



# Applying the Lifestyle Routine Activities Theory to Explore Predictors of Various Types of Offending Behaviors among Adolescents in the United States

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## Abstract

Although predictors of criminal offense committed by minors have been examined extensively over the years, most researchers have focused specifically on serious types of offense. However, the rates of less serious offense show steady or increasing trends, whereas serious offenses have been declining steadily. The current study explores how individual traits, risk factors, and protective factors are associated with various types of juvenile offense. Data were derived from the Second International Self-Reported Delinquency Study (ISR2), and the sample for the analysis was composed of 2,400 adolescents between the ages of 12 and 15. Results revealed that various variables of low self-control and risky lifestyles were significantly related to juvenile offense. In addition, proximity to crime and social bonds contributed as predictors in some of the regression models.

**Key words:** Juvenile offense; Self-control; Risky lifestyle; Proximity to crime; Social bonds

**Abbreviation:** UCR: Uniform Crime Reports; FBI: Federal Bureau of Investigation; LRAT: Lifestyle Routine Activities Theory; SES: Socioeconomic status; ISR2: International Self-Reported Delinquency Study.

## Introduction

Researchers and the media have reported on offending behaviors among minors over the years. According to the

Uniform Crime Reports (UCR) report of the Federal Bureau of Investigation (FBI), juvenile offense are categorized as serious offense such as violent crimes (e.g., murder, rape, robbery, and aggravated assault) and property crimes (e.g., burglary, larceny-theft, motor vehicle theft, and arson) and non-index offense (e.g., [simple] assaults, vandalism, weapons, drug abuse violations, disorderly conduct, curfew and loitering, runaways, and other offense. Although crimes committed

by minors appear to be a serious social concern, in actuality, they are in decline [1]. Based on the UCR, violent crimes, property crimes, and non-index crimes had significantly decreased between 2003 and 2012. More specifically, forcible rape decreased by 43%, motor vehicle theft by 71%, and curfew violations and loitering by 49%. Also, according to a recent report by the Bureau of Justice Statistics and the National Center for Education Statistics, school-related crime rates among 12- to 18-year-old students decreased between 1993 (42%) and 2013 [25%;2]. According to the Office of Juvenile Justice and Delinquency Prevention, the rate of juvenile arrests for violent offense has decreased from mid-1990s to 2014 (OJJDP Statistical Briefing Book 2015).

Despite these reductions, researchers have extensively examined predictors of crime and offense committed by minors over the years [3,4]. Many studies have focused specifically on serious offense. In particular, a significant amount has been devoted to understanding “violent tendencies” of minors, including gun-related assaults, homicides, and gang violence [5], which in part might be motivated by public fear of “youth violence” [6]. Other types of offense, for example, thefts, show steady or increasing trends. According to the 2011 National Youth Gang Survey of the National Gang Center (n.d.), the rate of gang-related activities in urban areas had increased by 36%, between 2002 and 2011, and Egley, Howell, and Harris [7] found that the gang-related activities had rose from 1,659 in 2008 to 2,363 in 2012. Lifestyle Routine Activities Theory (LRAT) has also long been applied to enhance our understanding of factors that are related to criminal behavior and offense. It specifically addresses “what people do, how they behave, places them at more or less risk of [juvenile offense]” [8]. The theory focuses on spatial and temporal order of criminal events and accounts for how daily routine activities or lifestyles of individuals create opportunities to engage in criminal activities. LRAT also underscores the importance of understanding individual and situational factors that predict offense. Four components of LRAT are individual traits, exposure to potential offenders, proximity to crime, and social bonds [9].

## Individual Traits

### Low Self-Control and Juvenile Offense

Individuals with higher self-control are more likely to behave positively long-term than are those with lower self-control. In contrast, individuals with lower levels of self-control are at risk of displaying delinquent behavior and engaging in criminal activities [10]. This proposition has also been supported by several other research findings [11-14]. In a sample of 843 Dutch adolescents,

ages 12-13 and 15-16, Pauwels et al. [15] found that self-control and perceived sanction risks (anxiety and perceived consequences when caught by police or others) were associated with less delinquency (i.e., burglary, vandalism, and assault). Furthermore, McGloin and Shermer's [12] longitudinal study, examining the complementary relationship between self-control and deviant peers, found that low self-control mediates the link between deviant socialization and delinquent behaviors. In addition, findings from Yun et al. [14] suggest that low self-control significantly predicts delinquency among South Korean youth with prior delinquent behaviors.

## Exposure to Potential Offenders

### Risky Behaviors and Juvenile Offense

Risky behaviors (e.g., alcohol and drug use, theft, truancy) are commonly identified precursors to youths' delinquent behavior and criminal activities, as substantiated by many studies. Notably, reported positive associations between adolescents' underage alcohol use and delinquency [16,17]. For instance, Felson et al. [16] found that 9th graders were most likely at risk of delinquent behavior (i.e., stealing from their parents), but were unlikely to do so when they were intoxicated. However, older adolescents under the influence of alcohol were likely to engage in vandalism and violence outside the home. Using a cross-cultural research with a sample of 7<sup>th</sup>, 9<sup>th</sup> graders in 25 European countries, Gatti et al. [17] found that alcohol consumption was more closely related to violent offense, rather than property offense. That study also showed that alcohol use was associated with delinquency to a similar degree in various cultural contexts.

### Gang Membership and Activities and Juvenile Offense

Studies have reported that youth involved in gangs are more likely to exhibit delinquent behavior and drug use than are their non-gang peers [18-20]. A meta-analytic study, which explored literature on the relationship between gang membership and offending behavior reported a strong link between the two (Pyrooz, Turanovic, Decker, & Wu 2015). Social disorganization theorists argue that gangs are one of the primary mechanisms for transmitting delinquent behavior and acts [21]. A number of research findings also proposed that adolescents who interact with gang-involved peers may be exposed to delinquency and engage in similar behavior as a result [12,22,23]. However, one study [19] concluded that the effect of delinquency on gang membership was beyond that of simply being exposed to delinquent friends.

## Victimization and Juvenile Offense

The effect of victimization on delinquent behavior has been explained by Agnew's General Strain Theory, which proposes that the strain of victimization can increase delinquency [24]. Victimization can disrupt adolescent development and contribute to problems over the course of the life span. Victimization may trigger anger, avoidant or desensitized responses, and victimized adolescents may respond through dangerous or reckless behaviors [25]. Victims of violence often may be linked to juvenile offense [26,27,28]. Kort-Butler's [27] study, consisting of 10,404 middle and high school students, found that adolescents who experienced or witnessed violent victimization report stress. Another longitudinal study (Manasse & Ganem) [28] consisting of male youth (ages 7-17) found that victimization positively influences both depression and delinquency later in life.

