wide range of desirable developmental outcomes in childhood and adolescence. However, despite extensive attention paid to parental influences on child delinquency, few criminological studies have examined whether such autonomy-supportive parenting practices inhibit adolescent delinquency. Furthermore, results from the few studies examining this link have left it unclear exactly what relationship, if any, autonomy-supportive parenting shares with adolescent delinquency.

Thus, the primary goal of this research is to examine whether autonomy-supportive parenting practices inhibit delinquency during adolescence, and to explore self-control, delinquent peer pressure, and defiance as possible mediating processes through which these practices might operate to influence delinquency. Overall, results of this research suggest that autonomy-supportive parenting is important to the etiology of adolescent delinquency. However, autonomy-supportive parenting is found to be a multidimensional construct, with each dimension influencing delinquency in different and sometimes countervailing ways. Thus, these results suggest that the relationship between autonomy-supportive parenting and adolescent delinquency is more complex than previously envisioned, and they highlight the

importance of examining parenting dimensions separately and across various stages of adolescence.

Rule-setting autonomy

Specifically, three separate dimensions of autonomy-supportive parenting were identified in this study – *autonomy-supportive rule-setting, autonomy-supportive communication, and psychological autonomy support*. The first, *autonomy-supportive rule-setting*, refers to the extent to which parents provide their children with a say in household rules. According to the findings reported above, this type of autonomy may influence delinquency through unique mechanisms at different stages of development. First, consistent with some extant research in criminology, granting youth more rule-setting autonomy in early adolescence (i.e., 10 to 12 years old) seems to exacerbate their immediate risks for delinquency by increasing youth's exposure to delinquent peer pressures. It is possible that during the process of developing a stable identity, young adolescents may attempt to associate with both conventional and delinquent peers, and that by providing youth with the freedom to make decisions about where and with whom they socialize, such behavioral autonomy might inadvertently leave these young adolescents vulnerable to delinquent peer influences. Alternatively, young adolescents whose parents exercise more behavioral control may be sheltered from delinquent peer influences and likewise are faced with fewer temptations to deviate (for similar discussions, see Beveridge and Berg 2007; Goldstein et al. 2005).

In the long term, however, youth whose parents provided them greater rule-setting autonomy in early adolescence exhibit the lowest levels of delinquency in later adolescence. This may be because older adolescents, having already developed more stable identities, are better able to resist peer pressures to deviate (Warr 2002: 105, 108). Alternatively, parents' provision of rule-setting autonomy may be especially important among older adolescents, who may be yearning for freedom during this stage of development (Beveridge and Berg 2007). Consider, first, that early parent-child relationships usually are characterized by unilateral authority and obligatory interactions, and that these hierarchical relationships typically become increasingly more cooperative and reciprocal throughout adolescence (Giordano 2003; Laursen, Wilder, Noack, and Williams 2000; Youniss and Smollar 1985). As mentioned earlier, these changes are thought to result from a process of individuation in adolescence during which youths strive for individuality or independence from their parents while simultaneously attempting to maintain close relationships or connectedness with parents (Allen et al. 1994; Buhl 2008; Grotevant and Cooper 1985; Youniss and Smollar 1985). Thus, older adolescents may expect to be provided a certain level of behavioral autonomy, and failure to provide such freedom in later adolescence may result in defiant reactions such as delinquency. The findings concerning rule-setting autonomy presented in this study are consistent with this logic, assuming that between-person differences in autonomy-supportive parenting remain relatively stable throughout adolescence (i.e., youth provided more of a say in rules during early adolescence also are granted more rule-setting autonomy in later adolescence). However, additional research using time-varying measures

of autonomy-supportive parenting, defiance, and delinquency throughout adolescence would be required to adequately assess these possibilities.

It is instead possible that the measure of autonomy-supportive rule-setting used here partially taps into differences in the extent to which parents set behavioral limits for their children. As mentioned previously, parental structure, or the extent to which parents set and consistently enforce appropriate limits on their children's behaviors, has been linked to greater child wellbeing and fewer behavioral problems; also, scholars have suggested that youth benefit most from autonomy-supportive parenting practices when they are applied within a secure parent-youth relationship and when used in conjunction with firm, but not rigid, behavioral expectations (Baumrind 1971; Gray and Steinberg 1999; Grolnick 2003; Maccoby and Martin 1983). Thus, if some youth perceive having a greater say in household rules because their parents impose relatively few behavioral limits upon them relative to their peers, then the short-term positive association reported above may be indicative of the undesirable effects associated with a lack of parental limits rather than with the presence of early autonomy-supportive parenting. In contrast, the long-term negative association may indicate that parents' reduction of behavioral limits produces beneficial effects during later adolescence, when youth take on more responsibilities and are yearning for more autonomy.

It is important to note, however, that limit-setting and autonomy support are conceptually distinct. That is, a child whose parent sets firm behavioral limits may nonetheless feel that she has say in these rules; however, that same youth may feel as if her parents rigidly set and apply rules to which she has no say in being subjected. According to self-determination theory, children are more likely to conform to parental limits when they

“buy into” the rules; furthermore, youth are thought to buy into rules if they perceive having a greater say in the rules, if their parents explain their reasons for setting specific limits, and if they deal with situations on a case-by-case basis instead of rigidly enforcing behavioral maxims. Thus, future research should attempt to isolate the potentially separate effects of parental limit-setting and autonomy supportive parenting by including distinct measures of each concept in models predicting delinquency.

Communicative autonomy

The second dimension, *autonomy-supportive communication*, refers to the extent to which parents communicate with their child as an autonomous agent by explaining decisions (e.g., by talking about important issues) and by empathizing with their child’s perspective (e.g., by listening to the child’s side in an argument). This type of autonomy support is shown to be associated with lower levels of delinquency during early adolescence in bivariate and descriptive multivariate analyses. However, the association is weak, and it disappears after including the other indicators of autonomy-supportive parenting.

One explanation for these findings is that communicative autonomy is less important during adolescence than are behavioral (e.g., rule-setting) autonomy or psychological autonomy. Parents who are otherwise controlling (i.e., by psychologically pressuring children and by providing few behavioral freedoms) may yet provide communicative autonomy – that is, they may still listen to their children’s frustrations and may still explain to their children *why* it is that they are controlling. Given this, if behavioral and psychological autonomy indeed are more salient to adolescents, then the provision of communicative autonomy, in the

absence of the other two forms of autonomy support, might be insufficient to prevent delinquency. Data on the relative salience of various forms of adolescent autonomy are necessary to investigate this issue.

Alternatively, recall that the bivariate analysis shows autonomy-supportive communication to be positively associated with psychological autonomy support; further, both of these forms of autonomy support are associated with each theoretical mechanism in the hypothesized direction. Given these findings, it is possible that communicative and psychological autonomy support each partially taps a similar underlying construct, and that this construct operates as hypothesized to reduce delinquency in adolescence. Of course, factor analysis showed autonomy-supportive communication and psychological autonomy support to be unique dimensions in this study; thus, future research should incorporate more items measuring autonomy-supportive parenting to examine whether the three dimensions identified in this research indeed are unique, or whether some (e.g., communicative and psychological autonomy support) might be collapsible into a singular dimension.

Psychological autonomy

The third dimension, *psychological autonomy support*, refers to the extent to which youth feel that their parents allow them to act upon their own interests and values as opposed to feeling pressured by parents to act in particular ways. This form of autonomy support is found to be associated with moderately lower delinquency levels across early and middle adolescence. Further, psychological autonomy support appears to operate partially through the theoretical processes described above – that is, adolescents who are granted more

psychological autonomy also have higher levels of self-control, experience fewer peer pressures to deviate, and exhibit less defiance, each of which, in turn, inhibits delinquency. Thus, results concerning this form of autonomy-supportive parenting present the strongest support for the theoretical arguments presented in this study and, likewise, provide an impetus for additional research examining the empirical utility of self-determination theory in predicting crime and delinquency.

It is also noteworthy that parents' provision of psychological autonomy support retains a negative association with adolescent delinquency net of controls and the theoretical mechanisms examined here. It is possible that this remaining effect might be accounted for by additional theoretical mechanisms discussed above, yet unavailable in this research. Future studies could improve upon these research efforts with data that contain proxies for each of the theoretical mechanisms implied by self-determination theory, including a proxy for youth's normative self-concepts and a more refined measure of self-control that incorporates the extent to which self-control is internally or externally regulated.

This finding also appears consistent with theorizing about *psychological control* in child development literature (see Aquilino and Supple 2001; Barber 1992) and *coercion* in criminology (e.g., Colvin, Cullen, and Vander Ven 2002; Crosswhite and Kerpelman 2009; Patterson and Dishion 1985). In these accounts, coercive and psychological controlling experiences usually are described as those that leave one feeling compelled to act out of fear of physical force or emotional intimidation; these experiences also are typically described as antithetical to the experience of autonomy. Furthermore, there is some evidence to suggest that psychological autonomy support and psychological control are opposite ends of the same

conceptual continuum (Soenens, Vansteenkiste, and Sierens 2009). Thus, the measure of psychological autonomy support used here (i.e., the extent to which a youth feels pressured by parents) might instead, or might additionally, tap coercion or psychological control. Future research in this area should attempt to replicate these results using multiple indicators specifically tapping the provision of psychological autonomy support (rather than the absence of such), as well as indicators of coercive or psychologically controlling parenting. In addition, theoretical efforts directed toward formally integrating criminology's coercion arguments with child developmental arguments concerning both autonomy support and psychological control would be useful for disentangling these conceptual ambiguities and, likewise, might result in fruitful hypotheses for research.

