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Underlying processes of antisocial decisions: Adolescents versus adults

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Underlying processes of antisocial decisions: Adolescents versus adults

Abstract
The question of adolescent decision maturity holds significant ramifications for today’s youth. When adolescents are viewed as competent, rational decision makers, they may be considered mature enough to make decisions in their best interest in criminal court (Grisso, 1997) and are held fully culpable for their crimes. In contrast, when adolescents are viewed as immature decision makers, they may be considered less competent to make criminal decisions, and thus may not be considered fully culpable for their crimes (Woolard, Reppucci, & Redding, 1996). The present study is based on responses to hypothetical vignettes and measures maturity of judgment (Scott, Reppucci, & Woolard, 1995; Steinberg & Cauffman, 1996) via standardized scales and qualitative analyses of open-ended responses. This work investigates the relations between maturity of judgment, consequential thinking, and participation in delinquent behaviors in adolescents (ages 12-18), adults (ages 35-63), and delinquent youth (ages 14-17). Results suggest that adolescents and adults differ significantly on the judgment factors that influence their decisions and their decision processes. However, adolescent within-group differences stemmed from the outcome expectancy that sensation seeking was a reason to engage in antisocial behavior, and from differences on consequential thinking variables. In all, findings suggest that for adolescents, but not adults, the domains most central to the endorsement of antisocial decisions are outcome expectancies related to peers, sensation seeking, negative emotion, short term benefits, lack of risk, and over-emphasis on said positive expectancies. Further, exploratory analyses showed external validity for the study’s qualitative coding. Taken together, the results of this study offer the potential to inform adolescent-focused legal policies and interventions.

Keywords
Psychology, Social, Psychology, Developmental
UNDERLYING PROCESSES OF ANTISOCIAL DECISIONS: ADOLESCENTS VERSUS ADULTS

BY

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DISSERTATION

Submitted to the University of New Hampshire
In Partial Fulfillment of
The Requirements for the Degree of

Doctor of Philosophy

In
Psychology

September, 2007
This dissertation has been examined and approved.

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June 4th, 2007
Date
DEDICATION

In Dedication to

Virginia Casbeer Parli
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ABSTRACT

UNDERLYING PROCESSES OF ANTISOCIAL DECISIONS: ADOLESCENTS VERSUS ADULTS

By

Kathryn L. Modecki

University of New Hampshire, September, 2007

The question of adolescent decision maturity holds significant ramifications for today’s youth. When adolescents are viewed as competent, rational decision makers, they may be considered mature enough to make decisions in their best interest in criminal court (Grisso, 1997) and may be held fully culpable for their crimes. In contrast, when adolescents are viewed as immature decision makers, they may be considered less competent to make criminal decisions, and thus may not be considered fully blameworthy for their crimes (Woolard, Reppucci, & Redding, 1996). The present study is based on responses to hypothetical vignettes and measures maturity of judgment (Scott, Reppucci, & Woolard, 1995; Steinberg & Cauffman, 1996) via standardized scales and qualitative analyses of open-ended responses. This work investigates the relations between maturity of judgment, consequential thinking, and participation in delinquent behaviors in adolescents (ages 12-18), adults (ages 35-63), and delinquent youth (ages 14-17). Results suggest that adolescents and adults differ significantly on the judgment factors that influence their decisions and their decision processes. However, adolescent within-group differences stemmed from the outcome
expectancy that sensation seeking was a reason TO engage in antisocial behavior, and from differences on consequential thinking variables. In all, findings suggests that for adolescents, but not adults, the domains most central to the endorsement of antisocial decisions are outcome expectancies related to peers, sensation seeking, negative emotion, short term benefits, lack of risk, and over-emphasis on said positive expectancies. Further, exploratory analyses showed external validity for the study's qualitative coding. Taken together, the results of this study offer the potential to inform adolescent-focused legal policies and interventions.
CHAPTER I

INTRODUCTION

Overview

Are adolescents mature decision makers? Research that attempts to answer this query provides a lens through which a society views its adolescents (Jacobs-Quadrel, Fischhoff, & Davis, 1993; Steinberg & Lerner, 2004). This tension is perhaps most perceptible in criminal contexts. When adolescents are viewed as competent, rational decision makers, they may be considered mature enough to make decisions in their best interest in criminal court (Grisso, 1997) and may be held fully culpable for their crimes. In contrast, when adolescents are viewed as immature decision makers, adolescents may be considered less competent to make criminal decisions, and thus may not be considered fully culpable for their crimes (Woolard, Reppucci, & Redding, 1996).

At present, both research and legislation offer a mixed view of adolescent maturity. Although traditional cognitive theory posits few differences between adolescents and adults (e.g. Inhelder & Piaget, 1958), Social Information-Processing theory suggests that younger individuals show deficits in their cognitive problem solving (Crick & Dodge, 1994). Further, more recent developmental theories of immature judgment emphasize psychosocial influences on decision making, positing that adolescents and adults may differ on
factors that influence their decision processes (Cauffman & Steinberg, 1995, 2000; Scott, Reppucci, & Woolard, 1995; Steinberg & Cauffman, 1996). This notion is supported by physiological research (Spear, 2000; Yurgelun-Todd, 2002) and studies of adolescent decision making in risk-laden contexts (Furby & Beyth-Marom, 1992).

In light of the potential implications in the policy arena attached to adolescent decision research, this review argues that adolescents and adults differ both in their decision processes and in the psychosocial factors that influence their decisions in antisocial domains (Halpern-Felsher & Cauffman, 2001). The current review aims to elucidate these differences, as well as the psychosocial factors which may influence adolescent antisocial decisions, and makes suggestions for theory and future research.

Definitions

Adolescence is often referred to in terms of phases, including early (age 10 to 14), middle (age 15 to 17), and late (18-mid 20's) stages (Elliott & Feldman, 1990). The present review focuses on the middle adolescent period, based on extensive findings of differences in decision making abilities between adolescents younger than 15 and adults across decision domains (e.g., Gittler, Quigley-Rick, & Saks, 1990; Grisso, 1997). Because middle adolescents are on the cusp of legal adulthood, their legal rights are perhaps the most tenuous. At the same time, middle adolescents are in the precarious position wherein their physical maturity may mask their developmental immaturity in decision making contexts (Steinberg & Cauffman, 1996).
Decision making has been defined as the process of evaluating options and making a choice based on the likelihood of a consequence's occurrence and expected utility (Beyth-Marom, Fischhoff, Jacobs-Quadrel, & Furby, 1991; Galotti, 1989). Policy makers, in particular, may be tempted to evaluate adolescent decisions in terms of what adolescents choose, their decision resolution, herein defined as decision outcome (Friedman, 1996). Yet in order to assess decision making ability, research must also consider the deliberation procedure used to arrive at a decision outcome, herein defined as the decision process (Friedman, 1996). For instance, adolescents may be deficient processors of social-information, based on lack of experience or on psychosocial influences on decision processes. These factors may bias adolescents towards diminished negative outcome expectancies and augmented positive outcome expectancies for antisocial behavior (Fontaine, in press).

Further, policy makers may look to evidence of adolescent abilities to make good decisions under ideal conditions, such as within the context of a laboratory, as evidence of maturity (Scott et al., 1995; Woolard et al. 1996); yet decision making capacity does not equate with decision making performance (Fischhoff, 1992; Grisso, 1986). Adolescent decision performance, everyday decision processes made within social and environmental contexts must be evaluated for competence, rather than laboratory-based tasks that assess decision outcomes (Woolard et al.).

Recent developmental research suggests that adolescent decision performance may be influenced by situation-specific features, such as peer
influences, risk perception, and shortened future-time perspective (Woolard et. al, 1996). This contextual approach is the immature judgment perspective (Scott et al., 1995; Steinberg & Cauffman, 1996), which focuses on adolescent susceptibility to psychosocial influences within particular decision domains. The immature judgment paradigm is distinct from more macro-based cognitive theory, which attempts to draw broad-based conclusions of over-all decision competence (Woolard et al.).

**Criminal Responsibility**

The current direction of the legal system is led by the assumption that adolescents are mature decision makers (Walkover, 1984), as seen in the over 200,000 adolescents tried in adult criminal court annually (Allard & Young, 2002). With an upsurge in criminal transfer through offense and prosecutor discretion laws, it becomes a foregone conclusion that adolescents are, in fact, rationally choosing their crimes (Gardner, 1989).

To be held fully criminally responsible under law, one must willingly engage in a criminal activity and, while doing so, possess a guilty or “criminal” mind set (Weithorn, 1984). Traditionally, it was assumed that individuals ages 14 and below could not possess a guilty mindset, although evidence to the contrary would be evaluated in specific cases (Weithorn, 1984). This analysis is known as the infancy defense, akin to the adult defense of insanity, compelling a reduction in punishment (Bonnie, Coughlin, Jeffries, & Low, 1997). However, infancy is a non-allowable defense in juvenile court (Bonnie et al.), because the
system exists to accommodate the notion that juveniles are less mature than adults, and thus less culpable for their crimes (Scott & Grisso, 1997).

When adolescents are transferred to adult court, the infancy claim is no longer extraneous. Although it is often assumed that criminal courts consider adolescent immaturity as a mitigating factor (Slobogin, Fondacaro & Woolard, 1999, Steinberg & Cauffman, 2001), research suggests that this is not the case (Scott & Grisso, 1997). In fact, juveniles transferred to criminal court may be punished more severely than young adults for similar crimes (Kurlychek & Johnson, 2004). For example, research suggests that judges may view transferred adolescents as more culpable for their crimes than adult defendants (Kurlychek & Johnson, 2004).

At the same time, if adolescent antisocial decisions are characterized as lacking mature, rational choice, the notion of “adult time for adult crime” is undermined (Scott et al., 1995; Woolard, Fondacaro, & Slobogin, 2001). In fact, adolescent's immaturity when making antisocial decisions advocates for reduced criminal responsibility in adolescents (Woolard et al., 1996). Yet scant research has directly addressed the question of adolescent criminal culpability (Fried & Reppucci, 2001; Woolard et al.). Consequently, law makers and theorists have relied on a broad-spectrum of decision making research to understand adolescent criminal responsibility (Scott & Grisso, 1997).

Despite the clear suppositions made by current legislative policy, scant research exists to elucidate questions of criminal culpability in adolescence (Fried & Reppucci, 2001; Woolard et al., 1996). Yet without mature, rational
choice, adolescents should not be held as accountable for their crimes as adults (Woolard et al.). The current project seeks to fill this critical gap in the research literature by investigating differences in adolescent and adult decision processes in criminal contexts.

**Cognitive Abilities**

Traditional cognitive theory suggests few differences between adolescent and adult decision making (Jacobs & Klaczynski, 2002; Moshman & Franks, 1986). At the cornerstone of cognitive-developmental concepts, Piagetian theory suggests discrete, gestalt-like stages of cognitive development, which indicate adult-like thinking in early adolescents (Inhelder & Piaget, 1958). For instance, between ages seven and eight the panultimate stage of cognitive development, concrete operations (Piaget, 1971), suggests that reasoning becomes more logical and organized, and thinking is portrayed as more akin to adults than to children (Berk, 2006). Further, starting at age 11, the final stage of cognitive development, formal operations (Piaget, 1971), suggests capabilities for hypothetical-deductive reasoning, including the generation of hypothetical alternatives (Ayers, 1971).

Cognitive development is no longer thought to occur in gestalt, linear stages (as discussed in Fischer & Silvern, 1985; Gardner, Scherer, & Tester, 1989; Strauss & Clarke, 1992), nor to encompass all domains concurrently (Flavell, 1982). Further, research suggests that adults seldom operate at the formal operations level of reasoning (Keating, 1990). In fact, much cognitive research suggests that both adolescents and adults often deviate from normative
decision standards (Fischhoff 1988; Nisbett & Ross, 1980). Adults are susceptible to judgment biases (Jacobs & Klaczynski, 2005), and are by no means the criterion for rational reasoning (Gittler et al., 1990; Halpern-Felsher & Cauffman, 2001).

Yet contemporary cognitive theory continues to underscore developmental progression in decision capabilities (Gopnik, 1996; Jacobs & Klaczynski, 2005). Neo-Piagetian theories propose that individuals advance from instinctive decision processes to analyses that are more reasoned and rational. Further, information processing perspectives posit improved decision efficiency with age (Gopnik, 1996; Jacobs & Klaczynski, 2005).

Nevertheless, current cognitive research provides evidence of adolescent and adult similarity under ideal conditions (as discussed in Jacobs & Ganzel, 1993 and Jacobs & Klaczynski, 2002). For instance, research suggests that adolescents and adults are comparable in their use of inferences (Jacobs & Narloch, 2001) and heuristics (Krouse, 1986; Jacobs & Potenza, 1991). Yet adolescent decision performance in real-life contexts likely diverges from such laboratory-based findings (Jacobs & Klaczynski, 2002). Indeed, the hallmark of the adolescent period is the unique physical, social, and environmental contexts in which individuals find themselves (Steinberg & Cauffman, 1996). In particular, adolescents are exposed to different social contexts than adults, and may evaluate consequences differently based on increased peer influence, decreased perception of risk, and decreased future time perspective (Scott & Grisso, 1997).
Social Information-Processing

Social information-processing (SIP) theorists have attempted to understand decision making in social contexts (Crick & Dodge, 1994). In particular, Dodge and Crick's (1990) model of "on-line" decisions may explain differential adjustment in children and adolescents (Crick & Dodge, 1994). Researchers posit that, with age, children should become more adept processors of social information (Crick & Dodge, 1994). Further, the strength of association between social information processing and observed behavior may increase with age (Crick & Dodge, 1994).

The refined SIP model, advanced by Crick and Dodge (1994) posits that individuals employ different "mental steps" in response to a given social cue. These steps include: (1) encoding of cues, wherein an individual attends to internal and external cues (2) interpretation of cues (3) clarification of goals (4) response access or construction (5) response decision, wherein an individual evaluates potential responses, including outcome expectations and self-efficacy, and (6) response enactment. The current review focuses on steps four through six of the SIP model.

Differences in aggressive and non-aggressive children have been found on all steps of the SIP model, including steps four through six: response access, response decision, and response enactment. In terms of response access (Step 4), aggressive children generate fewer assertive and more aggressive responses than non-aggressive children (Feldman & Dodge, 1987; Weiss, Dodge, Bates, & Petit, 1992). In addition, in a short-term intervention for incarcerated aggressive
adolescents, Slaby and Guerra (1988) found that individuals who received decision training generated more solutions and more consequences to hypothetical provocation events than untrained adolescents.

Further, research shows a relation between aggression and outcome expectancies (Step 5): expected consequences are related to verbal (Crick & Ladd, 1990) and aggressive behavior (Hart, Ladd, & Burlseon, 1990; Slaby & Guerra, 1988). Aggressive adolescents (Slaby & Guerra, 1988) and children (Boldizar, Perry, & Perry, 1989) diminish negative consequences of aggression. Aggressive youth also expect that positive consequences are associated with aggressive behavior (Crick & Werner, 1998; Deluty, 1983; Guerra & Slaby, 1990; Lochman & Dodge, 1994; Perry et al., 1986; Slaby & Guerra, 1988). In addition, aggressive children expect aggression to be more successful in acquiring rewards, and in decreasing aversive peer treatment than non-aggressive children (Perry et al.). Aggressive children are more confident in their self-efficacy for aggression than non-aggressive children, as well (Perry et al.). Finally, in terms of response decision (Step 6), aggressive children endorse aggressive responses more often and assertive responses less often than non-aggressive children (Feldman & Dodge, 1987).

Adolescent Social Information-Processing

Few researchers have included adolescent samples in studies of SIP, although the function of aggressive strategies on behavior may increase with age (as discussed in Crick & Dodge, 1994). Indeed, research shows that older youth generate more solutions to interpersonal problems (Step 4), but may not differ
from younger youth in their outcome expectations (Step 5). For instance, in a 7-year follow up of children as adolescents (ages 17 and 18), aggressive versus non-aggressive participants differed in their actual use of problem solving strategies (Keltikangas-Jarvinen & Pakaslahti, 1999). However, this difference was seen only in adolescents. Although age-differences have not been found in terms of outcome expectations for aggression (Lochman & Dodge, 1994), this lack of difference may be based on measurement issues, as described below. Indeed, future research would benefit from a focus on age-based differences in outcome expectations, as children, adolescents, and adults experience different psychosocial contexts, such as peer influence, that would likely affect decision processes (Fontaine, in press).

Measurement

Researchers have been quite consistent in their approach towards assessment of social information-processing steps (e.g. Weiss et al., 1992; Quiggle, Garber, Panak, & Dodge, 1992). For example, in Step 4, response search, participants are often asked what responses they might consider in reaction to a hypothetical vignette. In Step 5, response evaluation, different responses (e.g. aggressive, non-aggressive-inept, and competent) are often presented. After each response, participants are asked to rate presented outcomes, from very bad to very good. Outcome expectancies often include the presentation of several responses, and participants are asked to indicate their level of confidence that a particular consequence will ensue. Finally, in Step 6, enactment, participants are often shown three different possibilities of how they
could respond to the story, and are asked to choose. Alternatively, participants are asked what they would do in response to the story.

However, in terms of outcome expectancies, it may prove more useful to measure consequential thinking via open-ended, as opposed to response-recognition formats (Hart et al., 1990). For example, when aggressive boys are asked to select response options from a provided list, they choose different selections than when they are asked to spontaneously generate responses (Lochman, Lampron, & Rabiner, 1989). Thus, selecting options from a provided list is likely a measure of deliberate, as opposed to automatic responses (Lochman et al., 1989). Yet only a minority of studies (e.g. Guerra, 1989; Slaby & Guerra, 1988) have assessed outcome expectancies in an open ended manner, and this research neither investigates age-differences, nor codes for psychosocial content.

Thus, future research would particularly benefit from a focus on age-based differences in the social information-processing step of outcome evaluation. Further, this research should include open-ended response formats, which are thought to measure salient, automatic responses (Lochman et al., 1989). Finally, consequence responses should be coded for psychosocial content, based on differential contexts of adolescent decision making, as discussed below.

**Immature Judgment Theory**

Adolescent decisions are likely influenced by a number of contextual features that are unique to their developmental period, and that may help explain observed differences in adolescent and adult decision making (Scott et al., 1995;
Steinberg & Cauffman, 1996). These psychosocial influences include increased peer influence, increased risk propensity, and decreased future-time perspective, among others (Scott et al.). Although adults may experience these psychosocial factors, adult decisions are thought to reflect their own choices and preferences, whereas adolescent choices may not (Steinberg & Scott, 2003). The term "maturity of judgment" has been coined to reflect the influence of such psychosocial factors on the cognitive decision process (Cauffman & Steinberg, 1995; Steinberg & Cauffman, 1996). A number of psycho-legal theorists have argued that middle adolescents, in particular, are unduly affected by these decision factors in real-world contexts, resulting in immature judgment as compared to adults (Scott et al.).

Little empirical work has investigated immature judgment in relation to antisocial decisions, with some exceptions (e.g. Cauffman & Steinberg, 2000; Fried & Reppucci, 2001, Steinberg et al., 2003). Original empirical research on immaturity of judgment focused on the effect of psychosocial variables: autonomy, independence, emotional temperance, future-time perspective, and perspective of others, on antisocial outcomes, finding evidence that immature judgment strongly affects antisocial choices (Cauffman & Steinberg, 2000; Modecki, in press). Further, this research suggests that beginning in 10th grade (age 15), immature judgment peaks, and then dissipates with age (Cauffman & Steinberg, 2000).

More recent research operationalizes maturity of judgment with the more specific dimensions of peer influence, increased risk propensity, and decreased
future-time perspective. However, only a single study has investigated any maturity of judgment factors in relation to criminal decision processes, as opposed to outcomes (Fried & Reppucci, 2001). This work measured perceived risks, benefits, peer influence, and consequence in detained and non-detained adolescents, with results suggesting age differences only in terms of appraisal of risk. Because this work was based on a small sample size and lacked an adult comparison, it is likely that a more extensive study would find evidence that adolescent decision processes are affected by all three psychosocial influences: peer influence, risk propensity, and future time perspective. Indeed, such developmental differences were seen on the standardized maturity of judgment measures of future time perspective and risk perception.

Peer Influence

Research on adolescent development suggests that, in an effort to assert autonomy (Douvan, 1974), adolescents shift from reliance on parents for decisions to reliance on peers (Steinberg & Silverberg, 1986). Moreover, adolescent risk behavior may be bolstered by such peer support (Jessor & Jessor, 1977).

Laboratory research on adolescent susceptibility to peer influence, based on Asch's (1951) design of group perceptual decisions, suggests a curvilinear trend, with vulnerability peaking between ages 11 and 12, and then dissipating (Berndt, 1979; Costanza & Shaw, 1966; Steinberg & Silverberg, 1986). However, other research has found evidence of greater risk taking in high school students versus young adults (Hensley, 1977), and has established the crest in
peer influence at a later stage, between ages 14 and 15 (Brown, Clasen, & Eicher, 1986). This later finding parallels studies of adolescent antisocial behavior, which suggests that adolescents generally make antisocial decisions in groups (Erickson & Jensen, 1977; Zimmiring, 1981), and that the age-curve in offending apexes between ages 15 and 16 (as discussed in Gottfredson & Hirschi, 1990).

Susceptibility to peer pressure requires not only conformity, but also a perception of peer norms to which one should adhere. Researchers have routinely found that adolescents' risk behaviors are predicted by their perceptions that peer norms endorse offending (Kuther & Higgins-D'Alessandro, 2003; Martens, Page, Mowry, Damann, Taylor, & Cimini, 2006; Martino, Collins, Kanouse, Elliott, & Berry, 2005; O'Donnell, Myint-U, O'Donnell, & Stueve, 2003). In fact, popular adolescents are more likely to adhere to perceived peer norms favoring delinquent behavior (Allen, Porter, McFarland, Marsh, & McElhaney, 2005; Allen, Weissberg, Hawkins, 1989). At the same time, a developmental trajectory exists in which adolescents perceive peer norms as most encouraging of risky behavior in early adolescence (Gillmore et al., 2002).

Risk Propensity

Adolescence is typically characterized as a time of increased risk taking, from unsafe driving (CDCP, 2004) to unsafe sex (ASHA, 2005). Adolescent propensity towards risky behavior has been explained in terms of both increased sensation seeking (Arnett, 1994; Zuckerman, 1979), and in terms of decreased risk
perception (Caffray & Schneider, 2000; Lavery, Siegel, Cousins, & Rubovits, 1993).

Increased sensation seeking, as typified by Zuckerman (1979), suggests that individuals attach greater importance to the novelty and complexity of risk (Arnett, 1994), and are thus more likely to engage in risk behaviors. High sensation seeking has been associated with a number of antisocial behaviors (Hovarth & Zuckerman, 1993; Perez & Torrubia, 1985). Moreover, sensation seeking has been found to escalate over the course of adolescence (Crawford, Pentz, Chou, Li, & Dwyer, 2003; Zuckerman, 1994). At the same time, research on adjudicated adolescents suggests that sensation seeking is moderately associated with diminished risk perception (Robbins & Bryan, 2004).

Adolescents may also engender a diminished assessment of potential negative consequences associated with decisions (Cauffman, Woolard, & Reppucci, 1999; Jacobs & Ganzel, 1993; Mann, Harmoni, & Power, 1989; Nightingale & Fischhoff, 2002). Research based on young adult samples in comparison to adolescents shows significant age-group differences in risk perceptions, in that young adults rated negative outcomes as least probable, followed by older adolescents, with pre-adolescents rating negative consequences as most probable (Millstein & Halpern-Felsher, 2002). Other research that focused on adolescents' and their parents' perceptions of their own potential harm also found age-based differences (Cohn, Macfarlane, Yanez, & Imai, 1995). This work shows that adolescents perceive less potential harm than adults, and that these
differences are most pronounced in experimental, as opposed to regular, risk contexts.

Theories of increased sensation seeking and decreased risk perception are not mutually exclusive (Furby & Beth-Marom; 1992; Scott et al., 1995). Instead, each facet of risk perception may affect different aspects of the decision processes. For instance, increased sensation seeking may cause an adolescent to view the inherent risk associated with a decision as benefit, as opposed to a cost. At the same time, a decreased perception of risk may cause an adolescent to discount potential negative consequences of a decision (Scott et al.).