## Proximity to Crime

### School Crime and Juvenile Offense

Previous research has found that school climate matters in adolescent behavior [29]. Exposure to violence (e.g., fights, assaults, weapon carrying) are likely to occur in and out of the school yard, raising concerns about school safety (Gottfredson, Gottfredson, Payne, & Gottfredson 2006). Deviant and delinquent activities occurring in school can have direct effects on adolescents' offending behavior, given their proximity to such activities. Schools with high levels of criminal activities and violence can also foster adolescent delinquent behavior. One study [30], which examined the link between weapon carrying on school property and health risks and problem behaviors, found that being armed was positively correlated with various forms of delinquent behavior, including frequent physical fights and substance use.

### Neighborhood Crime and Juvenile Offense

Youth living in unsafe neighborhoods may lack positive role models, which can negatively affect their psychological and behavioral development [31] and increase the risk of delinquency [32,33]. In a sample of refugee adolescents in Denmark, Damm and Dustmann [33] found that early exposure to neighborhood crime increased delinquent behavior later in life. Chung and Steinberg [32] also reported that neighborhoods' concentrated poverty was related to neighborhood disorder; residential instability was related to weak neighborhood social cohesion, and neighborhood disorder and social cohesion indirectly elevated the risk of committing serious offense. Further, Schaefer, Rodriguez, and Decker's [34] findings indicate that weak neighborhood ties due to crime heighten youths'

motivation for co-offending behaviors, such as sharing criminal information or learning criminal skills from one another. Neighborhoods with criminal activity may be associated with adolescents' delinquent behavior through several mechanisms [35]. Delinquent behavior may gradually be regarded as a normal, as modeled by residents [36]. Moreover, elevated criminal activity might induce fear and distrust among residents, seriously compromising mutual cooperation, a necessity for maintaining pro-social behavior [37].

## Social Bonds

### Parenting and Juvenile Offense

Individuals' levels of self-control are shaped in early childhood by effective parental control and socialization (e.g., monitoring and discipline; [10]. Scholars have long argued that secure attachment buffers the negative effects of stressful events [38], and the nature of early attachment with parents is the most robust predictor of the quality of later relationships and behaviors outside the home [39]. Study findings have substantiated that aspects of parental control, including support and monitoring, are associated with lower risks of delinquent behavior [11,39,40]. Craig [40] compared how differently maternal, paternal, and both parental bonds affect adolescents' delinquency through a cross-sectional and a longitudinal study. Cross-sectional results indicated that adolescents who had strong levels of parental bonds were less likely to be involved in delinquency; likewise, the longitudinal findings also suggest that adolescents who had a positive relationship with both parents displayed less delinquent behavior. Boisvert et al.'s [11] study, which consisted of 784 pairs of twin adolescents, found that low self-control and nonviolent delinquency (e.g., stealing, selling drugs, damaging property) and low self-control and violent delinquency (e.g., physical fighting, shooting/stabbing, hurting someone) were influenced by genetic factors as well as socialization with parents.

### School Connectedness and Juvenile Offense

School is one of the primary institutions where youth develop socialization because they spend most of their away-from-home time there. *School* connectedness refers to a sense of belonging to school, school attachment, and school bonding. In addition, as emphasized in educational research, characteristics of school connectedness are social support, belonging, and engagement [40,41]. As indicated by several empirical findings, when youth have a strong sense of school connectedness, they experience social support, which generates a sense of belonging, which subsequently leads to increased engagement. Consequently, their likelihood of academic success is high

and delinquent behavior is low [42-45]. On the contrary, behavior health is likely compromised when youth report a sense of low connectedness and support in their school. Mrug and Windle [45] found that that youth, ages 12-17, who reported witnessing or experiencing violent victimization had low levels of school connectedness, which increased their risk of delinquency. Similarly, Crosnoe et al. [43] found that adolescents with a strong bond with school were less likely to engage in delinquent behaviors such as substance use. The study also found that students with school bond are less likely to be influenced by delinquent peers.

## Socio-Demographics

### Gender Differences in Juvenile Offense

Males are considered the “aggressive sex” [46], and until recently, it had been widely acknowledged that male adolescents are more likely to engage in delinquency [47]. However, more recent statistics report that between 2003 and 2012, the delinquency gender gap has narrowed [48]. Studies over the years have researched extensively on gender differences in delinquent behavior [49-52]. However, research has produced mixed findings. Miller’s [50] study, which examined the impact of gender on juvenile crime, based on places and contexts, found that male youth were more likely to be involved in delinquency. In a sample of 2,095 secondary school students, ages 11–18 (961 males and 1,134 females) LaGrange and Silverman [53] found that males were more engaged in property offense, and violence, but there was no gender difference with drug offense. Also, low self-control (e.g., risk-taking, adventure seeking, and impulsivity) was found to be a significant predictor of delinquency, property offense, and violent offense for both genders. In contrast, Tracy et al. [52], which examined arrest rates, arrest statistics, juvenile court data, and juvenile corrections data found few gender differences regarding delinquency. In addition, Piquero et al.’s [51] study found that, although boys reported more convictions than girls, the distributions were similarly skewed for both genders.

### Age Difference in Juvenile Offense

Due to growing public concern that juvenile delinquents are committing more serious offense at earlier ages [54], research on delinquent behavior and juvenile offense is beginning to focus on age. Delinquent behavior has been found to be initiated in early adolescence, peaks during middle and late adolescence, and declines after adolescence [55]. Several research findings suggest that younger adolescents are more likely than their older peers to engage in delinquent behavior. For instance,

based on age among 19,321 students in grades 7–12, Barnes et al.’s [55] findings revealed that younger-age adolescents were more likely to consume alcohol and drugs and engage in other forms of delinquency than were older adolescents. Other studies also consistently found that younger adolescents account for the increased proportion of all juvenile arrests and were more likely to be re-arrested than were their older counterparts [56-58].

### Socioeconomic Status and Juvenile Offense

Socioeconomic status (SES) can also shape youths’ development and behaviors, and low SES has detrimental effects on behavior. Adolescents in low SES families are at an elevated risk of adverse outcomes, including internalizing (e.g., depression, anxiety) and externalizing (e.g., aggression) problems [59-61]. Impoverished adolescents and their families undergo financial strains, which can lead to parents’ psychological distress, resulting in disrupted parenting, parent-child conflicts and subsequent adolescents’ maladjustments [59]. Moreover, youth in poverty are likely concentrated in low-resourced and disorganized neighborhoods in which they are frequently exposed to delinquency and criminal activities [62,63]. Study findings consistently demonstrate that low SES is significantly, positively related to youths’ delinquent and offending behaviors [61,64-66].