Finally, these results also have important implications for research on the sources of self-control. Recall, self-control theory asserts that children develop high self-control when parents consistently supervise their behaviors and punish wrongdoings. In this study, parental supervision is found to increase self-control (see table 4.4), thereby supporting the theory's basic assertion. However, the finding that psychological autonomy granting is a robust predictor of self-control supports Hay's (2001) conclusion that self-control theory would benefit from a broader conceptualization of parenting. It also suggests that self-control theory may be improved by specifically integrating some of self-determination theory's insights regarding the nature of self-control and its sources.

5.2 Limitations and Future Research Directions

This dissertation research is not without its share of limitations. The first notable limitation is the lack of time-varying measures of parenting practices in this study.¹⁷ Time-varying measures are necessary to explore further the potential age-sensitive relationship between autonomy-supportive rule-setting and adolescent delinquency discussed earlier. In addition, the lack of time-varying measures is problematic because parenting and child behaviors are reciprocal – that is, children’s behaviors may change in response to parents’ behaviors, while parents’ behaviors may change in reaction to children’s behaviors (Burke, Pardini, and Loeber 2008; Laird, Pettit, Bates, and Dodge 2003; Reuter and Conger 1998). For instance, delinquency may elicit controlling parenting practices among some parents, which, in turn, could further exacerbate youth’s delinquency. Thus, future research should attempt to re-examine the links between autonomy-supportive parenting and adolescent delinquency using time-varying indicators of each to explore possible age-conditional hypotheses and to adequately model potential reciprocal effects.

In addition, the key parenting measures in this study are drawn solely from child reports, and these measures fail to differentiate between mothers’ and fathers’ practices. Research on parenting styles finds that fathers’ and mothers’ parenting can have unique effects on adolescents’ behaviors, and that some of these effects, in turn, may be conditioned

¹⁷ Unfortunately, due to the C-NLSY’s survey design, only a very small fraction of adolescents had three observations on the autonomy-supportive parenting variables examined here. Recall, subjects are interviewed every two years, and autonomy-supportive parenting items were asked only in the child supplement that is administered to subjects aged 10 to 14 and were not included in the later young adult supplement.

by the child's sex (e.g., Bronte-Tinkew, Moore, and Carrano 2006). In addition, other parenting research identifies possible biases resulting from the sole reliance on one reporter and from failing to investigate possible differences across parents' and children's gender (e.g., Bogenschneider and Pallock 2008; Mandemakers and Dykstra 2008). Unfortunately, these limitations are unavoidable in this study due to a lack of duplicate items across the C-NLSY's mother supplement and child supplement, and due to a lack of separate items indicating mothers' and fathers' provision of autonomy support for each variable. Thus, future research might be productively directed toward attempting to replicate the findings of this study using data that include both parents' and children's reports, as well separate maternal and paternal measures of autonomy-supportive parenting.¹⁸

Furthermore, this study does not examine possible nonlinear relationships between autonomy-supportive parenting and adolescent delinquency. For instance, some theorists have posited that an extreme lack of autonomy (i.e., extreme experiences with control or coercion) can lead to internalized problems (e.g., depression) and to sluggish conformity to normative expectations (Colvin et al. 2002; Tittle 1995, 2004). If this were the case, then

¹⁸ With that said, reliance on *adolescents' perceptions of parenting* may be justified for theoretical reasons. First, SDT implies that self-regulated conformity stems from youth's *felt* or *experienced* sense of autonomy, not from objective levels of autonomy support, whereas defiance similarly is presumed to result from a lack of such subjective experiences with autonomy. Second, the theories examined here typically are considered general with respect to gender; that is, they do not explicitly identify differential processes across parents' or children's gender. Furthermore, a recent study reports that maternal and paternal items measuring autonomy-supportive parenting are significantly correlated, and that gender of the parent does not moderate the patterns of empirical association between autonomy-supportive parenting and adolescent wellbeing (Soenens et al. 2007).

youth experiencing the highest and the lowest levels of autonomy support, though possibly having different mental health profiles, might be expected to have similarly low levels of delinquency, whereas youth experiencing moderate levels of autonomy-support might be expected to exhibit the highest levels of delinquency. Alternatively, extremely high levels of behavioral autonomy might increase delinquency by leaving young adolescents more susceptible to delinquent peer influences, while extremely low levels of autonomy support might increase delinquency by invoking defiant motivations. Following this logic, young adolescents exposed to moderate levels of behavioral autonomy might be expected to have the lowest levels of delinquency, compared to their more autonomy supported and less autonomy supported peers. Despite these possibilities, the autonomy-supportive parenting measures used in this study each are constructed from only one or two substantive items; as such, they lack the variation required to adequately identify possible nonlinear relationships. Future research could expand upon this work by examining nonlinear hypotheses using multi-item measures of autonomy-supportive parenting to better capture variation in these practices.

In addition to using more nuanced measures of each construct, future research should collect and employ direct indicators of youth defiance. Recall that a defiant youth is expected to disobey controlling parents' normative expectations in reaction to feelings of humiliation or debasement; these reactive behaviors, then, are expected to augment the youth's perceived sense of autonomy or control. In order to avoid retaliation and the resulting counter-control, though, such defiant behaviors are not necessarily focused directly at the source of reactance motives. Rather, a youth may attempt to maintain his perceived sense of autonomy or control

by hiding his defiant actions from parents in an attempt to avoid sanctions and the accompanying loss of control. Following this logic, the indirect measure of defiance used in this study captures the extent to which youth are forthright with parents about what they are doing when parents are not around. However, a youth with exceptionally strong reactance motives may resort to openly defying parental demands or provocatively divulging his defiant behavior. Alternatively, a non-defiant youth that conforms to conventional normative expectations may nonetheless fail to tell parents about her behaviors if she rarely communicates with her parents about important issues. Thus, the indirect measure of defiance employed in this study may fail to adequately differentiate defiant and non-defiant youth, and it may confound a youth's lying about or hiding of defiant behaviors with that youth's general tendency to communicate with parents. Future research should clearly distinguish between parent-youth communication and youth defiance by including measures that directly tap reactance motivations, such as whether and how often youth feel humiliated or debased by their parents.¹⁹

Despite its limitations, this study has important implications for criminological research on parenting and delinquency. First, the robust negative association found across all models between parental supervision and delinquency confirms extant research indicating

¹⁹ Defiant youth also may be more likely to exhibit weakened attachments to parents and may be more likely to argue with parents. Thus, additional models that employed youths' weakened attachments to parents and youths' frequency of arguing with parents as indirect measures of defiance were estimated and produced similar substantive results. Since these indirect indicators are also less than ideal measures of defiance, future research efforts should be devoted to collecting and employing direct measures of this construct.

that some forms of parental control inhibit adolescent delinquency. Similarly, rule-setting autonomy support's negative bivariate correlation with parental supervision, and its similar inhibiting effect on early adolescent delinquency, may indicate that parents' use of behavioral control strategies (e.g., rule-setting and monitoring) is especially important in early adolescence, when youth are exploring various friendship networks, internalizing norms, and establishing stable identities (Barber 1992; Grolnick 2003; Grotevant and Cooper 1985). Alternatively, the positive correlations among parental supervision and the other two forms of autonomy-supportive parenting (communicative and psychological) indicate that young adolescents whose parents monitor their behaviors also feel that their parents otherwise treat them as autonomous (i.e., by empathizing with them and by not pressuring them). Furthermore, this research suggests that those youth who are simultaneously exposed to behavioral control, communicative autonomy support, and psychological autonomy support exhibit the lowest levels of delinquency in early adolescence.

Future research should explore further the relationships between autonomy-related parenting practices, potential theoretical mechanisms, and delinquency using more nuanced measures of each construct. In addition, researchers should explore whether and how more nuanced measures of specific parenting practices cluster together across adolescence, as well as whether any empirically observed parenting clusters found using more nuanced measures are consistent with broader parenting typologies or scales used in prior research (c.f., Aquilino and Supple 2001; Hoeve et al. 2008; Perrone et al. 2004; Simons et al. 1994; Simons et al. 2005). However, it is important to consider that typologies, once defined, are typically treated as general with respect to time; in contrast, parenting practices, like

delinquency, may change in predictable ways throughout adolescence, and the nature of the relationships between parenting practices and delinquency may change over time as well. Thus, future research could examine whether autonomy supportive practices become more common as youth individuate from their parents in later adolescence, as well as examine whether parents' provision of autonomy becomes especially important for delinquency in later adolescence, when youth may place a premium on the importance of autonomy.

In addition, researchers interested in understanding youth delinquency might benefit from a detailed examination of the possible interactive relationships between parents' normative expectations and autonomy-supportive parenting. Much research on child development appears to implicitly assume that parents uniformly hold conventional expectations for their children, while some criminologists explicitly assert this to be the case (Gottfredson and Hirschi 1990). However, this assumption is not held by all child development or criminological theorists (c.f., Akers 1998; Catalano and Hawkins 1996; Hawkins and Weis 1985; Sutherland and Cressey 1966). Thus, assuming that autonomy-supportive parenting indeed causes youth to internalize and willfully conform to parents' normative expectations, then it is possible that some youth willfully deviate because their parents employ autonomy-supportive parenting practices while espousing nonconventional values. Future research predicting delinquency could explore this possibility by testing for statistical interactions between measures of parents' normative values and their adoption of autonomy-supportive parenting practices.

