Law Hum Behav (2008) 32:78–91
DOI 10.1007/s10979-007-9087-7

ORIGINAL ARTICLE

Addressing Gaps in the Maturity of Judgment Literature: Age Differences and Delinquency

Kathryn Lynn Modecki

Published online: 2 June 2007

Abstract Over the past decade, a majority of states have legislated to expand their capacity to try adolescents as adults [Griffin (2003). *Trying and sentencing juveniles as adults: An analysis of state transfer and blended sentencing laws*. Pittsburgh, PA: National Center for Juvenile Justice]. In response, researchers have investigated factors that may affect adolescent culpability [Steinberg and Scott (Am Psychol 58(12):1009–1018, 2003)]. Research on immature judgment posits that psychosocial influences on adolescent decision processes results in reduced criminal responsibility [Cauffman and Steinberg (Behav Sci Law 18(6):741–760, 2000); Scott, Reppucci, and Woolard (Law Hum Behav 19(3):221–244, 1995); Steinberg and Cauffman (Law Hum Behav 20(3):249–272, 1996)]. The current study utilizes hypothetical vignettes and standardized measures of maturity of judgment (responsibility, temperance, and perspective) to examine gaps in previous maturity of judgment findings (Cauffman and Steinberg 2000). This work suggests that adolescents (ages 14–17) display less responsibility and perspective relative to college students (ages 18–21), young-adults (ages 22–27), and adults (ages 28–40). Further, this research finds no maturity of judgment differences between delinquent and non-delinquent youth, but does find significant maturity of judgment differences between high and low delinquency male youth. Finally, results show that maturity of judgment predicts self-reported delinquency beyond the contributions of age, gender, race, education level, SES, and antisocial decision making. Implications for the juvenile justice system are discussed.

Keywords Adolescents · Maturity of judgment · Decision making · Juvenile justice · Delinquency · Adolescent and adult differences

The Supreme Court recently ruled that the juvenile death penalty was ''cruel and unusual punishment'' in Roper v. Simmons (No. 03-633). Yet voters continue to advocate juvenile punishment over rehabilitation (Griffin 2003) based on the notion that an adult crime compels an adult punishment (Scott and Grisso 1997). Lawmakers may justify punitive trends based on their belief that adolescents have adequate moral judgment and self-control to be held fully culpable for their crimes (Scott and Grisso 1997). In contrast, numerous developmental theorists maintain that adolescents, ages 13–18, may lack the judgmental maturity to make decisions based on their own inclinations and principles (e.g., Reppucci 1999; Scott et al. 1995; Steinberg and Cauffman 1996). Further, adolescent inclinations and principles may differ from those of adults and thus may be considered ''misguided.'' The maturity of judgment perspective argues that adolescents are confronted with psychosocial factors (i.e., emotional and social influences) (Cauffman 1996) that are unique to their developmental period (Scott and Woolard 2004). These psychosocial influences contribute to immature judgment, which affects adolescent decision making, particularly in antisocial contexts (Cauffman 1996). Accordingly, due to immaturity of judgment, adolescents' antisocial decisions should be viewed through a lens of mitigated criminal culpability (Scott et al. 1995; Steinberg and Scott 2003).

This research was conducted in partial fulfillment of the M.A degree in Psychology from the University of New Hampshire.

K. L. Modecki (✉)
Psychology, University of New Hampshire, Conant Hall, 10 Library Way, Durham, NH 03824, USA
e-mail: kmodecki@unh.edu

Although several landmark empirical studies have investigated adolescent maturity of judgment in relation to antisocial decision making (e.g., Cauffman and Steinberg 2000; Fried and Reppucci 2001), this work has compared adolescents to college students or has lacked age-based contrasts beyond age 18. Yet physiological research suggests that age-based brain maturation, which may be linked to maturity of judgment factors (Bennett and Baird in press), does not occur until the early twenties (Sowell et al. 2001). Thus, college students may not be equipped for mature judgment themselves. Further, although preliminary work has linked adolescent immature judgment to antisocial decision making, this work has lacked measures of criminal involvement, such as self-report delinquency (Cauffman and Steinberg 2000). Finally, although the maturity of judgment perspective suggests that adolescent offending may be accounted for, in part, by immature judgment (Cauffman and Steinberg 2000), only two studies have investigated maturity of judgment in delinquent youth (Fried and Reppucci 2001; Grisso et al. 2003). The aim of the current study is to address these gaps in previous maturity of judgment research. Juvenile crime, physiology, and maturity of judgment literature will be reviewed within the framework of extending past maturity of judgment research.

Juvenile Crime

In recent years, juvenile crime has been approached from an increasingly punitive direction, as evidenced by increased transfers of juveniles to criminal court and increased formal processing of juveniles within the justice system. This punishment perspective is based on the assumption that adolescents are sufficiently mature and should be held fully accountable for their crimes (Slobogin 1999; Steinberg and Cauffman 1996). However, some authors argue that the juvenile justice system was created based on an altogether different idea: adolescents and adults differ in maturity (Scott and Grisso 1997). Yet this view has increasingly been called into question, since the Supreme Court ruling, In Re Gault, in 1967 (Scott and Grisso 1997).

Although rehabilitative efforts continue to exist, since 1967 courts have held adolescents increasingly liable for their crimes (Scott and Grisso 1997). Between 1987 and 1994, there was a 73% increase in the number of juvenile cases waived to adult court (Snyder and Sickmund 1999). Today, over 200,000 adolescents are tried in criminal court annually (Allard and Young 2002).

At the same time, the juvenile court system's caseload has grown overloaded in recent years (Snyder and Sickmund 1999). The court's inundation is the result not only of increased juvenile crime, but also increased prosecution of juvenile crime (Snyder 2003). For instance, between 1987 and 1996 there was a 78% increase in formal processing of delinquency cases (Stahl 1999). Currently one in five juveniles who encounter police for delinquent behavior is processed through the legal system (Snyder and Sickmund 1999).

The punitive orientation towards adolescent offending is particularly striking given that most adolescents will participate in at least a few delinquent acts, such as drug use, school truancy, vandalism, or petty theft (Moffit 1993). In fact, problem behavior is considered by some theorists to be a distinctive component of adolescent development (Baumrind 1987; Moffitt 1993). Many developmental researchers consider moderate amounts of delinquent behavior to be typical for adolescents, who attempt to gain adult-like status through risk-taking behavior (e.g., Moffitt 1993). For most adolescents, delinquency desists on its own, potentially precipitated by the maturation process (Moffit 1993; Scott and Grisso 1997).

Moffitt's (1993) work is consistent with the aggregate age curve in offending that is seen across cultures and countries (Gottfredson and Hirshi 1990). In general, the age curve shows crime rates escalating rapidly between ages 14 and 15, topping out between ages 16 and 20, and promptly deescalating (Farrington 1986). Although this curve is an aggregate and not all individuals show desistance, this criminological trend seems to reflect adolescents' natural maturation. However, proponents of adult criminal sanctions and formal processing argue that adolescent decision making skills are mature enough both to commit crimes and to pay serious consequences for such decisions (Scott and Grisso 1997; Scott et al. 1995). Thus empirical work that investigates judgmental maturity in relation to antisocial decision making is germane to arguments that both support and oppose reduced criminal culpability for adolescents.