## Present Study and Research Hypotheses

Scholars over the years have examined a number of risk factors associated with delinquent behaviors. Although these studies have made a significant contribution to the literature delinquency, little is known about whether the risk factors are similar across various types of juvenile offense. The present study contributes to the literature by applying LRAT to better understand the antecedents of both minor and serious types of juvenile offense. Individuals with risky lifestyles are likely to put themselves into risky situations, such as exposure to potential offenders and proximity to crime that, in turn, increase their risk of committing juvenile offense, as proposed by LRAT theorists. Also, individuals with low self-control might face similar risks. However, conventional social supports might buffer these associations. The aim of the study is to explore how individual traits, risk factors, and protective factors are associated with various types of juvenile offense, such as violence, shoplifting, property offense, vandalism, or drug dealing. Further, we examine whether risky lifestyles and social controls mediate the link between individual traits and various types of juvenile offense.

### Thus, the following hypotheses were tested:

a. Four different domains of low self-control (i.e.,



- impulsivity, risk taking, self-centeredness, and temperament) will be positively associated with a risk of various types of juvenile offense
- b. Risky lifestyles (i.e., risk behaviors, unstructured socializing, gang activities, delinquent peer associations, victimization, attending school and/or living in neighborhood with high crime) will be associated with juvenile offense.
  - c. Social bonds (i.e., parental control and school attachments) will be inversely associated with all forms of juvenile offense.
  - d. Higher levels of risky lifestyles (i.e., risk behaviors, unstructured socializing, gang activities, delinquent peer associations, victimization, attending school or living in neighborhood with high crime) will fully or partially mediate the relationship between low self-control and all forms of juvenile offense.
  - e. To test social-control theory, social bonds (i.e., parental and school attachments) would fully or partially mediate the link between low self-control and juvenile offense as well as the relationship between risky lifestyles and all forms of juvenile offense.

## Method

### Data and Sample

Data for the analysis are derived from the Second International Self-Reported Delinquency Study (ISRD-2), an international data set in which the data collection was completed between 2005 and 2007 in 31 countries in North America, Latin America, Europe, and Asia. Our study describes cross-national variability in the correlates of delinquency and victimizations experienced by youth, aged 12 to 15. The ISRD-2 sample was drawn using a

stratified, multistage cluster design to obtain a representative cross-national sample of youth. The sample was first selected by cities and towns based upon the size, urbanization, and demographic and economic variables. The sample was randomly selected from the schools in the selected cities and towns, and stratified by seventh through ninth grade levels. The total sample size of the merged data set was 71,400. The sample for the analysis was composed of 2,400 adolescents between the ages 12 and 15, which corresponds to grades seven to nine in the U.S.

## Measures

### Dependent Variables

The outcome variables are self-reported juvenile offense, which include *group fight* ("Did you ever participate in a group fight on the school playground, a football stadium, the streets or in any public place?"), *assault* ("Did you ever threaten somebody with a weapon or to beat them up, just to get money or other things from them?" and "Did you ever intentionally beat up someone, or hurt him with a stick or knife, so bad that he had to see a doctor?"), *shoplifting* ("Did you ever steal something from a shop or a department store?"), *property offense* ("Did you ever steal something out of or from a car?", "Did you ever steal a bicycle, moped or scooter?", "Did you ever steal a motorbike or car?", and "Did you ever snatch a purse, bag or something else from a person?"), *vandalism* ("Did you ever damage something on purpose, such as a bus shelter, a window, a car or a seat in the bus or train or?"), and *drug dealing* ("Did you ever sell any (soft or hard) drugs or act as an intermediary?"). Response options for these items are 0 = no and 1 = yes (Table 1).

	N	Minimum	Maximum	Mean	SD
Group fight	2248	0	1	.11	.31
Shoplifting	2267	0	1	.09	.29
Vandalism	2279	0	1	.09	.28
Assault	2282	0	1	.03	.16
Property offense	2285	0	1	.05	.21
Drug dealing	2265	0	1	.03	.18
Gender	2396	0	1	.52	.50
Grade level	2400	7	9	8.25	.83
Family SES	2398	0	100	85.92	19.90
Impulsivity	2344	0	1	-1.71	2.29
Risk-taking	2336	0	1	-1.32	2.10
Self-centeredness	2332	0	1	-1.13	2.79
Temperament	2333	0	1	-1.58	1.94
Risk behaviors	2302	0	5	.61	.94
Unstructured socialization	2324	-1.78	1.97	.09	1.05
Gang activities	2031	-.72	2.33	-.04	.99

Delinquent peer associations	2232	-.63	3.86	.49	1.35
Victimization	2222	.00	1.00	.42	.49
School with high crime	2290	-1.52	2.41	.20	1.07
High crime neighborhood	2238	-.90	3.20	-.14	1.09
Parental control	2281	-2.58	.78	.05	.97
School attachment	2271	-2.75	1.53	.01	.98

Table 1: Descriptive Statistics of the Study Variables.

## Independent Variables

Low self-control was assessed with 12 survey items, consisting of both attitudinal/cognitive items (e.g., “more concerned with what happens to me in the short run”) and behavioral items (e.g., “act on the spur of moment without stopping to think”), which are consistent with Gottfredson and Hirschi’s [10] definition of self-control. Low self-control was categorized into four domains: “impulsivity,” “risk seeking,” “self-centeredness,” and “temperament,” each containing three questions from the 12 items. *Impulsivity* was measured by the extent to which the participants acted in the spur of moment, sought short pleasure, and are more concerned with what happens to them in the short run ( $\alpha = .71$ ). *Risk taking* was measured by taking a small risk, taking a risk just for fun, and seeking excitement ( $\alpha = .79$ ). *Self-centeredness* was measured by asking whether they looked out for themselves first, didn’t mind upsetting others, and didn’t mind causing problems ( $\alpha = .69$ ). Temperament was measured by asking whether they lose temper easily, people stay away from them if they’re angry, and find it difficult to discuss calmly ( $\alpha = .70$ ). The response options were based on a four-point Likert scale, ranging from 1 = fully disagree to 4 = fully agree. Factor analyses directed the construction of low self-control subscales. Higher values on the latent variable scale reflected greater level of low self-control.