Future Time Perspective

Future time perspective has been defined in terms of both cognitive extension (Nurmi, 1987), the period in time over which one forecasts future thoughts, and cognitive-motivation, the pattern of consideration of more distal consequences (Lessing, 1972). Both perspectives, cognitive extension (as discussed in Greene, 1986) and cognitive motivation (Lessing, 1972; Nurmi, 1987), have been found to increase with age. Further, lengthier cognitive extension has been associated with the ability to delay gratification (Klineberg, 1968); whereas a shortened future time extension has been associated with delinquency (Barndt & Johnson, 1955).

It is likely that adolescent future time perspective varies in relation to social and environmental influences, in that research investigating age-based changes has found no association with cognitive abilities, such as formal operational reasoning (Greene, 1986). Further, contextual influences such as identity...
formation, cultural orientation, and family environment have been shown to influence future orientation (Nurmi, 1991), and future time perspective has been positively linked with increased experience (Greene, 1986). Thus, in a review of future orientation, Nurmi (1991) argues that future orientation may be a consequence, as well as a cause of risky situational contexts.

Future time orientation has also been linked to socioeconomic status, with lower SES related to more proximal future orientation (Lamm, Schmidt, & Trommsdorff, 1976). The finding is suggestive, and parallels research that decreased optimism for the future is associated with limited future time perspective (Teahan, 1958). Indeed, future hopelessness has been associated with increased risk taking (Hill, Ross, & Low, 1997). Thus at-risk adolescents may show decreased future time perspective, which can be partially explained by their perceived lack of future hopeful prospects.

**Physiological Research**

Recent physiological research supports the notion that the adolescent decision process differs significantly from that of adults. For example, brain maturation between adolescence and young adulthood has been spatially and temporally mapped using MRI imaging. Findings suggest that the adolescent brain (ages 12-16) has yet to fully develop in the frontal lobe region, and may not mature to adult capacity until the early twenties (Sowell & Jernigan, 1998). This research shows that the brain is significantly remodeled during adolescence, which may lead to increased emotion in information encoding and decision making (Spear, 2000; Yurgelun-Todd, 2002). The adolescent pre-frontal cortex,
an area involved in goal-directed behaviors and emotional processing, is altered appreciably during this time (Spear, 2000). In addition, the frontal lobes, a region typically utilized by adults for decision processing, may not reach full maturity until the early twenties (Davies & Rose, 1999). Adolescents may utilize the basal ganglia as a surrogate for decision processing (Yurgelun-Todd, Killgore, & Clintron 2003). This area, part of the amygdala, is frequently associated with emotion.

As adolescent physiological development favors more emotional processing, such changes may well be associated with the immature judgment factors of increased peer influence, decreased perception of risk, and decreased future time perspective. Indeed longitudinal research is currently underway that attempts to link these two developmental trajectories (T. Grisso, personal communication, March 9, 2006).

**Decision Making**

The tension between findings of cognitive competence in adolescent decision making and findings of developmental differences in social information-processing and vulnerability to psychosocial influences underscores the importance of domain based research. Indeed, cognitive research highlights the notion that maturation is likely domain-specific (Flavell, 1982). Adolescents may engage a range of decision making capabilities, depending on the social and environmental context.

Although few decision making studies directly compare adolescents and adults (Gardner et al., 1989), or investigate illegal decisions, beyond aggression...
(Fonataine, in press; Fried & Reppucci, 2001), hypotheses can be drawn from the existing decision literature. Analysis of this work centers on the substantial empirical evidence surrounding adolescent risk decisions. Although risk decisions have been investigated primarily through an epidemiological lens, such work is germane to antisocial decision research because both entail harmful negative consequences, are associated with high levels of excitement, and occur in the contexts of peers.

**Antisocial Decision Making**

Adolescence is a time of increased risk for criminal behavior (Hirschi & Gottfredson, 1983), as the offending age curve shows crime rates topping out during late adolescence and early adulthood, followed by a prompt decline (as discussed in Gottfredson & Hirshi, 1990). In fact, most adolescents are thought to participate in at least some rule violating behavior, such as drug use, vandalism, or petty theft (Moffitt, 1993). Thus theorists have often considered some degree of criminal behavior to be a distinctive component of adolescent development (Baumrind, 1987; Moffitt, 1993).

Although empirical work implicates immature judgment in delinquent decision making (e.g. Cauffman & Steinberg, 2000; Modecki, in press), scant research has investigated how factors of immature judgment might affect the criminal decision process. Indeed, in a recent study, Modecki (in press) compared adolescent, college student, young-adult, and adult individuals on maturity of judgment factors and antisocial decision making in varying consequential contexts: no negative consequences, definite negative
consequences, and uncertain negative consequences. She found that adolescents were significantly more likely than college students or adults to endorse antisocial choices in situations wherein definite consequences were certain to occur. Making an antisocial decision when it is known that negative consequences will definitely result may be considered the least “rational” or “mature” choice available. It is unclear whether this decision is based on a failure to consider negative consequences, an underestimation of such consequences, or an over-emphasis on positive consequences. Thus, the remainder of this review applies immature judgment theory to relevant dimensions of adolescent criminal decision making.

Relevant Decision Making Dimensions

Relevant research that does investigate psychosocial influences on adolescent decision processes is found primarily within public-health and psychological literatures on risk taking (see Furby & Beyth-Marom, 1992). This literature is relevant to criminal decisions based on the similarity of contexts, such that both risky and illegal decisions are likely to be similarly affected by immature judgment. In fact, risky and illegal choices have been conceptualized as different aspects of a more general problem behavior variable (Jessor, 1992). Thus, risk decision research provides a useful framework for investigation, suggesting a number of decision making dimensions that may be associated with criminal behavior. This framework posits differences between adults and adolescents on each of the following dimensions, all of which fall within steps four through six of the social information-processing model: perceived incentives

Perceived Incentives. Past research has measured perceived consequences of risky behavior and has found a psychosocial orientation to adolescent responses (Beyth-Marom, Austin, Fischhoff, Plamgren, & Jacobs-Quadrel, 1993). For example, positive consequences associated with risky behavior likely include both increased excitement and peer acceptance. In addition, social information-processing research shows an association between peer influence and outcome expectancies that endorse aggressive behavior.

First, past research on involvement in risky behaviors suggests an association with both sensation seeking and perceived benefits (Rolison & Scherman, 2003). This work, based on college students, finds that sensation seeking is most predictive of students' risk behaviors (Rolison & Scherman, 2002). Along the same lines, longitudinal research has found that adolescent's 'fun' ratings of behavior predict their subsequent risk involvement (Maggs, Almeida, & Galambos, 1995). Longitudinal work based on college students shows similar results, suggesting that perceived benefits of risk actions is associated with predicted behavior involvement (Parsons, Siegel, & Cousins, 1997).

Similarly, within their reward structures, adolescents may emphasize peer approval in committing risky acts. For instance, past research shows that boys
Miller & Byrnes, 1997) and adolescents (Gardner & Steinberg, 2005) are more likely to take risks when peers are present than absent. Likewise, Jessor and Jessor (1977) found that risk-taking adolescents perceive greater peer support for their behavior and greater peer involvement in risk behavior than non risk-taking adolescents. Further, other work shows that college students’ perceptions of peer involvement in risky acts are most predictive of their own involvement (Rolison & Scherman, 2003). In addition, longitudinal research has found that adolescents’ problem behavior is significantly related to peer’s acceptance (Maggs et al., 1995).

At the same time, SIP research has found some evidence for psychosocial incentives in relation to aggressive behavior. For instance, in step five of the SIP model, aggressive delinquent adolescents (Slaby & Guerra, 1988) but not aggressive children (Perry et al., 1986) identify peer approval in their outcome expectancies for aggressive behavior. This finding is in-line with the maturity of judgment perspective, underscoring adolescents’ increased susceptibility to psychosocial factors in comparison to both children and adults. However, SIP research has not explicitly investigated contents of outcome expectancies in relation to judgment factors such as risk perception, including sensation seeking, and future-time orientation. Thus, future research would benefit from the content coding of outcome expectancies for psychosocial judgment factors, particularly in antisocial contexts extending beyond aggression.

**Perceived Loss Potential.** The maturity of judgment perspective suggests that adolescents, as opposed to adults, may underestimate the consequences of
antisocial decisions based on their shortened future-time perspective. Research does suggest that adolescents underestimate the risk of experimenting with risky health behaviors (Cohn et al., 1995). In addition, there is research to suggest that adolescents who engage in risky actions are likely to engender a diminished perception of risk. For example, risk-taking adolescents rate their behaviors as less risky and more controllable and risk-taking consequences as being less serious than non-risk takers (Benthin, Slovic, & Severson, 1993).

Further, it may be the case that adolescents continue to underestimate base-rates of risk-taking consequences even as they increase their participation in risky behavior. For example, research suggests that adolescents who participate in risky behaviors are overly optimistic about the size of and their chances for controlling risk (Benthin et al. 1993), with increased risk taking being associated with decreased risk perception (Maggs et al., 1995; Siegel & Cousins, 1994). In addition, longitudinal work based on college students found no relation between perceived risk (certainty of arrest) and criminal behavior. Instead, this work found that past criminal behavior lead to a diminished perception of risk (Paternoster, Saltzman, Waldo, & Chiricos, 1983). The latter finding was also replicated in a sixth month longitudinal study of high school students (Paternoster et al.).

Along similar lines, delinquent adolescents, in particular, may have a higher tolerance for negative consequences that are associated with antisocial decisions. Thus, based on past experience and peer norms, these individuals may have a higher threshold for negative consequences before deciding against an action. For instance, research has found that high-risk taking adolescents are less likely to
underestimate risk than low-risk taking adolescents (Cohn et al., 1995). None the less, further research is needed to understand the role of loss potential in adolescent antisocial decisions, particularly in comparison to adults.

Findings from social information-processing research also support the notion of a relation between the perception of diminished negative consequences, heightened threshold for negative consequences, and antisocial behavior. For example, on step five of the SIP model, aggressive individuals endorse fewer negative outcome expectancies in association with aggressive acts than non-aggressive individuals (e.g. Boldizar et al., 1989; Slaby & Guerra, 1988). Further, Guerra (1989) found that high-level delinquent adolescents believe consequences of cheating are less severe and less important than low-level delinquent adolescents. Finally, research shows that aggressive versus non-aggressive adolescent boys indicate they would have a happy affect even in normally fearful and sad situations (Lochman & Dodge, 1994). Thus, it may be that adolescent antisocial decisions are associated with both diminished negative outcome expectancies and increased thresholds for negative consequences. However, further research is needed to demarcate this decision process in both adolescents and adults.

**Reward Structures.** The maturity of judgment perspective posits that adolescents may perceive different benefits in antisocial decision making than adults, including increased excitement and peer approval, and diminished costs, based on a decreased future-time perspective. This view parallels the hypothesis that adolescent and adult reward structures may differ, such that
adolescent judgment may be biased towards a reward orientation. The biased reward structure hypothesis is supported by recent fMRI research (Bjork et al., 2004) suggesting that within adolescents, the anticipatory reward system is less neurologically sensitive than that of adults'. At the same time, research on adolescent risk taking heavily implicates a positive reward orientation, as well. For instance, Bauman's (1980) innovative work found that the most salient (high probability and high importance) positive consequences for adolescent risk takers were those most likely to bring direct and immediate satisfaction. However, past research has primarily focused on risky (e.g. smoking cigarettes), as opposed to delinquent (e.g. shoplifting) behavior. Because the latter includes legal as well as psychosocial consequences, it is unclear whether adolescents would demonstrate a biased reward orientation in illegal contexts.

In addition, research couched within the SIP framework supports the notion of a biased reward structure in aggressive youth. This work shows that within step five of the SIP model, outcome expectancies are biased in favor of hostile outcomes in aggressive individuals (e.g. & Guerra, 1989). However, research on biased outcome expectancies has not been extended to non-aggressive antisocial decisions (e.g. shoplifting). Further, SIP research on biased outcome expectancies has not yet compared adolescent versus adult decision making. Both of these research directions would be fruitful next steps.

**Depth of Processing.** A majority of decision theories endorse a thorough analysis of future-oriented consequences in mature decision-makers (e.g. Janis & Mann, 1977). In addition, social information-processing theory provides limited
support for the hypothesis that positive social adjustment is associated with increased depth of processing (Crick & Dodge, 1994). However, dual process cognitive theory presents contrary evidence, suggesting that adults may utilize more automatic decision strategies than adolescents.

The maturity of judgment perspective associates a less reasoned decision process with adolescents versus adults, a viewpoint that is in-line with the hypothesis that adolescents engage in a less thorough decision analysis than adults. However, developmental risk taking research offers little insight into depth of processing in adolescents. For the most part, this work has coded for qualitative risk content, as opposed to quantitative processing depth. However, research does show that in terms of adolescents' risky behavior, adolescents mention fewer consequences, in total, than their parents (Beyth-Marom et al., 1993). Yet in order to better understand adolescent antisocial decision making, future decision research would benefit from the inclusion of depth of processing variables in studies including both adolescents and adults.

Similarly, little social information-processing research has assessed processing depth in relation to aggression. A single study did find that non-aggressive adolescents generate more outcome expectancies (step five) than high-level or low-level aggressive adolescents (Slaby & Guerra, 1988). Further, this line of research shows that adolescent offenders who receive decision training are able to generate more consequences to hypothetical aggressive events than those who do not receive training (Guerra & Slaby, 1990). However,
future research would benefit from further comparisons of depth of processing in delinquent versus non-delinquent youth.

Contrary to SIP, dual process cognitive theory (Klaczynski, 2004) asserts that decision making is governed primarily by a heuristic, experiential system, which can be consciously superceded by a rational, analytic system, a skill that likely increases with age (Jacobs & Klaczynski, 2002). Further, adults may be inclined towards automatic processing based on their increased experience, because the experiential system is situation dependent, with cues from specific circumstances activating heuristics (Jacobs & Klaczynski, 2002). Similarly, fMRI research suggests that adult decisions regarding risky behavior are relatively automatic, and that adolescents are more likely to weigh the consequences of risky behavior than adults (Baird, 2004). Although previous research has not measured consequence generation in relation to delinquent decisions (e.g. cheating, stealing), increased experience with antisocial events may predict a more shallow depth of processing. None the less, additional research is required to disentangle the relation between age and event experience in relation to processing depth.

Response Solutions. The maturity of judgment perspective suggests that with age, individuals should have access to improved response solutions. Specifically, response solutions should be less affected by psychosocial factors such as peer influence and short-term concerns. Similarly, both risk taking (Fischhoff, 1992) and social information-processing (Dodge & Price, 1994; Feldman & Dodge, 1987, Mayeux & Cillessen, 2003) research posit that with
increased age, individuals should improve in their identification of alternative courses of action. This idea is supported in a review of the adolescent decision making literature by Mann et al. (1989). Although empirical work on risk taking provides tangential support for this hypothesis, little work has explicitly investigated adolescents' deliberation of options in delinquent contexts (Furby & Beyth-Marom, 1992).

Past research suggests that high-risk, as opposed to low-risk, adolescents consider fewer response options in antisocial contexts. For instance, research has found that risk-inclined adolescents rate risky activities as less avoidable than their peers (Benthin et al. 1993). Further, in a risk-taking diary study of female college students, responses were characterized as largely having failed to consider alternatives (Shapiro, Siegel, Scovill, & Hays, 1998). Finally, research based on college students shows that on decision making vignettes, engagement in behaviors is associated with certainty of the decision (Rolison & Scherman, 2003). In this case, certainty may be indicative of lack of consideration of alternatives. However, further research is required to explicate age and delinquency group differences in consideration of response solutions.

Social information-processing theory also provides evidence of a relation between generation of alternate solutions (step four) and aggression. For example, aggressive youth generate fewer non-aggressive solutions to social problems than non-aggressive youth (Rabiner, Lenhart, & Lochman, 1990; Slaby & Guerra, 1988). In addition, aggressive youth generate solutions that are more aggressive and less pro-social than non-aggressive youth (Quiggle et al., 1992).
Similarly, for responses beyond their first choice solution, aggressive children generate less effective resolutions than non-aggressive children (Richard & Dodge, 1982). At the same time, more recent work shows that delinquent adolescents generate less effective first choice and second choice solutions than do non-delinquent youth. Yet when delinquent youth are trained in decision making, they show improved effectiveness in their second choice solutions, in comparison to control groups. Thus, future SIP research would benefit from continued investigation of response solutions in adults, adolescents, and delinquent youth. In particular, this research should examine both quantity and quality of generated solutions.

**Summary and Conclusion**

Adolescents clearly have an increased propensity towards criminal behavior (Hirschi & Gottfredson, 1983), yet there is an absence of research on adolescent criminal decision making (Scott & Grisso, 1997). This vital domain of decision making research has been neglected by researchers, although legislative policy in this area holds some of the most serious consequences for adolescents. Such a dearth of research forces law makers and theorists to rely on a broad spectrum of decision making research in an attempt to understand adolescent culpability (Scott & Grisso, 1997).

The lack of research on adolescent criminal decision processes is all the more surprising, based on the numerous criminological theories that indicate an association between the decision process and antisocial choices (e.g. Cornish & Clarke, 1986; Crick & Dodge, 1994; Gibbs, 1975; see Guerra, 1989). Work that
investigates adolescent decision processes in antisocial contexts beyond aggression would inform not only legal policy, but also relevant criminological literature. While social information-processing theory has much to offer criminological research, little work has focused on the developmental stage of adolescence, although this time period parallels a heightened incidence of antisocial behavior. In addition, only a minority of SIP research has measured open-ended responses to outcome expectancies (e.g. Guerra, 1989). Instead, studies often present participants with lists of potential consequences of decisions, likely a measure of more deliberate decision processes. Further, SIP research has yet to extend its focus to other antisocial contexts, such as cheating and stealing (Fontaine, in press). Finally, SIP research has yet to incorporate immature judgment theory to examine and explain differences in decision processes and outcomes (e.g. Jacobs-Quadrel et al., 1993).

This review has outlined a framework for future research that draws together cognitive, criminological, developmental, social, and physiological literatures. Based on the notion of criminal responsibility, future psychological research should focus on understanding the differential antisocial decision processes of adolescents and adults. Utilizing the social information-processing framework, this review focuses on steps four through six: response access, response decision, and response enactment. Within these three steps, this review suggests that five dimensions of consequential thinking: perceived incentives, perceived loss potential, reward structures, depth of processing, and
generation of response solutions are likely affected by immature judgment, influencing adolescent decision processes.

This review argues that consequential thinking likely mediates the relation between immature judgment and delinquent behavior based on several premises. First, past research has shown that social information-processing variables may act as mediators in predicting antisocial behavior (e.g. Burks, Laird, Dodge, Petit, & Bates, 1999; Dodge et al., 2003; Schultz, 2003). In addition, immature judgment, as a distal factor, should contribute to the organization of information-processing patterns, which might be considered more proximal factors. Finally, a mediator should elucidate how external factors (such as psycho-social influences) undertake internal meaning (e.g. information processing) (Baron & Kenny, 1986).

**Research Aims**

The first aim of the research is to compare low risk adolescents (high school students) and adults within the social information-processing framework. First, the two groups will be compared on standardized measures of maturity of judgment, as well as the maturity of judgment content of their outcome expectancies. In addition, low risk adolescents and adults will be evaluated for differences on the five afore-mentioned aspects of consequential thinking. These comparisons will not include high risk adolescents, as detained delinquents are expected to differ from adults in a variety of ways (age, IQ, delinquency) that go beyond the scope of this research.
The second aim is to compare low risk (high school students) and high risk (detained delinquents) adolescents within the social information-processing framework. With few exceptions, decision making research has investigated individuals who are unlikely to come before the courts wherein their culpability might be in question. Instead, middle class Caucasian adolescents are the norm for most research (Mulvey & Peeples, 1996). First, low versus high risk adolescents will be evaluated in terms of standardized measures of maturity of judgment and the maturity of judgment content of their outcome expectancies. Next, low and high risk groups will be compared on the five afore-mentioned aspects of consequential thinking.

The third aim of the research is to understand how adolescents and adults may differ in terms of variable associations. First, the study aims to gauge which theoretical variable is most predictive of delinquency for adolescents and for adults. Second, this study aims to test a model in which consequential thinking mediates the relation between immature judgment outcome expectancies and delinquency in adolescents and in adults. Third, this study will test a series of interactions between theoretically important independent variables and adolescence, to determine which variables uniquely affect adolescents as opposed to adults in predicting delinquency.

It is expected that male and female participants will differ in their decision making. For example, as found in previous work (Cauffman & Steinberg, 2000; Modecki, in press) female participants are hypothesized to show more mature judgment (decreased peer influence, increased risk perception, lengthier future-
time perspective) than male participants. Further, this research posits that female participants will display increased social information-processing skills on the five consequential thinking factors, a hypothesis that is also in-line with previous work (see Crick & Dodge, 1994, for a review). However, it is expected that the pattern of relations between variables will be identical for male and female participants. Consequently, gender will be included as a covariate in all analyses, but explicit differences in decision processes are not expected to vary by gender.

Hypotheses

Aim 1: Comparing Low Risk Adolescents vs. Adults.

(1) Maturity of judgment components

Modecki (in press), found that adolescents versus adults differed on the maturity of judgment aspects of responsibility, temperance, and perspective. Accordingly, adolescents are expected to show decreased risk perception, future-orientation and resistance to peer influence and increased sensation seeking on standardized measures, in comparison to adults.

In addition, adolescents are expected to spontaneously mention more outcome expectancies associated with immature judgment (peer influence TO, sensation seeking TO, negative emotion TO, risk perception TO, short term consequence TO engage in behavior) and fewer outcome expectancies associated with mature judgment (risk perception NOT TO, legal consequences NOT TO, long term consequences NOT TO engage in behavior) than adults.

(2) Five factors of consequential thinking
A) Adolescents will perceive greater benefits in delinquent and aggressive behaviors as compared to adults. Consequently, adolescents will spontaneously mentioning more positive outcome expectancies than adults. In addition, adolescents will be more likely to engage in antisocial acts which they believe are wrong, and anticipate greater peer antisocial behavior than adults.

B) Adolescents will underestimate negative consequences (outcome expectancies) associated with delinquent and aggressive behaviors, as compared to adults, measured three different ways. First, adolescents will spontaneously mention fewer negative outcome expectancies than adults. Second, on likert scale ratings measuring the likelihood of negative consequences (being caught, detained, spending time in a delinquent facility), adolescents will underestimate the likelihood of negative consequences as compared to adults. Third, adolescents will care less about getting caught than adults.

C) Based on Bauman (1980), adolescents will display a positive reward bias. Thus, adolescents will spontaneously mention a higher positive to negative outcome expectancy ratio regarding delinquent and aggressive behaviors than adults. Adolescents will attach greater importance to positive, as opposed to negative, outcome expectancies than adults. Finally, adolescents will respond that they require a less positive feeling about engaging in an antisocial act and have a higher threshold for risk than adults.

D) Based on recent fMRI research (Baird, 2004), adolescents versus adults will display a shallower depth of processing. Accordingly, adolescents will
spontaneously mention fewer outcome expectancies, total (both positive and negative), than adults. In addition, adolescents will report less past event experience than adults.

E) Based on Halpern-Felsher and Cauffman (2001), adolescents will generate fewer response solutions to delinquent and aggressive scenarios than adults. Hence, adolescents will generate fewer non delinquent/aggressive response solutions to decision scenarios.

Aim 2: Comparing Low vs. High Risk Adolescents.

(1) Maturity of judgment components

Based on Modecki (in press), wherein low and high delinquency adolescents differed on the maturity of judgment aspects of temperance and perspective. Accordingly, low delinquency adolescents are expected to show increased risk perception, future-orientation and resistance to peer influence and decreased sensation seeking on standardized measures, in comparison to high delinquency adolescents.

In addition, low delinquency adolescents are expected to spontaneously mention fewer outcome expectancies associated with immature judgment (peer influence TO, sensation seeking TO, negative emotion TO, risk perception TO, and short term consequence TO engage in behavior) and more outcome expectancies associated with mature judgment (risk perception NOT TO, legal consequences NOT TO, and long term consequences NOT TO engage in behavior) than high delinquency adolescents.