Finally, this study provides estimates of the average relationship between early autonomy-supportive parenting and adolescent delinquency across a nationally representative

and, hence, a heterogeneous sample of youth. As such, it is not offered as a definitive statement on the importance of autonomy-supportive parenting to delinquency; rather, it is intended as the first step in a broader research agenda focusing on the relationship between individuals and their immediate interpersonal interactions, proximal social environments, and distal social structural arrangements. Recall, this study is primarily intended to introduce the concept of autonomy support to criminology as a characteristic of parent-youth interactions that might be important to understanding adolescents' differential participation in delinquency. However, like parent-youth interactions, interpersonal interactions with peers, employers, significant others, and teachers also may be characterized as more or less autonomy-supportive and, likewise, may impact individual outcomes such as delinquency (for research on other individual outcomes, see Ducat and Zimmer-Gembeck 2010; Gagne 2003; Klem and Connell 2004; Soenens and Vansteenkiste 2005).

Additionally, interpersonal interactions may be shaped by features of the proximal social environments within which they typically occur; these environments, such as neighborhoods, schools, and workplaces, also may vary in the extent to which they present individuals with opportunities for choice or self-direction versus experiences with pressure or coercion. Furthermore, whether these environments themselves typically are supportive or controlling may depend upon broader structural arrangements such as a society's class or stratification systems (for related arguments, see Kohn 1989; Kohn et al. 1990; Lareau 1987). Thus, a next step in this research agenda is to explore how features of the macro-social environment influence the extent to which adolescents' micro-social interactions are autonomy-supportive or controlling, and therefore ultimately produce or inhibit delinquency.

Kohn and colleagues' research on work socialization (e.g., Kohn 1963; 1977; for a review, see Spenner 1988) is one example of an existing research program that examines such links between macrosocial arrangements and individual outcomes. Drawing from this body of work, Parcel and Menaghan (1994) examine whether parents' paid working conditions, which differ systematically by social class, influence child developmental outcomes by shaping parents' child-rearing values and parenting behaviors. Specifically, they suggest the white-collar jobs that are occupied by higher status parents are characterized by greater task complexity, less direct supervision, and more flexibility and autonomy compared to the blue-collar jobs of lower status parents. Parents in white-collar jobs, in turn, presumably come to value self-direction, intellectual flexibility, and behavioral autonomy and, likewise, benefit their children by transmitting these values to them. In contrast, low status parents reproduce their controlled working conditions at home by relying on external controls to socialize children, thus teaching them the importance of conformity to authority; additionally, the low complexity and routinization of blue-collar work presumably impedes child well-being indirectly by negatively impacting parents' psychological well-being.

Also drawing from this literature, Colvin and Pauly (1983) directly tie social class and parents' working conditions to adolescent delinquency; they too argue that working parents tend to reproduce at home the control structures they experience in the work environment (e.g, coercive, utilitarian, normative), which, in turn, impacts youth delinquency (see also Vander Ven and Cullen 2004; Vander Ven et al. 2001). For example, working class parents in unskilled jobs presumably reproduce coercive controls at home to elicit a fear-based conformity from their children; this form of control ultimately is hypothesized to

increase youth's likelihood of chronic participation in serious delinquency. In contrast, skilled working class parents are expected to reproduce normative controls at home, which instead are thought to elicit in youth a more effective moral or commitment-based conformity. Thus, following these workplace socialization arguments, future research could examine whether parents in jobs with higher occupational complexity are more likely to adopt autonomy-supportive parenting practices, as these practices reflect the premium these parents supposedly place on autonomy and self-direction.

Akin to these workplace socialization arguments, Hagan, Simpson, and Gillis (1987) suggest that structural conditions (i.e., class- and gender-based power distributions) shape parenting practices (e.g., socialization and supervision), which in turn influence children's participation in minor delinquent behaviors. In short, their argument is that the gender gap in delinquency is a result of the historically patriarchal division of labor following the shift to industrial capitalism. Specifically, in modern industrial society, family members presumably attain power and authority as a result of being responsible for work outside the home; mothers, who traditionally are responsible for child-rearing in the home, typically have less power than fathers and, as a result, they presumably are responsible for reproducing this division of labor via childhood socialization. Hence, mothers in patriarchal households (i.e., in which the father has a higher occupational status than the mother) are hypothesized to use more behavioral control over their girls, who subsequently develop lower risk-taking preferences and exhibit lower levels of minor delinquency compared to boys. Alternatively, in egalitarian households (i.e., in which fathers and mothers have relatively equal occupational prestige and hence equal power), parenting practices are not expected to vary

systematically by gender; as a result, boys and girls in these households are expected to exhibit similar tastes for risk and similar levels of minor delinquency.

While it is difficult to derive specific hypotheses from power-control theory due to its limited focus and, at times, inconsistent and ambiguous logical structure (see Tittle 1995: 103-107), the notion that children's parenting experiences may vary depending upon mother's and father's relative status, or upon the family's level of traditionalism or egalitarianism, is intriguing. It is also interesting to note that the bivariate results of this study suggest that autonomy-supportive parenting practices indeed differ by gender: boys appear to be granted behavioral autonomy to a greater extent than are girls, whereas girls appear to be granted more psychological autonomy compared to boys. Thus, future research might explore whether the average gender differences in autonomy-supportive parenting reported here vary further according to mothers' and fathers relative levels of power or, perhaps, according to the relative traditionalism or egalitarianism of the home environment.

In addition to these examples, Lareau (2002) argues that middle class families and working/poor class families adopt different childrearing practices that serve to transmit class (dis)advantages to their children. Specifically, middle class parents deliberately attempt to stimulate children's development and cultivate cognitive and social skills; these "concerted cultivation" practices presumably result in higher self-esteem, self-efficacy, and reasoning skills. In contrast, working class and poor parents provide children with basic necessities while letting their development occur spontaneously. Lareau also notes that middle class parents structured their children's pastimes to a greater extent than did working class and

poor parents; however, the latter group was more likely to treat children as subordinates to adults.

It is interesting to note that the bivariate results of this study are consistent with Lareau's "concerted cultivation" thesis: relative to lower SES youth, higher SES youth report being granted less behavioral autonomy support yet higher communicative and psychological autonomy support from their parents. Future research might explore whether higher SES parents continue to adopt these "concerted cultivation" practices (i.e., high psychological autonomy support and low behavioral autonomy support) throughout adolescence, as well as examine the potential consequences of this parenting regime for delinquency. For example, the results of this study suggest that the combination of high psychological autonomy support and low behavioral autonomy support may inhibit delinquency in early adolescence. However, if these practices continue, the restriction of behavioral autonomy may increase delinquency in later adolescence, thus offsetting the inhibiting effects of psychological autonomy support, as youth begin craving autonomy to a greater extent during the process of individuation.

As final examples of research exploring the relationships between macrosocial contexts, microsocial interactions, and individual outcomes, some scholars have linked social class to environmental stressors (e.g., economic hardship, unemployment, negative life events, and single parenting) that may cause some parents to inadvertently adopt psychologically controlling parenting practices that are harmful to children's developmental well-being (Barber 1992; Conger et al. 1994; Grolnick 2003). Alternatively, others have suggested that in economically disadvantaged, high crime neighborhoods, some parents may

intentionally restrict their children's behavioral autonomy in the hopes of protecting them from danger and sheltering them from criminal opportunities (Anderson 1999; Stewart and Simons 2006). Thus, future research might explore linkages between stressors in the local social environment and parents' ensuing adoption of autonomy-supportive or controlling parenting practices. Additionally, research might explore whether the granting of behavioral autonomy leaves kids especially at risk for delinquency in high crime contexts (e.g., neighborhoods; schools), whereas psychological autonomy support might be especially important in these contexts for youths to develop the internalized normative inhibitions required to resist constant pressures to offend.

In sum, this dissertation research indicates that early autonomy-supportive parenting is relevant to adolescent delinquency; however, the nature of this relationship depends upon the type of autonomy-supportive parenting (rule-setting, communicative, or psychological) examined, as well as perhaps the stage of adolescence examined. This research should provide an impetus for including specific measures of autonomy-supportive parenting practices, and for examining their potentially varying effects at different stages of adolescence, in future research on the etiology of delinquency. In addition, it should highlight the importance of refining the concept of autonomy and integrating the notion of autonomy-supportive contexts into etiological theories of delinquency.

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Table 2.1. Hypotheses

Hypothesis 1: (*Parental autonomy-support and delinquency*)

Autonomy-supportive parenting will be negatively associated with adolescent delinquency.

Hypothesis 2: (*Parental autonomy support and self-control*)

Autonomy-supportive parenting will be positively associated with adolescent self-control.

Hypothesis 3: (*Self-control and delinquency*)

Adolescent self-control will be negatively associated with adolescent delinquency.

Hypothesis 4: (*Self-control as a mediator*)

Adolescent self-control will partially mediate the relationship between autonomy-supportive parenting and adolescent delinquency.