Risky behaviors were measured with five items, including truancy, consumption of spirits, being drunk more than once, having consumed soft drugs, and having consumed hard drugs ( $\alpha = .70$ ). These items were coded with a dichotomous scale and were summed. Higher values indicated a greater likelihood of risky behaviors. Unstructured socialization with peers in the absence of authority figures was measured with two items, including “how many times a week you usually go out at night” and “how many times a week you hang out on the street with your friends” (Spearman-Brown = .68). Response options ranged from 1 = none to 6 = more than four hours and were loaded on a single factor. Higher values indicated a greater likelihood of unstructured socialization with peers, which represents exposure to potential juvenile offenders in the absence of a capable guardian. Gang

activities were measured with three items, including “do you do illegal things against the law accepted by your group,” “do people in your group actually do illegal things against the law together,” and “do you consider your group of friends to be a gang” ( $\alpha = .66$ ). These measures were based on the definition of gang activities in previous studies (Esbensen & Weerman 2005; Howell 1998; Klien, Weerman, & Thornberry 2006). These items were coded with a dichotomous scale and were summed. The summed variable was recoded as 0 = no and 1 = yes. Higher values represented a greater likelihood of engaging in gang activities.

Delinquent peer associations were measured with five items: “how many friends [participant] know who have done the following”, with regards to drugs, shop-lifting, burglary, extortion, and assault” ( $\alpha = .70$ ). Response options for each of the items are 1 = never, 2 = sometimes, 3 = often, and 4 = always. These items were loaded on one single latent factor, with higher values indicating a greater likelihood of associating with delinquent peers. Victimization was measured using three items about reporting incidents to the police over the last 12 months: someone extorting money or something else from them or threatened them, being hit violently or being seriously hurt, or being bullied in school ( $\alpha = .70$ ). Factor analysis was conducted to create a single factor, in which higher scores represented a greater likelihood of being victimized. Attending school with high crime was measured by: “how strongly do you agree or disagree with the following statements about your school”, followed by “there is a lot of” (a) stealing, (b) fighting, (c) vandalism, and (d) drug use ( $\alpha = .75$ ). Response options were on a four-point Likert scale, ranging from 1 = not at all true to 4 = very true. These items were loaded on a single factor, and higher scores indicated greater proximity to crime at school. Living in a high crime neighborhood was measured with five items: “how strongly do you agree or disagree with the following statement about your neighborhood”, followed by “there is/are a lot of” (a) crime, (b) drug selling, (c) fighting, (e) empty and abandoned buildings, and (e) graffiti ( $\alpha = .82$ ). Response options were on a four-point Likert scale, ranging from 1 = not at all true to 4 = very true. Factor analysis was conducted to create a single factor, in which

higher scores represented a greater likelihood of proximity to crime in a neighborhood. Parental control was measured by the quality of parental awareness (e.g., “your parents usually know who you are with when you go out”) as well as parental supervision (e.g., “when you go out at night, your parents generally tell you at what time you have to be back”). Response options were on a four-point Likert scale, ranging from 1 = not at all true to 4 = very true;  $\alpha = .98$ ). Those items loaded on a single latent factor, in which higher values represented strong ties to parents. School attachment was measured with three items that assessed whether the participants like school, have a great relationship with their teachers, and would miss school if they had to move ( $\alpha = .70$ ). Response options ranged from 1 = not at all true to 4 = very true. Factor analysis was conducted to create a single variable in which higher values represented a higher level of school attachment.

### Control Variables

Three socio-demographic variables, gender (0 = girls, 1 = boys), grade level (7<sup>th</sup> – 9<sup>th</sup>), and family socio-economic status were treated as control variables. Level of family socio-economic status was measured with four items asking whether the participants and/or their family owned the following items: (a) a room, (b) a computer, (c) a mobile phone, and (d) a car. These dichotomous variables were transformed into percentage of maximum possible scores, ranging from 1 to 100. Higher scores represented the higher level of family SES (Table 1).

## Analyses

### Correlational Analyses

We examined the zero-order relationships between each independent variable and the types of juvenile offense. The zero-order relationships of the study variables are displayed in Table 2. All independent variables were included because they had statistically significant effects on each type of juvenile offense, and including them simultaneously with the other independent variables allowed for model estimation.

### Regression Analyses

Regression analyses proceeded in three stages for all types of juvenile offense. The hypotheses were tested through multiple models with direct and mediating effects on each type of juvenile offense. Three models are displayed for each type of juvenile offense, where the first model included variables representing individual traits. The second model included variables representing individual traits and situational factors (risky lifestyles).

The final model included individual traits, situational factors, and protective factors (social bonds). Thus, this study demonstrates whether excluding either risk factors and/or protective factors might lead to misinterpretation of the main direct effect of the individual traits on each type of offense.

## Results

### Regression of Group Fight

We first estimated the direct effect of individual traits (low self-control) *respectively* on group fight. Both control variables and individual trait variables were entered in the first model (see Table 2, Model 1a). Sex (OR = 2.16,  $p < .00$ ), family SES (OR = .99,  $p < .01$ ), risk-taking (OR = 1.02,  $p < .00$ ), and temperament (OR = 1.02,  $p < .00$ ) were found to be significant. In the second model, variables representing exposure to potential offenders and proximity to crime (risky lifestyles) were added (see Table 2, Model 1b). Risky behaviors (OR = 1.43,  $p < .00$ ), unstructured socializing (OR = 1.48,  $p < .00$ ), delinquent peer associations (OR = 1.49,  $p < .00$ ), victimization (OR = 1.73,  $p < .01$ ), and high crime neighborhood (OR = 1.32,  $p < .01$ ) were significant. Sex and temperament remained significant, and self-centeredness became significant in the second model (OR = .99,  $p < .05$ ). Risky lifestyles did not mediate the relationship between low self-control and group fight. In the third model, variables representing social bonds (parental control and school attachment) were added (see Table 2, Model 1c), and were found to be not significant. However, sex, self-centeredness, temperament, high crime neighborhood, and variables representing exposure to potential offenders all remained significant.

### Regression of Assault

We then estimated the direct effect of individual traits (low self-control) on assault. Both control variables and individual trait variables were entered in Model 2. Although none of the control variables were significant, three variables representing individual traits, such as risk-taking (OR = 1.02,  $p < .01$ ), self-centeredness (OR = 1.01,  $p < .05$ ), and temperament (OR = 1.01,  $p < .01$ ) had a direct effect on assault (Table 2, Model 2a). When “exposure to potential offenders” variables were added, only delinquent peer associations was found to have a direct effect on assault (OR = 2.28,  $p < .00$ ), which *partially* mediated the relationship between low self-control and assault. None of the variables representing proximity to crime and social bonds were statistically significant (Table 2, Model 2c).