(2) Five factors of consequential thinking
A) As found in Slaby and Guerra (1988), low risk versus high risk adolescents will perceive fewer benefits in delinquent and aggressive behavior. Therefore, low risk adolescents will spontaneously mention fewer positive outcome expectancies than high risk adolescents.

B) As suggested by previous research (e.g. Jacobs-Quadrel et al., 1993), low risk adolescents will be less likely to underestimate negative consequences (outcome expectancies) associated with delinquent and aggressive behaviors than high risk adolescents, as measured two different ways. First, low risk adolescents will spontaneously mention more negative outcome expectancies than high risk adolescents. Second, on likert scale ratings measuring the likelihood of presented negative consequences (being caught, detained, spending time in a delinquent facility), low risk adolescents will estimate negative consequences as more likely as compared to high risk adolescents.

C) Based on Bauman (1980), low risk adolescents will be less likely than high risk adolescents to display a positive reward bias. Thus, low risk adolescents will spontaneously mentioning a lower positive to negative outcome expectancy ratio regarding delinquent and aggressive behaviors than high risk adolescents.

D) Because past event experience may activate a heuristic decision process in high risk adolescents, low risk adolescents will display greater depth of processing in delinquent and aggressive decision scenarios than high risk adolescents. Consequently, low risk adolescents will spontaneously mention
more positive and negative outcome expectancies, total, than high risk adolescents.

E) Although high risk adolescents may have more experience with delinquent and aggressive events than low risk adolescents, their current situation does not suggest that they generate effective alternative solutions to these circumstances. Hence, low risk adolescents will generate more non-delinquent/aggressive response solutions to decision scenarios than high risk adolescents.

Aim 3: Adolescent and Adult Differences in Variable Associations.

A) For adolescents, a composite of maturity of judgment scales should be most predictive of delinquency, followed by consequential thinking composites. For adolescents, maturity of judgment outcome expectancies should be mediated by consequential thinking, and thus not be predictive in the overall equation.

Whereas for adults, only the consequential thinking factor composites should be predictive of delinquency. Maturity of judgment may not predict delinquency in adults, as judgment may have little effect for older individuals.

B) Because adolescents are likely to display a high degree of immature judgment content in their outcome expectancies, which in turn likely affects consequential thinking, consequential thinking will mediate the association between immature judgment outcome expectancies and delinquency.

For adults, immature judgment outcome expectancies likely do not affect delinquency, and thus no such mediation is predicted to occur.
C) Several theoretically important independent variables are predicted to uniquely affect adolescents as compared to adults. These variables will be selected upon completion of aims 1 and 2.
METHOD

Participants

The current study consisted of three samples: adolescent, adult, and delinquent individuals. The samples differed in their population characteristics: the adolescent sample was drawn from a high school, the adult sample were parents of students drawn from undergraduate psychology laboratory experiments, and the delinquent youth were drawn from a state juvenile delinquent facility. Thus, the groups may have differed in terms of IQ. In order to minimize such differences between groups, verbal ability was controlled for in the analyses between high school students and delinquent youth and for comparative analyses between high school students and adults, SES and average high school grades were controlled.

The adolescent sample (ages 12-18) consisted of 134 male ($M_{age} = 15.66; SD = 1.37$) and 132 female ($M_{age} = 15.56; SD = 1.39$) students enrolled in an urban public high school. As seen in Table 1, socioeconomic status (SES), as measured by parents’ education level, was high school or less (43.8% mothers, 45.6% fathers), college degree or some college (42.8% mothers, 35.2% fathers), and graduate school (13.4% mothers, 19.2% fathers). The adolescent participants were freshman (39.4%), sophomores (24.2%), juniors (8.9%), and
seniors (27.5%). Grades for the last full year completed in high school (average grade) was all A’s (14.2%), A’s and B’s (39.9%), all B’s (4.1%), B’s and C’s (24.0%), all C’s (2.2%), C’s and D’s (10.4%), all D’s (1.5%), D’s and F’s (3%), and all F’s (.7%).

The high school was selected based on its socioeconomic diversity and its status as a major school district associated with the delinquent facility. All students present in selected classes on the day of the survey participated in the study. Classes were chosen to incorporate students with a wide-range of academic abilities.

The adult sample (ages 35-63) consisted of 111 male ($M_{age} = 50.77; SD = 4.87$) and 150 female ($M_{age} = 47.98; SD = 45.1$) participants. Education level for the adult participants was less than high school (1.2%), high school (13.7%) some college (35.1%), college degree (27.5%) and some graduate school (22.5%).

Finally, the delinquent sample (ages 14-17) consisted of 45 male ($M_{age} = 15.87; SD = .76$) and 16 female ($M_{age} = 15.63; SD = .89$) delinquent youth detained in the state delinquency facility. SES, as measured by parents education level, was high school or less (70.5% mothers, 90.2% fathers), college degree or some college (21.3% mothers, 8.2% fathers), and graduate school (8.2% mothers, 1.6% fathers). The delinquent participants’ education level was junior high school (40%), freshman (13.3%), sophomore (31.7%), and junior (15%).
As seen in Table 1, the subjects’ race was primarily Caucasian, a lack of racial diversity that is consistent with the demographics of the New England state from which the data were collected. Also seen in Table 1, for the adult and adolescent samples, multivariate analysis of variance found significant differences in socio-economic status proxy and average high school grade among groups. Thus these variables were controlled in subsequent analyses. For the second set of analyses, comparing adolescent and delinquent groups, a multivariate analysis of variance found significant differences in gender, IQ, socio-economic status proxy, and average high school grade among groups. (See Table 1.) Thus, these variables were controlled within this set of analyses.

**Materials**

Participants received a questionnaire consisting of demographics, including brief IQ, decision making vignettes including outcome expectancies and standardized risk perception scales, standardized psychosocial measures (immature judgment factors), and a standardized delinquency measure (see Appendix A).

**Demographics**

Demographic questions included age, gender, parent or own and spouse education level as a proxy for socio-economic status, and measures of past justice system experience. A verbal IQ measure (Wechsler, 1991) was also included for adolescents and delinquents. For both groups, the verbal IQ measure was read aloud. For the adolescent sample, the verbal IQ measure was read aloud to an entire class of participants, who were asked to write their
best definition of each word on the space provided on their survey. For the delinquent sample, research assistants individually administered the verbal IQ measure, reading the measure aloud and recorded the participant's verbal response. The IQ measures were scored by the researcher, after an initial training with an upper-level undergraduate Psychology student to assess reliability.

**Decision Vignettes**

The vignette format was based on the Youth Decision Making Questionnaire (YDMQ) (Ford, Wentzel, Wood, Stevens, & Siesfeld, 1990) and adapted to measure different factors of delinquency and aggression. Based on the YDMQ, the delinquency scenarios included cheating on a test and shoplifting. An aggression vignette was adapted from O'Conner, Archer, and Wu (1992), and depicted a movie theatre disruption. Finally, participants were asked to describe an antisocial decision they had to make in the last three months and "Write about what (they) decided to do and why." The five dimensions of consequential thinking: reward structures, perceived incentives, perceived loss potential, depth of processing, and generation of response solutions were measured based on open-ended responses to vignettes. Further, responses were coding for (im)mature judgment content: peer influence, sensation seeking, negative emotion, risk perception, legal, short term, and long term consequences as reason TO/NOT TO engage in antisocial act.

The coding procedure was created based on an amalgamation of past decision research (Cauffman, 1996, Guerra, 1989, Lewis, 1981). (See Appendix
B for coding guidelines.) To train, the principle investigator and four research assistants coded a subset of surveys (n = 60). (See Appendix C for coding sheet.) The principle investigator discussed each evaluation with the research assistants to establish reliability. Once inter-rater reliability was established, two separate groups, comprised of two research assistants each, coded responses. Within each group, the two research assistants agreed on the coding for each response. For each sample, 10% of the surveys were cross-coded for inter-group reliability (adults n = 30, adolescents n = 30, delinquents, n = 20). Raters agreed on 94.5% of their initial coding decisions (kappa = .66).

Kappas and percent agreement were: peer influence TO (% agreement = 87%, kappa = .61), sensation seeking TO (% agreement = 100%, kappa = .97), negative emotion TO (% agreement = 94%, kappa = .57), risk perception TO (% agreement = 94%, kappa = .22), short term consequences TO (% agreement = 85%, kappa = .49), and long term consequences TO (% agreement = 99.57%, kappa = .67) engage in antisocial behavior. Kappa and percent agreement were: peer influence NOT TO (% agreement = 99.57%, kappa = .67), sensation seeking NOT TO (% agreement = 100%, kappa = 1), negative emotion NOT TO (% agreement = 97%, kappa = .80), risk perception NOT TO (% agreement = 93%, kappa = .79), legal consequences NOT TO (% agreement = 97%, kappa = .92), short term consequences NOT TO (% agreement = 91%, kappa = .50), and long term consequences NOT TO (% agreement = 95%, kappa = .66) engage in antisocial behavior. In cases of disagreement, the principle investigator decided on the best-fitting response code.
Perceived Incentives. A perceived incentives score was based on the summed score of the number of positive outcome expectancies (endorsing antisocial decisions) generated by respondents.

Because adolescents were hypothesized to act based on perceived peer behavior, two additional items designed to measure peer influence were included in the survey. First, a measure of peer influence was created through the inclusion of a set of decision questions that paralleled those on the decision vignettes, with the exception that the former were based within an individual, as opposed to a peer context, based on Berndt (1979). Three decision questions asked, for example, “How wrong is it to take clothing from a store without paying for it?” Responses were measured on a four-point scale, from 1 “Not at all” to 4 “Very wrong.” A high score indicates high moral opposition to the behavior. For this sample, Cronbach’s α = .59, M = 3.08, SD = .65, Range = 1 - 4. The Berndt scale was utilized to create an Operationalized Peer Influence (OPI) score. The OPI was created by reverse coding the Berndt scale, and subtracting the reverse coded Berndt score from the decision score for each parallel vignette. The absolute value of the mean of all the “decision score minus wrong score” is the final OPI score. For this sample, Cronbach’s α = .70, M = .34, SD = .37, Range = 0 – 2.67. A high score on the OPI indicates high operationalized peer influence.

Second, an item was attached to each scenario asking “How likely do you think your friends would be to (shoplift)?” in an attempt to gauge perceived peer norms. The Anticipated Peer Behavior (APB) items were measured on a five-point scale, from 1 “Very unlikely” to 5 “Very likely.” A high score on the APB
indicates high anticipated peer antisocial behavior. For this sample, Cronbach’s α = .65, M = 2.41, SD = .74, Range = 1 - 4.

**Perceived Loss Potential.** Perceived loss potential was based on three indices. First, a score was summed for the number of negative outcome expectancies generated. Second, perceived negative consequences were measured by adapting criminal sanctions questions from Fried and Reppucci (2001). The criminal sanctions scale included three five-point likert scale items measuring chances of getting caught by police, found guilty of a crime, and spending time in detention. These items were measured from 1 “Very unlikely” to 5 “Very likely.” For this sample, Cronbach’s α = .73, M = 2.99, SD = .67, Range = 1 - 5. A higher score on the criminal sanctions scale suggests perceptions of strong negative consequences. Finally, each vignette included an item asking “How much would you care if you were caught?” These items were measured from 1 “Not at all” to 4 “Very much.” For this sample, Cronbach’s α = .70, M = 3.39, SD = .73, Range = 1 - 4. A higher score on the Care Scale indicates high amounts of caring about getting caught.

**Reward Structures.** Reward structures were measured with questions asking participants to list the positive and negative outcome expectancies (counterbalanced) they would think about in considering each scenario. Participants were asked to circle the consequence most important to their decision.

Two measures of reward structure were created: First, a benefit/cost ratio was created based on Fried and Reppucci (2001), in which the total number of
positive outcome expectancies was divided by the total number of negative outcome expectancies. Second, participants received a score for the most important outcome expectancy considered: 1 for a positive outcome expectancy and zero for a negative outcome expectancy.

Further, to assess the possibility that adolescents in general, and delinquents in particular, have a higher tolerance for negative outcome expectancies and a lower threshold for positive outcome expectancies when engaging in antisocial behavior, negative and positive probability scales were included in vignette form. Participants were asked to mark with an X along the provided scale spectrums, and ruler measurements were taken of each marked spot. The first scale (positive) asked "How good would you have to feel about (stealing clothes) before you would decide to (steal)?" The positive scale ranged from 1 “You would have to feel very bad about doing this” to 5 “You would have to feel really good about doing this,” and was transferred to a 100 point scale when the ruler measurement was taken. The second scale ranged from 0% to 100% and asked (negative) “How likely would it have to be that you’d get caught for you to decide NOT to (steal the clothes)?.” A low score on the former scale indicates a high discomfort threshold, while a high score on the later scale indicates a high risk threshold. For this sample, the positive threshold measure had a Cronbach’s α of .75, \( M = 63.28, SD = 28.83, \) Range = 0 – 100, and the negative threshold measure had a Cronbach’s α of .72, \( M = 38.07, SD = 27.68, \) Range = 0 - 100.
Depth of Processing and Past Event Experience. Depth of processing was assessed by summing the total number of positive and negative outcome expectancies generated for each vignette. In addition, depth of processing is hypothesized to be associated with past event experience. Thus, past event experience was assessed utilizing an item developed by Weinstein (1987), asking “About how much experience do you have with this type of decision?” Participant responses were measured on a five-item scale from (a) “I don’t know anyone this has happened to” to (e) “Has happened to me more than once.” For this sample, Cronbach’s α = .51, M = 3.24, SD = 1.09, Range = 1 - 5. A higher score on past event experience indicates more experience with an event.

Generation of Response Solutions. Finally, following each vignette, participants were asked to generate alternate solutions to each antisocial decision. Generation of solutions to a decision was gauged by summing the number of solutions offered in response to each vignette, as well as summing the number of non-delinquent/aggressive solutions generated.

Coded Immature Judgment Factors. As seen in Appendix B, negative and positive outcome expectancies were also coded for immaturity of judgment content. Categories were mutually exclusive, with the exception that expectancies marked as risk perception could also fall under long or short term consequences, as well as legal consequences.

All expectancies were coded only when the emotion, risk, or consequences directly pertained to the participant. In addition, peer influence was coded only when a friend or peer was specifically mentioned and not more
general “people.” Further, risk perception was coded only when a specific risk was mentioned (e.g. "getting caught" or "might get hurt" not “negative consequences”). Finally, short term consequence was coded only for a consequence that would immediately and directly ensue from the antisocial decision in question.

Immature Judgment Factors

Four standardized psychosocial measures were also utilized: Future Outlook Inventory (Cauffman & Woolard, 1999), Risk Perception Scale (Siegel et al., 1994), Sensation Seeking (Arnett, 1994), and Resistance to Peer Influence (Steinberg, 2002). An addition measure of peer influence was created through the inclusion of two sets of parallel decision questions, one set based within a peer context, and another set based within an individual context, based on Berndt (1979). The vignettes also included a measure of peer norms.

The Future Outlook Inventory (FIO) (Cauffman & Woolard, 1999) is a 14 item scale based on previously published scales, including the Life Orientation Task (Scheier & Carver, 1985) the Zimbardo Time Perspective Scale (Zimbardo, 1990), and the Consideration of Future Consequences Scale (Strathman, Gleicher, Boninger, & Edwards, 1994). The FOI is a measure of consideration of future events and consequences, and is rated on a 4-point Likert scale from “Never True” to “Always True.” An example item from this scale is “I think about how things might be in the future.” For this sample Cronbach’s $\alpha = .77$, $M = 2.62$, $SD = .41$, Range $= 1 - 3.71$. A high score on the FOI indicates extended future outlook.
Two measures associated with risk perception were employed, the Risk Perception Scale (Siegel et al., 1994) and the Arnett Inventory of Sensation Seeking (AISS) (Arnett, 1994). The Risk Perception Scale (RPS) is a measure that taps perceived risk of eighteen different risky behaviors, for example, "smoking marijuana" and "having sex without a condom." The RPS is scored on a nine-point Likert scale from 0 “Not at all risky” to 8 “Extremely risky.” For this sample, Cronbach’s α = .91, M = 5.26, SD = 1.27, Range = .11 - 8. A high score on this subscale indicates high perceived risk. The second measure associated with risk perception is the Arnett Inventory of Sensation Seeking (AISS) (Arnett, 1994). This is an 18 item scale measured on a 4-point likert scale from 1 “Does not describe me at all” to 4 “Describes me very well.” For this sample, Cronbach’s α = .72, M = 2.52, SD = .41, Range = 1.45 - 3.78. An example statement is “I can see how it would be interesting to marry someone from a foreign country.” Higher scores on this measure indicate high sensation seeking.

A standardized measure tapped resistance to peer influence, a revised Resistance to Peer Influence Scale (Steinberg, 2002). This scale gauges independence from peer pressure and consists of ten items. Based on poor reliability in a pilot test, the scale was altered from its original format. Wherein each question originally included two contradictory statements, the format was revised to include only a single sentence, such as “Some people go along with their friends just to keep their friends happy.” Ten items are measured on a four-point scale from 1 “Very much like me” to 4 “Not at all like me”. For this sample,
Cronbach's $\alpha = .71$, $M = 3.17$, $SD = .47$, Range = 1.30 - 4. A high score on the RPS indicates a high resistance to peer influence.

**Outcomes**

Outcomes measures included antisocial decision making and delinquency. Antisocial decision making was assessed with an item associated with each vignette asking what participants would decide to do in each scenario. For example, "Would you shoplift or would you refuse to take the item?" Responses are measured on a four point scale from 1 "Definitely refuse" to 4 "Definitely shoplift." For this sample, Cronbach's $\alpha = .68$, $M = 1.97$, $SD = .70$, Range = 1 - 4. High scores indicate high levels of antisocial decision making.

Delinquency was measured with Elliot and Ageton’s (1985) self-report delinquency scale. This scale asks “How many times in the last year have you (been involved in gang fights),” consists of 45 items, and measures delinquent and aggressive behavior and substance use. Five items from the original scale which assessed status behaviors were dropped in the current study. Further, because individuals were inconsistent in their numerical estimates of behavioral engagement, utilizing words such as “many,” “a lot,” and “infinity,” all items marked above zero were recoded to “1.” This method has been recognized as a successful summative method for scoring multiple-item measures of antisocial behavior, as it limits the contributions of more minor behaviors and does not require an assignment of metric values to response categories (Osgood, McMorris, & Potenza, 2002). A total delinquency score measuring whether an individual engaged in the 40 behaviors was then calculated, based on the mean
of all items multiplied by 100. For this sample, Cronbach’s alpha = $\alpha = .92$, $M = 13.90$, $SD = 18.15$, Range = 0 – 100. A high score on this scale indicates participation in a large variety of delinquent behavior.

Procedure

Appropriate IRB approval was obtained through the University. This approval allowed for passive consent from parents of adolescent and delinquent participants.

For adolescents, permission was obtained from an urban high school to survey students in a classes selected to include students on both lower and higher-level academic tracks. Passive parental consent was obtained from the youths’ parents and informed assent was obtained from the adolescents. Students were told that their participation and responses would not affect their academic status, and were given a debriefing form upon completion of the survey.

A sample of adults was obtained by offering undergraduate students class credit for their parent’s participation in the survey. Students addressed packets to their parents, including an assent letter explaining the study and a debriefing form. Parents returned their completed survey to the researcher in a pre-addressed, pre-stamped enveloped.

The delinquent facility had custody of the program youth; thus parental consent was not required. Nonetheless, passive consent was obtained from the youths’ parents. Informed assent was also obtained from the adolescents, with an emphasis that participation and responses would not affect legal status. The
measures were administered orally on an individual basis, and participants responded orally, with the researchers transcribing their answers. Youth were given a debriefing form upon completion of the survey.

Analysis Plan

The analyses were first conducted utilizing data from adolescent and adult samples. These analyses focused on age group and gender differences in maturity of judgment, followed by age group and gender differences on the five factors of consequential thinking.

The second segment of analyses focused on data from adolescent and delinquent youth samples. The adult sample was not included in these analyses as the groups were expected to differ from delinquents in a variety of ways (both age and delinquency) which were beyond the scope of this research. This set of analyses focused on delinquency-group (adolescent or delinquent) and gender differences in maturity of judgment, followed by delinquency-group (adolescent or delinquent) and gender differences on the five factors of consequential thinking. This second set of analyses was also run based on cut-score delinquency group, such that all adolescents, whether incarcerated or not, were categorized as low or high levels of delinquent behavior. This method of grouping allowed for the investigation of group differences beyond the confound of being caught and prosecuted.

Finally, the last segment of analyses assessed adolescent and adult differences in variable associations. Delinquent youth were not included in this segment of analyses. The first set of analyses tested the most predictive
theoretical variable on total delinquency above and beyond demographic variables correlated with delinquency. The second set of analyses tested a model, for adolescents and for adults, in which consequential thinking mediated the relation between immature judgment outcome expectancies and total delinquency. Because past research found a relation between immature judgment and delinquency (Modecki, in press), the main purpose of the mediational analyses was to understand why this association may exist (Frazier, Tix, & Barron, 2004). The third set of analyses explored theoretically significant independent variable by adolescent interactions. The purpose of the moderation analyses was to address for whom (adolescents or adults) consequential thinking variables were more strongly related to delinquency (Frazier et al., 2004). Lastly, exploratory analyses assessed the external validity of the maturity of judgment outcome expectancies.
CHAPTER III

RESULTS

Aim 1: Comparing Low Risk Adolescents vs. Adults

Maturity of Judgment Components

First, age-group and gender differences on standardized components of maturity of judgment were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, components of maturity of judgment (resistance to peer influence, sensation seeking, risk perception, and future-orientation) as the dependent variables, and average grade and SES as the covariates. Maturity of judgment was significantly related to age-group, and the strength of this association was strong (multivariate $F(4, 510) = 106.67$, Pillai’s Trace $= .46$, $p < .001$, $\eta^2 = .46$). Significant univariate differences were found for peer influence ($F(1, 513) = 133.87$, $p < .001$, $\eta^2 = .21$), sensation seeking ($F(1, 513) = 222.93$, $p < .001$, $\eta^2 = .30$), risk perception ($F(1, 513) = 53.47$, $p < .001$, $\eta^2 = .09$) and future-orientation ($F(1, 513) = 138.25$, $p < .001$, $\eta^2 = .21$). As seen in Table 2, pairwise comparisons indicated that adolescents displayed decreased resistance to peer influence, risk perception, and future-orientation and increased sensation seeking as compared to adults. Components of maturity of judgment were also significantly related to gender, although this association was small, as well (multivariate $F(4, 510) = 23.56$, Pillai’s Trace $= .16$, $p < .001$, $\eta^2 = .16$). Males
showed greater sensation seeking (univariate $F(1, 621) = 9.46, p < .01, \eta^2 = .01$) and decreased risk perception (univariate $F(1, 621) = 30.64, p < .001, \eta^2 = .05$) than females. However, there was not a significant age-group by gender interaction (multivariate $F(4, 510) = 1.07$, Pillai's Trace = .01, ns, $\eta^2 = .01$).

Next, age-group and gender differences on spontaneously mentioned outcome expectancies to engage in antisocial behavior were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, outcome expectancies associated with immaturity of judgment (peer influence, sensation seeking, negative emotion, risk perception, short term, and long term consequences as reasons to engage in antisocial act) as the dependent variables, and average grade and SES as the covariates. Maturity of judgment outcome expectancy to engage in behavior was significantly related to age-group, and the strength of this association was moderate (multivariate $F(6, 498) = 26.88$, Pillai's Trace = .25, $p < .001, \eta^2 = .25$). Significant univariate differences were found for peer influence ($F(1, 503) = 9.95, p < .01, \eta^2 = .02$), sensation seeking ($F(1, 503) = 6.32, p < .05, \eta^2 = .01$), negative emotion ($F(1, 503) = 49.49, p < .001, \eta^2 = .09$), risk perception ($F(1, 503) = 6.45, p < .05, \eta^2 = .01$), and short term consequence ($F(1, 503) = 116.57, p < .001, \eta^2 = .19$) expectancies to engage in antisocial acts. As seen in Table 3, pairwise comparisons indicated that adolescents mentioned more peer influence, sensation seeking, negative emotion, risk perception, and short term consequence outcome expectancies, but not more long range consequences, as reason to engage in antisocial acts than adults.
Maturity of judgment expectancies TO engage in antisocial behavior were neither significantly related to gender (multivariate $F(6, 498) = 2.04$, Pillai's Trace $= .02$, ns, $\eta^2 = .02$), nor to the interaction between age-group and gender (multivariate $F(6, 498) = 1.96$, Pillai's Trace $= .02$, ns, $\eta^2 = .02$).