Physiological Research

Recent physiological research offers some support for the hypothesis that adolescent judgment may be relatively immature as compared to adults. Although this work is in its initial stages, research suggests that adolescents and college-aged individuals may have yet to fully develop neurologically (Bennett and Baird in press; Sowell et al. 1999) and thus may not be equipped for mature judgment. Brain maturation between adolescence and young adulthood has been spatially and temporally mapped using MRI imaging, indicating that the brain may not mature to adult capacity until the early twenties (Giedd et al. 1999; Reiss et al. 1996). 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 lobe, a region typically utilized by adults for decision processing, may not reach full maturity until the early twenties (Davies and Rose 1999). As a surrogate, adolescents may utilize the basal ganglia for decision processing (Yurgelun-Todd et al. 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 immature judgment. It is important to note, however, that much work remains to be realized in this area. Indeed longitudinal research is currently underway that attempts to link these two developmental trajectories (T. Grisso, personal communication, March 9, 2006).

Maturity of Judgment

Although research associating physiological development and maturity of judgment is only in its initial stage, developmental research suggests that adolescents' decision processes are unduly affected by a variety of social and environmental factors (Scott et al. 1995). For instance, adolescent risk decisions are influenced by social pressure, emotional experiences, and peer norms (Steinberg and Cauffman 1996). Although adults may experience these psychosocial factors, adult decisions are thought to reflect their own choices and preferences, whereas adolescent choices may not (Steinberg and Scott 2003). The term ''maturity of judgment'' has been coined to reflect the influence of such psychosocial factors on the cognitive decision process (Cauffman and Steinberg 1995; Steinberg and Cauffman 1996).

Past research has varied in its operationalization of maturity of judgment. The Scott et al. (1995) judgment framework encompasses decreased risk perception and future-time perspective, and increased peer influence. Steinberg and Cauffman (1996) posit that three more general factors may comprise maturity of judgment and thus affect adolescent decision making: responsibility (the ability to act independently and to be self-sufficient), temperance (the ability to evaluate a situation before acting), and perspective (the ability to consider different viewpoints when making decisions) (Steinberg and Cauffman 1996; Cauffman and Steinberg 2000). The current study is based on the later, more expansive maturity of judgment framework of responsibility, temperance, and perspective.

In all, factors of maturity of judgment have been conceptualized as dispositions that interact with decision contexts; thus an individual's judgmental maturity may vary from one circumstance to the next (Steinberg and Cauffman 1996). However, adolescents are especially likely to face risky choices (Baumrind 1987), wherein peer norms, sensation seeking, and future time perspective may unduly affect their decision processes (Scott and Grisso 1997). Consequently, maturity of judgment is most germane to such risk-laden contexts.

Thus, maturity of judgment research informs the ongoing legislative debate regarding adolescent culpability (Steinberg and Cauffman 1996), based on the thesis that without mature, competent decision making, adolescents should not be held as accountable as adults for their crimes (Woolard et al. 1996). However, the maturity of judgment perspective suggests a developmental inclination towards immature reasoning in antisocial decisions making; this perspective does not argue for a lack of criminal culpability (Steinberg and Scott 2003). Instead, maturity of judgment suggests reduced culpability based on developmental differences between adolescent and adult antisocial decision making (Cauffman and Steinberg 2000). Further, this perspective acknowledges significant within group variability, such that individual adolescents may display judgment that is relatively mature and such that individual adults may display judgment that is relatively immature (Cauffman and Steinberg 2000).

Next Steps

Social science research has only recently focused empirically on maturity of judgment and its influence on adolescent decision making (Fried and Reppucci 2001; Grisso et al. 2003; Woolard et al. 2001). While a number of empirical works have provided significant grounding within the maturity of judgment framework several gaps remain, a number of which the current study seeks to fill.

The first gap in previous maturity of judgment research is a lack of adult judgment comparisons. For instance, Cauffman and Steinberg's (2000) landmark research on maturity of judgment suggests that maturity of judgment predicts antisocial decision making and that adolescents are less psychosocially mature and more likely to make antisocial decisions than college students. Yet physiological research suggests that college-aged individuals themselves may continue to undergo brain-based maturation that could conceivably be linked to immature judgment (Bennett and Baird in press). Thus, inclusion of samples beyond college age is central to informing questions of maturation beyond adolescence. In addition, Cauffman and Steinberg found that antisocial decision making remains relatively stable after age 19. Yet it is unclear whether this result is due to their college-student sample, which had a mean age of 25. Both physiological (Giedd et al. 1999; Reiss et al. 1996)

and sociological (Farrington 1986) research would suggest that antisocial decision making should continue to decline for many individuals through the early twenties. Thus, one direction for future research includes investigating maturity of judgment in adult samples beyond the age of 25.

A second gap in current adolescent maturity of judgment literature is a need for indices of criminal involvement. For instance, past work has utilized antisocial decision making vignettes that are couched in psychosocial contexts to assess decision outcomes (Cauffman and Steinberg 2000). However, because the maturity of judgment perspective attempts to account for age-based differences in crime (Steinberg and Cauffman 1996), maturity of judgment research should also focus on involvement in illegal acts. Responses to decision making vignettes may be correlated with engagement in delinquent acts, but empirical evidence in this area has been inconsistent. For instance, in a study comparing judgment factors in adolescents and adults in pre-trial detention, a different pattern of results was found for hypothetical peer-focuses vignettes versus what individuals stated that they, themselves, would do (Schmidt et al. 2003). Age did predict recommendations to a peer regarding communication with an attorney, but did not predict participant self-reports regarding their own communication with an attorney. Thus, future research would benefit from self-report measures of delinquency, in addition to antisocial decision making vignettes.

A third gap of critical interest to maturity of judgment research involves adolescent within-group variability. Detained adolescents, those individuals who are most likely to come before the courts and who are most affected by questions of criminal culpability, are often excluded from empirical decision making research (Mulvey and Peeples 1996). Normative adolescent samples are useful for making age-based judgment comparisons with normative adults (Woolard et al. 1996). However, inclusion of institutionalized delinquent samples would allow for maturity of judgment comparisons that reflect within-group differences, potentially based on delinquency status (Grisso 1996; Mulvey and Peeples 1996; Woolard et al.), though few studies to date do so (Fried and Reppucci 2001; Steinberg et al. 2003)

Only a single study has investigated the relation between psychosocial judgment factors and antisocial decisions in detained and non-detained adolescents (Fried and Reppucci 2001). This work, based on a sample of 56 adolescents, found that delinquent youth displayed increased future-orientation and diminished peer influence as compared to their non-detained peers, but found no differences in risk perception. Yet these findings are of questionable generalizability based on the study's small sample size.