Hypothesis 5: (*Parental autonomy support and delinquent peer pressures*)

Autonomy-supportive parenting will be negatively associated with delinquent peer pressures.

Hypothesis 6: (*Delinquent peer pressures and delinquency*)

Delinquent peer pressures will be positively associated with adolescent delinquency.

Hypothesis 7: (*Delinquent peer pressures as a mediator*)

Delinquent peer pressures will partially mediate the relationship between autonomy-supportive parenting and adolescent delinquency.

Hypothesis 8: (*Parental autonomy support as a moderator*)

Delinquent peer pressures will interact with autonomy-supportive parenting in predicting adolescent delinquency, such that delinquent peer pressures will share a weaker positive association with delinquency among youth exposed to greater levels of autonomy support.

Hypothesis 9: (*Parental autonomy support and defiance*)

Autonomy-supportive parenting will be negatively associated with defiance

Hypothesis 10: (*Defiance and delinquency*)

Defiance will be positively associated with adolescent delinquency.

Hypothesis 11: (*Defiance as a mediator*)

Defiance will partially mediate the relationship between autonomy-supportive parenting and adolescent delinquency.

Hypothesis A1: (*Alternative: Autonomy-supportive parenting and delinquency*)

Autonomy-supportive parenting will be positively associated with adolescent delinquency.

Hypothesis A2: (*Alternative: Autonomy-supportive parenting and self-control*)

Autonomy-supportive parenting will be negatively associated with self-control.

Hypothesis A3: (*Alternative: Autonomy-supportive parenting and delinquent peer pressures*)

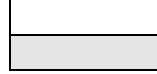
Autonomy-supportive parenting will be positively associated with delinquent peer pressures.

Hypothesis A4: (*Alternative: Delinquent peer pressures as a mediator*)

Self-control and delinquent peer pressures will partially mediate the positive relationship between autonomy-supportive parenting and delinquency.

Table 3.1. Typical Observation Occasions for C-NLSY 79 Sample Adolescents

Birth year	Age in '96	Age in '98	Age in '00	Age in '02	Age in '04	Age in '06	Age in '08
1985	11	13	15	17	19	21	23
1986	10	12	14	16	18	20	22
1987	9	11	13	15	17	19	21
1988	8	10	12	14	16	18	20
1989	7	9	11	13	15	17	19
1990	6	8	10	12	14	16	18
1991	5	7	9	11	13	15	17
1992	4	6	8	10	12	14	16
1993	3	5	7	9	11	13	15



Delinquency observations
Independent variable observations

Table 3.2. NLSY Survey Items Used to Measure Theoretical Constructs

Dependent Variable (*time-varying measure from children age 10 to 17*)

Delinquency (CYA) ($\alpha = .72$)

- # of times in past year stayed out later than parent said
- # of times in past year hurt someone bad enough to need a doctor
- # of times in past year stole from a store
- # of times in past year damaged school property
- # of times in past year gotten drunk
- # of times in past year child stayed out all night without permission

Parenting (*time-invariant L2 measures at child's first observation [age 10-12]*)

Autonomy-supportive rule setting (CYA) ($\alpha = .70$)

- How much say does child have in... (0=no say at all; 1=a little say; 2=some say; 3=a lot of say)*
- Rules about keeping parents informed
- Rules about doing homework

Autonomy-supportive communication (CYA) ($\alpha = .43$)

- How often... (0=hardly ever; 1=sometimes; 2=often)*
- Mom (and dad/stepdad) talks about important issues with child
- Mom (& dad/stepdad) listens to child's side in argument

Psychological autonomy support (CYA)

- How often... (0=often; 1=sometimes; 2=hardly ever)*
- Child feels pressured by parents

Parental supervision (CYA)

- How often mom (& dad/stepdad) knows who child is with (*0=hardly ever; 1=sometimes; 2=often*)

Mechanisms (*time-invariant L2 measures at child's first observation [age 10-12]*)

Self-control (CYA) ($\alpha = .60$)

- Often does things without thinking (*0=strongly agree; 1=agree; 2=disagree; 3=strongly disagree*)
- Planning takes the fun out of things (*0=strongly agree; ...; 3=strongly disagree*)
- Uses self-control to keep out of trouble (*0=strongly disagree; ...; 3 = strongly agree*)
- Enjoys taking risks (*0=strongly agree; ...; 3=strongly disagree*)
- Feels life without danger is dull (*0=strongly agree; ...; 3=strongly disagree*)

Delinquent peer pressure (CYA) ($\alpha = .88$)

- Child feels pressure from peers to... (0=no; 1=yes)*
- try cigarettes
- try marijuana/drugs
- drink alcohol
- skip school
- commit crime

Note: (CYA) indicates items are child or young adult self-reports; (M) indicates items are mother reports.

* The ' α ' values reported for multi-item variables represent Cronbach's standardized alpha coefficients.

Table 3.2. Continued**Defiance (CYA) ($\alpha = .73$)**

- How much do you tell your parents about... (0=not at all; ...; 3=a lot)*
- Where you are when you are away from home (reverse)
 - Who you are with when away from home (reverse)
 - How you spend your money (reverse)
 - What kinds of TV shows and movies you have seen (reverse)
 - What your homework is (reverse)

Time (time-varying measure from children age 10 to 17)**Child's age at interview (in years; CYA)****L1 Controls (time-varying measure from children age 10 to 17)****Mother's marital status (M)****Mother's highest grade completed (M)****Family income (in constant 2008 dollars, capped at 100,000; M)****Mother's hours worked per week in past year (M)**

- Non-working (baseline);
- Low part-time (< 20 hours)
- High part-time (20–34 hours)
- Full-time (35-40 hours)
- Overtime (> 40 hours)

L2 Controls (time-invariant measures at child's first observation [age 10-12])**Sex (CYA)****Race/ethnicity (CYA)**

- White, non-Hispanic (baseline)
- Black
- Hispanic

Birth order (M)

- Firstborn (baseline)
- Second-born
- Third-born
- Fourth-born or higher

Urban residence (M)**Family size (M)****Mother's age at child's birth (M)****Religiosity (CYA)**

- How frequently child attends religious services (0=not at all; ...; 5=more than once a week)

Table 3.2 Continued

L3 Controls (*time-invariant measures from mother, prior to child's first observation [age 10-12]*)

Mom's Armed Forces Qualification Test (AFQT) percentile score in 1992 (M)

Mom's crime/delinquency index in 1980 (M) ($\alpha = .66$)

In the past year, respondent... (0=no; 1=yes)

- Intentionally damaged property
- Fought at school or work
- Shoplifted
- Stolen someone else's belongings worth < \$50
- Stolen someone else's belongings worth > \$50
- Seriously threatened to hit/hit someone
- Attacked with intent to injure or kill
- Sold marijuana
- Attempted to "con" someone
- Taken automobile without owner's permission
- Broken into a building
- Knowingly sold/held stolen goods

Mom's perceived control (mastery scale) in 1992 (M) ($\alpha = .78$)

Respondent agrees/disagrees with the statement... (0=strongly agree; ...; 3=strongly disagree)

- No way I can solve some of the problems I have
 - I sometimes feel I am being pushed around
 - I have little control over what happens to me
 - I can do almost anything I really set my mind to (reverse)
 - I often feel helpless in dealing with the problems of life
 - What happens in the future mostly depends on me (reverse)
 - Little I can do to change the important things in life
-

Table 3.3. Descriptive Statistics for Variables at Respondent's First Observation (Age 10-12; N=1,919)

	Mean or %	SD	Range
Delinquency	1.54	2.32	0-18
Rule-setting autonomy	1.41	1.06	0-3
Communicative autonomy	1.20	.52	0-2
Psychological autonomy	1.45	.71	0-2
Self-control	1.66	.57	0-3
Peer pressure	.35	1.06	0-5
Defiance	.62	.60	0-3
Married mom	65.3%	--	0-1
Mom's highest grade completed	12.99	2.55	0-20
Family income (in tens of thousands)	5.27	3.16	0-10
Mom's hrs work/week (<20)	15.3%	--	0-1
Mom's hrs work/week (20-34)	16.7%	--	0-1
Mom's hrs work/week (35-40)	29.3%	--	0-1
Mom's hrs work/wk (>40)	18.2%	--	0-1
Female sex	50.2%	--	0-1
Black race	27.8%	--	0-1
Hispanic ethnicity	20.9%	--	0-1
Birth order (second)	36.9%	--	0-1
Birth order (third)	20.7%	--	0-1
Birth order (four or higher)	11.4%	--	0-1
Urban residence	68.3%	--	0-1
Family size	4.45	1.34	1-8
Mom's age at birth	27.35	2.75	21-35
Religious attendance	2.84	1.82	0-5
Parental supervision	1.62	.52	0-2
Mom's AFQT score	39.62	28.67	1-99
Mom's delinquency	3.21	.73	3-9
Mom's mastery	14.85	3.24	3-21