Lastly, age-group and gender differences on spontaneously mentioned outcome expectancies NOT TO engage in antisocial behavior were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, outcome expectancies associated with immaturity of judgment (peer influence, sensation seeking, negative emotion, risk perception, legal, short term, and long term consequences as reasons NOT TO engage in antisocial act) as the dependent variables, and average grade and SES as the covariates. Maturity of judgment outcome expectancy NOT TO engage in behavior was significantly related to age-group, and the strength of this association was small (multivariate $F(7, 497) = 12.54$, Pillai’s Trace $= .15$, $p < .001$, $\eta^2 = .21$). Significant univariate differences were found for negative emotion ($F(1, 503) = 5.45$, $p < .05$, $\eta^2 = .01$), risk perception ($F(1, 503) = 51.36$, $p < .001$, $\eta^2 = .09$), short term consequence ($F(1, 503) = 41.12$, $p < .001$, $\eta^2 = .08$) and long term consequence ($F(1, 503) = 5.24$, $p < .05$, $\eta^2 = .01$) expectancies NOT TO engage in antisocial acts. As seen in Table 4, pairwise comparisons indicated that adolescents mentioned fewer negative emotions and long term consequences as reasons NOT TO engage in antisocial acts than adults. In addition, adolescents mentioned a greater number of
perceived risks and short term consequence outcome expectancies as reasons NOT TO engage in antisocial acts than adults.

Maturity of judgment expectancies NOT TO engage in antisocial behavior were also significantly related to gender (multivariate $F(7, 497) = 2.38$, Pillai’s Trace = .03, $p < .05$, $\eta^2 = .03$). Significant univariate differences were found for negative emotion ($F(1, 503) = 7.04$, $p < .01$, $\eta^2 = .01$), risk perception ($F(1, 503) = 5.40$, $p < .05$, $\eta^2 = .01$), and short term consequence ($F(1, 503) = 3.96$, $p < .05$, $\eta^2 = .01$) expectancies NOT to engage in antisocial behavior. Females mentioned a greater number of negative emotions, perceived risks, and short term consequences than males. In addition, there was a significant age-group by gender interaction (multivariate $F(7, 497) = 2.09$, Pillai’s Trace = .03, $p < .05$, $\eta^2 = .03$). A significant univariate difference was found for risk perception $F(1, 503) = 5.68$, $p < .02$, $\eta^2 = .01$), such than female adolescents mentioned the greatest number of perceived risks, followed by male adolescents and male adults, with female adults mentioning the fewest perceived risks.

**Five Factors of Consequential Thinking**

First, age-group and gender differences on perceived incentives were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, perceived incentive variables (total positive expectancies, operationalized peer influence, and anticipated peer behavior) as the dependent variables, and average grade and SES as the covariates. Perceived incentive variables were significantly related to age-group, and the strength of this association was strong (multivariate $F(3, 472) = 107.19$, Pillai’s Trace = .41, $p < .001$, $\eta^2 = .41$). Significant univariate
differences were found for total positive expectancies ($F(1, 474) = 102.81, p < .001, \eta^2 = .18$), operationalized peer influence ($F(1, 474) = 23.17, p < .001, \eta^2 = .05$), and anticipated peer behavior ($F(1, 474) = 262.26, p < .001, \eta^2 = .36$). As seen in Table 5, pairwise comparisons indicated that adolescents mentioned more perceived incentives, displayed greater discrepancies between what they would do and what they believed was right, and anticipated greater peer involvement in antisocial acts than adults. However, perceived incentives were not significantly related to gender, (multivariate $F(3, 472) = .81$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$) nor to the interaction between age-group and gender (multivariate $F(3, 472) = .98$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$).

Second, age-group and gender differences on perceived costs were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, perceived cost variables (total negative expectancies, perceived criminal sanctions, and care if caught) as the dependent variables, and average grade and SES as the covariates. Cost expectancy variables were significantly related to age-group, and the strength of this association was small (multivariate $F(3, 501) = 37.08$, Pillai’s Trace = .18, $p < .001, \eta^2 = .18$). Significant univariate differences were found for total negative expectancies ($F(1, 503) = 24.93, p < .001, \eta^2 = .05$), perceived criminal sanctions ($F(1, 503) = 13.71, p < .001, \eta^2 = .03$), and care if caught ($F(1, 503) = 106.64, p < .001, \eta^2 = .18$). As seen in Table 5, pairwise comparisons indicated that adolescents mentioned fewer perceived costs, perceived criminal sanctions as less likely, and cared less if they were caught
than adults. Perceived costs was significantly related to gender, (multivariate $F(3, 325) = 2.85$, Pillai’s Trace = .03, $p < .05$, $\eta^2 = .03$). Significant univariate differences were found for care if caught ($F(1, 503) = 9.78$, $p < .01$, $\eta^2 = .02$), such that females cared more about getting caught than males. However, there was not a significant age-group by gender interaction (multivariate $F(3, 501) = .97$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$).

Third, age-group and gender differences on reward biases of outcome expectancies were assessed. Thus, a $2 \times 2$ MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, reward bias variables (benefit/cost ratio, most important expectancy, comfort threshold, and risk threshold) as the dependent variables, and average grade and SES as the covariates. Reward bias variables were significantly related to age-group, and the strength of this association was moderate to strong (multivariate $F(4, 403) = 42.84$, Pillai’s Trace = .30, $p < .001$, $\eta^2 = .30$). Significant univariate differences were found for benefit to cost ratio ($F(1, 406) = 92.49$, $p < .001$, $\eta^2 = .19$), most important expectancy ($F(1, 406) = 61.14$, $p < .001$, $\eta^2 = .13$), comfort threshold ($F(1, 406) = 12.50$, $p < .001$, $\eta^2 = .03$), and risk threshold ($F(1, 406) = 53.86$, $p < .001$, $\eta^2 = .12$). As seen in Table 5, pairwise comparisons indicated that adolescents displayed a higher benefit to cost expectancy ratio, a heightened importance on positive expectancies, a lower comfort threshold for and a higher risk threshold for willingness to engage in antisocial acts than adults.
Reward bias of outcome expectancies were also significantly related to gender, although this association was small (multivariate $F(4, 403) = 2.76$, Pillai’s Trace = .03, $p < .01$, $\eta^2 = .03$). Females displayed a higher risk threshold (univariate $F(1, 406) = 7.71$, $p < .01$, $\eta^2 = .02$) than males. However, there was not a significant age-group by gender interaction (multivariate $F(4, 403) = 1.48$, Pillai’s Trace = .02, $ns$, $\eta^2 = .02$).

Fourth, age-group and gender differences on depth of processing variables were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, depth of processing variables (depth of processing and past event experience) as the dependent variables, and average grade and SES as the covariates. Depth of processing variables were significantly related to age-group, and the strength of this association was small (multivariate $F(2, 449) = 22.14$, Pillai’s Trace = .08, $p < .001$, $\eta^2 = .08$). Significant univariate differences were found for depth of processing ($F(1, 500) = 8.81$, $p < .01$, $\eta^2 = .02$) and past event experience ($F(1, 500) = 40.37$, $p < .001$, $\eta^2 = .08$). As seen in Table 5, pairwise comparisons indicated that adolescents displayed greater depth of processing and more past event experience than adults. Depth of processing variables were not significantly related to gender, (multivariate $F(2, 499) = .42$, Pillai’s Trace = .00, $ns$, $\eta^2 = .00$) but there was a significant age-group by gender interaction (multivariate $F(2, 499) = 7.35$, Pillai’s Trace = .03, $p < .01$, $\eta^2 = .03$). Female adolescents had the greatest amount of past event experience, followed by male
adolescents, male adults, with female adults reporting the least amount of past event experience.

Finally, age-group and gender differences on generation of alternate solution variables were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or adult) and gender as the independent variables, alternate solution variables (number of alternate solutions and number of non-aggressive/delinquent solutions) as the dependent variables, and average grade and SES as the covariates. Alternate solution variables were significantly related to age-group, and the strength of this association was small (multivariate $F(2, 499) = 63.17$, Pillai's Trace $= .20$, $p < .001$, $\eta^2 = .20$). Significant univariate differences were found for number of alternate solutions ($F(1, 506) = 17.53$, $p < .01$, $\eta^2 = .03$) and number of non-delinquent/aggressive solutions ($F(1, 506) = 45.61$, $p < .001$, $\eta^2 = .10$). As seen in Table 5, pairwise comparisons indicated that adolescents generated fewer alternate solutions and fewer non-delinquent/aggressive solutions than adults. Alternate solution variables were not significantly related to gender, (multivariate $F(2, 499) = 1.60$, Pillai's Trace $= .01$, $n.s$, $\eta^2 = .01$) nor to the interaction between age-group and gender (multivariate $F(2, 499) = .89$, Pillai's Trace $= .00$, $n.s$, $\eta^2 = .00$).

Aim 2: Comparing Low vs. High Risk Adolescents

Maturity of Judgment Components

Delinquency-Group. First, delinquency-group and gender differences on standardized components of maturity of judgment were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing delinquency-group (adolescent or
delinquent) and gender as the independent variables, components of maturity of judgment (resistance to peer influence, sensation seeking, risk perception, and future-orientation) as the dependent variables, and average grade, IQ, and SES as the covariates.

Maturity of judgment was significantly related to delinquency-group, although the strength of this association was small (multivariate $F(4, 308) = 7.40$, Pillai’s Trace = .09, $p < .001$, $\eta^2 = .09$). A significant univariate difference was found for risk perception ($F(1, 311) = 23.46, p < .001$, $\eta^2 = .07$), but not for peer influence ($F(1, 311) = .97, ns$, $\eta^2 = .00$), sensation seeking ($F(1, 311) = .15, ns$, $\eta^2 = .00$), and future-orientation ($F(1, 311) = .09, ns$, $\eta^2 = .00$). As seen in Table 6, pairwise comparisons indicated that adolescents displayed increased risk perception as compared to delinquents. Components of maturity of judgment were also significantly related to gender, although this association was small, as well (multivariate $F(4, 308) = 3.03$, Pillai’s Trace = .04, $p < .05$, $\eta^2 = .04$). Males showed greater sensation seeking (univariate $F(1, 311) = 9.25, p < .01$, $\eta^2 = .03$) than females. However, maturity of judgment was not significantly related to the interaction between delinquency-group and gender (multivariate $F(4, 311) = .74$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$).

Next, delinquency-group and gender differences on spontaneously mentioned outcome expectancies TO engage in antisocial behavior were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing delinquency-group (adolescent or delinquent) and gender as the independent variables, outcome expectancies (peer influence, sensation seeking, negative emotion, risk
perception, short term, and long term consequences as reason TO engage in antisocial act) as the dependent variables, and average grade, IQ, and SES as the covariates. Maturity of judgment outcome expectancies TO engage in antisocial acts was not significantly related to delinquency-group (multivariate $F(6, 303) = 1.04$, Pillai's Trace = .02, ns, $\eta^2 = .02$). Further, maturity of judgment expectancies TO engage in antisocial acts were neither significantly related to gender (multivariate $F(6, 303) = .54$, Pillai's Trace = .02, ns, $\eta^2 = .02$), nor to the interaction between age-group and gender (multivariate $F(5, 303) = .52$, Pillai's Trace = .02, ns, $\eta^2 = .02$).

Third, delinquency-group and gender differences on spontaneously mentioned outcome expectancies NOT TO engage in antisocial behavior were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing delinquency-group (adolescent or delinquent) and gender as the independent variables, outcome expectancies (peer influence, sensation seeking, negative emotion, risk perception, legal, short term, and long term consequences as reason NOT TO engage in antisocial act) as the dependent variables, and average grade, IQ, and SES as the covariates. As seen in Table 8, maturity of judgment outcome expectancies NOT TO engage in antisocial acts was not significantly related to delinquency-group (multivariate $F(6, 303) = 1.84$, Pillai's Trace = .04, ns, $\eta^2 = .04$). In addition, maturity of judgment expectancies NOT TO engage in antisocial acts were neither significantly related to gender (multivariate $F(6, 303) = 1.77$, Pillai's Trace = .03, ns, $\eta^2 = .03$), nor to the interaction between
delinquency-group and gender (multivariate $F(6, 303) = .28$, Pillai's Trace = .01, 
$ns, \eta^2 = .01$).

**Cut-Score Delinquency Group.** Because of significant within-group
variation in delinquency, as seen in the standard deviations on the measure of
delinquency for both groups: adolescent (SD = 21.51) and delinquent youth (SD
= 22.20), both groups were combined to form two categories based on
delinquency cut-score. Those youth (whether high school youth or delinquent)
with delinquency scores above the 50th percentile were labeled high delinquent
and those youth (whether high school youth or delinquent) with delinquency
scores below the 50th percentile were labeled low delinquent.

To test whether maturity of judgment was significantly related to cut-score
delinquency group, a multivariate analysis of covariance (MANCOVA) was
conducted, utilizing cut-score delinquency group (low or high) as the independent
variable, the four separate components of maturity of judgment (resistance to
peer influence, sensation seeking, risk perception, and future-orientation) as the
dependent variables, and IQ, average grade, and SES as the covariates. Overall
maturity of judgment was related to delinquency group, although the strength of
this association was small (multivariate $F(4, 298) = 15.28, p < .001$, Pillai's Trace
= .17, $\eta^2 = .17$). As seen in Table 6, univariate analyses indicated an effect of
delinquency group on sensation seeking ($F(1, 301) = 8.49, p < .01, \eta^2 = .03$), risk
perception ($F(1, 301) = 49.93, p < .001, \eta^2 = .14$) and future-orientation ($F(1,
301) = 23.66, p < .001, \eta^2 = .07$), such that low delinquency youth displayed
decreased sensation seeking and increased risk perception and future-orientation than high delinquency youth.

Components of maturity of judgment were also significantly related to gender, although this association was small, as well (multivariate $F(4, 298) = 7.14$, Pillai's Trace = .09, $p < .001$, $\eta^2 = .09$). Males showed greater sensation seeking (univariate $F(1, 301) = 28.88$, $p < .001$, $\eta^2 = .07$) than females. However, maturity of judgment was not significantly related to the interaction between age-group and gender (multivariate $F(4, 298) = 1.08$, Pillai's Trace = .01, $ns$, $\eta^2 = .01$).

In addition, cut-score delinquency group and gender differences on spontaneously mentioned outcome expectancies associated with maturity of judgment were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing cut-score delinquency group (low or high) and gender as the independent variables, outcome expectancies associated with immaturity of judgment (peer influence, sensation seeking, negative emotion, risk perception, short term, and long term consequences as reason TO engage in antisocial act) as the dependent variables, and average grade, IQ, and SES as the covariates. Maturity of judgment outcome expectancy was significantly related to cut-score delinquency group, although the strength of this association was small (multivariate $F(6, 293) = 2.33$, Pillai's Trace = .05, $p < .05$, $\eta^2 = .05$). Significant univariate differences were found for sensation seeking ($F(1, 298) = 7.06$, $p < .01$, $\eta^2 = .02$) expectancies TO engage in antisocial acts. As seen in Table 7, pairwise comparisons indicated that low delinquency adolescents mentioned fewer
sensation seeking expectancies as reason TO engage in antisocial acts than high delinquency adolescents.

Finally, cut-score delinquency group and gender differences on spontaneously mentioned outcome expectancies associated with maturity of judgment were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing cut-score delinquency group (low or high) and gender as the independent variables, outcome expectancies associated with immaturity of judgment (peer influence, sensation seeking, negative emotion, risk perception, legal, short term, and long term consequences as reason NOT TO engage in antisocial act) as the dependent variables, and average grade, IQ, and SES as the covariates. As seen in Table 8, maturity of judgment outcome expectancy was not significantly related to cut-score delinquency group (multivariate $F(6, 293) = 1.40$, Pillai’s Trace $= .03$, $n$ s, $\eta^2 = .03$). Maturity of judgment expectancies NOT TO engage in antisocial acts was significantly related to gender, although the strength of this association was small (multivariate $F(6, 293) = 3.87$, Pillai’s Trace $= .07$, $p < .01$, $\eta^2 = .07$). Significant univariate differences were found for risk perception ($F(1, 298) = 11.69$, $p < .01$, $\eta^2 = .04$) and short term consequence ($F(1, 298) = 8.73$, $p < .01$, $\eta^2 = .03$) expectancies NOT TO engage in antisocial acts. Females mentioned a greater number of perceived risks and short term consequences as reason NOT TO engage in antisocial acts than males. However, there was not a significant cut-score delinquency group by gender interaction (multivariate $F(6, 293) = .88$, Pillai’s Trace $= .02$, $n$s, $\eta^2 = .02$).
Five Factors of Consequential Thinking

**Delinquency-Group.** First, delinquency-group and gender differences on perceived incentives were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing delinquency-group (adolescent or delinquent) and gender as the independent variables, perceived incentive variables (total positive expectancies, operationalized peer influence, and anticipated peer behavior) as the dependent variables, and average grade, IQ, and SES as the covariates. Perceived incentive variables were significantly related to delinquency-group, although the strength of this association was weak (multivariate $F(3, 286) = 8.93$, Pillai's Trace $= .09$, $p < .001$, $\eta^2 = .09$). Significant univariate differences were found for operationalized peer influence ($F(1, 288) = 4.97$, $p < .05$, $\eta^2 = .02$), and anticipated peer behavior ($F(1, 288) = 22.83$, $p < .001$, $\eta^2 = .07$). As seen in Table 9, pairwise comparisons indicated that adolescents displayed fewer discrepancies between what they would do and what they believed was right, and anticipated less peer involvement in antisocial acts than delinquent youth. However, perceived incentives were not significantly related to gender, (multivariate $F(3, 286) = .88$, Pillai's Trace $= .01$, ns, $\eta^2 = .01$) nor to the interaction between delinquency-group and gender (multivariate $F(3, 286) = 1.17$, Pillai's Trace $= .01$, ns, $\eta^2 = .01$).

Second, delinquency-group and gender differences on perceived costs were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing delinquency-group (adolescent or delinquent) and gender as the independent variables, perceived cost variables (total negative expectancies, perceived criminal
sanctions, and care if caught) as the dependent variables, and average grade, IQ, and SES as the covariates. Cost expectancy variables were significantly related to delinquency-group, and the strength of this association was small (multivariate $F(3, 306) = 4.36$, Pillai’s Trace = .04, $p < .01$, $\eta^2 = .04$). Significant univariate differences were found for how much one would care if caught ($F(1, 308) = 8.34$, $p < .01$, $r^2 = .03$). As seen in Table 9, pairwise comparisons indicated that adolescents cared more if they were caught than delinquent youth. However, perceived costs was neither significantly related to gender, (multivariate $F(3, 306) = 2.47$, Pillai’s Trace = .02, $ns$, $\eta^2 = .02$), nor to the interaction between delinquency-group and gender (multivariate $F(3, 306) = 2.02$, Pillai’s Trace = .02, $ns$, $\eta^2 = .02$).

Third, delinquency-group and gender differences on reward biases of outcome expectancies were assessed. Thus, a $2 \times 2$ MANCOVA was conducted, utilizing delinquency-group (adolescent or delinquent) and gender as the independent variables, reward bias variables (benefit/cost ratio, most important expectancy, comfort threshold, and risk threshold) as the dependent variables, and average grade, IQ, and SES as the covariates. Reward bias variables were not significantly related to delinquency-group (multivariate $F(4, 245) = .32$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$). Nor were reward bias of outcome expectancies significantly related to gender (multivariate $F(4, 245) = .50$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$), or the interaction between delinquency-group and gender (multivariate $F(4, 245) = .86$, Pillai’s Trace = .01, $ns$, $\eta^2 = .01$).

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Fourth, delinquency-group and gender differences on depth of processing variables were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing age-group (adolescent or delinquent) and gender as the independent variables, depth of processing variables (depth of processing and past event experience) as the dependent variables, and average grade, IQ, and SES as the covariates. Depth of processing variables were significantly related to delinquency-group, and the strength of this association was small (multivariate $F(2, 304) = 3.50$, Pillai’s Trace = .02, $p < .05$, $\eta^2 = .02$). Significant univariate differences were found for past event experience ($F(1, 305) = 7.00$, $p < .01$, $\eta^2 = .02$). As seen in Table 9, pairwise comparisons indicated that adolescents reported less past event experience than delinquent youth. Depth of processing variables were not significantly related to gender, (multivariate $F(2, 304) = 2.25$, Pillai’s Trace = .02, $ns$, $\eta^2 = .02$) nor to the interaction between delinquency-group and gender (multivariate $F(2, 304) = .37$, Pillai’s Trace = .00, $ns$, $\eta^2 = .00$).

Finally, delinquency-group and gender differences on generation of alternate solution variables were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing delinquency-group (adolescent or delinquent) and gender as the independent variables, alternate solution variables (number of alternate solutions and number of non-aggressive/delinquent solutions) as the dependent variables, and average grade, IQ, and SES as the covariates. Alternate solution variables were not significantly related to delinquency-group (multivariate $F(2, 305) = .65$, Pillai’s Trace = .00, $ns$, $\eta^2 = .00$). Further, alternate solution variables were not significantly related to gender, (multivariate $F(2, 305) = 1.83$, Pillai’s
Trace = .01, ns, $\eta^2 = .01$) nor to the interaction between delinquency-group and gender (multivariate $F(2, 305) = .33$, Pillai's Trace = .00, ns, $\eta^2 = .00$).

**Cut-Score Delinquency Group.** First, a 2 x 2 MANCOVA was conducted, cut-score delinquency group (low or high) and gender as the independent variables, perceived incentive variables (total positive expectancies, operationalized peer influence, and anticipated peer behavior) as the dependent variables, and average grade, IQ, and SES as the covariates. Perceived incentive variables were significantly related to cut-score delinquency group, although the strength of this association was weak (multivariate $F(3, 278) = 12.82$, Pillai's Trace = .12, $p < .001$, $\eta^2 = .12$). Significant univariate differences were found for total positive expectancies ($F(1, 280) = 12.29$, $p < .01$, $\eta^2 = .04$) and anticipated peer behavior ($F(1, 281) = 30.65$, $p < .001$, $\eta^2 = .10$). As seen in Table 9, pairwise comparisons indicated that low delinquency adolescents anticipated fewer positive expectancies associated with antisocial behavior and less peer involvement in antisocial acts than high delinquency adolescents. However, perceived incentives were not significantly related to gender, (multivariate $F(3, 278) = .81$, Pillai's Trace = .01, ns, $\eta^2 = .01$) nor to the interaction between cut-score delinquency group and gender (multivariate $F(3, 278) = .37$, Pillai's Trace = .00, ns, $\eta^2 = .00$).

Second, cut-score delinquency group and gender differences on perceived costs were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing cut-score delinquency group (low or high) and gender as the independent variables, perceived cost variables (total negative expectancies,
perceived criminal sanctions, and care if caught) as the dependent variables, and average grade, IQ, and SES as the covariates. Cost expectancy variables were significantly related to cut-score delinquency group, and the strength of this association was small (multivariate $F(3, 296) = 10.91$, Pillai’s Trace = .10, $p < .001, \eta^2 = .10$). Significant univariate differences were found for how much one would care if caught ($F(1, 298) = 30.31, p < .001, \eta^2 = .09$) and perceived sanctions ($F(1, 298) = 10.20, p < .01, \eta^2 = .03$). As seen in Table 9, pairwise comparisons indicated that low delinquency youth perceived criminal sanctions as more likely, and cared more if they were caught than high delinquency youth.

In addition, perceived costs was significantly related to gender, (multivariate $F(3, 296) = 3.32$, Pillai’s Trace = .03, $p < .05, \eta^2 = .03$). Significant univariate differences were found for total perceived costs ($F(1, 298) = 8.75, p < .01, \eta^2 = .03$) and how much one would care if caught ($F(1, 298) = 4.58, p < .05, \eta^2 = .02$). Females perceived a greater number of costs associated with antisocial behavior, and cared more if they were caught than males. However, there was not a significant cut-score delinquency group by gender interaction (multivariate $F(3, 296) = .72$, Pillai’s Trace = .01, ns, $\eta^2 = .01$).