	Model 1						Model 2					
	1 <sup>a</sup>		1 <sup>b</sup>		1 <sup>c</sup>		2 <sup>a</sup>		2 <sup>b</sup>		2 <sup>c</sup>	
	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR
<b>Control variables</b>												
Sex	.77***(.16)	2.16	1.17***(.22)	3.24	1.14***(.23)	3.12	.27(.25)	1.32	.17(.37)	1.19	.12(.39)	1.31
Grade level	.02(.01)	1.02	-.12(.14)	.89	-.10(.14)	.90	.26(.17)	1.30	.24(.24)	1.27	.24(.24)	1.27
Family SES	-.01**(.01)	.99	-.01(.01)	.99	-.01(.01)	.99	-.01(.01)	.99	.01(.01)	1.00	.01(.01)	1.00
<b>Individual traits (Low self-control)</b>												
Impulsivity	.01(.01)	1.00	-.01(.01)	.99	-.01(.01)	.99	.01(.01)	1.01	-.01(.01)	.99	-.01(.01)	.99
Risk-taking	.02***(.01)	1.02	.01(.01)	1.01	.01(.01)	1.01	.02**(.01)	1.02	.01(.01)	1.01	.01(.01)	1.02
Self-centeredness	.01(.01)	1.00	-.01*(.01)	.99	-.01*(.01)	.99	.01*(.01)	1.01	.01(.01)	1.01	.01(.01)	1.01
Temperament	.02***(.01)	1.02	.01***(.01)	1.01	.01**(.01)	1.01	.01**(.01)	1.01	-.01(.01)	.99	-.01(.01)	.99
<b>Exposure to potential offenders</b>												
Risk behaviors			.36***(.11)	1.43	.34**(.11)	1.40			.21(.15)	1.26	.17(.16)	1.19
Unstructured socializing			.39***(.12)	1.48	.33**(.13)	1.40			.31(.22)	1.36	.24(.22)	1.27
Gang activities			.11(.13)	1.12	.06(.13)	1.06			-.13(.20)	.88	-.22(.21)	.80
Delinquent peer			.40***(.09)	1.49	.41***(.09)	1.51			.82***(.15)	2.28	.81***(.16)	2.24
Victimization			.55**(.21)	1.73	.54**(.22)	1.71			.03(.34)	1.03	.03(.37)	1.03
<b>Proximity to crime</b>												
School with high crime			.02(.12)	1.02	.02(.12)	1.02			.22(.24)	1.24	.28(.25)	1.32
High crime neighborhood			.28**(.10)	1.32	.28**(.10)	1.32			.11(.17)	1.11	.11(.17)	1.12
<b>Social bonds</b>												
Parental control					-.13(.12)	.88					-.24(.15)	.79
School attachment					-.20(.11)	.82					-.09(.19)	.91
Model Fit												
Akaike (AIC)	1199.57		733.58		704.87		579.33		311.77		304.94	
Bayesian (BIC)	1245.12		814.23		795.36		624.85		392.34		395.35	
Sample-size adjusted BIC	1219.71		766.58		741.36		599.43		344.69		341.34	

Table 2: Logistic Regression Results of Individual Trait, Protective, and Risk Factors on Group Fight and Assault

Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .00$ 

a: Group fight

b: Assault

### Regression of Shoplifting

Next, we estimated the direct effect of individual traits (low self-control) on shoplifting. Both control variables and individual trait variables were entered in Model 2 (Table 3, Model 3a). We found that family SES (OR = .99,  $p < .01$ ), impulsivity (OR = 1.02,  $p < .00$ ), risk-taking (OR = 1.02,  $p < .00$ ), and temperament (OR = 1.01,  $p < .01$ ) were significantly associated with shoplifting. When the variables representing exposure to potential offenders and proximity to crime were added (see Table 3, Model 3b), we found that risky behaviors (OR = 1.46,  $p < .00$ ), gang activities (OR = 1.54,  $p < .00$ ), delinquent peer associations (OR = 1.47,  $p < .00$ ), victimization (OR = 1.53,  $p < .05$ ), and high-crime school (OR = 1.30,  $p < .05$ ) were

statistically significant. When social bonds variables were added (see Table 3, Model 3c), we found that parental control was inversely associated with shoplifting (OR = .11,  $p < .01$ ). Family SES, risk-taking, risk behaviors, gang activities, delinquent peer associations, and high crime school all remained significant. Social bonds did not fully mediate these relationships.

### Regression of Property Offense

We then estimated the direct effect of individual traits (low self-control) on property offense. Both control variables and individual trait variables were entered in Model 4 (Table 3, Model 4a). Sex (OR = 2.10,  $p < .01$ ), family SES (OR = .98,  $p < .00$ ), impulsivity (OR = 1.01,  $p <$



.05), and risk-taking ( $OR = 1.02, p < .00$ ) were found to be associated with property offense. When variables representing exposure to potential offenders and proximity to crime were added to the model (see Model 4b), we found that risky behaviors ( $OR = 1.66, p < .00$ ), gang activities ( $OR = 1.97, p < .00$ ), and delinquent peer associations ( $OR = 1.39, p < .01$ ) were significant. Only sex and family SES remained significant in this model, and individual traits were rendered insignificant with the

inclusion of risky lifestyles, meaning risky lifestyles *fully* mediated the link between low self-control and property offense when social bonds variables were added (see Model 4c), we found that parental control was significant ( $OR = .59, p < .00$ ); further, sex, family SES, risk behaviors, gang activities, and delinquent peer associations remained significant. There was no mediating effect of social bonds on these relationships.