A more extensive study included measures of psychosocial judgment factors in detained and non-detained adolescents and adults, although this work investigated competence to stand trial, as compared to antisocial decision making (Steinberg et al. 2003). Research based on 927 adolescents in juvenile detention facilities and community settings and 466 young adults in jails and the community, found that judgment factors affected individuals' functioning as defendants, regardless of their detained status. While this work is highly comprehensive in its sampling, the investigational focus does not allow for a comparison of maturity of judgment factors between adolescent groups, nor does this work examine the relation between maturity of judgment factors and antisocial decision making.

The present study speaks to these gaps in the literature. Based on recent physiological research (Bennett and Baird in press), college students should display more mature judgment than adolescents, but less mature judgment than young-adults and adults. Similar age-based differences should be found for antisocial decision making (Cauffman and Steinberg 2000) and delinquency, such that adolescents are most likely to engage in antisocial decisions and delinquency, followed by college-student, young-adults, and adults. Since past research suggests that maturity of judgment predicts antisocial decision making as measured by vignettes (Cauffman and Steinberg 2000), it is hypothesized that maturity of judgment will predict self-report delinquency scores above and beyond antisocial decision making. Finally, the current study compares male adolescent and delinquent youth samples on facets of maturity of judgment. It is hypothesized that delinquent youth will display less mature judgment than male adolescents.

Method

Participants

The current study consisted of five samples: adolescent, college-student, young-adult, adult, and delinquent individuals. The samples differed in terms of their population characteristics: the adolescent sample was drawn from a high school, the college students from a state university, the young-adult and adult samples were drawn from a community sample collected by undergraduate researchers, and the delinquent youth were drawn from a state juvenile delinquent facility. Thus, the groups may have differed in terms of eligibility to attend post-secondary education. In order to minimize such differences between groups, the analyses in set one included only adolescents with a C average or above (n = 9 excluded). Young-adult and adult individuals with lower education levels were not excluded, as inclusion of these individuals might provide a lower threshold for comparing adolescents' relative immaturity.

The adolescent sample (ages 14–17) consisted of 56 male (M_{age} = 16.00; SD = 1.09) and 80 female (M_{age} = 15.71;

SD = 1.16) 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 (30.1% mothers, 31.3% fathers), college degree or some college (49.1% mothers, 47.9% fathers), and graduate school (20.9% mothers, 20.9% fathers). The adolescent participants were freshman (37.0%), sophomores (5.5%), juniors (33.5%), and seniors (23.8%). Grades for the last full year completed in high school (average grade) was all A's (15.1%), A's and B's (54.2%), all B's (5.4%), B's and C's (22.3%), and all C's (3%). The high school was selected based on its socioeconomic diversity and it status as the main 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 college student sample (ages 18–21) consisted of 116 male (M_{age} = 18.71; SD = .93) and 139 female (M_{age} = 18.33; SD = .74) college undergraduates who participated in the research for course credit. SES was high school or less (25.1% mothers, 22.3% fathers), college degree or some college (54.9% mothers, 55.9% fathers), and graduate school (20.0% mothers, 21.8% fathers). The college participants were freshman (78.2%), sophomores (14.1%), juniors (6.0%), and seniors (1.6%). Grades for the last full year completed in high school (average grade) was all A's (17.8%), A's and B's (64.0%), all B's (7.1%), B's and C's (10.7%), and all C's (0%). The undergraduates attended the largest public university in the same northeastern state from which the adolescent and delinquent samples were drawn.

The young-adult sample (ages 22–27) consisted of 73 male (M_{age} = 24.35; SD = 1.75) and 72 female (M_{age} = 23.91; SD = 1.90) participants. Education level for the young-adult participants was less than high school (5.0%), high school (38.3%) some college (48.2%), college degree (5.7%) and some graduate school (2.8%).

The adult sample (ages 28–40) consisted of 71 male (M_{age} = 34.19; SD = 4.27) and 75 female (M_{age} = 34.23; SD = 3.87) participants. Education level for the adult participants was less than high school (9.6%), high school (18.5%) some college (43.2%), college degree (12.3%) and some graduate school (16.4%).

Both the young-adult and adult samples were attained as an upper-level undergraduate class research project, wherein students were each assigned to distribute surveys to 10 willing adults between the ages of 22 and 40. The majority of young-adult and adult participants were relatives, co-workers, bosses, and teachers associated with the undergraduate researchers.

The male adolescent sample (ages 14–17) consisted of 61 male (M_{age} = 16.00; SD = 1.08) students enrolled in an urban public high school. The male adolescent sample was taken from the larger adolescent sample used above. However, this sample included adolescents with less than a C average. As seen in Table 2, SES as measured by parents education level was high school or less (27.6% mothers, 30.5% fathers), college degree or some college (62.1% mothers, 52.5% fathers), and graduate school (10.3% mothers, 17.0% fathers). The adolescent male participants were freshman (24.0%), sophomores (10.2%), juniors (42.4%), and seniors (23.4%).

Finally, the delinquent sample consisted of 91 male youth (ages 14–17, M_{age} = 15.67; SD = .75) detained in the state delinquency facility. SES, as measured by parents education level, was high school or less (79.9% mothers, 91.0% fathers), college degree or some college (15.7% mothers, 6.8% fathers), and graduate school (4.4% mothers, 2.2% fathers). The delinquent participants education level was junior high school (6.7%), freshman (16.7%), sophomore (40.0%), junior (25.6%), senior (5.6%), and GED (5.4%) level.

As seen in Tables 1 and 2, 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, young-adult, college, and adolescent samples, multivariate analysis of variance found significant differences

Table 1 Sample demographic information analysis set 1

	Adolescent	College student	Young-adult	Adult
Gender (% male)	41.2%	45.5%	50.3%	48.6%
Race (% Caucasian)*	91.1%	92.2%	93.0%	85.6%
SES*				
% ≤ high school degree	35.2%	31.6%	5.3%	10.9%
% some college education	47.8%	44.6%	49.6%	28.9%
% college degree	7.3%	14.8%	42.1%	41.5%
% ≥ some graduate education	9.7%	9%	3%	18.7%

Note. SES is a proxy based on parents' education level

* $P \leq .05$

Table 2 Sample demographic information analysis set 2

	Male adolescent	Delinquent youth
Mean age	16.00 (1.08)	15.67 (.75)
Race (% Caucasian)	90.2%	62%
SES*		
% ≤ high school degree	38.2%	85.7%
% some college education	42.1%	11%
% college degree	10.7%	1.1%
% ≥ some graduate education	9%	2.2%
Average grades for most recent year in school*		
All A's	13.3%	0%
Primarily A's and B's	51.7%	15.9%
All B's	6.7%	1.1%
Primarily B's and C's	16.7%	25.0%
All C's	3.3%	3.4%
Primarily C's and D's	8.3%	14.8%
All D's	0%	1.1%
Primarily D's and F's	0%	25%
All F's	0%	12.5%
Highest grade-level completed in school*		
9th grade	23.7%	17.9%
10th grade	10.2%	42.9%
11th grade	42.4%	27.4%
12th grade	22%	6%
GED	1.7%	1.2%

Note. SES is a proxy based on parents' education level

* $P < .05$

in race and SES among groups. Thus these variables were controlled in subsequent analyses. As seen in Table 2, for the second set of analyses, comparing male adolescent and delinquent groups, a multivariate analysis of variance found significant differences in average grade, education level, and SES. Thus, these variables were controlled within this set of analyses.