Third, cut-score delinquency group and gender differences on reward biases of outcome expectancies were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing cut-score delinquency group (low or high) and gender as the independent variables, reward bias variables (benefit/cost ratio, most important expectancy, comfort threshold, and risk threshold) as the dependent variables, and average grade, IQ, and SES as the covariates. Reward bias variables were
significantly related to cut-score delinquency group, although the strength of this association was small (multivariate $F(4, 241) = 10.99$, Pillai's Trace = .15, $p < .001$, $\eta^2 = .15$). Significant univariate differences were found for benefit/cost ratio ($F(1, 244) = 7.78$, $p < .01$, $\eta^2 = .03$), most important expectancy ($F(1, 244) = 21.89$, $p < .001$, $\eta^2 = .08$), and risk threshold ($F(1, 244) = 23.33$, $p < .001$, $\eta^2 = .09$). As seen in Table 9, pairwise comparisons indicated that low delinquency adolescents held a smaller benefit to cost ratio, placed a decreased importance on positive expectancies, and displayed a lower risk threshold for willingness to engage in antisocial acts than high delinquency adolescents. However, reward bias of outcome expectancies were not significantly related to gender (multivariate $F(4, 241) = 1.83$, Pillai's Trace = .03, $ns$, $\eta^2 = .03$), nor to the interaction between cut-score delinquency group and gender (multivariate $F(4, 241) = .64$, Pillai's Trace = .01, $ns$, $\eta^2 = .01$).

Fourth, cut-score delinquency group and gender differences on depth of processing variables were assessed. Thus, a 2 x 2 MANCOVA was conducted, utilizing cut-score delinquency group (low or high) and gender as the independent variables, depth of processing variables (depth of processing and past event experience) as the dependent variables, and average grade, IQ, and SES as the covariates. Depth of processing variables were significantly related to cut-score delinquency group, and the strength of this association was small (multivariate $F(2, 294) = 24.38$, Pillai's Trace = .14, $p < .001$, $\eta^2 = .14$). Significant univariate differences were found for past event experience ($F(1, 295) = 47.52$, $p < .001$, $\eta^2 = .14$). As seen in Table 9, pairwise comparisons
indicated that low delinquency adolescents reported less past event experience than high delinquency adolescents. In addition, depth of processing variables were significantly related to gender, (multivariate $F(2, 294) = 5.14$, Pillai’s Trace $= .03$, $p < .01$, $\eta^2 = .03$). Significant univariate differences were found for depth of processing ($F(1, 295) = 5.11$, $p < .05$, $\eta^2 = .02$) and for past event experience ($F(1, 295) = 4.87$, $p < .05$, $\eta^2 = .02$). Females displayed deeper depth of processing and reported more past event experience than males. However, there was not a significant cut-score delinquency group by gender interaction (multivariate $F(2, 294) = .11$, Pillai’s Trace $= .00$, $\eta^2 = .00$).

Finally, cut-score delinquency group and gender differences on generation of alternate solution variables were assessed. Thus, a $2 \times 2$ MANCOVA was conducted, utilizing cut-score delinquency group (low or high) and gender as the independent variables, alternate solution variables (number of alternate solutions and number of non-aggressive/delinquent solutions) as the dependent variables, and average grade, IQ, and SES as the covariates. Alternate solution variables were not significantly related to cut-score delinquency group (multivariate $F(2, 295) = 1.47$, Pillai’s Trace $= .01$, $\eta^2 = .01$). However, alternate solution variables were significantly related to gender, (multivariate $F(2, 295) = 3.66$, Pillai’s Trace $= .02$, $p < .05$, $\eta^2 = .02$). Significant univariate differences were found for number of alternate solutions ($F(1, 296) = 6.97$, $p < .01$, $\eta^2 = .02$) and number of non-delinquent/aggressive solutions ($F(1, 296) = 6.92$, $p < .01$, $\eta^2 = .02$). Females generated a greater number of alternate solutions and a greater number of non-delinquent/aggressive alternate solutions than males. However,
there was not a significant cut-score delinquency group by gender interaction
(multivariate \( F(2, 295) = .60 \), Pillai’s Trace = .00, \( ns, \eta^2 = .00 \)).

**Aim 3: Adolescent and Adult Differences in Variable Associations.**

The final set of planned analyses assessed adolescent and adult
differences in predictors of delinquency. Delinquent youth were not included in
the reported analyses, as potential cohort differences of these youth go beyond
the scope of this study. At the same time, all analyses in this set were also run
including delinquent youth within the adolescent group, and identical results were
attained.

First, analyses assessed which theoretical variable was most predictive of
delinquency in adolescents and in adults. Second, a model in which
consequential thinking mediated the relation between immature judgment
outcome expectancies and delinquency was tested in adolescents and in adults.
Finally, a series of OLS regressions tested the interaction between being an
adolescent and several theoretically significant independent variables in
predicting delinquency.

For this set of analyses, several composite variables were created by
averaging standardized scores on pertinent variables: maturity of judgment
scales (composite of standardized scales for Resistance to Peer Influence,
Sensation Seeking (reverse coded), Risk Perception, and Future-Outlook
Inventory), immaturity of judgment outcome expectancies (average of
presence/absence scores for peer influence, sensation seeking, negative
emotion, risk perspective, and short term consequences as reason TO engage in
behavior), pro-delinquency (composite of scores for total positive expectancies, benefit/cost ratio, and depth of processing), and anti-delinquency (composite of scores for total negative expectancies and total alternate solutions).

For all analyses, the demographic variables that were correlated with delinquency were entered on Step 1, and the relevant independent variable(s) were then entered on Step 2. Thus, if differences in the dependent variable(s) were attributable to differences in the independent variable, then any significant effect at stage one should become non-significant at stage two.

Variable Most Highly Associated With Total Delinquency. For adolescents, a hierarchical regression was conducted, entering IQ, gender, average grade, education level, and SES on step one and composite of maturity scales (Resistance to Peer Influence, Sensation Seeking (reverse coded), Risk Perception, and Future-Outlook Inventory), immaturity of judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior), and two variables encompassing consequential thinking: pro-delinquency (total positive expectancies, benefit/cost ratio, and depth of processing) and anti-delinquency (total negative expectancies and total alternate solutions) on step two. As seen in Table 10, on step one gender and average grade were significant predictors of delinquency, with a moderate relation between the demographic variables and total delinquency ($F(5, 239) = 30.13, p < .001$; Adjusted $R^2 = .23$). Once the composite of maturity of judgment scales, maturity of judgment outcome expectancies, and two consequential thinking variables...
were entered into the second step of the equation, composite of maturity of judgment scales, pro-delinquency composite, and average grade were significant, strong predictors of delinquency ($F(9, 235) = 27.72, p < .001$; Adjusted $R^2 = .50$; $R^2 = .25$ for Step 1; $\Delta R^2 = .27$ for Step 2 ($p < .001$).

Composite of maturity of judgment scales ($\beta = -.43$) was a stronger predictor of total delinquency than pro-delinquency composite ($\beta = .31$) and average grade ($\beta = .30$).

For adults, a hierarchical regression was conducted, entering gender, education level, and SES on step one and composite of maturity scales (Resistance to Peer Influence, Sensation Seeking (reverse coded), Risk Perception, and Future-Outlook Inventory), maturity of judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior), and two variables encompassing consequential thinking: pro-delinquency (total positive expectancies, benefit/cost ratio, and depth of processing) and anti-delinquency (total negative expectancies and total alternate solutions) on step two. As seen in Table 10, on step one gender was a significant predictor of delinquency, with a weak relation between the demographic variables and total delinquency ($F(3, 250) = 3.78, p < .01$; Adjusted $R^2 = .03$). Once the composite of maturity of judgment scales, maturity of judgment outcome expectancies, and two consequential thinking variables were entered into the second step of the equation, composite of maturity of judgment scales ($\beta = -.23$) was a significant,
weak predictor of delinquency \( (F(7, 246) = 4.74, p < .001; \text{Adjusted } R^2 = .03; R^2 = .04 \text{ for Step 1}; \Delta R^2 = .08 \text{ for Step 2} (p < .001) \).

**Pro-Delinquency Consequential Thinking Composite Mediating Maturity of Judgment Outcome Expectancies and Delinquency.** Baron and Kenney's (1986) regressional techniques allow for testing the relation between two variables, X and Z. The mediating model occurs when the two variables X and Z are related directly but have a weakened relation when a third variable Y is included in the regression. First, the pro-delinquency consequential thinking composite was regressed on the composite of immature judgment outcome expectancies. Next total delinquency was regressed on the composite of immature judgment outcome expectancies. Finally, a regression was conducted with the composites of immature judgment outcome expectancies and pro-delinquency consequential thinking as the independent variables and total delinquency as the dependent variable. Further, demographic variables associated with delinquency were controlled for in all analyses by entering them on Step 1 of the regression equation and entering the predictor variables on Steps 2 and 3.

To test the mediating model for adolescents, a hierarchical regression was conducted, entering the demographic variables (IQ, gender, average grade, education level, and SES) associated with delinquency on step one and the composite of immature judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior) on step two. As seen in Table 11, none of the demographic variables were significant in predicting the pro-
delinquency composite on step 1 (total positive expectancies, benefit/cost ratio, and depth of processing) \( F(5, 248) = 1.86, \ ns; \) Adjusted \( R^2 = .02 \). Once the composites of immature judgment outcome expectancies was entered into the second step of the equation, average grade and composite of immature judgment outcome expectancies was a moderate to strong predictor of pro-delinquency (composite of total positive expectancies, benefit/cost ratio, and depth of processing) \( F(6, 247) = 19.30, p < .001; \) Adjusted \( R^2 = .30; \) \( R^2 = .04 \) for Step 1; \( \Delta R^2 = .28 \) for Step 2 \( p < .001 \).

Second, a hierarchical regression was conducted, entering the demographic variables (IQ, gender, average grade, education level, and SES) associated with delinquency on step one and the composite of immature judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior) on step two. As seen in Table 12, gender and average grade were significant on step one, with a moderate relation between the demographic variables and total delinquency \( F(5, 239) = 15.91, p < .001; \) Adjusted \( R^2 = .23 \). Once the composite of immature judgment outcome expectancies was entered into the second step of the equation, the composite of immaturity judgment outcome expectancies, gender, and average grade were significant, moderate predictors of total delinquency \( F(6, 238) = 17.81, p < .001; \) Adjusted \( R^2 = .29; \) \( R^2 = .25 \) for Step 1; \( \Delta R^2 = .06 \) for Step 2 \( p < .001 \).

Third, a hierarchical regression was conducted, entering the demographic variables (IQ, gender, average grade, education level, and SES) associated with
delinquency on step one, the composites of immature judgment outcome
effectances (peer influence, sensation seeking, negative emotion, risk
perspective, and short term consequences as reason TO engage in behavior) on
step 2, and pro-delinquency consequential thinking (total positive effectances,
benefit/cost ratio, and depth of processing) on step three. As seen in Table 13,
gender and average grade were significant on step one, with a moderate relation
between the demographic variables and total delinquency \(F(5, 239) = 15.91, p < .001; \text{Adjusted } R^2 = .23\). Once the composite of immature judgment outcome
effectances was entered into the second step of the equation, immature
judgment outcome effectances, gender, and average grade were significant,
moderate predictors of delinquency \(F(6, 238) = 17.81, p < .001; \text{Adjusted } R^2 = .29\). On the third step of the equation, gender, average grade, and pro-
delinquency consequential thinking were significant, strong predictors of
delinquency \(F(7, 237) = 19.52, p < .001; \text{Adjusted } R^2 = .35; R^2 = .31 \text{ for Step } 2; \Delta R^2 = .06 \text{ for Step } 3 \text{ (} p < .001 \)). The composite of immature judgment outcome
effectances became insignificant when total delinquency was regressed on
both the composites of pro-delinquency consequential thinking and immature
judgment outcome effectances (see Figure 1). To test whether the reduction in
immature judgment outcome effectances was significant, a Sobel test was
performed. The result showed that the test statistic was significant \(z = 4.14, p < .001\). Thus, for adolescents, the relation between immature judgment outcome
effectances and delinquency was significantly mediated by consequential
thinking.
To test the mediating model for adults, a hierarchical regression was conducted, entering the demographic variables (gender, education level, and SES) associated with delinquency on step one and the composite of immature judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior) on step two. As seen in Table 11, none of the demographic variables significantly predicted pro-delinquency composite (total positive expectancies, benefit/cost ratio, and depth of processing) ($F(3, 250) = 5.27$, $p < .01$; Adjusted $R^2 = .05$). Once the composites of immature judgment outcome expectancies was entered into the second step of the equation, the composite of immature judgment outcome expectancies was a strong predictor of pro-delinquency (composite of total positive expectancies, benefit/cost ratio, and depth of processing) ($F(4, 249) = 49.45$, $p < .001$; Adjusted $R^2 = .43$; $R^2 = .06$ for Step 1; $\Delta R^2 = .38$ for Step 2 ($p < .001$).

Second, a hierarchical regression was conducted, entering the demographic variables (gender, education level, and SES) associated with delinquency on step one and the composite of immature judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior) on step two. As seen in Table 12, gender was significant on step one, with a weak relation between the demographic variable and total delinquency ($F(3, 250) = 3.78$, $p < .05$; Adjusted $R^2 = .03$). Once the composite of immature judgment outcome expectancies was entered into the second step of the equation, the
composite of immaturity judgment outcome expectancies and gender were significant, weak predictors of total delinquency \( F(4, 249) = 4.30, p < .01 \); Adjusted \( R^2 = .05 \); \( R^2 = .04 \) for Step 1; \( \Delta R^2 = .02 \) for Step 2 \( p < .05 \).

Third, a hierarchical regression was conducted, entering the demographic variables (gender, education level, and SES) associated with delinquency on step one, the composites of immature judgment outcome expectancies (peer influence, sensation seeking, negative emotion, risk perspective, and short term consequences as reason TO engage in behavior) on step 2, and pro-delinquency consequential thinking (total positive expectancies, benefit/cost ratio, and depth of processing) on step three. As seen in Table 13, gender was significant on step one, with a weak relation between the demographic variables and total delinquency \( F(3, 250) = 3.78, p < .05 \); Adjusted \( R^2 = .03 \). Once the composite of immature judgment outcome expectancies was entered into the second step of the equation, gender and immature judgment outcome expectancies was a significant weak predictor of delinquency \( F(4, 249) = 4.33, p < .01 \); Adjusted \( R^2 = .05 \). On the third step of the equation, gender was a significant, weak predictor of delinquency \( F(5, 248) = 3.98, p < .01 \); Adjusted \( R^2 = .06 \); \( R^2 = .07 \) for Step 2; \( \Delta R^2 = .01 \) for Step 3 \( p = ns \). Because neither the composite of immature judgment outcome expectancies nor the composite of pro-delinquency consequential thinking remained significant when predicting total delinquency, for adults, the relation between immature judgment outcome expectancies and delinquency was not mediated by consequential thinking (see Figure 2).
Alternate Mediational Model. To ensure that immature judgment outcome expectancies was not acting as a mediator of the consequential thinking–total delinquency relation, a reverse mediational model was executed for both adolescents and adults. For adolescents, in this model, the initial relation between consequential thinking and delinquency was significant ($\beta = .34$, $t = 6.40$, $p < .001$); however, this direct path was not reduced to a non-significant level once immature judgment was included in the model ($\beta = .29$, $t = 4.57$, $p < .001$). For adults, in this model, the initial relation between consequential thinking and delinquency was significant ($\beta = .17$, $t = 2.75$, $p < .01$); however, although this direct path was reduced to a non-significant level once immature judgment was included in the model ($\beta = .13$, $t = 1.58$, $p = ns$), immature judgment expectancies was also non-significant ($\beta = .07$, $t = .85$, $p = ns$). Based on these results, there was no support for an alternate mediating model.

Theoretically Significant Independent Variable by Adolescent Interactions.

A series of ordinary least squares (OLS) regressions tested the interaction between being an adolescent and several theoretically significant independent variables in predicting delinquency. Based on analyses conducted under Aim 1 and Aim 2, the following independent variables were run as interactions with the dummy variable of adolescent (1 = adolescent, 0 = adult): total positive expectancies, most important consequence, anticipated peer behavior, perceived criminal sanctions, care if caught, risk threshold, and past event experience. In order to interpret differences in benefit/cost ratio, total negative expectancies was also included in the analyses.
The OLS regressions were run with demographic control variables on the first step of the equation: adolescence (dummy coded variable adolescent or not), gender, SES, average grade, and education level. Age was not included in the regressions as the variable had a large variance-inflation factor (VIF) and was determined to be unnecessary with the inclusion of the adolescence variable. All predictor variables and the mediator variable were entered on the second step of the equation. The product term was then entered on the third step of the equation.

First, an OLS regression was run with unstandardized variables, for ease in comprehension of the remaining analyses. As seen in Table 14, for model 1, on step 2, average grade, total positive expectancies, anticipated peer behavior, care if caught, and past event experience were significant strong predictors of delinquency ($F(13, 411) = 38.37, p < .001$; Adjusted $R^2 = .53$; $R^2 = .39$ for Step 1; $\Delta R^2 = .16$ for Step 2 ($p < .001$). The same OLS regression was then run with all independent and dependent variables standardized. All further analyses were based on standardized variables, with the exception of the dummy-coded variable "adolescent or not".

Next, a series of models (2 - 9) were run to determine which of the independent variables had a unique effect on adolescents versus adults. In turn, OLS regressions were run with the following interaction terms: total positive expectancies x adolescence, total costs x adolescence, most important consequence x adolescence, anticipated peer behavior x adolescence, perceived
criminal sanctions x adolescence, care if caught x adolescence, risk threshold x adolescence, and past event experience x adolescence.

As seen in Table 14 (see Figures 3-8), the interactive effects of total positive outcome expectancies x adolescence ($B = .34$), most important consequence x adolescence ($B = .27$) anticipated peer behavior x adolescence ($B = .31$), care if caught x adolescence ($B = -.42$), risk threshold x adolescence ($B = .12$) and past event experience x adolescence ($B = .32$) were all significant predictors of total delinquency. However, the interactions between total costs x adolescence and criminal sanctions x adolescence were not significantly predictive of delinquency.

The significant interaction terms for positive outcome expectancies, emphasizing positive outcomes, anticipating high peer delinquency, caring little if caught, having a high threshold for risk, and more past event experience showed that the regression slopes for adolescents differed significantly from that of adults in predicting delinquent behavior. The next set of analyses tested whether the simple slopes for adolescents and for adults significantly differed from zero. For all analyses, adolescent regression slopes significantly differed from zero, while adult regression slopes did not: total positive outcome expectancies ($t_{adolescents} = 5.75, p < .001; t_{adults} = -.45, ns$), most important consequence ($t_{adolescents} = 4.93, p < .001; t_{adults} = -1.8, ns$), anticipated peer behavior ($t_{adolescents} = 5.17, p < .001; t_{adults} = -1.46, ns$), care if caught ($t_{adolescents} = -5.93, p < .001; t_{adults} = 1.42, ns$), risk threshold ($t_{adolescents} = 2.30, p < .05; t_{adults} = -.63, ns$), and past event experience ($t_{adolescents} = 6.78, p < .001; t_{adults} = -.63, ns$).
**Exploratory Analyses: Measurement.**

Little previous research has measured outcome expectancies associated with maturity of judgment in association with antisocial decision making. Thus, this study attempts to measure several concepts associated with maturity of judgment for the first time, to the author’s knowledge. To understand whether maturity of judgment outcome expectancies were associated with standardized judgment scales, a series of bivariate correlations were run.

As seen in Table 15, outcome expectancies associated with reasons TO engage in behavior were significantly correlated with several judgment scales. Peer influence was negatively associated with the Resistance to Peer Influence Scale (RPIS) \( r = -0.14 \) and positively associated with the Sensation Seeking Scale \( r = 0.09 \) (SSS). Sensation seeking was positively associated with the SSS \( r = 0.12 \), and negatively associated with the Risk Perception Scale (RPS) \( r = -0.18 \) and the Future-Outlook Inventory (FOI) \( r = 0.12 \). Negative emotion was negatively associated with RPIS \( r = -0.12 \), RPS, \( r = -0.11 \) and FOI \( r = -0.15 \) and positively associated with SSS \( r = 0.17 \). Risk perception was positively associated with SSS \( r = 0.13 \). Short term consequences was negatively associated with RPIS \( r = -0.25 \), RPS \( r = -0.25 \), and FOI \( r = -0.15 \) and positively associated with SSS \( r = 0.26 \). However, long term consequences as reason TO engage in antisocial behavior was not significantly correlated with any of the maturity of judgment scales.

Also seen in Table 15, outcome expectancies associated with reasons NOT TO engage in behavior were significantly correlated with several judgment scales.
scales. Peer influence was negatively associated with the Resistance to Peer Influence Scale (RPIS) \( r = -.08 \). Negative emotion was negatively associated with SSS \( r = -.14 \), and positively associated RPS, \( r = .17 \) and FOI \( r = .17 \). Risk perception was negatively associated with RPIS \( r = -.16 \) and positively associated with SSS \( r = .11 \). Legal consequence was negatively associated with SSS \( r = -.09 \) and positively associated with RPIS \( r = .11 \). Short term consequences was negatively associated with RPIS \( r = -.11 \). Long term consequences was negatively associated with SSS \( r = -.08 \) and positively associated with RPS \( r = .10 \). However, sensation seeking as a reason NOT TO engage in antisocial behavior was not associated with any of the judgment scales.
CHAPTER IV

DISCUSSION

The present study brings together diverse areas of research to investigate the relations between maturity of judgment, consequential thinking, and delinquency in adolescents, adults, and delinquent youth. Results suggest that adolescents and adults may differ significantly on the judgment factors that influence their decisions and their decision processes. In addition, research shows few adolescent within-group differences in judgment and several within-group differences in consequential thinking. Finally, adolescent and adult differences may exist in the content and patterns of variables associated with delinquency.

Results Summary

Results suggest that adolescents may be less mature than adults based on maturity of judgment scale measures and numerous maturity of judgment outcome expectancy measures. In addition, adolescents were found to be less mature than adults based on all aspects related to consequential thinking: perceived incentives, perceived loss potential, reward structures, depth of processing, and generation of response solutions.

Adolescents were found to be more mature than delinquent youth only on two of the four maturity of judgment scales, sensation seeking and risk
perception, and did not differ from delinquent youth on any of the seven immature judgment outcome expectancies. Further, adolescents were found to be more mature than delinquent youth on only three aspects related to consequential thinking: operationalized peer influence, anticipated peer antisocial behavior, and how much cared if caught.

However, low delinquency youth were found to be more mature than high delinquency youth based on three of the four maturity of judgment scales: sensation seeking, risk perception, and future-orientation scales. In addition, low delinquency youth were found to be more mature than high delinquency youth on one of the seven immature judgment outcome expectancies; low delinquency youth were less likely to mention sensation seeking expectancies as reason TO engage in antisocial behavior. Finally, low delinquency youth were found to be more mature than high delinquency youth on numerous factors related to consequential thinking: total positive expectancies, anticipated peer antisocial behavior, perceived criminal sanctions, how much cared if caught, benefit/cost ratio, most important expectancy, and risk threshold.

The final set of planned analyses assessed adolescent and adult differences in variables associated with delinquency. Results showed that, for adolescents, maturity of judgment scales and pro-delinquency consequential thinking were associated with delinquency beyond demographic effects. For adults, only maturity of judgment scales were associated with antisocial behavior beyond the effects of demographic variables. In addition, consequential thinking mediated the relation between immature judgment outcome expectancies and
delinquency for adolescents, but not adults. Lastly, OLS regressions revealed that total positive consequences, emphasis on positive consequences, anticipated peer antisocial behavior, caring if caught, having a high risk threshold, and past event experience were all uniquely associated with delinquent behavior for adolescents, as a group.

Exploratory analyses also assessed the external validity of the maturity of judgment outcome expectancies. Bivariate correlations showed that all pertinent outcome expectancies were associated with maturity scales in expected directions.