	Model 3						Model 4					
	3 <sup>a</sup>		3 <sup>b</sup>		3 <sup>c</sup>		4 <sup>a</sup>		4 <sup>b</sup>		4 <sup>c</sup>	
	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR
<b>Control variables</b>												
Sex	.02(.16)	1.02	-.01(.21)	1.00	.03(.23)	1.03	.74**(.24)	2.10	.65*(.31)	1.91	.69*(.34)	1.99
Grade level	.13(.10)	1.14	-.29(.14)	.75	-.26(.15)	.77	.07(.14)	1.07	-.22(.19)	.81	-.11(.20)	.90
Family SES	-.01**(.01)	.99	-.01*(.01)	.99	-.01**(.01)	.99	-.02***(.01)	.98	-.03***(.01)	.98	-.03***(.01)	.97
<b>Individual traits (Low self-control)</b>												
Impulsivity	.02***(.01)	1.02	.01**(.01)	1.00	.01(.01)	1.00	.01*(.01)	1.01	.01(.01)	1.00	-.01(.01)	1.00
Risk-taking	.02***(.01)	1.02	.01*(.01)	1.01	.01*(.01)	1.01	.02***(.01)	1.02	.01(.01)	1.01	.01(.01)	1.00
Self-centeredness	.01(.01)	1.00	-.01(.01)	1.00	-.01(.01)	1.00	.01(.01)	1.00	-.01(.01)	1.00	-.01(.01)	.99
Temperament	.01**(.01)	1.01	.01**(.01)	1.01	.01(.01)	1.00	.01(.01)	1.01	-.01(.01)	1.00	-.01(.01)	1.01
<b>Exposure to potential offenders</b>												
Risk behaviors			.38***(.10)	1.46	.25**(.11)	1.28			.50***(.13)	1.66	.42**(.14)	1.52
Unstructured socializing			-.03(.12)	.97	-.06(.12)	.94			-.03(.16)	.97	-.16(.17)	.85
Gang activities			.43***(.13)	1.54	.41**(.13)	1.50			.68***(.21)	1.97	.60**(.23)	1.82
Delinquent peer			.38***(.08)	1.47	.41***(.08)	1.50			.33**(.11)	1.39	.36**(.11)	1.44
Victimization			.42*(.21)	1.53	.32(.22)	1.37			.32(.30)	1.21	.38(.22)	1.37
<b>Proximity to crime</b>												
School with high crime			.26*(.11)	1.30	.24*(.12)	1.27			-.07(.18)	.93	.02(.20)	1.02
High crime neighborhood			-.11(.10)	.90	-.11(.10)	.89			.27(.15)	1.32	.30(.15)	1.36
<b>Social bonds</b>												
Parental control					-.30**(.11)	.74					-.53***(.17)	.59
School attachment					-.05(.12)	.96					-.11(.15)	.90
Model Fit												
Akaike (AIC)	1174.88		720.11		676.64		695.55		386.93		360.18	
Bayesian (BIC)	1220.44		800.76		772.38		741.16		467.67		456.03	
Sample-size adjusted BIC	1195.02		753.11		715.20		715.74		420.02		398.85	

Table 3: Logistic Regression Results of Individual Trait, Protective, and Risk Factors on Shoplifting and Property Offense.

Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .00$

a. Shoplifting

b. Property offense

### Regression of Vandalism

Next, we estimated the direct effect of individual traits (low self-control) on vandalism. Both control variables and individual trait variables were entered in Model 5 (see Table 4, Model 5a). We found that sex ( $OR = 1.81, p <$

.00), grade level ( $OR = 1.02, p < .00$ ), impulsivity ( $OR = 1.01, p < .05$ ), and risk-taking ( $OR = 1.03, p < .00$ ) were statistically significant. When variables representing exposure to potential offenders and proximity to crime were added to the model (Model 5b), we found that risk behaviors ( $OR = 1.16, p < .05$ ), gang activities ( $OR = 1.64, p$

< .00), delinquent peer associations (OR = 1.76,  $p < .00$ ), and victimization (OR = 1.73,  $p < .01$ ) were statistically significant. Sex, grade level, and risk-taking variables remained significant. When social bonds variables were added (Model 5c), we found that parental control was significant (OR = .67,  $p < .00$ ); further, sex, grade level, risk-taking, risk behavior, gang activities, and delinquent peer associations remained significant. Risky lifestyles and social bonds did not mediate the direct effect of low self-control and risky lifestyles.

### Regression of Drug Dealing

And finally, we estimated the direct effect of individual traits (low self-control) on drug dealing. Both control variables and individual trait variables were entered in Model 6 (see Table 4, Model 6a). Our findings suggest that

sex (OR = 1.76,  $p < .05$ ), grade level (OR = 1.51,  $p < .05$ ), and temperament (OR = 1.01,  $p < .05$ ) were statistically significant. When variables representing exposure to potential offenders and proximity to crime were added to the model (Model 6b), risk behaviors (OR = 3.23,  $p < .00$ ), gang activities (OR = 1.98,  $p < .01$ ), delinquent peer associations (OR = 1.20,  $p < .01$ ), and high-crime school (OR = 1.59,  $p < .05$ ) were found to be significant. Sex remained significant in this model also. Risky lifestyles fully mediated the link between temperament and drug dealing. When variables representing social bonds were added to the model (Model 6c), neither parental control or school attachment were significant; however, sex, risk behaviors, gang activities, delinquent peer associations, and high-crime school remained significant, indicating no mediating effect of social bonds.

	Model 5						Model 6					
	5 <sup>a</sup>		5 <sup>b</sup>		5 <sup>c</sup>		6 <sup>a</sup>		6 <sup>b</sup>		6 <sup>c</sup>	
	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR	b(SE)	OR
<b>Control variables</b>												
Sex	.59***(.17)	1.81	.77***(.21)	2.16	.77***(.22)	2.19	.57* (.25)	1.76	.88*(.39)	2.41	.96*(.41)	2.62
Grade level	-.02***(.10)	1.02	-.44**(.12)	.64	-.37**(.15)	.79	.41* (.17)	1.51	-.10(.30)	.90	-.19(.32)	.83
Family SES	-.01(.01)	1.00	-.01(.01)	1.00	-.01(.01)	1.00	-.01 (.01)	.99	.01(.01)	1.00	.01(.01)	1.01
<b>Individual traits (Low self-control)</b>												
Impulsivity	.01* (.01)	1.01	.01(.01)	1.00	-.01(.01)	1.00	.01 (.01)	1.01	-.01(.01)	.99	-.01(.02)	.99
Risk-taking	.03***(.01)	1.03	.01***(.01)	1.02	.02**(.01)	1.02	.01 (.01)	1.01	-.01(.01)	.99	-.01(.01)	.99
Self-centeredness	.01(.01)	1.00	-.01(.01)	1.00	-.01(.01)	1.00	.01 (.01)	1.00	-.01(.01)	.99	-.01(.01)	.99
Temperament	.01(.01)	1.01	-.01(.01)	1.01	-.01(.01)	1.00	.01* (.01)	1.01	.01(.01)	1.01	.01(.01)	1.01
<b>Exposure to potential offenders</b>												
Risk behaviors			.15*(.10)	1.16	.07*(.11)	1.13			1.17***(.14)	3.23	1.18***(.16)	3.24
Unstructured socializing			-.01(.11)	.99	-.13 (.12)	.82			-.39(.21)	.68	-.49 (.22)	.61
Gang activities			.49***(.13)	1.64	.42***(.13)	1.52			.68**(.28)	1.98	.70**(.30)	2.02
Delinquent peer			.56***(.08)	1.76	.58***(.09)	1.73			.19**(.15)	1.20	.11**(.16)	1.11
Victimization			.55**(.21)	1.73	.42(.22)	1.52			-.08(.37)	.93	-.41(.42)	.67
<b>Proximity to crime</b>												
School with high crime			.09(.10)	1.09	.14(.13)	1.19			.46*(.19)	1.59	.43*(.20)	1.54