Materials

Maturity of Judgment

Three factors employed by Cauffman and Steinberg (2000) to assess psychosocial maturity (Cronbach $\alpha = .94$) were utilized. Responsibility was measured with the Psychosocial Maturity Inventory (PSMI Form D; Greenberger et al. 1974), which consisted of 30 items such as ''I often don't finish work I start'', measured on a four-point Likert scale, $\alpha = .88$. Perspective was measured with the Consideration of Future Consequences Scale (CFC) (Strathman et al. 1994) which consisted of 12 items, with responses indicated on a five-point Likert scale. An example of items included in this measure is: ''I am willing to give up my happiness right now in order to gain something in the future.'' Perspective was also measured via the Consideration of Others subscale from the Weinberger Adjustment Inventory (WAI; Weinberger and Schwartz 1990), which consisted of seven questions, with responses indicated on a five-point Likert scale. An example from this measure is: ''I often go out of my way to do things for other people.'' The two scales were transformed to standardized units and averaged to generate a combined perspective measure that was used in all analyses. For the combined perspective measure, Cronbach's $\alpha = .86$. The final component of maturity of judgment, temperance, was measured with two subscales of the Weinberger Adjustment Inventory (Weinberger and Schwartz 1990), Restraint and Impulse Control, which were averaged to generate a combined temperance measure. The Restraint sub-scale consisted of seven items, such as ''I say something mean to someone who has upset me,'' and the Impulse Control sub-scale, which consisted of eight items, such as ''I should try harder to control myself when I'm having fun.'' Responses from both measures were indicated on a five-point Likert scale; for the combined temperance measure, Cronbach's $\alpha = .90$. A comprehensive measure of maturity of judgment was

created by averaging scores across factors of responsibility, temperance, and perspective, Cronbach's $\alpha = .79$.

Antisocial Decision Making

The antisocial decision making scale was utilized by Cauffman and Steinberg (2000) to gauge antisocial decision making, based on the Youth Decision-Making Questionnaire (Ford et al. 1990), Cronbach's $\alpha = .90$. The questionnaire included nine vignettes, five of which were utilized in the present study. An example includes ''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.'' Each vignette was followed by three consequence scenarios: ''Suppose that nothing bad would happen to you (such as getting arrested)'' (no consequences), Cronbach's $\alpha = .74$, ''Suppose that you didn't know whether something bad would happen to you'' (uncertain consequences), Cronbach's $\alpha = .76$, and ''Suppose that something bad would happen to you'' (definite consequences), Cronbach's $\alpha = .76$, followed by the likelihood of engaging in the antisocial act, measured on a four-point scale.

Delinquency

The delinquency measure was based on the delinquency component of the National Youth Longitudinal Survey (USBLS, n.d.), Cronbach's $\alpha = .92$. This measure asked: ''In the last year (12 months) have you ever,'' and consisted of 16 items that pertain to three different areas of delinquency: stealing offenses, property offenses, and assault offenses. Delinquent youth were asked to consider their last 12 months outside of their institution. Responses are indicated with Yes/No answers. Data from the measure was rescaled to a 100 point continuum to create a total delinquency score that was utilized in all analyses.

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.

College students participated in the experiment for class credit. Students gave informed consent and were given a debriefing form upon completion of the survey.

A community sample of young-adults and older adults was obtained by assigning students in an upper level Psychology class to survey 10 adults between the ages of 22 and 40 over the course of 2 weeks. The community sample participants gave verbal consent and were given a debriefing form upon completion of the survey.

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. For the detained youth, each participant was given an assent form, which was read aloud and explained. The measures were administered to small groups of subjects and read aloud as necessary, with an emphasis that participation and responses would not affect legal status. Youth were given a debriefing form upon completion of the survey.

Results

The analyses were first conducted utilizing data from adolescent, college student, young-adult, and adult samples. These analyses focused on age-group and gender differences in maturity of judgment, followed by age-group and gender differences in antisocial decision making and delinquency. Finally, hierarchical regression analyses were employed to assess the predictive utility of maturity of judgment on total delinquency, above and beyond age, gender, race, education level, SES, and antisocial decision making.

The second segment of analyses focused on data from male adolescents and delinquent youth. All adolescent male participants were included in these analyses, regardless of school grades. Other age groups were not included in these later analyses as they 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 differences in maturity of judgment, and the predictive utility of maturity of judgment on total delinquency, above and beyond age, race, average grades, education level, SES, and antisocial decision making.

Gap 1: Adolescent vs. College Student, Young-Adult and Adult Samples

First, age-group and gender differences on components of maturity of judgment were assessed. Thus, a 4×2 MANCOVA was conducted, utilizing age-group (adolescent,

college student, young-adult or adult) and gender as the independent variables, components of maturity of judgment (responsibility, temperance, and perspective) as the dependent variables, and race, education level, and SES as the covariates. Maturity of judgment was significantly related to age-group, although the strength of this association was small (multivariate $F(9, 1863) = 3.91$, Pillai's Trace = .06, $p < .001$, $\eta^2 = .02$). Significant univariate differences were found for responsibility ($F(3, 621) = 7.02$, $P < .001$, $\eta^2 = .03$) and perspective ($F(3, 621) = 6.63$, $P < .001$, $\eta^2 = .03$), but not for temperance ($F(3, 621) = 2.51$, ns, $\eta^2 = .01$). As seen in Table 3, pairwise comparisons indicated age-based differences between adolescents versus college students, young-adults, and adults on responsibility and perspective, such that adolescents displayed less responsibility and perspective than the older age-groups. Further, on measures of temperance, adults were significantly more mature than young-adults, college students, and adolescents. Components of maturity of judgment were also significantly related to gender, although this association was small, as well (multivariate $F(3, 619) = 13.97$, Pillai's Trace = .06, $P < .001$, $\eta^2 = .06$). Females showed greater responsibility (univariate $F(1, 621) = 9.46$, $P < .01$, $\eta^2 = .01$), temperance (univariate $F(1, 621) = 30.64$, $P < .001$, $\eta^2 = .05$), and perspective (univariate $F(1, 621) = 30.86$, $P < .001$, $\eta^2 = .05$) than males. However, maturity of judgment was not significantly related to the interaction between age-group and gender (multivariate $F(9, 1863) = 1.37$, Pillai's Trace = .02, ns, $\eta^2 = .01$).