**Aim 1: Comparing Low Risk Adolescents vs. Adults**

(1) Maturity of judgment components

As hypothesized, adolescents showed decreased risk perception, future-orientation and resistance to peer influence and increased sensation seeking on standardized measures, as compared to adults. This finding is in-line with previous maturity of judgment research (Cauffman & Steinberg, 2000; Modecki, in press) that focused on responsibility, temperance, and perspective, but is also notable based on the use of more specific scales in this study: risk perception, future-orientation, resistance to peer influence, and sensation seeking.

Further, in line with the immaturity of judgment hypothesis, adolescents spontaneously mentioned a greater number of outcome expectancies associated with immature judgment (peer influence TO, sensation seeking TO, negative emotion TO, risk perception TO, and short term consequences TO engage in antisocial behavior), and fewer outcome expectancies associated with mature
judgment (risk perception NOT TO, legal consequences NOT TO, and long term consequences NOT TO engage in antisocial behavior) than adults. These results suggest that adolescents' immaturity of judgment may be reflected in their outcome expectancies for antisocial behavior, also providing further support for adolescent and adult differences in antisocial decision making.

(2) Five factors of consequential thinking

A) As hypothesized, adolescents perceived greater benefits in antisocial behavior than adults. This result was consistent across three separate measures of perceived benefits: number of positive outcome expectancies, operationalized peer influence, and perceived peer antisocial behavior. This finding suggests that adolescent antisocial decisions may be based partially on expected benefits of illicit behavior. Further, the finding that adolescents perceive benefits to antisocial actions which exceed those of adults implies that adolescent decision making may not necessarily be "illogical", but instead may reflect differential adolescent values and goals, as compared to adults.

B) As posited, adolescents underestimated negative consequences associated with antisocial behavior as compared to adults, as measured by three different indices. Adolescents mentioned fewer negative outcome expectancies of antisocial behavior, predicted negative and legal consequences of behavior (being caught, arrested, etc.) as less likely, and cared less about getting caught than adults. The second finding, that adolescents underestimate the likelihood of negative and legal consequences of behavior, is of particular interest from a policy perspective. Increasing the likelihood that adolescents will be caught while
committing antisocial acts may serve to decrease antisocial behavior. At the same time, the latter result is particularly striking from a prevention/intervention perspective. If adolescents simply care less about being caught, then it is questionable how additional rules or penalties would serve to make adolescents care more. That is, do adolescents care less because they believe the consequences are not severe enough to warrant care? It seems unlikely that harsher penalties alone would increase adolescent’s concerns about getting caught. Instead, it is more likely that lack of future hopefulness and/or lack of true understanding of the implications for their future may lead adolescents to discount the ramifications of being caught. Future research is warranted in this area. At the same time, these results suggest that adolescents’ antisocial decisions may be fairly “rational”, in that they consider negative consequences less likely, less severe, and care less about them, as compared to adults.

C) In agreement with the study’s hypothesis, adolescents displayed a positive reward bias in antisocial decision making as compared to adults. Adolescents mentioned a higher positive to negative outcome expectancy, attached greater importance to positive than negative consequences of behavior, and stated that they would have to feel “less good” about engaging in an antisocial behavior than adults. These results suggest that interventions aimed at changing adolescent decisions should focus on perceived benefits of behavior, as adolescents emphasize positive over negative outcome expectancies. In addition, that adolescents are willing to feel “less good” about their decisions before engagement, warrants further attention. In particular, research should
consider whether this threshold can be increased. It is possible that if adolescents perceived negative consequences as more likely, then adolescents would not only care more about getting caught, but would also require a higher threshold for “feeling good” about their decisions before engagement. Again, this pattern of findings highlights the need for continued research.

D) Contrary to the study’s hypotheses, adolescents both displayed a greater depth of processing and reported more past event experience than adults. The former finding runs contrary to past research on risky decision making (Beyth-Marom, et al., 1993), but may be the result of different procedures employed in past studies versus the present. Because this study asked participants to list both reasons to and not to engage in behavior, as opposed to asking participants to simply list consequences of engaging in the behavior, a more thorough picture of adolescent depth of processing may be presented in the current study (Furby & Beyth-Marom, 1992). Indeed, the current study’s results are in line with a recent summary of research on decision theory and adolescent risk decisions (Reyna & Farley, 2006), suggesting that mature decision making is often more “gist based” than deliberative. Further, the Reyna and Farley (2006) review argues that adolescents learn more from experience when there is a lack of negative outcomes, and that adolescents then go on to modify their risk perceptions downward.

E) As predicted, adolescents generated fewer response solutions and fewer non-delinquent/aggressive response solutions than adults. This result is in-line with the immaturity of judgment perspective and parallels past findings on
medical decision making (Halpern-Felsher & Cauffman, 2001). This aspect of consequential thinking has been successfully targeted for intervention vis a vis the social information-processing model of aggressive decision making (Guerra & Slaby, 1990), and thus may be a worthwhile focus for more general antisocial decision making programming.

**Aim 2: Comparing Low vs. High Risk Adolescents**

The current study compared low versus high risk adolescents in two ways. First, high school students and delinquent youth were compared. Second, both adolescent samples (high school students and delinquent youth) were combined, and a delinquency cut-score was created to form two groups (low versus high delinquency), which were then contrasted. Overall, the former comparisons resulted in fewer differences than the later comparisons, a finding that is in-line with previous maturity of judgment research comparing non-delinquent and delinquent youth (Modecki, in press). Indeed, the delinquency group variable is likely impacted by extraneous factors that determine who is caught, prosecuted, and convicted. Whereas the self-report measure of delinquency likely provides a more accurate assessment of antisocial behavior.

1) Maturity of judgment components

In terms of maturity of judgment differences on standardized scales, adolescents and delinquents differed only on the measure of risk perception, such that adolescents perceived behaviors as more risky than delinquent youth. Although the standardized risk perception scale targeted risky behaviors (engaging in sexual intercourse without a condom, driving with a drunk driver) as
opposed to antisocial behaviors, it may be that delinquent youth have, as
discussed earlier, decreased their risk expectancies based on failure to
experience negative outcomes from their risky acts in the past.

In addition, adolescents and delinquent youth did not differ on any
outcome expectancies associated with immature judgment (peer influence TO,
sensation seeking TO, negative emotion TO, risk perception TO, and short term
consequences TO engage in antisocial behavior) or mature judgment (risk
perception NOT TO, legal consequences NOT TO, and long term consequences
NOT TO engage in antisocial behavior). As mentioned above, this result is not
unsurprising, in light of potential confounds with the delinquency-group variable.

However, for low and high delinquency adolescents, differences in
maturity of judgment were found on all standardized scales, with the exception of
resistance to peer influence. Low delinquency youth displayed stronger risk
perception and future orientation and lower sensations seeking compared to high
delinquency youth. These results largely support the immaturity of judgment
hypothesis, although the lack of differences on the resistance to peer influence
measure is surprising. Because this scale was modified from the original version
for reasons of improved reliability, it may be that scale lacks external validity.
Prior research has struggled to create a peer influence scale with strong internal
and external validity (Berndt, 1999) although a recent laboratory-based
manipulation of peer influence has shown promise (Gardner & Steinberg, 2005).

At the same time, low and high delinquency youth differed only on the
sensation seeking immature judgment outcome expectancy, and did not differ on
any outcome expectancies related to mature judgment (risk perception NOT TO, legal consequences NOT TO, and long term consequences NOT TO engage in antisocial behavior). Low delinquency youth were less likely to mention sensation seeking as a reason TO engage in behavior than high delinquency youth. This finding of sensation seeking differences supports the notion that adolescents are particularly susceptible to suboptimal emotional regulation, which in turn is associated with internalizing and externalizing problems (Steinberg, 2005). At the same time, the lack of significant differences on the remaining outcome expectancies implies that this method of measurement may not be the best indicator of adolescent within-group differences. This study utilized the method of presence versus absence of judgment factors. It may be that because adolescents, as a group, tend to mention judgment-related factors, within group differences in valence would be a stronger indicator of delinquency.

(2) Five factors of consequential thinking

A) Adolescents and delinquent youth did not differ on total number of positive expectancies, but did differ on the remaining two perceived incentive indices: operationalized peer influence and anticipated peer behavior. The finding of no differences between adolescents and delinquent youth on total number of positive consequences runs contrary to the study’s hypothesis, and may be a result of confounds with the delinquency-group measure. At the same time, the peer-based results suggest that detained youth may more susceptible to peer pressure than non-detained adolescents, a finding that runs contrary to
Fried and Reppucci (2001) who found that detained youth predicted less pressure from peers in antisocial situations than non-detained youth.

However, low delinquency youth reported fewer positive outcome expectancies and anticipated that peer antisocial behavior was less likely than high delinquency youth. Yet there were no cut-score delinquency differences on operationalized peer influence. The first result is in-line with the hypothesis that over-emphasis on positive consequences is associated with adolescent delinquency. This finding also suggests that youth decision making programs should focus on reducing the perceived positive consequences associated with delinquency, as opposed to asking youth to focus on perceived negative consequences.

In addition, low delinquency youth anticipated their peers would be less likely to engage in antisocial behavior than high delinquency youth. Along with the anticipated peer differences found in delinquent and non-delinquent youth above, this pattern of results proposes that perceived peer behavior is an important factor in adolescent delinquency, a finding that is supported within the criminological literature (e.g. Jessor & Jessor, 1977). Finally, the finding that low and high delinquency youth did not differ on the operationalized peer influence measure may be due to the mechanism by which the measure was calculated. Low and high delinquency youth may differ in their beliefs regarding how wrong an action is, and then go on to engage or not engage in the behavior based on said belief. That is, high delinquency youth may not believe that shoplifting is wrong, and then state that they would definitely shoplift. This pattern would
result in a low score on operationalized peer influence, similar to low delinquency youth believing that a behavior is wrong and then stating that they would definitely not shoplift. Future research would benefit from differential operationalizations of peer influence on behavior.

B) Neither adolescents versus delinquent youth nor low versus high delinquency adolescents differed on number of perceived costs of delinquent behavior. This result runs contrary to past research on adolescent risk-taking (e.g. Jacobs-Quadrel et al., 1993). However, along with the results showing adolescent within-group differences on perceived benefits, this pattern of findings reinforces the current study’s premise that for adolescents, benefits, as opposed to costs, are a predominant focus for antisocial decisions (Parsons, Siegel, & Cousins, 1997).

Further, results showed that adolescents versus delinquent youth and low versus high delinquency adolescents cared more about getting caught for antisocial behavior. Again, this pattern of findings implies that simply increasing penalties against juveniles likely will not alter delinquent behavior. Instead, it may be the perceived benefits of behavior, in addition to a lack of future hopefulness or current opportunities that drives delinquent behavior.

At the same time, there were no differences between adolescents and delinquent youth on perceived criminal sanctions. Once more, this suggests that increasing punitive sanctions may not ameliorate adolescent antisocial decision making. However, low delinquency youth perceived criminal sanctions as more likely than high delinquency youth. This later finding is in-line with Guerra (1989)
and suggests that a sub-group of adolescents that engage in little, if any, delinquent behavior may over-estimate potential sanctions in comparison to youth who have more delinquent experience.

C) No differences were found between adolescents and delinquent youth on measures of reward bias: benefit/cost ratio, most important expectancy, comfort threshold, and risk threshold. This finding is unexpected, and suggests that the delinquency-group variable is confounded with differences in those who are caught and prosecuted within the justice system versus those who are not. This conclusion is supported further with the subsequent finding that low and high delinquency youth differed on three of four aspects of reward bias: benefit/cost ratio, most important expectancy, and risk threshold. Low delinquency youth perceived a lower benefit to cost ratio, were less likely to emphasize positive over negative consequences, and had a lower threshold for risk than high delinquency youth. Again, these results suggest that adolescent decision making might be improved (or at least, less delinquent) via a marked de-emphasis on positive consequences. Finally, low and high delinquency groups did not differ on the comfort threshold needed to engage in behavior. It may be that sensation seeking and other positive emotions may drive delinquent behavior, as opposed to feelings such as fear and guilt. This idea is supported by the finding of no differences between adolescents and delinquents or between low and high delinquency youth on negative emotion outcome expectancies associated with antisocial behavior.
D) Findings indicated no differences between adolescents and delinquent youth on depth of processing, but adolescents did report less past event experience than delinquent youth. This is an unexpected finding, and it may be that more extensive processing depth could be related to situational novelty for adolescents and related to consideration of past consequences of antisocial behavior for delinquent youth. This idea is further supported based on the finding of no differences in depth of processing between low and high delinquency groups, although low delinquency youth reported less past event experience than high delinquency youth.

E) Results showed no differences between adolescents and delinquents or between low and high delinquency youth on number of alternate solutions generated nor on number of non-delinquent/aggressive alternate solutions generated. The former result is surprising, as youth who are caught and incarcerated would seem to have fewer response options at their disposal than those who circumvent detection. In addition, both findings run contrary to Guerra and Slaby (1990), and may be due to the fact that the current study did not group individuals based on levels of aggression.

Aim 3: Adolescent and Adult Differences in Variable Associations

Variable Most Highly Associated With Total Delinquency

For adolescents, composites of maturity of judgment scales and pro-delinquency consequential thinking factors were associated with delinquency; whereas for adults, only the composite of maturity of judgment scales was associated with delinquency. The former finding supports the current study's
theses, endorsing both the maturity of judgment and social information-processing perspectives. The latter result, although not in-line with the study's original hypothesis, advocates for the theory that mature judgment may be based on more gist-like processing, as opposed to a thorough decision analysis (Reyna & Farley, 2006). Such conclusions warrant attention for intervention programming, as deliberate, thorough analyses may be less important to mature decisions than previously considered.

Pro-Delinquency Consequential Thinking Composite Mediating Maturity of Judgment Outcome Expectancies and Delinquency

For adolescents, the pro-delinquency consequential thinking composite mediated the association between the composite of immature judgment outcome expectancies and delinquency. For adults, this relation did not exist: when both consequential thinking and outcome expectancies were entered into the regression equation, neither was significant. This study's finding of support for the mediation hypothesis bolsters the thesis that maturity of judgment and social information-processing perspectives are related, and that both are associated with adolescent antisocial decision making. This finding is particularly important in terms of social information-processing based interventions. Youth programming may improve decision making by focusing on immaturity of judgment based benefits of antisocial behavior: peer influence, sensation seeking, negative emotion, risk perception, and short term consequences.

The lack of support for the mediating model for adults is only partially in accordance with the study's hypotheses. Although consequential thinking did not
mediate the relation between immature judgment outcome expectancies and
delinquency in adults, immature judgment expectancies were associated with
antisocial behavior in adults. Along with the above finding that maturity of
judgment was the only theoretical independent variable associated with
delinquency in adults, results show that maturity of judgment may be associated
with delinquency even in adults ages 35-63. Previous cross-sectional research
has shown that the general judgment factors of responsibility and perspective
remains relatively stable after age 18, but the factor of temperance may continue
to mature through young-adulthood (Modecki, in press). Future research should
consider which specific aspects of judgment continue to affect adult antisocial
decisions.

Theoretically Significant Independent Variable by Adolescent Interactions

Several variables associated with consequential thinking were associated
with delinquency for adolescents but not for adults: total positive consequences,
emphasis on positive expectancies, anticipated peer antisocial behavior, caring if
caught, and past event experience all were associated with total delinquent
behavior for adolescents, as a group, but not adults. The first three results
provide support for the notion that perceived benefits of antisocial behavior may
be a particularly fruitful intervention focus for adolescent decision making. In
addition, the later two interaction results, caring if caught and past event
experience, reinforce the notion that improved monitoring of adolescents and
enforcement of set consequences for antisocial behavior may serve to improve
adolescent decision making.
Exploratory Analyses: Measurement

This study was unique in its inclusion of coding for maturity of judgment content for positive and negative expectancies of antisocial behavior. Results provide support for the operationalizations that were utilized in the current study, showing external validity for the factor coding. All immature judgment outcome expectancies were significantly associated with judgment scales. In particular, peer influence was negatively associated with the Resistance to Peer Influence Scale (RPIS), sensation seeking was positively associated with the Sensation Seeking Scale (SSS), and short term consequence was negatively associated with the Future-Outlook Inventory. Although risk perception was not significantly associated with the Risk Perception Scale (RPS), there was a positive association between the risk perception outcome expectancy and SSS.

Further, the negative emotion immature judgment outcome expectancy was included in the study, based on its relation to the "gestalt" of immature judgment. Findings indicated that negative emotion was negatively associated with RPIS, RPS, and FOI and positively associated with SSS. In all, the results of the exploratory analyses, along with the above analyses showing the predictive usefulness of immature judgment outcome expectancies on delinquency, provides support for further use of qualitative judgment measures in decision making research.

Final Remarks

The current study is germane to policy makers and courts. The juvenile justice system is based on the premise of adolescent immaturity of judgment,
suggesting reduced culpability for crimes and increased amenability to rehabilitation (Steinberg & Cauffman, 1996). However, the juvenile and adult court systems remain tenuously separate, as evidenced by the roughly 200,000 adolescents who are tried in adult criminal court annually (Allard & Young, 2002). The current project investigates age-based differences in maturity of judgment and perceived consequences of antisocial decisions. This study’s findings provide support for potential adolescent and adult differences in their antisocial decision processes. Adolescents display increased peer influence and sensation seeking and decreased risk perception and future-orientation than adults. In addition, adolescent decision processes are, to a significantly larger degree than adults, based on content that can be categorized as immature. Further, although adolescent decision processing has been shown to be deeper than that of adults, adolescents engage in a less mature decision process, based primarily on a biased reward structure that emphasizes positive over negative consequences.

The results of the current study do suggest that adolescents, as a group, differ markedly from adults in their antisocial decision process. These findings propose decreased decision making competence, and parallel neurobiological conclusions that suggest a positive/emotional reward bias in adolescents (Steinberg, 2004). In all, results support legislation for adolescent-specific versus adult-based sanctions (Fried & Reppucci, 2001). A predominate finding of this study is that adolescents, as a group, are particularly inclined to focus on benefits of antisocial behavior over risks. It has been hypothesized that lack of adolescent supervision and surveillance may add to this propensity, through
adolescent’s downward adjustment of risk after “getting away” with antisocial behavior (Reyna & Farley, 2006). This idea is further supported by the finding of adolescent within-group differences (both adolescent vs. delinquent and low vs high delinquency youth) on the standardized risk perception measure. Thus, possible adolescent-specific policies include increased supervision and monitoring through community surveillance and policing and regular enforcement of less severe consequences. At the same time, large scale attempts to “get tough on adolescents” and “treat adolescents as adults” may, in many ways, make it less likely that adolescents will a) received positive reinforcement for making social, as opposed to antisocial decisions and b) receive consistent and reasonable punishments for their infractions.

In light of the study’s conclusions, it is also important to note that the study’s design has several limitations. First, there were significant cohort differences between the adolescent and adults groups. The adult sample in this study was comprised of parents of college students and thus was likely a more highly educated group than would be found in a community-based sample. Although SES was controlled for in all analyses that compared adolescents and adults, the findings of the current study must be considered in light of these group differences. Findings of differences between adolescents and adults may not be due entirely to age differences, and instead may due to educational and socio-economic differences between groups. Second, this work attempts to investigate a developmental construct though the use of sampling, and thus is limited by its cross-sectional nature. While a mediational model was tested, the
lack of longitudinal data prohibits establishing causal pathways for variables in the models. Future research should attempt to follow individuals over time, from middle school through adulthood, in order to understand developmental changes in immature judgment, consequential thinking, and antisocial decisions. Further, subsequent work should attempt to measure constructs through experimental, as opposed to self-report questionnaire methods. An example of such research is that of Gardner and Steinberg (2005) who successfully measured peer influence and risk perception through experimental techniques. In addition, forthcoming work should attempt to corroborate decision making research with brain-based findings. Although this study's hypotheses were influenced by physiological research, tests of the developmental nature of adolescent decisions should ideally be linked to biological changes over the course of adolescence.

Finally, there were several measurement issues that may have affected the study's results (Frazier et al., 2004). First, in the mediational analyses for both adolescents and adults, the Path a relation between the predictor (immature judgment expectancies) and the dependent variable (total delinquency) ($\beta_{\text{adolescents}} = .25$, $\beta_{\text{adults}} = .15$) was less than the Path b relation between the predictor (immature judgment expectancies) and the mediator (pro-delinquency consequential thinking) ($\beta_{\text{adolescents}} = .54$, $\beta_{\text{adults}} = .64$). For adolescents, the Path a relation was not so strong that multicollinearity was a problem. However, the strong Path a relation for adults suggests potential problems with multicollinearity.
Second, two scales that were utilized in the current study had low reliabilities (below $\alpha = .70$): anticipated peer behavior ($\alpha = .65$) and past event experience ($\alpha = .51$). Although low reliability may reduce the power of statistical tests (Frazier et al., 2004), moderator analyses involving the low reliability scales were still significant for adolescents. Thus, the two variables in question still provided statistically significant regression results, although results should be interpreted with caution.

Third, multiple moderators were tested in the third set of analyses, and multiple correlations were tested in the exploratory analyses of the study. These procedures increased the likelihood of Type 1 error, and again, results should be construed with cautiousness.

Never the less, this work has significant, direct applications for behavioral interventions (Nightingale & Fischhoff, 2002). Numerous delinquency and violence prevention programs advise individuals to “stop and think” before they act (Orobio de Castro, Bosch, Veerman, & Koops, 2003). Such curriculums assume that a guided extension of children’s thought process will result in improved decision making. (e.g. Knoff, 2000; Larson & Gerber, 1987; Mann et al., 1989). These programs have been widely implemented within US school systems; for example, Project ACHIEVE (Knoff, 2000) has been incorporated into more than 1500 schools (Project Achieve, n.d.). The current study informs such programs by highlighting specific aspects of adolescent antisocial decision making that may be deficient. For instance, adolescents may be instructed to
consider the negative ramifications associated with an antisocial act, but remain highly biased in their perception of positive consequences of antisocial behavior.

The results of this study offer the potential to strengthen existing interventions by focusing on domains most central to the endorsement of antisocial decisions in adolescents: outcome expectancies related to peers, sensation seeking, short term benefits, and lack of risk and emphasis on said positive consequences.
REFERENCES


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to television's sexual content and adolescents' sexual behavior. *Journal of Personality and Social Psychology, 89*(6), 914-924.


APPENDIX A

QUESTIONNAIRE

Demographics
Please circle the answer that best describes you.

A. What is your primary racial background?
   (1.) African American
   (2.) Native American (Indian)
   (3.) Asian American
   (4.) Caucasian (white)
   (5.) Hispanic American
   (6.) Mixed African American and white
   (7.) Mixed Hispanic American and white

B. How old are you?
   ____________________ years old

C. What is your gender?
   (1) Male     (2) Female

D. What type of town are you from?
   (1.) Large city
   (2.) Small city
   (3.) Town
   (4.) Rural area
   (5.) Farm

E. What is the last full grade that you have completed in school?
   (1). 6th grade or less (5.) 10th grade
   (2.) 7th grade     (6.) 11th grade
   (3.) 8th grade     (7.) GED
   (4.) 9th grade     (8.) 12th grade

F. For the last full year you have completed in school, what was your average grade?
   (1.) All A’s
   (2.) Primarily A’s and B’s
   (3.) All B’s
   (4.) Primarily B’s and C’s
   (5.) All C’s

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(6.) Primarily C's and D's
(7.) All D's
(8.) Primarily D's and F's
(9.) All F's

G. Highest level of education attained by your mother:
(0.) Don't know/Not sure
(1.) Less than high school/GED
(2.) High school
(3.) Some college education
(4.) Associate Degree (2 year college)
(5.) College degree (4 year college)
(6.) Some graduate education
(7.) Graduate or professional degree (Ph.D MD MBA MA)

H. Highest level of education attained by your father:
(0.) Don't know/Not sure
(1.) Less than high school/GED
(2.) High school
(3.) Some college education
(4.) Associate Degree (2 year college)
(5.) College degree (4 year college)
(6.) Some graduate education
(7.) Graduate or professional degree (Ph.D MD MBA MA)

I. Were you ever convicted of a crime as a juvenile?
(Does not include speeding ticket)
(1.) Yes
(2.) No

J. If yes, how many times? __________________________

K. Have you ever been convicted of a crime as an adult?
(Does not include speeding ticket)
(1.) Yes
(2.) No

L. If yes, please circle the type of conviction
(1) Misdemeanor
(2) Felony

M. Have you ever stayed in a detention center (such as the Youth Development Center) previously?
(1.) Yes
(2.) No

N. If yes, how many times (including this time)? __________ times
O. How old were you when (if) you were first involved with the law? For example, got picked up by the police, went to community court, or something like that?