High crime neighborhood			-.15(.09)	.87	-.14(.12)	.92			-.04(.17)	.97	-.01(.18)	.99
<b>Social bonds</b>												
Parental control					-.42***(.11)	.67					.01(.18)	1.01
School attachment					-.09(.11)	.82					-.35(.20)	.70
Model Fit												
Akaike (AIC)	1088.17	694.40	656.06	603.16	275.23	259.43						
Bayesian (BIC)	1133.76	775.11	751.88	648.70	355.83	355.13						
Sample-size adjusted BIC	1108.35	727.46	694.70	623.28	308.18	297.95						

Table 4: Logistic Regression Results of Individual Trait, Protective, and Risk Factors on Vandalism and Drug Dealing  
 Note: \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .00$

- a. Vandalism
- b. Drug dealing

## Discussion

Our aim was to examine how individual traits, risk factors, and protective factors are associated with violence, shoplifting, property offense, vandalism, and drug dealing. Although many studies have provided evidence on how risky lifestyles are related to juvenile offense [67-69], our important contribution study is advancing understanding of juvenile offense by investigating how situational and contextual factors relate to various offense and how daily routine activities or individual lifestyles create opportunities to engage in these behaviors. Overall findings corroborate previous study findings and the existing theories. The first finding reveals that low self-control, in particular, risk-taking, significantly increases the risk of various negative behaviors (i.e., group fight, assault, shoplifting, property offense, and vandalism), which is also consistent with past research findings [16,17]. The next important finding indicates that risk factors, such as exposure to potential offenders and proximity to crime were significantly related to juvenile offense. Specifically, risky behaviors were associated with five of the six forms of juvenile offense (group fight, shoplifting, property offense, vandalism, and drug dealing,) while delinquent peer associations were associated with all forms of juvenile offense. This finding supports the second hypothesis. Risky lifestyles (risky behaviors, gang activities, and delinquent peer associations) fully mediated the link between low self-control and relatively serious crimes (i.e., assault, property offense, and drug dealing) whereas they partially mediated the relationship between low self-control and relatively minor offense (i.e., group fight, shoplifting, and vandalism). This finding also supports the fourth hypothesis, and is consistent with LRAT.

Individuals with risky lifestyles put themselves into potentially dangerous situations (i.e., exposure to potential offenders and proximity to crime) which, in turn, lead to an increased risk of committing crimes or becoming victims. Also, it is consistent with LRAT, in that the relationship between indicators of social inequality (i.e., individual traits, race, income, and age) and predatory crimes (i.e., assault, burglary, larceny) is mediated by risky lifestyles. The final finding of interest is the likelihood that social bonds were significantly, negatively associated with shoplifting, property offense, and vandalism. This supports the third hypothesis. However, social bonds did not fully mediate the effect of low self-control and risky lifestyles on juvenile offense, which also supports Gottfredson and Hirschi's [10] proposition that individuals with low self-control are more likely to engage in offending behaviors when they encounter opportunities for criminal activities.

## Limitations

Limitations of the study need to be acknowledged. First, the data did not allow for a multilevel modeling, which is necessary to accurately explore criminal opportunities that are created by particular locations and immediate situations where criminal activities are likely to occur [70]. Moreover, we used a cross-sectional research design, making it impossible to make causal inferences. In addition, this study utilized the 2005-2007 ISRD-2 data, which are somewhat dated, but may still be relevant. And finally, this study relied on adolescents' self-report measures, rather than data from multiple sources such as teacher, peer, or parent reports, psychological testing, or police records. Adopting some or all of these resources

could reduce the shared method variance bias and the probability of biased self-reports.

### Research Implications and Conclusion

Future research should address our limitations. Longitudinal design should be adopted to further examine how poor self-control traits, risky lifestyles, proximity to crime and social bonds are associated with various juvenile offenses. That would provide an understanding of how such risk and protective factors predict themselves and each other, as well as various forms of juvenile offense, over time. It would also help us gain a better understanding of various developmental trajectories of offending behaviors. Further, future research should include multiple data sources to strengthening the validity and reliability of the findings. Finally, future studies with a multilevel longitudinal design should include additional risk and protective factors, such as empathy, callous and unemotional traits, neuropsychiatric diagnoses, parenting styles, parental criminality, cohesive family patterns, race/ethnicity, classroom climates, and academic achievement to more fully investigate the complex interplay between individual and contextual factors in explaining the development of various offending behaviors in these populations. The main findings confirmed our hypothesis that low self-control increases the risk of various offending youthful behaviors, and should therefore be a key component in prevention and intervention programs. The main findings also confirmed our hypothesis that risky lifestyles, in particular risky behaviors and delinquent peer associations, are associated with various juvenile offenses. Addressing these behavioral patterns and the contexts within which they function should therefore be seriously considered in developing or fine-tuning programs aimed to prevent or reduce behavioral problems among adolescents. We found that parental control is a protective factor that lowers the risk of shoplifting, property offense, and vandalism, whereas proximity to crime was associated with engagement in group fights, shoplifting, and drug dealing. Overall, the findings emphasize the need of multilevel prevention and intervention efforts to reduce offending behavior among adolescents.

### Author Note

**Ethical Statements:** Because the Second International Self-Reported Delinquency Study (ISRD-2) is a publicly available dataset, which does not allow for identification of the participants, the present study was exempted from Institutional Review Board oversight.

**Conflict of Interest:** The authors declare that there is

no conflict of interest.

**Human Participants/Animals:** Because ISRD-2 is a publicly available dataset, there are no ethical issues with regards to human participants/animals in the present study.

**Informed Consent:** Because ISRD-2 is a publicly available dataset, there are no ethical issues with regards to informed consent in the present study.