Next, age-group and gender differences on antisocial decision making and delinquency scores were examined. First, in order to assess age-group and gender differences on each of the antisocial decision scenarios, a 4×2 MANCOVA was conducted. Age-group (adolescent, college student, young-adult or adult) and gender were utilized as the independent variables, decision making scenarios (responses to antisocial vignettes with no consequences, uncertain consequences, and definite consequences) as the dependent variables, and race, education level, and SES as the covariates. Antisocial decision making was significantly related to age group, although this association was small (multivariate $F(9, 1872) = 7.85$, $P < .001$, Pillai's Trace = .11, $\eta^2 = .04$). Univariate analyses indicated an effect of age-group on the no consequence ($F(3, 624) = 11.85$, $P < .001$, $\eta^2 = .05$), the uncertain consequence ($F(3, 624) = 16.59$, $P < .001$, $\eta^2 = .07$), and the definite consequence ($F(3, 624) = 11.38$, $P < .001$, $\eta^2 = .05$) scenarios. Young-adults had the highest levels of antisocial decision makings in the no and uncertain consequence scenarios, whereas adolescents had the highest level of antisocial decision making in the definite consequence scenario. Pair-wise comparisons indicated that adults were less likely to make antisocial decisions in the no, uncertain, and definite consequence scenarios than any of the younger age groups: adolescents, college students, or young-adults. Further, adolescents were more likely to make antisocial decisions than college students in the definite consequence scenario (see Table 4). Antisocial decision making also was significantly related to gender,

Table 3 Adjusted and unadjusted group means for components of maturity of judgment for adolescents, college students, young-adults, and adults

Maturity of judgment	Group	Mean	Adjusted mean[a]	Pairwise comparisons significant at $P < .05$
Responsibility	Adolescent[b]	2.68	2.68	College; young-adult; adult
	College[c]	2.93	2.95	Adolescent
	Young-adult[d]	2.92	2.91	Adolescent
	Adult[e]	3.09	3.04	Adolescent
Temperance	Adolescent[b]	3.21	3.22	Adult
	College[c]	3.29	3.28	Adult
	Young-adult[d]	3.28	3.30	Adult
	Adult[e]	3.55	3.50	Adolescent; college; young-adult
Perspective	Adolescent[b]	3.16	3.16	College; young-adult; adult
	College[c]	3.44	3.46	Adolescent
	Young-adult[d]	3.38	3.36	Adolescent
	Adult[e]	3.52	3.45	Adolescent

[a] Mean adjusted for race, education level, and SES

[b] $n = 132$

[c] $n = 244$

[d] $n = 131$

[e] $n = 125$

though this effect was small ($F(3, 622) = 8.23$, $P < .001$, Pillai's Trace = .04, $\eta^2 = .04$). Univariate analyses indicated an effect of gender on the no (F (1, 624) = 9.63, $P < .01$, $\eta^2 = .02$), uncertain (F (1, 624) = 17.50, $P < .001$, $\eta^2 = .03$), and definite (F (1, 624) = 23.66, $P < .001$, $\eta^2 = .04$) consequence scenarios, with females showing less antisocial decision making in these contexts than males. Antisocial decision making was not significantly related to the interaction between age-group and gender (multivariate $F(9, 1872) = .85$, Pillai's Trace = .01, ns, $\eta^2 = .00$).

Gap 2: Delinquency Measure

To determine whether delinquency was significantly associated with age-group and gender, a two-way analysis of variance (ANCOVA) was conducted, utilizing age-group (adolescent, college student, young-adult or adult) and gender as the independent variables, total delinquency score as the dependent variable, and race, education level, and SES as the covariates. Delinquency was significantly related to age-group, although the strength of this association was small (univariate $F(3, 624) = 12.59$, $P < .001$, $\eta^2 = .06$). As seen in the bottom of Table 4, pairwise comparisons indicated adults showed less delinquency than the adolescent, college student, and young-adult samples, whereas young-adults showed less delinquency than adolescents or college students. Delinquency was also significantly related to gender, though the strength of this relation was small (univariate $F(1, 624) = 27.19$, $P < .001$, $\eta^2 = .04$), with females showing less delinquency than males. However, delinquency was not significantly related to the interaction between age-group and gender (multivariate $F(3, 624) = .21$, ns, $\eta^2 = .00$).

A final analysis assessed the predictive usefulness of maturity of judgment on total delinquency, above and beyond age, gender, race, education level, SES, and antisocial decision making. A hierarchical regression was conducted, entering age, gender, race, education level, SES, and antisocial decision making on step one and the composite measure of maturity of judgment on step two. If age, gender, race, education level, SES, and antisocial decision making differences in delinquency were attributable to differences in maturity of judgment, then any significant

Table 4 Adjusted and unadjusted group means for antisocial decision making components and delinquency for adolescents, college students, young-adults, and adults

Antisocial decision making	Group	Mean	Adjusted mean[a]	Pairwise comparisons significant at $P < .05$
No consequences	Adolescent[b]	2.38	2.42	Adult
	College[c]	2.53	2.56	Adult
	Young-adult[d]	2.57	2.50	Adult
	Adult[e]	2.13	2.11	Adolescent; college; young-adult
Uncertain consequences	Adolescent[b]	2.05	2.09	Adult
	College[c]	2.05	2.07	Adult
	Young-adult[d]	2.14	2.10	Adult
	Adult[e]	1.71	1.69	Adolescent; college; young-adult
Definite consequences	Adolescent[b]	1.30	1.30	College; adult
	College[c]	1.57	1.55	Adolescent; adult
	Young-adult[d]	1.51	1.51	Adult
	Adult[e]	1.60	1.63	Adolescent; college; young-adult
Delinquency	Adolescent[f]	18.52	18.93	Young-adult; adult
	College[g]	17.26	17.48	Young-adult; adult
	Young-adult[h]	12.83	12.67	Adolescent; college; adult
	Adult[i]	10.27	8.64	Adolescent; college; young-adult

[a] Mean adjusted for race, education level, and SES

[b] $n = 132$

[c] $n = 247$

[d] $n = 130$

[e] $n = 126$

[f] $n = 133$

[g] $n = 247$

[h] $n = 131$

[i] $n = 124$

effect at stage one should become non-significant at stage two. As seen in Table 5, on step one, age, gender, race, education level, SES, and antisocial decision making were significant predictors of delinquency, with a moderate relation between the variables ($F(6, 624) = 43.84$, $P < .001$; Adjusted $R^2 = .29$). Once maturity of judgment was entered into the second step of the equation, maturity of judgment, age, gender, and decision making were significant, moderate to strong predictors of delinquency ($F(7, 623) = 51.27$, $P < .001$; Adjusted $R^2 = .36$). However, results indicated that maturity of judgment ($\beta = -.33$) rather than age ($\beta = -.13$), gender ($\beta = -.09$), or decision making ($\beta = .26$), was the most powerful predictor of delinquency; $R^2 = .30$ for Step 1; $\Delta R^2 = .07$ for Step 2 ($P < .001$).

Gap 3: Adolescent vs. Delinquent Samples

The final set of analyses was based on two male adolescent samples. One sample was drawn from the high school group utilized above, with the exception that adolescents with below a C average were included for this set. The second sample consisted of male adjudicated adolescents drawn from a state juvenile delinquency facility. In order to assess delinquency group differences in maturity of judgment, two analyses were conducted, one based on delinquency group (male adolescent or delinquent youth) and the other based on cut-score delinquency group (low or high). For the latter analysis, total delinquency scores were used to form two cut-score delinquency groups, low delinquent ($M_{\text{Delinquency}} = 23.45$, SD = 14.92) and high delinquent ($M_{\text{Delinquency}} = 80.64$, SD = 12.35).