__________ years old

Alternate demographic questions for adults:
F. For the last full year you completed in high school, what was your average grade?
   (1.) All A's
   (2.) Primarily A's and B's
   (3.) All B's
   (4.) Primarily B's and C's
   (5.) All C's
   (6.) Primarily C's and D's
   (7.) All D's
   (8.) Primarily D's and F's
   (9.) All F's

G. Highest level of education you have received:
   (0.) Don't know/Not sure
   (1.) Less than high school/GED
   (2.) High school
   (3.) Some college education
   (4.) Associate Degree (2 year college)
   (5.) College degree (4 year college)
   (6.) Some graduate education
   (7.) Graduate or professional degree (Ph.D MD MBA MA)

H. Highest level of education your spouse has received:
   (0.) Don't know/Not sure
   (1.) Less than high school/GED
   (2.) High school
   (3.) Some college education
   (4.) Associate Degree (2 year college)
   (5.) College degree (4 year college)
   (6.) Some graduate education
   (7.) Graduate or professional degree (Ph.D MD MBA MA)

Alternate demographic questions for delinquent adolescents:
J. How many times have you been convicted of a delinquency, total (including this time)?

__________________________

Verbal IQ
RESEARCHER READS ALOUD:
I am going to say some words. Listen carefully, and write what each word means on the lines provided on your survey.
1. What is a cow?
2. What is an alphabet?
3. What is a donkey?
4. What is a thief?
5. What does leave mean?
6. What does brave mean?
7. What is an island?
8. What does ancient mean?
9. What does nonsense mean?
10. What does absorb mean?
11. What is a fable?
12. What does precise mean?
13. What does migrate mean?
14. What does mimic mean?
15. What does transparent mean?
16. What does strenuous mean?
17. What does boast mean?
18. What does unanimous mean?
19. What does seclude mean?
20. What does rivalry mean?
21. What is an amendment?
22. What does compel mean?
23. What does affliction mean?
24. What does imminent mean?
25. What does aberration mean?
26. What does dilatory mean?

Alternate Verbal IQ instructions for delinquent adolescents:
I am going to say some words. Listen carefully, and tell me what each word means.

Additional Verbal IQ questions for delinquent adolescents:
27. What is a clock?
28. What is a hat?
29. What is an umbrella?
30. What is a bicycle?

Operationalized Peer Influence (OPI)
Please check an answer for each below.

1. How wrong is it to tell a friend what questions will be on an upcoming test if you have already taken the test?

Not wrong at all A little wrong Pretty wrong Very wrong
2. How wrong is it to take clothing from a store without paying for it?

Not wrong at all  A little wrong  Pretty wrong  Very wrong

3. How wrong is it to threaten some teenagers who are being loud in a movie theatre?

Not wrong at all  A little wrong  Pretty wrong  Very wrong

Decision Vignettes
1. You and a friend have the same history test but are in different classes. You have history in the morning while she/he has history in the afternoon. At lunch, your friend asks you to tell her/him what questions were on the test. You realize that your friend has a good reason for not studying, but you know you shouldn't tell the test questions.

A. Would you tell your friend the test questions, or follow the rule of not revealing test questions? (Circle One)

1  2  3  4
Definitely  Probably  Probably  Definitely
probably
the question  the question  follow the rule  follow the rule

B. When you are deciding what to do, what are the reasons that would make you decide TO tell your friend the questions? Please list as many as you think of:

1.
2.
3.
4.
5.
6.

C. When you are deciding what to do, what are the reasons that would make you decide NOT TO tell your friend the questions? Please list as many as you think of:

7.
8.
9.
10.

11.

12.

D. Not all reasons are important when you make a decision. Please go back to your reasons above and circle the ONE MOST important reason for your decision. All together, circle only ONE reason.

E. About how much experience do you have with this type of decision? Please circle ALL the responses that apply:

a. I don't know anyone who has had to make this kind of decision.

b. People I know have had to make this kind of decision.

c. Close friends or family have had to make this kind of decision.

d. I've had to make this kind of decision once.

e. I've had to make this kind of decision more than once.

Now think about what other things you could do if your friend asked you to tell her/him the test questions.

F. What are some other things you could do? List all of the things you could do to solve this problem.

1.

2.

3.

4.

5.

G. Let's say that you decided to tell your friend the questions. How likely do you think it is that:

You will get caught by your teacher?

1  2  3  4  5
Very Somewhat Not sure Somewhat Very
Unlikely unlikely likely likely

If you are caught, that you will get in trouble?

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If you are caught, you will be suspended from school?

H. How much would you care if you were caught?

I. How good would you have to feel about sharing the test questions before you would do it? (Please mark with an X)

J. How likely would it have to be that you would get caught for you to decide NOT to share the questions? (Mark with an X)

K. How likely would your friends be to share the questions?

2. You're out shopping with some of your close friends and they decide to take some clothing without paying for it. You don't think it's a good idea, but they say you should take something too.

A. Would you shoplift or would you refuse to take the item? (Circle One)

1  2  3  4  5
Very Somewhat Not sure Somewhat Very
Unlikely unlikely likely likely

1  2  3  4  5
Very Somewhat Not sure Somewhat Very
Unlikely unlikely likely likely

1  2  3  4
Not at all A little Some what Very much

You would have to feel really bad about doing this
You would have to feel really good about doing this
1  5

0%  50%  100%

1  2  3  4
Very unlikely Some what Some what Very much
Unlikely unlikely likely likely

1  2  3  4
Definitely Probably Probably Definitely
refuse refuse shoplift shoplift
to shoplift to shoplift
B. When you are deciding what to do, what are the reasons that would make you decide TO take the clothing? Please list as many as you think of:

1.

2.

3.

4.

5.

6.

C. When you are deciding what to do, what are the reasons that would make you decide NOT TO take the clothing? Please list as many as you think of:

1.

2.

3.

4.

5.

6.

D. Not all reasons are important when you make a decision. Please go back to your reasons above and circle the ONE MOST important reason for your decision. All together, circle only ONE reason.

E. About how much experience do you have with this type of decision? Please circle ALL the responses that apply:

a. I don’t know anyone who has had to make this kind of decision.

b. People I know have had to make this kind of decision.

c. Close friends or family have had to make this kind of decision.

d. I’ve had to make this kind of decision once.

e. I’ve had to make this kind of decision more than once.
F. Now think about what other things you could do if your friends said that you should take some clothing. What are some other things you could do? List all of the things you could do to solve this problem.

1.

2.

3.

4.

G. Let's say that you decided to take the clothing with your friends. How likely do you think it is that:

You will get caught by the police?

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<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Very</td>
<td>Somewhat</td>
<td>Not sure</td>
<td>Somewhat</td>
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<td>Unlikely</td>
<td>unlikely</td>
<td>likely</td>
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If you are caught, that you will be found guilty of a crime?

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<td>Not sure</td>
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<td>Unlikely</td>
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<td>likely</td>
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You will spend time in detention or a correctional facility?

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H. How much would you care if you were caught?

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<tbody>
<tr>
<td>Not at all</td>
<td>A little</td>
<td>Some what</td>
<td>Very much</td>
</tr>
</tbody>
</table>

I. How good would you have to feel about stealing the clothing before you would do it? (Please mark with an X)

You would have to feel really bad about doing this

| 1 |

J. How likely would it have to be that you would get caught for you to decide NOT to steal the clothing? (Mark with an X)
K. How likely would your friends be to steal the clothing?

1 2 3 4
Very unlikely Some what Some what Very much
Unlikely unlikely likely likely

3. You and your friend are at a movie theatre watching a film. Behind you two teens are talking, laughing loudly, and kicking the back of your seat all of the time. Your friend wants you to turn around and threaten to hit them if they don’t keep quiet.

A. Would you threaten the teens or would you refuse? (Circle One)

1 2 3 4
Definitely Probably Probably Definitely
refuse refuse threaten them threaten them

B. When you are deciding what to do, what are the reasons that would make you decide NOT to threaten the teens? Please list as many as you think of:

1.
2.
3.
4.
5.
6.

C. When you are deciding what to do, what are the reasons that would make you decide TO threaten the teens? Please list as many as you think of:

1.
2.
3.
4.
5.

6.

D. Not all reasons are important when you make a decision. Please go back to your reasons above and circle the ONE MOST important reason for your decision. All together, circle only ONE reason.

E. About how much experience do you have with this type of decision? Please circle ALL of the responses that apply:

a. I don't know anyone who has had to make this kind of decision.

b. People I know have had to make this kind of decision.

c. Close friends or family have had to make this kind of decision.

d. I've had to make this kind of decision once.

e. I've had to make this kind of decision more than once.

Now think about what other things you could do if your friend wanted you to threaten to hit some teens.

F. What are some other things you could do? List all of the things you could do to solve this problem.

1.

2.

3.

4.

5.

G. Let's say that you decided to threaten them. How likely do you think it is that:

You will get caught by the police?

<table>
<thead>
<tr>
<th>Very unlikely</th>
<th>Unlikely</th>
<th>Not sure</th>
<th>Somewhat likely</th>
<th>Somewhat unlikely</th>
<th>Very likely</th>
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If you are caught, that you will be found guilty of a crime?

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<th>Very unlikely</th>
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<th>Not sure</th>
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You will spend time in detention or a correctional facility?

1  2  3  4  5
Very  Somewhat  Not sure  Somewhat  Very
Unlikely  unlikely  likely  likely

H. How much would you care if you were caught?

1  2  3  4
Not at all  A little  Some what  Very much

I. How good would you have to feel about threatening the teens before you would do it? (Please mark with an X)

You would
have to feel
really bad
about doing this
1

You would
have to feel
really good
about doing this
5

J. How likely would it have to be that you would get caught for you to decide NOT to threaten the teens (Mark with an X)

0%  50%  100%

K. How likely would your friends be to threaten the teens?

1  2  3  4
Very unlikely  Some what  Some what  Very much
Unlikely  unlikely  likely  likely

4. Describe a situation that happened to you in the last three months where you had to make a decision about something that was against the rules or illegal. Write about what you decided to do and why.

A. What did you decide to do?

B. When you were deciding what to do, what were the reasons that made you NOT want TO break the rules/law? Please list as many as you think of:

1.

2.
C. When you were deciding what to do, what were the reasons that made you want TO break the rules/law? Please list as many as you can think of:
7.
8.
9.
10.
11.
12.

D. Not all reasons are important when you make a decision. Please go back to your reasons above and circle the ONE MOST important reason for your decision. All together, circle only ONE reason.

E. About how much experience do you have with this type of decision? Please circle ALL the responses that apply:
a. I don’t know anyone who has had to make this kind of decision.
b. People I know have had to make this kind of decision.
c. Close friends or family have had to make this kind of decision.
d. I’ve had to make this kind of decision once.
e. I’ve had to make this kind of decision more than once.

F. What are some other ways that you could have solved your problem? Please list anything you might have done instead:
1.
2.
3.
G. If you chose to break the rule/law, how likely did you think it would be that:

<table>
<thead>
<tr>
<th>You would get caught?</th>
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<tr>
<td>Unlikely</td>
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If you were caught, that you would be found guilty of a crime?

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<tr>
<th>You would spend time in detention or a correctional facility?</th>
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H. How much would you have cared if you were caught?

<table>
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<tr>
<th>You would have to feel really bad about doing this</th>
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<th>4</th>
<th>Very much</th>
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<tr>
<td>Not at all</td>
<td>A little</td>
<td>Some what</td>
<td>Very much</td>
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</table>

I. How good would you have to feel about breaking the rule/law before you would do it? (Please mark with an X)

<table>
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<tr>
<th>You would have to feel really bad about doing this</th>
<th>You would have to feel really good about doing this</th>
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J. How likely would it have to be that you would get caught for you to decide NOT to break the rule/law? (Mark with an X)

<table>
<thead>
<tr>
<th>You would have to feel really bad about doing this</th>
<th>You would have to feel really good about doing this</th>
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<td>0%</td>
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K. How likely would your friends be to break the rule/law?

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<th>You would have to feel really bad about doing this</th>
<th>You would have to feel really good about doing this</th>
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Alternate decision vignette for adults:

1. You and a friend have the same work related test but have it at different times. You have your test in the morning while she/he has hers/his in the afternoon. At
lunch, your friend asks you to tell her/him what questions were on the test. You realize that your friend has a good reason for not studying, but you know you shouldn't tell the test questions.

Future Outlook Inventory
Please read each sentence carefully and circle the number that you most agree with

1. I will keep working at difficult, boring tasks if I know they will help me get ahead later.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

2. I live each day as if it's my last.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

3. I think about how things might be in the future.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

4. I tend to get caught up in the excitement of the moment.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

5. I make lists of things to do.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

6. Before making a decision, I weigh the good vs. the bad.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

7. I will give up my happiness now so I can get what I want in the future.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

8. I make decisions on the spur of the moment.
   1  2  3  4
   Never true  Rarely true  Often true  Always true

9. I would rather save my money for a rainy day than spend it now on something fun.

10. I can't really plan for the future because things change so much.
11. I always seem to be doing things at the last minute.
   | 1 | 2 | 3 | 4 |
   | Never true | Rarely true | Often true | Always true |

12. I don’t plan; I take each day as it is.
   | 1 | 2 | 3 | 4 |
   | Never true | Rarely true | Often true | Always true |

13. I can see my life 10 years from now.
   | 1 | 2 | 3 | 4 |
   | Never true | Rarely true | Often true | Always true |

   | 1 | 2 | 3 | 4 |
   | Never true | Rarely true | Often true | Always true |

Revised Resistance to Peer Influence Scale (RPIS)
How much does this describe you?

1. Some people go along with their friends just to keep them happy.
   | 1 | 2 | 3 | 4 |
   | Not at all | Somewhat | Sort of | Very much |
   | like me | like me | like me | like me |

2. Some people think it's more important to be an individual than to fit in with the crowd.
   | 1 | 2 | 3 | 4 |
   | Not at all | Somewhat | Sort of | Very much |
   | like me | like me | like me | like me |

3. For some people, it's pretty easy for their friends to get them to change their mind.
   | 1 | 2 | 3 | 4 |
   | Not at all | Somewhat | Sort of | Very much |
   | like me | like me | like me | like me |

4. Some people would do something that they knew was wrong just to stay on their friends' good side.
   | 1 | 2 | 3 | 4 |
   | Not at all | Somewhat | Sort of | Very much |
   | like me | like me | like me | like me |

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5. Some people hide their true opinion from their friends if they think they will be made fun of because of it.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>Somewhat</td>
<td>Sort of</td>
<td>Very much</td>
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</tr>
<tr>
<td>all like me</td>
<td>like me</td>
<td>like me</td>
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</tbody>
</table>

6. Some people will not break the law just because their friends would.

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</tbody>
</table>

7. Some people change the way they act so much when they are with their friends that they wonder who they “really are”.

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</table>

8. Some people take more risks when they are with their friends than they do when they are alone.

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</tbody>
</table>

9. Some people say things they don’t really believe because they think it will make their friends respect them more.

<table>
<thead>
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<td>like me</td>
<td>like me</td>
<td>like me</td>
<td></td>
</tr>
</tbody>
</table>

10. Some people think it’s better to be an individual even if people will be angry at them for going against the crowd.

<table>
<thead>
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<th>4</th>
</tr>
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<td>like me</td>
<td>like me</td>
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</tbody>
</table>

Arnett Sensation Seeking Inventory (ASSI)

1. I can see how it would be interesting to marry someone from a foreign country.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not describe me at all</td>
<td>Does not describe me me somewhat very well</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>describe me</td>
<td>describes me</td>
<td>very well</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. When the water is very cold, I prefer not to swim even if it’s a hot day.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not describe me</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>describe me</td>
<td>describes me</td>
<td>very well</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. If I have to wait in a long line, I'm usually patient about it.

<table>
<thead>
<tr>
<th></th>
<th>Does not</th>
<th>Does not</th>
<th>Describes</th>
<th>Describes me</th>
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<tbody>
<tr>
<td>1</td>
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<td></td>
</tr>
</tbody>
</table>

at all | very well

Does not describe me | describe me | me somewhat | very well

4. When I listen to music, I like it to be loud.

<table>
<thead>
<tr>
<th></th>
<th>Does not</th>
<th>Does not</th>
<th>Describes</th>
<th>Describes me</th>
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<tbody>
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</tbody>
</table>

at all | very well

Does not describe me | describe me | me somewhat | very well

5. When taking a trip, I think it is best to make as few plans as possible and just take it as it comes.

<table>
<thead>
<tr>
<th></th>
<th>Does not</th>
<th>Does not</th>
<th>Describes</th>
<th>Describes me</th>
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at all | very well

Does not describe me | describe me | me somewhat | very well

6. I stay away from movies that are said to be frightening or highly suspenseful.

<table>
<thead>
<tr>
<th></th>
<th>Does not</th>
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at all | very well

Does not describe me | describe me | me somewhat | very well

7. I think it's fun and exciting to perform or speak before a group.

<table>
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at all | very well

Does not describe me | describe me | me somewhat | very well

8. If I were to go to an amusement park, I would prefer to ride the rollercoaster or other fast rides.

<table>
<thead>
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at all | very well

Does not describe me | describe me | me somewhat | very well

9. I would like to travel to places that are far away and strange.

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at all | very well

Does not describe me | describe me | me somewhat | very well
10. I would never like to gamble with money, even if I could afford it.

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11. I would have enjoyed being one of the first explorers of an unknown land.

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</table>

12. I like a movie where there are a lot of explosions and car crashes.

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</tr>
</tbody>
</table>

13. I don't like extremely hot and spicy foods.

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</tbody>
</table>

14. In general, I work better when I'm under pressure.

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15. I often like to have the radio or TV on while I'm doing something else, such as reading or cleaning up.

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16. It would be interesting to see a car accident happen.

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</table>

17. I think it's best to order something familiar when eating at a restaurant.

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<td>Does not describe me me somewhat</td>
<td>Describes describes me very well</td>
<td></td>
</tr>
</tbody>
</table>
describe me  describe me me somewhat very well
at all very well
very well

18. I like the feeling of standing next to the edge on a high place and looking down.

1  2 3
Describes
Describes me
me somewhat very well
very well

19. If it were possible to visit another planet or the moon for free, I would be among the first in line to sign up.

1  2 3
Does not Describes
Describes me
describe me describe me me somewhat very well
at all very well
very well

20. I can see how it must be exciting to be in a battle during a war.

1  2 3
Describes
Describes me
me somewhat very well
very well

Delinquency Scale
How many times is the last year have you:

1. Purposely damaged or destroyed property belonging to your parents or family members.
2. Purposely damaged or destroyed property belonging to a school.
3. Purposely damaged or destroyed other property that did not belong to you (not counting family or school property).
4. Stolen (or tried to steal) a motor vehicle, such as a car or motorcycle.
5. Stolen (or tried to steal) something worth more than $50.
6. Knowingly bought, sold or held stolen goods (or tied to do any of these things).
7. Thrown objects (such as rocks, snowballs, or bottles) at cars or people.
8. Carried a weapon other than a plain pocket knife.
9. Stolen (or tried to steal) things worth $5 or less.
10. Attacked someone with the idea of seriously hurting or killing him/her.
11. Been paid for having sexual relations with someone.
13. Sold marijuana or hashish ("pot", "grass", "hash").
14. Hitchhiked when it was illegal to do so.
15. Stolen money or other things from your parents or other members of your family.
16. Hit (or threatened to hit) a teacher or other adult at school.
17. Hit (or threatened to hit) one of your parents.
18. Hit (or threatened to hit) other students.
20. Sold hard drugs, such as heroin, cocaine, and LSD.
21. Taken a vehicle for a ride (drive) without permission.
22. Had (or tried to have) sexual relations with someone against their will.
23. Used force (strong-arm methods) to get money or things from other students.
24. Used force (strong-arm methods) to get money or things from a teacher or other adult at school.
25. Used force (strong-arm methods) to get money or things from people (not students or teachers).
26. Avoided paying for things such as movies, bus or subway rides, and food.
27. Been drunk in a public place.
28. Stolen (or tried to steal) things worth between $5 and $50.
29. Stolen (or tried to steal) something at school, such as someone’s coat from a classroom, locker, or cafeteria, or a book from the library.
30. Broken into a building or vehicle (or tried to break in) to steal something or to look around.
31. Begged for money or things from strangers.
32. Failed to return extra change that a cashier gave you by mistake.
33. Made obscene telephone calls, such as calling someone and saying dirty things.
34. Used alcoholic beverages (beer, wine, and hard liquor).
35. Used marijuana-hashish ("grass", "pot", "hash").
37. Used amphetamines ("Uppers", "Speed", "Whites").
38. Used barbiturates ("Downers", "Reds").
39. Used heroin ("Horse", "Smack").
40. Used cocaine ("Coke").

Alternate delinquency scale instructions for delinquent adolescents:
_in the year before you were detained at the YDC, how many times did you:

Alternate delinquency scale questions for adults:
1. Purposely damaged or destroyed property belonging to your family members.
2. Not included on adult scale.
3. Purposely damages or destroyed other property that did not belong to you (not counting family property).
16. Not included on adult scale.
17. Hit (or threatened to hit) one of your children.
18. Hit (or threatened to hit) another individual (not your children).
29. Stolen (or tried to steal) a book from the library.
34. Not included on adult scale.
### Risk Perception Scale

For each of the following behaviors, circle the number that best corresponds to how risky or dangerous you think it is to engage in that behavior.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Not at All risky</th>
<th>Slightly risky</th>
<th>Moderately risky</th>
<th>Very risky</th>
<th>Extremely risky</th>
</tr>
</thead>
<tbody>
<tr>
<td>Having sex</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Drinking alcohol</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Getting drunk</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Binging/purging</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Taking speed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Shoplifting</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Driving a car</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Smoking cigarettes</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Walking alone at night</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Riding with a drunk driver</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Taking prescription drugs as prescribed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Riding a motorcycle</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Smoking marijuana</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Having sex without a condom</td>
<td>0</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>Driving after drinking</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Taking crack or cocaine</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Driving/riding without a seatbelt</td>
<td>0</td>
<td>1</td>
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</tr>
<tr>
<td>Taking prescription drugs without doctors' approval or in excess</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
CODING CRITERIA

Five dimensions of consequential thinking:

1. Benefit/Cost: Total number of REASONS TO (positive) consequences divided by the total number of REASONS NOT TO (negative) consequences.

2. Most important consequence considered: 1 for a REASON TO (positive) consequence and zero for a REASON NOT TO (negative) consequence.

3. Depth of processing: Sum the total number of REASONS TO (positive) and REASONS NOT TO (negative) consequences generated for each vignette.

4. Generation of solutions: Sum the number of solutions offered in response to each vignette.

5. Generation of acceptable solutions: Sum the number of non-delinquent, non-aggressive solutions.

Immature judgment factors:

Peer Influence-(friends opinion/influence/expectations) *If the presence of peers impacts their reasoning*; not to be left behind; peer pressure; jealous of friends free purchases; influenced by friends; help a friend; he's my boy; want to see friend do well; made me more accepted; going along with him; my friend told me to; they are friends; to be cool. DO NOT INCLUDE: Not to make a scene-because it does not specifically include friends/peers.
Sensation Seeking-(anything that is fun, thrilling, *emotionally exciting*, etc.)

fun; excitement; a "rush"; just to have a good time; don't want to miss out on fun;
immediate satisfaction; feel powerful, feeling the affects of the drugs FOR NOT TO Sensation Seeking must say –RUSH, THRILL.

**Negative Emotion**-(anything that is an *unpleasant emotion* -RESPONDENT MUST FEEL- sadness, embarrassment, shame, anger, etc.) embarrassment; embarrassing if I get caught; rude; I am irritated/ annoyed; I was mad; he pissed me off; fear; guilt. DO NOT INCLUDE: “The kids are annoying” or “They are hurting my back.”