Table 4.1. Bivariate Correlations among Variables at Respondent's First Observation (N= 1,919; * indicates $p < .05$)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Delinquency	1	.03*	-.06*	-.12*	-.20*	.11*	.18*	-.12*	-.09*	-.09*	-.01	.01	.01	-.01
(2) Rule-setting AS	--	1	-.00	-.03*	-.05*	.06*	.08*	-.10*	-.10*	-.14*	.01	-.01	.01	-.02
(3) Communicative AS	--	--	1	.12*	.10*	-.04*	-.29*	.01	.08*	.06*	-.02	.02	-.03*	.02
(4) Psychological AS	--	--	--	1	.20*	-.11*	-.23*	.09*	.04*	.11*	.01	.02	-.04*	-.02
(5) Self-control	--	--	--	--	1	-.14*	-.24*	.07*	.05*	.06*	.02	-.03*	-.02	-.00
(6) Peer pressure	--	--	--	--	--	1	.13*	-.05*	-.07*	-.07*	.02	-.00	.01	-.02
(7) Defiance	--	--	--	--	--	--	1	-.12*	-.15*	-.18*	-.01	-.00	.03*	.01
(8) Married mom	--	--	--	--	--	--	--	1	.21*	.70*	.06*	.02	-.06*	-.00
(9) Mom's highest grade	--	--	--	--	--	--	--	--	1	.51*	-.01	.01	.00	.15*
(10) Family income	--	--	--	--	--	--	--	--	--	1	-.00	-.01	.02	.14*
(11) Mom's hrs work (<20)	--	--	--	--	--	--	--	--	--	--	1	-.17*	-.27*	-.19*
(12) Mom's hrs work (20-34)	--	--	--	--	--	--	--	--	--	--	--	1	-.30*	-.21*
(13) Mom's hrs work (35-40)	--	--	--	--	--	--	--	--	--	--	--	--	1	-.34*
(14) Mom's hrs work (>40)	--	--	--	--	--	--	--	--	--	--	--	--	--	1
(15) Female sex	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(16) Black race	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(17) Hispanic ethnicity	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(18) Birth order (second)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(19) Birth order (third)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(20) Birth order (four +)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(21) Urban residence	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(22) Family size	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(23) Mom's age at birth	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(24) Religious attendance	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(25) Parental supervision	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(26) Mom's AFQT score	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(27) Mom's delinquency	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(28) Mom's mastery	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 4.1. Continued

	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)
(1) Delinquency	-.17*	.03*	.03*	.01	.02	.06*	.04*	-.00	-.07*	-.03*	-.15*	-.07*	.06*	-.02
(2) Rule-setting AS	-.03*	.05*	.05*	.00	-.01	.04*	-.02	.01	-.05*	-.00	-.09*	-.14*	-.04*	-.03*
(3) Communicative AS	.00	.02	.00	.02	-.03*	-.07*	.04*	-.02	.01	.07*	.31*	.02	-.01	.07*
(4) Psychological AS	.08*	-.08*	.01	.02	-.00	-.01	-.00	.01	.03*	.03*	.15*	.05*	-.04*	.02
(5) Self-control	.19*	-.01	-.02	.00	.00	-.03*	-.01	.03*	.03*	.05*	.15*	.03*	-.03*	.02
(6) Peer pressure	-.05*	.09*	.00	.01	.05*	.01	-.02	.00	.02	-.01	-.10*	-.11*	.01	-.03*
(7) Defiance	-.08*	.10*	.08*	-.01	.05*	.04*	.02	-.01	-.09*	-.03*	-.33*	-.16*	.02	-.08*
(8) Married mom	.01	-.32*	-.04*	.04*	-.06*	-.11*	-.09*	.23*	.09*	.14*	.18*	.34*	-.09*	.10*
(9) Mom's highest grade	-.00	-.09*	-.23*	.02	-.12*	-.25*	-.01	-.06*	.18*	.14*	.14*	.69*	-.09*	.29*
(10) Family income	.00	-.30*	-.12*	.03*	-.10*	-.19*	-.00	.05*	.17*	.12*	.17*	.59*	-.10*	.23*
(11) Mom's hrs work (<20)	.02	-.08*	-.01	-.02	-.02	.03*	-.04*	.08*	.00	.02	.01	.03*	.01	.01
(12) Mom's hrs work (20-34)	-.02	-.04*	-.01	.01	-.01	.01	.01	.02	-.01	-.00	.02	.03*	.02	-.01
(13) Mom's hrs work (35-40)	-.00	.07*	.00	.02	.01	-.05*	.01	-.11*	-.01	-.04*	-.03*	-.03*	-.02	.03*
(14) Mom's hrs work (>40)	.01	.03*	-.03*	.03*	-.04*	-.06*	-.00	-.10*	-.01	-.01	-.00	.07*	-.02	.08*
(15) Female sex	1	.02	-.01	-.00	-.04*	.03*	.01	-.01	.02	.01	.05*	-.01	.02	-.03*
(16) Black race	--	1	-.32*	-.01	.06*	.12*	.13*	-.01	-.09*	.03*	-.14*	-.45*	.05*	-.03*
(17) Hispanic ethnicity	--	--	1	-.01	.05*	.07*	.11*	.08*	-.04*	-.03*	-.02	-.25*	-.02	-.07*
(18) Birth order (second)	--	--	--	1	-.40*	-.28*	-.02	-.10*	-.06*	-.01	.01	.02	.01	.06*
(19) Birth order (third)	--	--	--	--	1	-.18*	.00	.16*	.06*	-.02	-.03*	-.13*	.06*	-.07*
(20) Birth order (four +)	--	--	--	--	--	1	.01	.33*	.11*	-.02	-.07*	-.20*	.04*	-.16*
(21) Urban residence	--	--	--	--	--	--	1	-.00	.01	-.03*	-.05*	-.04*	-.01	.01
(22) Family size	--	--	--	--	--	--	--	1	.01	-.03*	-.05*	-.04*	-.01	.01
(23) Mom's age at birth	--	--	--	--	--	--	--	--	1	.00	.01	-.05*	-.07*	.04*
(24) Religious attendance	--	--	--	--	--	--	--	--	--	1	.06*	.10*	-.03*	.06*
(25) Parental supervision	--	--	--	--	--	--	--	--	--	--	1	.16*	-.07*	.05*
(26) Mom's AFQT score	--	--	--	--	--	--	--	--	--	--	--	1	-.05*	.22*
(27) Mom's delinquency	--	--	--	--	--	--	--	--	--	--	--	--	1	-.03*
(28) Mom's mastery	--	--	--	--	--	--	--	--	--	--	--	--	--	1

Table 4.2. Multilevel Poisson Regressions Predicting Links between Autonomy-Supportive Parenting and Adolescent Delinquency

	Model 1 (Rule-setting)		Model 2 (Communicative)		Model 3 (Psychological)		Model 4 (Parenting)	
<i>Growth parameters</i>								
Intercept	.691*	(.074)	.708*	(.074)	.694*	(.073)	.702*	(.073)
Age (centered at 13)	.117*	(.018)	.114*	(.018)	.120*	(.018)	.121*	(.018)
Age-squared	-.009*	(.003)	-.009*	(.003)	-.009*	(.003)	-.009*	(.003)
<i>Parenting</i>								
Rule-setting AS	.037	(.020)	--	--	--	--	.029	(.019)
Age	-.022	(.006)	--	--	--	--	-.022*	(.006)
Communicative AS	--		-.164*	(.040)	--	--	-.067	(.041)
*Age	--		.032	(.013)	--	--	.018	(.013)
Psychological AS	--		--		-.202*	(.028)	-.174*	(.028)
Age	--		--		.046	(.009)	.042*	(.009)
Parental supervision	--		--		--	--	-.239*	(.041)
Age	--		--		--	--	.026	(.013)
<i>L1 Controls</i>								
Married mom	-.172*	(.046)	-.171*	(.046)	-.168*	(.046)	-.150*	(.045)
Mom's highest grade	-.024*	(.010)	-.023	(.010)	-.024*	(.010)	-.020*	(.010)
Family income	-.001	(.007)	.001	(.007)	.001	(.007)	.002	(.007)
Mom's hrs wrk (<20)	.030	(.050)	.025	(.051)	.024	(.050)	.015	(.050)
Mom hrs wrk (20-34)	.032	(.049)	.028	(.049)	.030	(.049)	.024	(.049)
Mom hrs wrk (35-40)	-.005	(.046)	-.011	(.046)	-.018	(.046)	-.027	(.046)
Mom hrs wrk (>40)	-.042	(.052)	-.050	(.052)	-.055	(.052)	-.065	(.052)

* indicates $p < .05$.

Table 4.2. ContinuedL2 Controls

Female sex	-.486*	(.041)	-.488*	(.040)	-.468*	(.041)	-.458*	(.041)
Age	.036	(.013)	.039*	(.013)	.034*	(.013)	.032*	(.013)
Black race	.005	(.062)	.010	(.062)	-.015	(.061)	-.041	(.061)
Age	-.054	(.019)	-.056*	(.019)	-.048*	(.019)	-.044*	(.019)
Hispanic ethnicity	.016	(.061)	.024	(.061)	.014	(.060)	.005	(.060)
*Age	.003	(.019)	-.001	(.019)	.001	(.019)	.004	(.019)
Birth order (second)	.120*	(.052)	.115*	(.052)	.129*	(.051)	.119*	(.051)
*Age	.021	(.016)	.023	(.016)	.020	(.016)	.021	(.016)
Birth order (third)	.139*	(.064)	.123	(.064)	.150*	(.063)	.139*	(.063)
*Age	-.014	(.020)	-.010	(.020)	-.016	(.020)	-.015	(.020)
Birth order (four +)	.277*	(.082)	.257*	(.083)	.285*	(.083)	.252*	(.082)
*Age	.010	(.025)	.012	(.025)	.009	(.025)	.016	(.025)

* indicates $p < .05$.