First, a *t*-test was run to confirm that total delinquency score differed by delinquency group (male adolescent or delinquent youth). Results suggested that male adolescents ($M_{\text{Delinquency}} = 22.34$, SD = 17.73) engaged in a significantly fewer delinquent behaviors than delinquent youth ($M_{\text{Delinquency}} = 73.30$, SD = 20.70) ($t(151) = -15.77$, $P < .001$). Next, to test whether maturity of judgment was significantly related to delinquency group, a multivariate analysis of covariance (MANCOVA) was conducted, utilizing delinquency group (male adolescent or delinquent youth) as the independent variable, the three separate components of maturity of judgment (responsibility, temperance, perspective) as the dependent variables, and age, race, average grade, education level, and SES as the covariates. Results indicated that maturity of judgment did not significantly vary by delinquency group, (multivariate $F(3, 127) = 2.14$, ns, Pillai's Trace = .05, $\eta^2 = .05$).

Due to significant within-group variation in delinquency, as seen in the standard deviations of the delinquency groups: male adolescent (SD = 17.73) and delinquent youth (SD = 20.70), both groups were combined to form two categories based on delinquency cut-score. Those youth (whether high school youth or delin-

Table 5 Summary of hierarchical regression analyses for variables predicting total delinquency for adolescents, college students, young-adults, and adults and male adolescents and delinquents

Variable	Adolescents, college students, young-adults, and adults			Male adolescents and delinquents		
	B	SE *B*	B	*B*	SE *B*	*β*
Step 1						
Age	–.28	.08	–.14*	2.17	2.49	.06
Gender	–3.62	.93	–.13*			
Race	1.54	.78	.07*	–2.82	1.88	–.09
Average grade				4.04	.85	.31*
Education level	–.03	.02	–.08*	–3.88	1.78	–.16*
SES	–.68	.31	–.08*	–3.00	1.14	–.17*
Antisocial decision making	11.50	.96	.43*	20.67	2.9	.46*
Step 2						
Age	–.27	.08	–.13*	2.38	2.48	.07
Gender	–2.34	.90	–.09*			
Race	1.43	.74	.06	–2.96	1.87	–.09
Average grade				3.67	.87	.29*
Education level	–.03	.02	–.06	–3.38	1.79	–.14
SES	–.33	.29	–.04	–2.38	1.18	–.13*
Antisocial decision making	7.01	1.06	.26*	18.09	3.25	.40*
Maturity of judgment	–7.69	.93	–.33*	–5.69	3.31	–.14

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

* $P < .05$

quent) 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 three separate components of maturity of judgment (responsibility, temperance, perspective) as the dependent variables, and age, race, average grades, education level, and SES as the covariates. Overall maturity of judgment was related to delinquency group, although the strength of this association was small (multivariate $F(3, 121) = 5.78$, $P = .001$, Pillai's Trace = .13, $\eta^2 = .13$). As seen in Table 6, univariate analyses indicated an effect of delinquency group on temperance ($F(1, 123) = 16.64$, $P < .001$, $\eta^2 = .12$) and perspective ($F(1, 123) = 6.35$, $P < .05$, $\eta^2 = .05$), such that low delinquency youth displayed higher temperance and perspective than high delinquency youth.

The final analysis assessed the predictive usefulness of maturity of judgment on total delinquency. A hierarchical regression was conducted, entering age, race, average grade, education level, SES, and antisocial decision making on step one, the composite measure of maturity of judgment on step two, and total delinquency as the dependent variable. If age, race, average grade, grade level, SES, and antisocial decision making differences were attributable to differences in maturity of judgment, then any significant effect at step one should become non-significant at step two. As seen in Table 5, on step one, average grade, grade level, SES, and antisocial decision making were significant predictors of total delinquency ($F(6, 129) = 31.13$, $P < .001$; Adjusted $R^2 = .57$). However, once maturity of judgment was entered into the second step of the equation, only average grade, SES, and antisocial decision making were significant predictors of delinquency ($F(7, 128) = 27.50$, $P < .001$; Adjusted $R^2 = .58$).

Discussion

The present study extends previous findings of age-based differences in maturity of judgment, linking immature judgment to antisocial decision making and delinquency in male and female adolescents, college students, young-adults, and adults, and male delinquents. Results suggest that adolescents are less mature on the judgment factors of responsibility and perspective relative to college students, young-adults, and adults. Further, maturity of judgment predicted total delinquency beyond the contributions of age, gender, race, education level, SES, and antisocial decision making. In addition, findings suggest there are no significant maturity of judgment differences between incarcerated delinquent and non-delinquent youth. However, in a sample of male high school students and incarcerated delinquents, low and high

Table 6 Adjusted and unadjusted group means for maturity of judgment components for male adolescent and delinquent youth and low and high delinquency groups

Maturity of judgment component	Group	Mean	Adjusted mean[a]
Responsibility	Male adolescent[b]	2.49	2.14 a
	Delinquent[c]	1.92	2.18 a
	Low delinquency[d]	2.37	2.14 a
	High delinquency[e]	1.97	2.18 a
Temperance	Male adolescent[b]	3.07	2.81 a
	Delinquent[c]	2.01	2.26 b
	Low delinquency[d]	3.07	2.80 a
	High delinquency[e]	1.94	2.17 b
Perspective	Male adolescent[b]	2.95	2.73 a
	Delinquent[c]	2.17	2.42 a
	Low delinquency[d]	2.90	2.71 a
	High delinquency[e]	2.14	2.31 b

Note. Adjusted means with different letters differ at the $P < .05$ level

[a] Mean adjusted for age, race, average grade, education level, and SES

[b] $n = 58$

[c] $n = 79$

[d] $n = 63$

[e] $n = 72$

delinquency youth differed on measures of temperance and perspective.

The first set of analyses consisted of adolescent, college student, young-adult, and adult samples. Similar to past research (Cauffman and Steinberg 2000), overall age-based differences were found on maturity of judgment. The current study found adolescents displayed less responsibility and perspective than college students, young-adults, or adults. Although it was hypothesized that college students would display less mature judgment than young-adults and adults, this was not the case. However, on measures of temperance, adults were more mature than adolescents, college students, and young-adults. This finding suggests that maturity of judgment factors of responsibility and perspective may remain relatively stable beyond the age of 18, but that emotional temperance may continue to improve through the mid to late twenties. Indeed, recent physiological findings support brain-based maturation in college students, which may be linked to emotional and behavioral regulation (Bennett and Baird in press). Such results underscore the importance of adult sampling in maturity of judgment research, delineating the differences between college students, young-adults ages 22–27, and adults ages 28 and above.