**Risk Perception**-(a judgment of risk, *explicitly list a risk, or lack of risk*) safety; it's dangerous; could get caught; could fight back; I could get hurt; getting caught; afraid to get caught; could get in trouble; could cause a fight; I won’t get caught; it's easy; no chance I’d get caught; there’s cameras; getting arrested; could set the alarm off; get caught easily; could get prosecuted; DO NOT INCLUDE: “It's a crime to threaten someone”, because does not specify risk (could be moral, etc.) or “criminal prosecution” (b/c not saying they are at explicit risk).

**Long term consequence**-(anything beyond the short term...In the long run...*Not the DIRECT result of the decision*) on my record; insurance costs; lose my parents trust; if I got caught I’d have to run; my mom wouldn’t trust me; I will go to jail and be tried as an adult; I’d have to go back to my county; hurt my brain; could harm my body; how much trouble I’d get in with the law and family; I will get community service; could get pregnant; might be grounded longer; reputation.
Short term consequence *(immediate event/consequences of choosing action)*
get them to be quiet; they'll stop kicking seat; could get kicked out of theatre;
want to be on time; cause a scene; get caught; police get called; the situation
could escalate; getting arrested; they will continue to talk loudly; could lose my
job (happens immediately due to telling work-related test answer); because it's
free; because I get new clothes; I get to look good; they will give me the answers
next time (explicit exchange); don't want to look bad.

Legal consequence *(must specify legal, about the law)* law; not want to
get arrested; fights are illegal; shoplifting is a serious crime; illegal; law; I'm on
parole.
APPENDIX C

SAMPLE CODE SHEET

Participant # __________________
1. Benefit/Cost: ________________
2. M. impt consequence: __________
3. Depth of processing: __________
4. Gen. of alt. sol.: _______________
5. Gen of non-agg./non-del. sol: ___

CODER INITIALS:
_________________________

1. TEST QUESTIONS

REASONS TO GIVE THE QUESTIONS
Peer Influence (0 = no; 1 = yes)
Sensation Seeking (0 = no; 1 = yes)
Negative Emotion (0 = no; 1 = yes)
Risk Perception (0 = no; 1 = yes)
Long R. coneq. (0 = no; 1 = yes)
Short T. conseq. (0 = no; 1 = yes)
Legal conseq. (0 = no; 1 = yes)

REASONS NOT TO GIVE THE QUESTIONS
Peer Influence (0 = no; 1 = yes)
Sensation Seeking (0 = no; 1 = yes)
Negative Emotion (0 = no; 1 = yes)
Risk Perception (0 = no; 1 = yes)
Long R. coneq. (0 = no; 1 = yes)
Short T. conseq. (0 = no; 1 = yes)
Legal conseq. (0 = no; 1 = yes)
The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study.

Approval is granted to conduct your study as described in your protocol for one year from the approval date above. At the end of the approval period you will be asked to submit a report with regard to the involvement of human subjects in this study. If your study is still active, you may request an extension of IRB approval.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://www.unh.edu/osr/compliance/irb.html.) Please read this document carefully before commencing your work involving human subjects.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,

Julie F. Simpson
Manager

cc: File
    Banyard, Vicki
## Table E1

### Sample Demographics Information

<table>
<thead>
<tr>
<th></th>
<th>Adolescents</th>
<th>Adults</th>
<th>Delinquents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (% Male)²</td>
<td>50.4%</td>
<td>42.5%</td>
<td>73.8%</td>
</tr>
<tr>
<td>Race (% Caucasian)</td>
<td>75.5%</td>
<td>94.6%</td>
<td>68.9%</td>
</tr>
<tr>
<td>IQ (% 30 or above)²</td>
<td>87.4%</td>
<td></td>
<td>46.7%</td>
</tr>
<tr>
<td>SES¹,²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% &lt; high school degree</td>
<td>38.4%</td>
<td>8.0%</td>
<td>78.7%</td>
</tr>
<tr>
<td>% some college education</td>
<td>32.8%</td>
<td>42.4%</td>
<td>19.7%</td>
</tr>
<tr>
<td>% college degree</td>
<td>10.0%</td>
<td>18.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>% &gt; some graduate education</td>
<td>18.8%</td>
<td>31.3%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Average high school grade¹,²</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All A's</td>
<td>14.2%</td>
<td>6.1%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Primarily A's and B's</td>
<td>39.9%</td>
<td>51.0%</td>
<td>18.3%</td>
</tr>
<tr>
<td>All B's</td>
<td>4.1%</td>
<td>13.8%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Primarily B's and C's</td>
<td>24.0%</td>
<td>24.1%</td>
<td>15.0%</td>
</tr>
<tr>
<td>All C's</td>
<td>2.2%</td>
<td>4.2%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Primarily C's and D's</td>
<td>10.4%</td>
<td>0.8%</td>
<td>20.0%</td>
</tr>
<tr>
<td>All D's</td>
<td>1.5%</td>
<td>0.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Primarily D's and F's</td>
<td>3.0%</td>
<td>0.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>All F's</td>
<td>0.7%</td>
<td>0.0%</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

**Note.** SES is a proxy based on own and partner's or both parents' education level. Average high school grade is based on adults' average high school grade and adolescents' average grade for last full year of school. Superscript 1 = adult and adolescent differences at p < .05. Superscript 2 = adolescent and delinquent differences at p < .05.
Table E2

_Adjusted and Unadjusted Group Means for Components of Maturity of Judgment for Adolescents and Adults_

<table>
<thead>
<tr>
<th>Maturity of Judgment Component</th>
<th>Group</th>
<th>Mean</th>
<th>Adjusted Mean¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance to Peer Influence</td>
<td>Adolescent²</td>
<td>2.98</td>
<td>2.98&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>3.44</td>
<td>3.44&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>Adolescent²</td>
<td>2.72</td>
<td>2.73&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>2.26</td>
<td>2.26&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Risk Perception</td>
<td>Adolescent²</td>
<td>4.94</td>
<td>4.97&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>5.84</td>
<td>5.77&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Future-Orientation</td>
<td>Adolescent²</td>
<td>2.42</td>
<td>2.45&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>2.86</td>
<td>2.83&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

*Note. Adjusted means with different superscripts differ at the p < .05 level.*

¹Mean adjusted for average grade and SES.
²n = 260, ³n = 259.
Table E3

*Adjusted and Unadjusted Group Means for Spontaneously Mentioned Outcome Expectancies as Reasons TO Engage in Antisocial Behavior for Adolescents and Adults*

<table>
<thead>
<tr>
<th>Maturity of Judgment Expectancy as Reason TO Engage in Behavior</th>
<th>Group</th>
<th>Mean</th>
<th>Adjusted Mean¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Influence TO</td>
<td>Adolescent²</td>
<td>.21</td>
<td>.22²</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>.16</td>
<td>.15ᵇ</td>
</tr>
<tr>
<td>Sensation Seeking TO</td>
<td>Adolescent²</td>
<td>.04</td>
<td>.05ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>.02</td>
<td>.02ᵇ</td>
</tr>
<tr>
<td>Negative Emotion TO</td>
<td>Adolescent²</td>
<td>.12</td>
<td>.13ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>.03</td>
<td>.03ᵇ</td>
</tr>
<tr>
<td>Risk Perception TO</td>
<td>Adolescent²</td>
<td>.08</td>
<td>.08ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>.05</td>
<td>.05ᵇ</td>
</tr>
<tr>
<td>Short Term Consequence TO</td>
<td>Adolescent²</td>
<td>.30</td>
<td>.31ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>.07</td>
<td>.06ᵇ</td>
</tr>
<tr>
<td>Long Term Consequence TO</td>
<td>Adolescent²</td>
<td>.00</td>
<td>.00ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult³</td>
<td>.00</td>
<td>.00ᵃ</td>
</tr>
</tbody>
</table>

*Note.* Adjusted means with different superscripts differ at the $p < .05$ level.

¹Mean adjusted for average grade and SES.

²$n = 256$, ³$n = 253$. 

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Table E4

Adjusted and Unadjusted Group Means for Spontaneously Mentioned Outcome Expectancies as Reasons NOT TO Engage in Antisocial Behavior for Adolescents and Adults

<table>
<thead>
<tr>
<th>Maturity of Judgment Expectancy as Reason NOT TO Engage in Behavior</th>
<th>Group</th>
<th>Mean</th>
<th>Adjusted Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Influence NOT TO</td>
<td>Adolescent</td>
<td>.00</td>
<td>.00&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.01</td>
<td>.01&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Sensation Seeking NOT TO</td>
<td>Adolescent</td>
<td>.00</td>
<td>.00&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.00</td>
<td>.00&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Negative Emotion NOT TO</td>
<td>Adolescent</td>
<td>.08</td>
<td>.09&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.16</td>
<td>.14&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Risk Perception NOT TO</td>
<td>Adolescent</td>
<td>.58</td>
<td>.58&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.37</td>
<td>.37&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Legal Consequence NOT TO</td>
<td>Adolescent</td>
<td>.18</td>
<td>.18&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.20</td>
<td>.20&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Short Term Consequence NOT TO</td>
<td>Adolescent</td>
<td>.56</td>
<td>.56&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.37</td>
<td>.37&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Long Term Consequence NOT TO</td>
<td>Adolescent</td>
<td>.09</td>
<td>.09&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>.14</td>
<td>.14&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note. Adjusted means with different superscripts differ at the p < .05 level.
<sup>1</sup>Mean adjusted for average grade and SES.
<sup>2</sup>n = 256, <sup>3</sup>n = 253.
Table E5

*Adjusted and Unadjusted Group Means for Five Factors of Consequential Thinking for Adolescents and Adults*

<table>
<thead>
<tr>
<th>Consequential Thinking Factor</th>
<th>Group</th>
<th>Mean</th>
<th>Adjusted Mean¹</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived Incentives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Positive Expectancies</td>
<td>Adolescent³</td>
<td>2.06</td>
<td>2.09ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁴</td>
<td>1.14</td>
<td>1.11ᵇ</td>
</tr>
<tr>
<td>Operationalized Peer Influence</td>
<td>Adolescent³</td>
<td>0.40</td>
<td>0.39ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁴</td>
<td>0.23</td>
<td>0.24ᵇ</td>
</tr>
<tr>
<td>Anticipated Peer Behavior</td>
<td>Adolescent³</td>
<td>2.67</td>
<td>2.65ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁴</td>
<td>1.70</td>
<td>1.72ᵇ</td>
</tr>
<tr>
<td><strong>Perceived Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Negative Expectancies</td>
<td>Adolescent⁵</td>
<td>2.05</td>
<td>2.10ᵃ</td>
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<tr>
<td></td>
<td>Adult⁶</td>
<td>2.64</td>
<td>2.59ᵇ</td>
</tr>
<tr>
<td>Perceived Criminal Sanctions</td>
<td>Adolescent⁵</td>
<td>2.93</td>
<td>2.90ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁶</td>
<td>3.13</td>
<td>3.15ᵇ</td>
</tr>
<tr>
<td>Care if Caught</td>
<td>Adolescent⁵</td>
<td>3.04</td>
<td>3.09ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁶</td>
<td>3.72</td>
<td>3.67ᵇ</td>
</tr>
<tr>
<td><strong>Reward Bias</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit/Cost Ratio</td>
<td>Adolescent⁷</td>
<td>1.24</td>
<td>1.24ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁸</td>
<td>0.47</td>
<td>0.47ᵇ</td>
</tr>
<tr>
<td>Most Important Expectancy²</td>
<td>Adolescent⁷</td>
<td>0.49</td>
<td>0.45ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁸</td>
<td>0.18</td>
<td>0.18ᵇ</td>
</tr>
<tr>
<td>Comfort Threshold</td>
<td>Adolescent⁷</td>
<td>57.47</td>
<td>57.52ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁸</td>
<td>68.56</td>
<td>68.66ᵇ</td>
</tr>
<tr>
<td>Risk Threshold</td>
<td>Adolescent⁷</td>
<td>45.51</td>
<td>44.94ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult⁸</td>
<td>25.61</td>
<td>25.31ᵇ</td>
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<tr>
<td><strong>Depth of Processing Variables</strong></td>
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</tr>
<tr>
<td>Depth of Processing</td>
<td>Adolescent⁶</td>
<td>4.10</td>
<td>4.17ᵃ</td>
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<td></td>
<td>Adult⁶</td>
<td>3.77</td>
<td>3.71ᵇ</td>
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<tr>
<td>Past Event Experience</td>
<td>Adolescent⁶</td>
<td>3.47</td>
<td>3.50ᵃ</td>
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<tr>
<td></td>
<td>Adult⁶</td>
<td>2.76</td>
<td>2.81ᵇ</td>
</tr>
<tr>
<td><strong>Alternate Solutions</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total Alternate Solutions</td>
<td>Adolescent⁹</td>
<td>1.94</td>
<td>2.00ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult¹⁰</td>
<td>2.44</td>
<td>2.38ᵇ</td>
</tr>
<tr>
<td>Total Non Del./Agg. Solutions</td>
<td>Adolescent⁹</td>
<td>1.64</td>
<td>1.69ᵃ</td>
</tr>
<tr>
<td></td>
<td>Adult¹⁰</td>
<td>2.39</td>
<td>2.33ᵇ</td>
</tr>
</tbody>
</table>

Note. Adjusted means with different superscripts differ at the *p < .05* level.
³Mean adjusted for average grade and SES.
²Most important expectancy is rated as 1 for positive expectancy and 0 for negative expectancy of antisocial behavior.
³ⁿ = 238, ⁴ⁿ = 242, ⁵ⁿ = 256, ⁶ⁿ = 253, ⁷ⁿ = 201, ⁸ⁿ = 211, ⁹ⁿ = 254, ¹⁰ⁿ = 252.
### Table E6

**Adjusted and Unadjusted Group Means for Maturity of Judgment Components for Adolescent and Delinquent Youth and Low and High Delinquency Groups**

<table>
<thead>
<tr>
<th>Maturity of Judgment Component</th>
<th>Group</th>
<th>Mean</th>
<th>Adjusted Mean&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance to Peer Influence</td>
<td>Adolescent&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2.98</td>
<td>2.95&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Delinquent&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2.96</td>
<td>3.09&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td></td>
<td>Low Delinquency&lt;sup&gt;4&lt;/sup&gt;</td>
<td>3.04</td>
<td>3.01&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>High Delinquency&lt;sup&gt;5&lt;/sup&gt;</td>
<td>2.91</td>
<td>2.95&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td>Adolescent&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2.71</td>
<td>2.65&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Delinquent&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2.70</td>
<td>2.72&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Low Delinquency&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2.67</td>
<td>2.65&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
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<td>2.77&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>3.68&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>5.29&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>Future-Orientation</td>
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<td>Delinquent&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>2.36&lt;sup&gt;a&lt;/sup&gt;</td>
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<td>2.18</td>
<td>2.25&lt;sup&gt;b&lt;/sup&gt;</td>
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*Note. Adjusted means with different superscripts differ at the $p < .05$ level.*

1<sup>Mean adjusted for average grade, IQ, and SES.</sup>

2<sup>Sample size = 259</sup>, 3<sup>Sample size = 59</sup>, 4<sup>Sample size = 160</sup>, 5<sup>Sample size = 148</sup>.
Table E7

*Adjusted and Unadjusted Group Means for Spontaneously Mentioned Outcome Expectancies as Reasons TO Engage in Antisocial Behavior for Adolescent and Delinquent Youth and Low and High Delinquency Groups*

<table>
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<th>Mean</th>
<th>Adjusted Mean</th>
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<td>.24$^a$</td>
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<td>.07$^a$</td>
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<td>.07$^a$</td>
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*Note.* Adjusted means with different superscripts differ at the $p < .05$ level.

$^1$Mean adjusted for average grade, IQ, and SES.

$^2$n = 256, $^3$n = 59, $^4$n = 158, $^5$n = 147.
Table E8

**Adjusted and Unadjusted Group Means for Spontaneously Mentioned Outcome Expectancies as Reasons NOT TO Engage in Antisocial Behavior for Adolescent and Delinquent Youth and Low and High Delinquency Groups**

<table>
<thead>
<tr>
<th>Maturity of Judgment Expectancy as Reason NOT TO Engage in Behavior</th>
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<th>Mean</th>
<th>Adjusted Mean¹</th>
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<td>.01ᵃ</td>
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<td>Low Delinquency⁴</td>
<td>.00</td>
<td>.00ᵃ</td>
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<td></td>
<td>High Delinquency⁵</td>
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<td>.01ᵃ</td>
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<td>Sensation Seeking NOT TO</td>
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<td>.00ᵃ</td>
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<td></td>
<td>Delinquent³</td>
<td>.00</td>
<td>.00ᵃ</td>
</tr>
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<td></td>
<td>Low Delinquency⁴</td>
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<td>.00ᵃ</td>
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<tr>
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<td>.00</td>
<td>.00ᵃ</td>
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Note. Adjusted means with different superscripts differ at the p < .05 level.

¹Mean adjusted for average grade, IQ, and SES.
²n = 256, ³n = 59, ⁴n = 158, ⁵n = 147.
Table E9

Adjusted and Unadjusted Group Means for Five Factors of Consequential Thinking for Adolescent and Delinquent Youth and Low and High Delinquency Groups

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<th>Depth of Processing</th>
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<th>Adolescent&lt;sup&gt;18&lt;/sup&gt;</th>
<th>1.64</th>
<th>1.55&lt;sup&gt;a&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>Delinquen&lt;sup&gt;8&lt;/sup&gt;</td>
<td>1.31</td>
<td>1.72&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Low Delinquency&lt;sup&gt;19&lt;/sup&gt;</td>
<td>1.74</td>
<td>1.58&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>High Delinquency&lt;sup&gt;17&lt;/sup&gt;</td>
<td>1.37</td>
<td>1.58&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

**Note.** Adjusted means with different superscripts differ at the p < .05 level.

<sup>1</sup>Mean adjusted for average grade and SES.

<sup>2</sup>Most important expectancy is rated as 1 for positive expectancy and 0 for negative expectancy of antisocial behavior.

<sup>3</sup>n = 238, <sup>4</sup>n = 57, <sup>5</sup>n = 144, <sup>6</sup>n = 143, <sup>7</sup>n = 256, <sup>8</sup>n = 59, <sup>9</sup>n = 158, <sup>10</sup>n = 147, <sup>11</sup>n = 201, <sup>12</sup>n = 54, <sup>13</sup>n = 128, <sup>14</sup>n = 123, <sup>15</sup>n = 253, <sup>16</sup>n = 156, <sup>17</sup>n = 146, <sup>18</sup>n = 254, <sup>19</sup>n = 157.
### Table E10

**Summary of Hierarchical Regression Analyses for Variables Predicting Total Delinquency for Adolescents and Adults**

<table>
<thead>
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<td>B</td>
<td>SE B</td>
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<tr>
<td><strong>Step 1</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Gender</td>
<td>-4.56</td>
<td>2.27</td>
<td>-0.11*</td>
<td>-0.87</td>
</tr>
<tr>
<td>IQ</td>
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<td>0.20</td>
<td>0.08</td>
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<tr>
<td>Average grade</td>
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<td>0.50***</td>
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<td>Education level</td>
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<td>0.92</td>
<td>-0.05</td>
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<td>SES</td>
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<td><strong>Step 2</strong></td>
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<td>Gender</td>
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<td>-0.32</td>
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<td>0.17</td>
<td>0.08</td>
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<tr>
<td>Average grade</td>
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<td>Composite of Maturity of Judgment Outcome Expectancies</td>
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<td>Composite Delinquency Consequential Thinking Factor</td>
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*Note.* Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner's or both parents' education level.

*p < .05. **p < .01. ***p < .001.

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Table E11

Summary of Hierarchical Regression Analyses for Immature Judgment Outcome Expectancies Predicting Pro-Delinquency Consequential Thinking for Adolescents and Adults

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<td>B</td>
<td>B</td>
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<td>Gender</td>
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<td>-.02</td>
<td>-.06</td>
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<td>.01</td>
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<td>Gender</td>
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<td>.01</td>
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<tr>
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<td>.15*</td>
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<td>.03</td>
<td>-.04</td>
<td>.01</td>
<td>.06</td>
<td>.02</td>
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<tr>
<td>Composite of Maturity of Judgment Outcome Expectancies</td>
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<td>.54***</td>
<td>6.63</td>
<td>.51</td>
<td>.64***</td>
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</table>

Note. Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner’s or both parents’ education level.  
*p < .05. ***p < .001.
Table E12

Summary of Hierarchical Regression Analyses for Immature Judgment Outcome Expectancies Predicting Total Delinquency for Adolescents and Adults

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<tr>
<td>Gender</td>
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<td>2.27</td>
</tr>
<tr>
<td>IQ</td>
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<td>.20</td>
</tr>
<tr>
<td>Average grade</td>
<td>5.46</td>
<td>.79</td>
</tr>
<tr>
<td>Education level</td>
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<td>.92</td>
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<tr>
<td>SES</td>
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<td>.65</td>
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<tr>
<td><strong>Step 2</strong></td>
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<tr>
<td>Gender</td>
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<td>IQ</td>
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<td>Composite of Maturity of Judgment Outcome Expectancies</td>
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*Note. Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner’s or both parents’ education level. 
*p < .05. ***p < .001.
Table E13

**Summary of Hierarchical Regression Analyses for Immature Judgment Outcome Expectancies and Pro-Delinquency Consequential Thinking Predicting Total Delinquency for Adolescents and Adults**

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<tr>
<td>Gender</td>
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<td>2.27</td>
<td>-.11*</td>
<td>-.87</td>
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<tr>
<td>IQ</td>
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<td>.20</td>
<td>.08</td>
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</tr>
<tr>
<td>Average grade</td>
<td>5.46</td>
<td>.79</td>
<td>.50***</td>
<td>-.81</td>
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<td>Education level</td>
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<td>.65</td>
<td>-.01</td>
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<td>SES</td>
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<tr>
<td>Step 2</td>
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<td>Gender</td>
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<td>11.99</td>
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<td>.73</td>
<td>.49***</td>
<td>-1.58</td>
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<tr>
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<td>.60</td>
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<td>SES</td>
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<td>.01</td>
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<tr>
<td>Composite of Maturity of Judgment Outcome Expectancies</td>
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<td>11.99</td>
<td>.09</td>
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<td>Composite Pro-Delinquency Consequential Thinking Factor</td>
<td>6.37</td>
<td>1.40</td>
<td>.29***</td>
<td>.42</td>
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</tbody>
</table>

*Note.* Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner's or both parents' education level.

*p < .05. ***p < .001.
### Table E14
Summary of OLS Regression Analyses Predicting Total Delinquency for Adolescents and Adults

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<th>Variable</th>
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<td>B</td>
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<td>β</td>
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<tr>
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*Note. Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner’s or both parents’ education level.

* p < .05. ** p < .01. *** p < .001.
Table E14 Continued

Summary of OLS Regression Analyses Predicting Total Delinquency for Adolescents and Adults

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<tr>
<td><strong>Step 1</strong></td>
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<td>.84***</td>
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*Note. Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner's or both parents' education level.

*p < .05. **p < .01. ***p < .001.
Table E14 Continued

Summary of OLS Regression Analyses Predicting Total Delinquency for Adolescents and Adults

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Note. Average grade is scored such that higher grades are equated with lower numbers. SES is a proxy based on own and partner's or both parents' education level.

*p < .05. **p < .01. ***p < .001.
APPENDIX F

FIGURES

Figure F1.

Summary of mediating regression analysis for total delinquency in adolescents.

Note. The initial path between immature judgment and delinquency is indicated by the beta-weight on top of the line connecting these variables. The beta-weight after pro-delinquency consequential thinking is included as the mediator is indicated by the value directly under the path.

***p < .001.
Figure F2.

Summary of mediating regression analysis for total delinquency in adults.

Note. The initial path between immature judgment and delinquency is indicated by the beta-weight on top of the line connecting these variables. The beta-weight after pro-delinquency consequential thinking is included as the mediator is indicated by the value directly under the path. 

*p < .05. ***p < .001.
Figure F3.

Plot of total positive expectancies by adolescence interaction.
Figure F4.

Plot of most important consequence by adolescence interaction.
Figure F5.

Plot of anticipated peer antisocial behavior by adolescence interaction.
Figure F6.

Plot of how much care if caught by adolescence interaction.
Figure F7.

Plot of risk threshold by adolescence interaction.
Figure F8.

Plot of past event experience by adolescence interaction.