Table 4.2. Continued

	Model 1 (Say in rules)		Model 2 (Communication)		Model 3 (Low pressure)		Model 4 (ASP)	
Urban residence	.087*	(.037)	.087*	(.037)	.085*	(.037)	.082*	(.037)
*Age	-.006	(.014)	-.003	(.014)	-.004	(.014)	-.006	(.014)
Family size	-.013	(.018)	-.014	(.018)	-.015	(.018)	-.013	(.017)
*Age	-.007	(.005)	-.007	(.005)	-.007	(.005)	-.007	(.005)
Mom age at birth	-.020*	(.008)	-.020*	(.008)	-.021*	(.008)	-.021*	(.008)
*Age	-.001	(.003)	-.001	(.003)	-.001	(.003)	-.001	(.003)
Religious attendance	-.017	(.011)	-.014	(.012)	-.014	(.011)	-.011	(.011)
*Age	.006	(.004)	.005	(.004)	.005	(.004)	.005	(.004)
<u>L3 Controls</u>								
Mom's AFQT score	-.001	(.001)	-.001	(.001)	-.001	(.001)	-.001	(.001)
Age	.001	(.000)	.001	(.000)	.001*	(.000)	.001	(.000)
Mom's delinquency	.072*	(.028)	.077*	(.027)	.068*	(.027)	.062*	(.027)
*Age	-.016	(.009)	-.015	(.009)	-.012	(.008)	-.012	(.008)
Mom's mastery	.006	(.007)	.007	(.007)	.006	(.007)	.007	(.007)
*Age	.002	(.002)	.002	(.002)	.002	(.002)	.001	(.002)

* indicates $p < .05$.

NOTES: N = 6,253 observations (L1) nested within 1,919 subjects (L2) nested within 1,477 moms (L3). Models were specified with random coefficients for the L3 intercept, the L2 intercept, and the linear age slope, and with one residual error term to adjust for over-dispersion. Non-dummy variables are grand-mean centered. Reference category (for dummy variables) is a first-born, non-Black, non-Hispanic male, living in a non-urban area, and with a non-working mother. Table entries are unstandardized Poisson regression coefficients (standard errors in parentheses).

Table 4.3. Multilevel Poisson Models Regressing Delinquency on Autonomy-Supportive Parenting, Self-control, Peer Pressure, Defiance, and Controls

	Model 1 (Parenting)		Model 2 (Self-control)		Model 3 (Peer pressure)		Model 4 (Defiance)	
<u>Growth parameters</u>								
Intercept	.702*	(.073)	.663*	(.072)	.662*	(.072)	.672*	(.072)
Age (centered at 13)	.121*	(.018)	.127*	(.018)	.128*	(.018)	.128*	(.018)
Age-squared	-.009*	(.003)	-.009*	(.003)	-.009*	(.003)	-.009*	(.003)
<u>Parenting</u>								
Rule-setting AS	.029	(.019)	.025	(.019)	.020	(.019)	.017	(.020)
Age	-.022	(.006)	-.021*	(.006)	-.020*	(.006)	-.019*	(.006)
Communicative AS	-.067	(.041)	-.056	(.041)	-.057	(.040)	-.012	(.041)
*Age	.018	(.013)	.018	(.013)	.018	(.013)	.007	(.013)
Psychological AS	-.174*	(.028)	-.132*	(.028)	-.122*	(.028)	-.101*	(.028)
Age	.042	(.009)	.037*	(.009)	.034*	(.009)	.030*	(.009)
Parental supervision	-.239*	(.041)	-.203*	(.040)	-.199*	(.040)	-.153*	(.040)
Age	.026	(.013)	.022	(.013)	.020	(.013)	.009	(.013)
<u>Mechanisms</u>								
Self-control	--		-.327*	(.036)	-.305*	(.036)	-.276*	(.036)
Age	--		.037	(.012)	.029*	(.012)	.022	(.012)
Peer pressure	--		--		.084*	(.018)	.078*	(.018)
Age	--		--		-.032	(.006)	-.030*	(.006)
Defiance	--		--		--		.201*	(.035)
Age	--		--		--		-.045	(.011)
<u>L1 Controls</u>								
Married mom	-.150*	(.045)	-.143*	(.045)	-.141*	(.045)	-.144*	(.045)
Mom's highest grade	-.020*	(.010)	-.019	(.010)	-.018	(.010)	-.017	(.010)
Family income	.002	(.007)	.002	(.007)	.001	(.007)	.002	(.007)
Mom hrs work (<20)	.015	(.050)	.023	(.050)	.017	(.050)	.016	(.050)
Mom's hrs work (20-34)	.024	(.049)	.019	(.048)	.017	(.048)	.015	(.048)
Mom's hrs work (35-40)	-.027	(.046)	-.027	(.045)	-.029	(.045)	-.033	(.045)
Mom's hrs work (>40)	-.065	(.052)	-.067	(.052)	-.063	(.052)	-.069	(.051)

* indicates $p < .05$.

Table 4.3. Continued

	Model 1 (ASP)		Model 2 (Self-control)		Model 3 (Peer pressure)		Model 4 (Defiance)	
<i>L2 Controls</i>								
Female sex	-.458*	(.041)	-.394*	(.040)	-.390*	(.040)	-.381*	(.040)
Age	.032	(.013)	.025	(.013)	.023	(.013)	.021	(.013)
Black race	-.041	(.061)	-.033	(.060)	-.044	(.060)	-.059	(.059)
Age	-.044	(.019)	-.045*	(.019)	-.042*	(.019)	-.039*	(.019)
Hispanic ethnicity	.005	(.060)	.003	(.059)	.002	(.058)	-.021	(.058)
*Age	.004	(.019)	.005	(.019)	.005	(.019)	.010	(.019)
Birth order (second)	.119*	(.051)	.116*	(.050)	.108*	(.050)	.103*	(.049)
*Age	.021	(.016)	.021	(.016)	.024	(.016)	.026	(.016)
Birth order (third)	.139*	(.063)	.125*	(.062)	.117*	(.061)	.105	(.061)
*Age	-.015	(.020)	-.021	(.016)	-.010	(.020)	-.007	(.020)
Birth order (four +)	.252*	(.082)	.235*	(.080)	.241*	(.080)	.237*	(.079)
*Age	.016	(.025)	.019	(.025)	.017	(.025)	.019	(.025)
Urban residence	.082*	(.037)	.083*	(.037)	.089*	(.037)	.090*	(.037)
*Age	-.006	(.014)	-.006	(.014)	-.007	(.014)	-.008	(.014)
Family size	-.013	(.017)	-.007	(.017)	-.009	(.017)	-.007	(.017)
*Age	-.007	(.005)	-.008	(.005)	-.007	(.005)	-.008	(.005)
Mom's age at birth	-.021*	(.008)	-.018*	(.008)	-.020*	(.008)	-.018*	(.008)
*Age	-.001	(.003)	-.001	(.003)	-.001	(.003)	-.002	(.003)
Religious attendance	-.011	(.011)	-.009	(.011)	-.008	(.011)	-.010	(.011)
*Age	.005	(.004)	.004	(.004)	.005	(.004)	.005	(.004)
<i>L3 Controls</i>								
Mom's AFQT score	-.001	(.001)	-.001	(.001)	-.000	(.001)	-.000	(.001)
*Age	.001	(.000)	.001	(.000)	.001	(.000)	.000	(.000)
Mom's delinquency	.062*	(.027)	.060*	(.027)	.059*	(.026)	.060*	(.026)
*Age	-.012	(.008)	-.012	(.008)	-.012	(.008)	-.012	(.008)
Mom's mastery	.007	(.007)	.007	(.007)	.007	(.007)	.008	(.007)
*Age	.001	(.002)	.002	(.002)	.001	(.002)	.001	(.002)

* indicates $p < .05$.

NOTES: N = 6,253 observations (L1) nested within 1,919 subjects (L2) nested within 1,477 moms (L3).

Models were specified with random coefficients for the L3 intercept, the L2 intercept, and the linear age slope, and with one residual error term to adjust for over-dispersion. Non-dummy variables are grand-mean centered. Reference category (for dummy variables) is a first-born, non-Black, non-Hispanic male, living in a non-urban area, and with a non-working mother. Table entries are unstandardized Poisson regression coefficients (standard errors in parentheses).

Table 4.4. Clustered Survey Regressions Predicting Self-control, Delinquent Peer Pressure, and Defiance at Respondent's First Observation (i.e., at Age 10 to 12)

	Model 1 (Self-control)		Model 2 (Peer pressure)		Model 3 (Defiance)	
Intercept	1.59*	(.050)	.283*	(.073)	.535*	(.047)
AS rule-setting	-.015	(.013)	.040	(.022)	.018	(.012)
AS communication	.048	(.027)	-.011	(.045)	-.230*	(.029)
Psychological AS	.131*	(.020)	-.128*	(.035)	-.129*	(.020)
Parental supervision	.107*	(.028)	-.116*	(.057)	-.233*	(.032)
<i>Controls</i>						
Married mom	.028	(.034)	.015	(.054)	.016	(.035)
Mom's highest grade completed	.004	(.007)	-.007	(.011)	-.008	(.007)
Family income	-.001	(.005)	.002	(.008)	-.012*	(.005)
Mom's hrs work/week (<20)	-.006	(.035)	.098	(.062)	.037	(.031)
Mom's hrs work/week (20-34)	-.064	(.036)	.040	(.055)	.051	(.032)
Mom's hrs work/week (35-40)	-.026	(.033)	.021	(.055)	.049	(.031)
Mom's hrs work/wk (>40)	-.031	(.035)	-.012	(.062)	.068*	(.034)

* indicates $p < .05$.