In addition, the current study found several age-based differences in antisocial decision making and delinquency. First, in situations with no, uncertain, and definite negative consequences, adults were less likely to make antisocial decisions than adolescents, college students, or young-adults. Results of the no and uncertain consequences scenario suggest that college students and young-adults may be more akin to adolescents than adults in their inclination to engage in antisocial decision making. This finding differs from Cauffman and Steinberg's (1996) work, which posits that antisocial decision making does not increase past the age of 19. However, the current study's results are in-line with physiological (Giedd et al. 1999; Reiss et al. 1996) and sociological (Farrington 1986) research which suggests that some individuals may be prone to engage in antisocial decision making through their early twenties.

At the same time, results from the definite consequence scenario, wherein negative consequences are certain to occur, show that adolescents were more likely to make antisocial decisions than either college students or adults. 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. In all, this pattern of results highlights the need for continued research on age-based differences between adolescents, college students, young-adults, and adults.

The current study also extends previous works through its inclusion of a self-report measure of delinquency (Cauffman and Steinberg 2000; Fried and Reppucci 2001). Results showed that adults engaged in significantly less delinquency than adolescents, college students, and young-adults, and showed that young-adults engaged in less delinquent behavior than adolescents and college students. These findings partially support the age-based delinquency hypothesis. Indeed, the finding that adolescents and college students were most delinquent runs parallel to recent physiological research (Giedd et al. 1999) and again emphasizes the potential comparability of adolescents and college students relative to older adults.

Further, the current study found that for adolescents, college students, young-adults, and adults, maturity of judgment predicted total delinquency above and beyond age, gender, race, education level, SES, and antisocial decision making. This finding is in-line with the study's hypothesis and shows strong support for the robust association between immaturity of judgment and delinquency. Although the current study is cross-sectional, this result further supports the thesis that psychosocial factors may be highly predictive of delinquent behavior.

The second analysis set compared male adolescent and delinquent youth samples on measures of maturity of judgment, antisocial decision making, and delinquency. This analysis set is useful for describing adolescent within group differences. The maturity of judgment thesis suggests that adolescents make antisocial decisions based in part on psychosocial influences that are characteristic of their age group (Scott and Grisso 1997). Yet because delinquent youth make more antisocial choices than their non-delinquent peers, it was hypothesized that delinquent youth would be less mature in their judgment than male high school students.

Delinquency group (male adolescent versus delinquent youth) differences were not found on maturity of judgment. The lack of significant differences between delinquent and non delinquent youth on maturity of judgment was unexpected. However, 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. Indeed, when two groups were formed based on delinquency cut-scores, the individual temperance and perspective factors significantly differed between the two groups, such that heightened involvement in delinquent acts was associated with less temperance and perspective. These results suggest that emotional temperance and perspective may play an important role in delinquent behavior. This outcome warrants attention, as well, based on Cauffman and Steinberg's (2000) finding that of the three judgment factors, temperance

showed the most significant developmental changes, which occurred between ages 16 and 19.

There are a number of limitations to the current study. First, the current study is cross sectional in nature, and thus does not allow for conclusions regarding prediction and change in maturity of judgment over time. Further, although this study's hypotheses are based, in part, on recent neurological findings of adolescent and post-adolescent maturation, this work attempts to link the two trajectories only in theory, and cannot empirically investigate this hypothesized association. At the same time, the current study excluded younger adolescents, age 12–13, a sample that would be useful for tracking maturity of judgment in conjunction with the onset of delinquent behaviors. Finally, this research does not control for cognitive ability, and past research has indicated that IQ is associated with decision maturity (Grisso et al. 2003; Schmidt et al. 2003). Instead, in an attempt to control for cognitive ability in age-based comparisons, the analyses in set one excluded adolescents with high school grades that were below a C average. In an attempt to control for cognitive ability in male adolescents and delinquent youth, all analyses in set two controlled for current average grade and grade level. Although male adolescents and delinquent youth did not differ in their maturity of judgment, the samples did differ vastly in their academic achievement.

In light of the study's limitations, the current research continues to offer worthwhile insight into maturity of judgment and its relation to delinquency. In all, the results of this study replicate and extend the immature judgment hypothesis (Cauffman and Steinberg 2000). These findings suggest that adolescents show reduced maturity of judgment in comparison to college students, young-adults, and adults, and that even college student and young-adult samples (ages 22–27) may display reduced temperance in comparison to adults. Further, adolescents were more likely to make antisocial decisions than college students or adults, but not young-adults, in contexts where negative consequences were certain to occur. Again, the endorsement of antisocial choices under such circumstances suggests a less rational or logical decision process in adolescents and perhaps young-adults, as compared to adults. In addition, adolescents and college students were most delinquent as compared to young-adults and adults. Finally, analyses that were based on both detained and non-detained samples support the notion that immaturity of judgment may play an important role in delinquent behavior.

If future research replicates the current findings, this will provide support for policies within the criminal justice system that view adolescents as differing in developmental maturity from adults. Such policies may hold youth accountable, but less culpable than adults for their crimes (Woolard et al. 1996). In addition, researchers may be inclined to investigate youth intervention programming with potential to improve maturity of judgment. However, caution must be taken with such applications. If intervention programs are conceived such that psychosocial maturity is improved, this does not suggest that more psychosocially mature youth should then be tried as adults in criminal court. Instead, it must be underscored that immature judgment is one of many facets of adolescent development that potentially should be taken into account when creating criminal sanctions for youth.

Acknowledgments Special thanks to Ellen Cohn for help with study design and data collection, to two anonymous reviewers, Vicki Banyard, Cesar Rebellon, and Jen Woolard for their helpful comments on earlier drafts of this manuscript, and to Becky Warner for feedback on statistical analyses. Many thanks to Kara O'Connor and Heather Budrewicz, for their research assistance. This research was funded in part by a Grant-in-Aid from the American Psychology-Law Society.

References

Allard, P., & Young, M. C. (2002). Prosecuting juveniles in adult court: The practitioner's perspective. *Journal of Forensic Psychology Practice, 2*(2), 65–77.

Baumrind, D. (1987). A developmental perspective on adolescent risk taking in contemporary America. *New Directions for Child Development, 37*, 93–125.

Bennett, C. M., & Baird, A. A. (in press). Anatomical changes in the emerging adult brain: A voxel-based morphology study. *Human Brain Mapping.*.

Cauffman, E. E. (1996). Maturity of judgment: Psychosocial factors in adolescent decision making. *Dissertation Abstracts International, 57*(09), (UMI No. 739473041).

Cauffman, E., & Steinberg, L. (1995). The cognitive and affective influences on adolescent decision-making. *Temple Law Review, 68*, 1763–1789.

Cauffman, E., & Steinberg, L. (2000). (Im)maturity of judgment in adolescence: Why adolescents may be less culpable than adults. *Behavioral Sciences & The Law*, *18*(6), 741–760.

Cauffman, E., Woolard, J. L., & Reppucci, N. D. (1999). Justice for juveniles: New perspectives on adolescents' competence and culpability. *Quinnipiac Law Review*, *18*, 403–419.

Davies, P. L., & Rose, J. D. (1999). Assessment of cognitive development in adolescents by means of neuropsychological tasks. *Developmental Neuropsychology, 15*(2), 227–248.

Farrington, D. P. (1986). Age and crime. *Crime and Justice, 7*, 189–250.

Ford, M., Wentzel, K., Wood, D., Stevens, E., & Siesfeld, G. A. (1990). Processes associated with integrative social competence: Emotional and contextual influences on adolescent social responsibility. *Journal of Adolescent Research, 4*, 405–425.

Fried, C. S., & Reppucci, N. D. (2001). Criminal decision making: The development of adolescent judgment, criminal responsibility, and culpability. *Law and Human Behavior, 25*(1), 45–61.

Giedd, J. N., Blumenthal, J., Jeffries, N. O., Castellonos, F. X., Liu, H., Zijdenbos, A., et al., (1999). Brain development during childhood and adolescence: A longitudinal MRI study. *Nature Neuroscience, 2*(10), 861–863.

Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.

Greenberger, E., Josselson, R., Knerr, C., & Knerr, B. (1974). The measurement and structure of psychosocial maturity. *Journal of Youth and Adolescence, 4*, 127–143.

Griffin, P. (2003). *Trying and sentencing juveniles as adults: An analysis of state transfer and blended sentencing laws*. Pittsburgh, PA: National Center for Juvenile Justice.

Grisso, T. (1996). Society's retributive response to juvenile violence: A developmental perspective. *Law and Human Behavior, 20*(3), 229–247.

Grisso, T., Steinberg, L., Woolard, J., Cauffman, E., Scott, E., Graham, S., et al. (2003). Juveniles' competence to stand trial: A comparison of adolescents' and adults' capacities as trial defendants. *Law and Human Behavior,* 27(4), 333–363.

Halpern-Felsher, B. L., & Cauffman, E. (2001). Costs and benefits of a decision. Decision-making competence in adolescents and adults. *Applied Developmental Psychology, 22*, 257–273.

In Re Gault, 387 U.S. 1 (1967).

Moffitt, T. E. (1993). Adolescence-limited and life-course persistent antisocial behavior. *Psychological Review, 100*(4), 674–701.

Mulvey, E. P., & Peeples, F. L. (1996). Are disturbed and normal adolescents equally competent to make decisions about mental health treatments? *Law and Human Behavior, 20*(3), 273–287.

Reiss, A. L., Abrams, M. T., Singer, H. S., Ross, J. L., & Denckla, M. B. (1996). Brain development, gender and IQ in children. A volumetric imaging study. *Brain, 119*, 1763–1774.

Reppucci, N. D. (1999). Adolescent development and juvenile justice. *American Journal of Community Psychology, 27*(3), 307–326.

Roper v. Simmons, 125 S.Ct. 1183 (2005).

Schmidt M. G., Reppucci, N. D., & Woolard, J. L. (2003). Effectiveness of participation as a defendant: The attorney-juvenile client relationship. *Behavioral Sciences and the Law, 21*, 175–198.

Scott, E. S. (2000). Criminal responsibility in adolescence: Lessons from developmental psychology. In T. Grisso & R. Schwartz (Eds.), *Youth on trial* (pp. 291–323). Chicago: University of Chicago Press.

Scott, E. S., & Grisso, T. (1997). The evolution of adolescence: A developmental perspective on juvenile justice reform. *The Journal of Criminal Law & Criminology, 88*(1), 137–189.

Scott, E. S., & Woolard, J. L. (2004). The legal regulation of adolescence. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (pp. 523–550). Hoboken, NJ: Wiley.

Scott, E. S., Reppucci, D., & Woolard, J. L. (1995). Evaluating adolescent decision making in legal contexts. *Law and Human Behavior, 19*(3), 221–244.

Slobogin, C. (1999). Treating kids right: deconstructing and reconstructing the amenability to treatment concept. *Journal of Contemporary Legal Issues, 10*, 299–333.

Snyder, H. N., & Sickmund, M. (1999). *Juvenile offenders and victims: 1999 national report*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention.

Sowell, E., & Jernigan, T. (1998). Further MRI evidence of late brain maturation: Limbic volume increase and changing asymmetries during childhood and adolescence. *Developmental Neuropsychology, 14*, 599–617.

Sowell, E. R., Thompson, P. M., Holmes, C. J., Jernigan, T. L., & Toga, A. W. (1999). In vivo evidence for post-adolescent brain maturation in frontal and striatal regions. *Nature Neuroscience, 2*(10), 859–861.

Sowell, E. R., Thompson, P. M., Tessner, K. D., & Toga, A. W. (2001). Mapping continued brain growth and gray matter density reduction in dorsal frontal cortex: Inverse relationships during postadolescent brain maturation. *The Journal of Neuroscience, 15*, 8819–8829.

Spear, L. P. (2000). Neurobehavioral changes in adolescence. *Current Directions in Psychological Science, 9*(4), 111–114.

Steinberg, L., & Cauffman, E. (1996). Maturity of judgement in adolescence: Psychosocial factors in adolescent decision making. *Law and Human Behavior, 20*(3), 249–272.

Steinberg, L., Grisso, T., Woolard, J., Cauffman, E., Scott, E., Graham, S., et al. (2003). Juveniles' competence to stand trial as adults. *Social Policy Reports, 17*(4), 3–15.

Steinberg, L., & Scott, E. S. (2003). Less guilty by reason of adolescence: Developmental immaturity, diminished responsibility, and the juvenile death penalty. *American Psychologist, 58*(12), 1009–1018.

Strathman, A., Gleicher, F., Boninger, D., Edwards, C. S. (1994). The consideration of future consequences: Weighing immediate and distant outcomes of behavior. *Journal of Personality and Social Psychology, 66*, 742–752.

U.S. Bureau of Labor Statistics. (n.d.). 1997 National longitudinal survey of youth. Retrieved May 9, 2003, from http://www.bls.gov/nls/home.htm.

Weinberger, D. A., & Schwartz, G. E. (1990). Distress and restraint as superordinate dimensions of self-reported adjustment: A typological perspective. *Journal of Personality and Social Psychology*, *66*, 742–752.

Woolard, J. L., Fondacaro, M. F., & Slobogin, C. (2001). Informing juvenile justice policy: Directions for behavioral science research. *Law and Human Behavior, 25*(1), 13–24.

Woolard, J., Reppucci, N., & Redding, R. (1996). Theoretical and methodological issues in studying children's capacities in legal contexts. *Law and Human Behavior, 20*, 219–228.

Yurgelun-Todd, D. (2002). Frontline Interview ''Inside the teen brain'' on PBS.org. Full interview available on the web at http://www.pbs.org/wgbh/pages/frontline/shows/teenbrain/interviews/todd.html.

Yurgelun-Todd, D. A., Killgore, W. D. S., & Clintron, C. B. (2003). Cognitive correlates of medial temporal lobe development across adolescence: A magnetic resonance imaging study. *Perceptual and Motor Skills, 96*(1), 3–17.