Table 4.4. Continued

Female sex	.196*	(.026)	-.083	(.046)	-.071*	(.025)
Black race	.028	(.043)	.145	(.080)	.088*	(.039)
Hispanic ethnicity	-.005	(.039)	.010	(.066)	.114*	(.038)
Birth order (second)	-.024	(.032)	.069	(.053)	.017	(.030)
Birth order (third)	-.057	(.040)	.111	(.076)	.044	(.040)
Birth order (four or higher)	-.054	(.056)	-.007	(.090)	.013	(.054)
Urban residence	-.003	(.026)	-.059	(.045)	.000	(.024)
Family size	.017	(.013)	-.002	(.019)	-.013	(.013)
Mom's age at birth	.006	(.005)	.019*	(.009)	-.013*	(.005)
Religious attendance	.006	(.008)	.003	(.013)	.008	(.007)
Mom's AFQT score	-.000	(.001)	-.002	(.001)	.000	(.001)
Mom's delinquency	-.015	(.016)	-.001	(.038)	-.012	(.022)
Mom's mastery	.001	(.004)	-.002	(.007)	-.005	(.004)
<i>R</i> ²		.09		.04		.20

* indicates $p < .05$.

NOTES: N = 1,919 subjects clustered within 1,477 moms. Table entries are unstandardized regression coefficients (standard errors in parentheses).

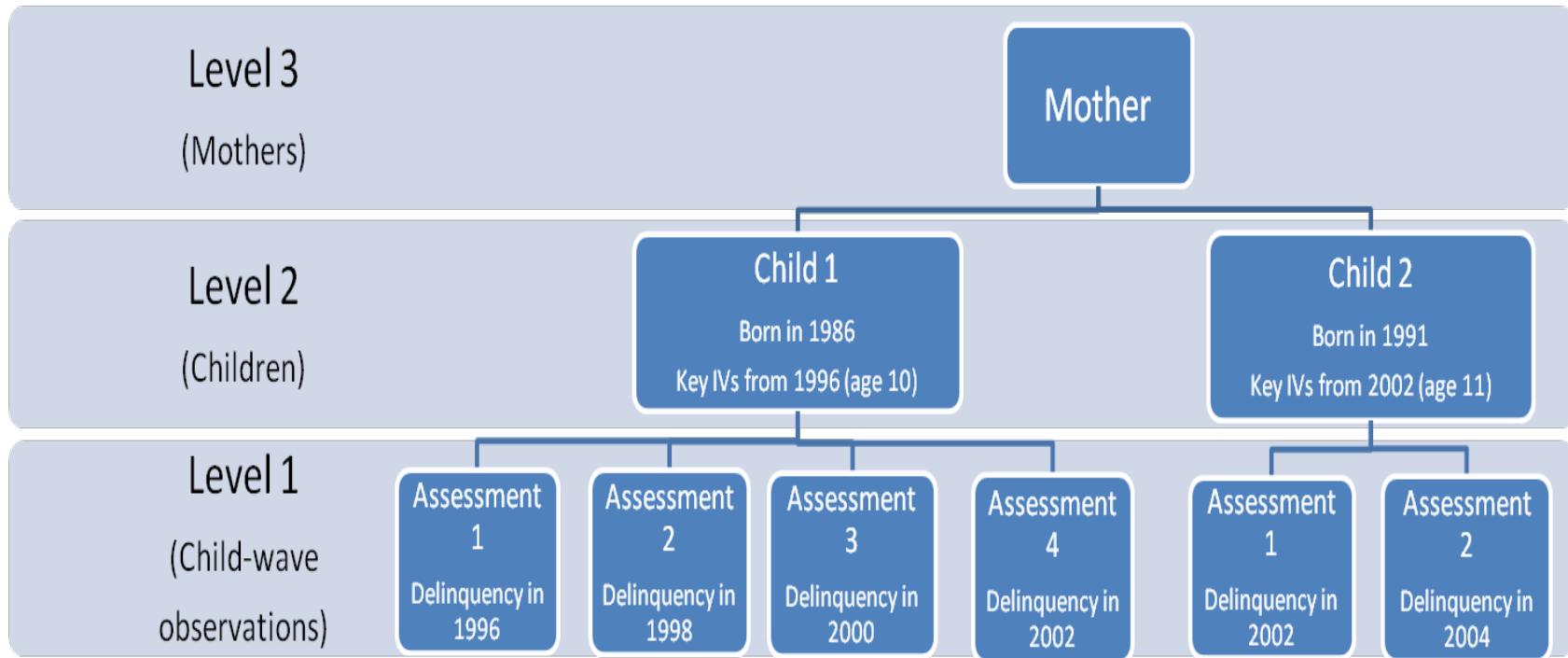


Figure 3.1. Graphical Display of the C-NLSY's Hierarchical Data Structure

Note: Figure 1 displays the data structure for a hypothetical mother (at Level 3) with two children in the C-NLSY (at Level 2), who were born in 1986 and 1991 respectively. The figure also indicates the year of C-NLSY survey wave at which child observations would be used to construct measures of time-varying independent variables (denoted as “IV”) and delinquency (denoted as “DV”).

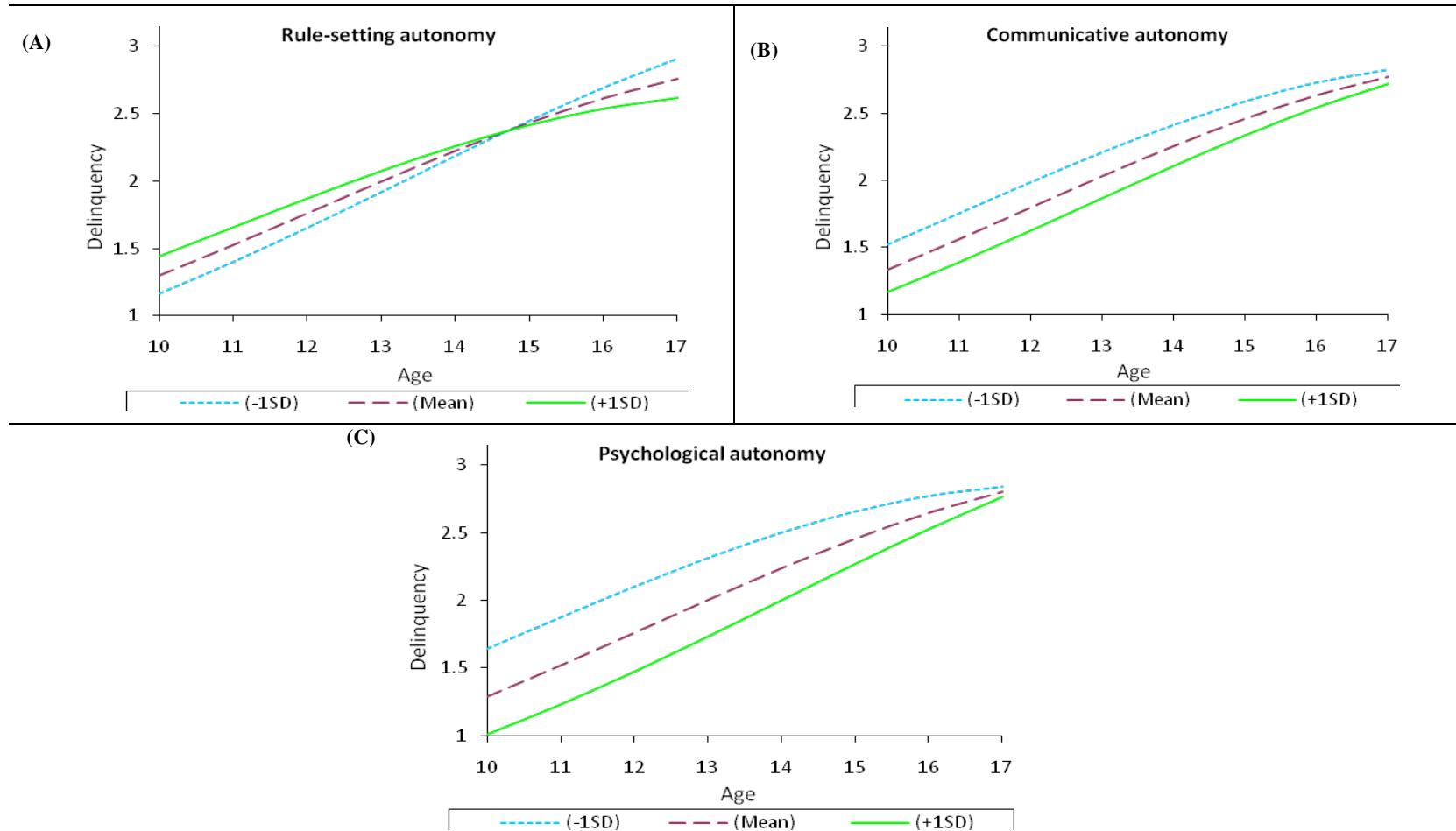


Figure 4.1. Graphical Display of Links between Autonomy-supportive Parenting and Adolescent Delinquency

NOTES: Predicted values displayed in Figures 1A, 1B, and 1C are calculated using coefficients presented in Models 1, 2, and 3 of Table 3, respectively. Data points reflect predicted delinquency event rates over the past year.

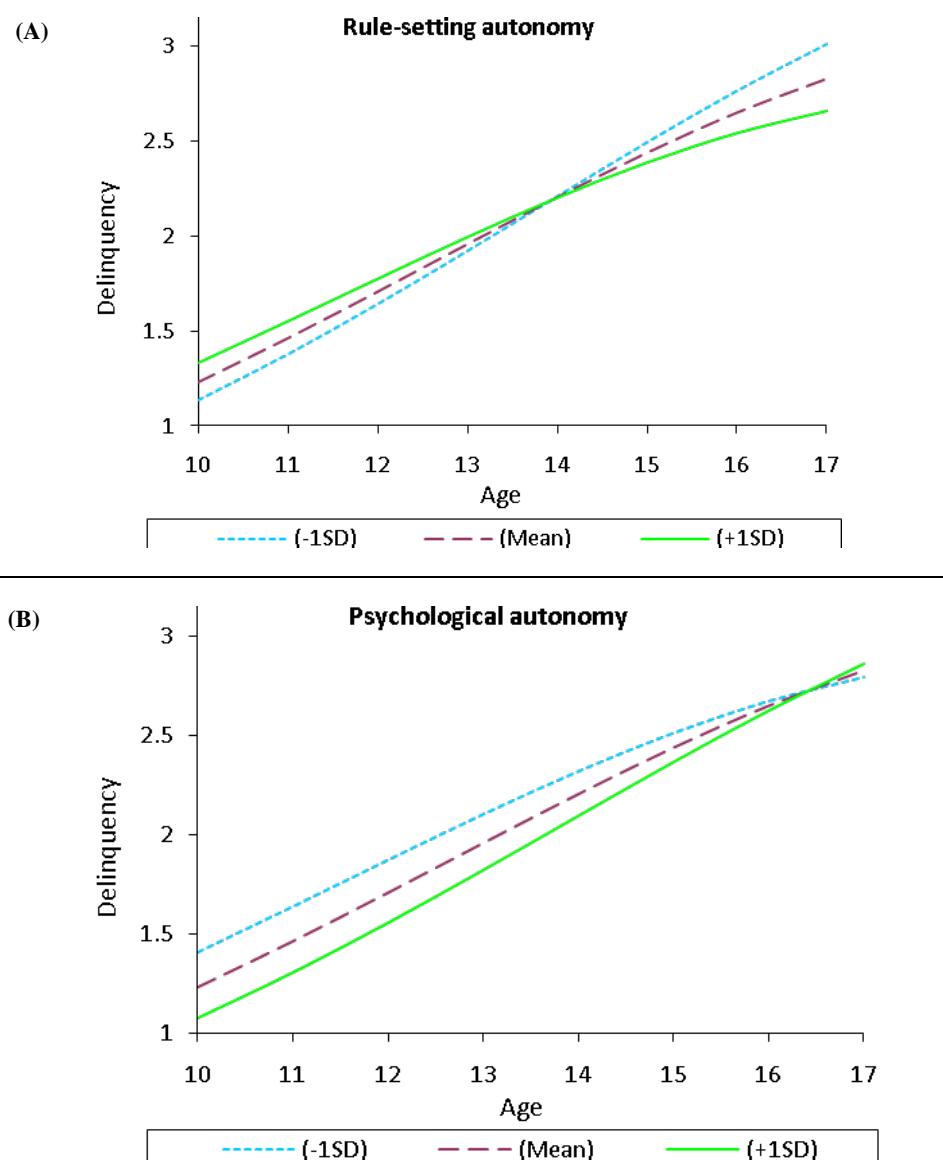


Figure 4.2. Graphical Display of Links between Autonomy-supportive Parenting and Adolescent Delinquency, Net of Theoretical Mechanisms

NOTES: Predicted values displayed in Figures 2A and 2B are calculated using coefficients presented in Model 7 of Table 5. Data points reflect predicted delinquency event rates over the past year.

APPENDICES

Appendix 4.1. Comparison of Clustered Survey Regression Coefficients from Models Predicting Concurrent and Lagged Measures of Self-control, Delinquent Peer Pressure, and Defiance

	Self-control		Peer pressure		Defiance	
Rule-setting AS						
Concurrent outcome	-.015	(.013)	.040	(.022)	.018	(.012)
Lagged outcome	.001	(.014)	.039	(.025)	.005	(.016)
Communicative AS						
Concurrent outcome	.048	(.027)	-.011	(.045)	-.230*	(.029)
Lagged outcome	.028	(.032)	-.014	(.058)	-.076*	(.035)
Psychological AS						
Concurrent outcome	.131*	(.020)	-.128*	(.035)	-.129*	(.020)
Lagged outcome	.090*	(.021)	-.149*	(.044)	-.034	(.025)

* indicates $p < .05$.

NOTES: Estimates for concurrent mechanisms are taken from Table 4.3. For models predicting lagged mechanisms, $N = 1,291$ subjects clustered within 1,042 moms. Lagged models also include all control variables found in Table 4.3. Table entries are unstandardized regression coefficients (standard errors in parentheses).

Appendix 4.2. Comparison of Multilevel Poisson Regression Coefficients from Final Models Predicting Alternative Measures of Delinquency

	Original Scale		Delinquency Index		Defiant Deviance	
<u>Growth parameters</u>						
Intercept	.672*	(.072)	.167*	(.066)	.344*	(.071)
Age (centered at 13)	.128*	(.018)	.094*	(.016)	.165*	(.014)
Age-squared	-.009*	(.003)	-.013*	(.003)	-.003*	(.002)
<u>ASP</u>						
Rule-setting AS	.017	(.020)	.025	(.017)	.015	(.020)
Age	-.019	(.006)	-.019*	(.005)	-.018*	(.005)
Communicative AS	-.012	(.041)	-.003	(.036)	.010	(.043)
*Age	.007	(.013)	.012	(.012)	-.001	(.010)
Psychological AS	-.101*	(.028)	-.093*	(.024)	-.087*	(.029)
Age	.030	(.009)	.020*	(.008)	.030*	(.007)
<u>Mechanisms</u>						
Self-control	-.276*	(.036)	-.240*	(.032)	-.275*	(.038)
*Age	.022	(.012)	.019	(.010)	.022	(.009)
Peer pressure	.078*	(.018)	.067*	(.015)	.080*	(.019)
Age	-.030	(.006)	-.027*	(.005)	-.026*	(.004)
Defiance	.201*	(.035)	.175*	(.031)	.208*	(.037)
Age	-.045	(.011)	-.040*	(.010)	-.040*	(.009)

* indicates $p < .05$.

NOTES: Estimates for original scale are taken from Model 4 of Table 4.4. For models predicting the delinquency index and defiant deviance, $N = 6,253$ observations (L1) nested within 1,919 subjects (L2) nested within 1,477 moms (L3). Delinquency index model specified with random coefficients for the L2 intercept and the linear age slope. Defiant deviant model specified with one random coefficient for the L2 intercept. Each model includes all control variables found in Model 4 of Table 4.4. Table entries are unstandardized Poisson regression coefficients (standard errors in parentheses).

Appendix 4.3. Comparison of Poisson Regression Coefficients from Cross-sectional Models Predicting Concurrent and Lagged Measures of Delinquency

	1 st Observation (Concurrent)	2 nd Observation (One-wave lag)	3 rd Observation (Two-wave lag)	4 th Observation (Three-wave lag)
<u>ASP and controls only</u>				
Intercept	.315* (.130)	.522* (.113)	.771* (.119)	.925* (.150)
AS rule-setting	.083* (.030)	.037 (.027)	-.026 (.028)	-.091* (.034)
AS communication	-.118 (.063)	.013 (.058)	-.057 (.059)	-.031 (.077)
Psychological AS	-.289* (.042)	-.157* (.039)	-.081* (.040)	-.015 (.052)
<u>ASP, controls, and mechanisms</u>				
Intercept	.259* (.126)	.496* (.112)	.767* (.119)	.946* (.150)
AS rule-setting	.062* (.029)	.028 (.027)	-.032 (.027)	-.096* (.034)
AS communication	-.040 (.062)	.061 (.058)	-.009 (.060)	.002 (.078)
Psychological AS	-.174* (.042)	-.091* (.040)	-.034 (.041)	.028 (.053)
Self-control	-.399* (.056)	-.289* (.052)	-.235* (.053)	-.180* (.067)
Peer pressure	.163* (.025)	.049 (.026)	-.007 (.029)	.030 (.040)
Defiance	.328* (.053)	.168* (.050)	.139* (.052)	.087 (.071)
N (youth)	1,919	1,837	1,611	840

* indicates $p < .05$.

NOTES: All models specified with one random coefficient for the L2 intercept; models also include all control variables found in Table 4.3. Table entries are unstandardized Poisson regression coefficients (standard errors in parentheses).