### References

1. McCord J, Widom CS, Crowell NA (2001) Juvenile crime, juvenile justice. Washington, DC: National Academy Press.
2. Robers S, Zhang A, Morgan RE (2015) Indicators of school crime and safety: 2014. (NCES 2015-072/NCJ 248036). National Center for Education Statistics, U.S. Department of Education, and Bureau of Justice Statistics, Office of Justice Programs, U.S. Department of Justice, Washington, DC.
3. Hubbard DJ, Pratt, TC (2002) A meta-analysis of the predictors of delinquency among girls. *Journal of Offender Rehabilitation* 34(3):1-13.
4. Lipsey MW, Derzon JH (1998) Predictors of violent or serious delinquency in adolescence and early adulthood: A synthesis of longitudinal research. Loeber R Arrington DP (Ed.), *Serious & violent juvenile offenders: Risk factors and successful interventions* (pp. 86-105). Thousand Oaks, CA: Sage Publications, Inc.
5. O'Brien K, Daffern M, Chu CM, Thomas SDM (2013). Youth gang affiliation, violence, and criminal activities: A review of motivational, risk, and protective factors. *Aggression and Violent Behavior* 18(4):417-425.
6. Kimmel MS, Mahler M (2003) Adolescent masculinity, homophobia, and violence: Random school shootings, 1982-2001. *American Behavioral Scientist* 46(10):1439-1458.
7. Egley A Jr, Howell JC, Harris M (2014) Highlights of the 2012 National Youth Gang Survey: Juvenile justice fact sheet. Washington, DC: U. S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.
8. Maxfield MG (1987) Lifestyle and routine activity theories of crime: Empirical studies of victimization,



- delinquency, and offender decision-making. *Journal of Quantitative Criminology* 3:275-282.
9. Miethe T, Meier R (1994) Crime and its social context: Toward an integrated theory of offenders, victims, and situations. Albany, NY: SUNY Press.
  10. Gottfredson MR, Hirschi T (1990) A general theory of crime. Stanford University Press.
  11. Boisvert D, Wright JP, Knopik V, Vaske J (2012) Genetic and environmental overlap between low self-control and delinquency. *Journal of Quantitative Criminology* 28(3):477-507.
  12. McGloin JM, Shermer LON (2009) Self-control and deviant peer network structure. *Journal of Research in Crime and Delinquency* 46(1):35-72.
  13. Pauwels L, Weerman F, Bruinsma G, Bernasco W (2011) Perceived sanction risk, individual propensity and adolescent offending: Assessing key findings from the deterrence literature in a Dutch sample. *European Journal of Criminology* 8(5):386-400.
  14. Yun M, Kim E, Park WS (2016) A test of an integrative model using social factors and personality traits prediction on the delinquency of South Korean youth. *Int J Offender Ther Comp Criminol* 61(11):1262-1287.
  15. Pauwels LJ, Svensson R (2011) Exploring the relationship between offending and victimization: What is the role of risky lifestyles and low self-control? A test in two urban samples. *European Journal on Criminal Policy and Research* 17(3):163-177.
  16. Felson R, Savolainen J, Aaltonen M, Moustgaard H (2008) Is the association between alcohol use and delinquency causal or spurious? *Criminology* 46(3):785-808.
  17. Gatti U, Soellner R, Bräker AB, Verde A, Rocca G (2015) Delinquency and alcohol use among adolescents in Europe: The role of cultural contexts. *European Journal of Criminology* 12(3):362-377.
  18. Alleyne E, Wood JL (2010) Gang involvement: Psychological and behavioral characteristics of gang members, peripheral youth, and nongang youth. *Aggressive Behavior* 36:423-436.
  19. Gatti U, Tremblay RE, Vitaro F, McDuff P (2005) Youth gangs, delinquency and drug use: A test of the selection, facilitation, and enhancement hypotheses. *Journal of Child Psychology and Psychiatry* 46(11):1178-1190.
  20. Krohn MD, Thornberry TP (2008) Longitudinal perspectives on adolescent street gangs. In A. M. Liberman (ed.), *The long view of crime: A synthesis of longitudinal research* (pp. 128-160). New York: Springer.
  21. Shaw CR, McKay HD (1942) *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press.
  22. Megens KC, Weerman FM (2011) The social transmission of delinquency: Effects of peer attitudes and behavior revisited. *Journal of Research in Crime and Delinquency* 49(3):35-72.
  23. Vásquez BE, Zimmerman GM (2014) An investigation into the empirical relationship between time with peers, friendship, and delinquency. *Journal of Criminal Justice* 42(3):244-256.
  24. Agnew R (2002) Experienced, vicarious, and anticipated strain: An exploratory study on physical victimization and delinquency. *Justice Quarterly* 19(4):603-632.
  25. Schwab-Stone ME, Ayers TS, Kaspro W, Voyce C, Barone C, et al. (1995) No safe haven: A study of violence exposure in an urban community. *Journal of the American Academy of Child & Adolescent Psychiatry*, 34(10):1343-1352.
  26. Hay C, Evans MM (2006) Violent victimization and involvement in delinquency: Examining predictions from general strain theory. *Journal of Criminal Justice* 34:261-274.
  27. Lisa A, Kort-Butler (2010) Experienced and vicarious victimization: Do social support and self-esteem prevent delinquent responses? *Journal of Criminal Justice* 38(4):496-505.
  28. Manasse ME, Ganem NM (2009) Victimization as a cause of delinquency: The role of depression and gender. *Journal of Criminal Justice* 37:371-378.
  29. Reinke WM, Herman KC (2002) Creating school environments that deter antisocial behaviors in youth. *Psychology in the Schools* 39(5):549-559.
  30. DuRant RH, Kahn J, Beckford PH, Woods ER (1997) The association of weapon carrying and fighting on school property and other health risk and problem behaviors among high school students. *Archives of Pediatrics & Adolescent Medicine* 151(4):360-366.

31. Sampson RJ, Morenoff JD, Gannon-Rowley T (2002) Assessing "neighborhood effects": Social processes and new directions in research. *Annual Review of Sociology* 28:443-478.
32. Chung HL, Steinberg L (2006) Relations between neighborhood factors, parenting behaviors, peer deviance, and delinquency among serious juvenile offenders. *Developmental Psychology* 42(2):319-331.
33. Damm AP, Dustmann C (2014) Does growing up in a high crime neighborhood affect youth criminal behavior? *The American Economic Review* 104:1806-1832.
34. Schaefer DR, Rodriguez N, Decker SH (2014) The role of neighborhood context in youth co-offending. *Criminology* 52(1):117-139.
35. Brook DW, Brook JS, Rubenstone E, Zhang C, Saar NS (2011) Developmental associations between externalizing behaviors, peer delinquency, drug use, perceived neighborhood crime, and violent behavior in urban communities. *Aggressive Behavior* 37(4):349-361.
36. Ng-Mak DS, Salzinger S, Feldman R (2002) Normalization of violence among inner-city youth: A formulation for research. *American Journal of Orthopsychiatry* 72(1):92-101.
37. Sampson RJ, Raudenbush SW, Earls F (1997) Neighborhoods and violent crime: A multilevel study of collective efficacy. *Science* 277(5328):918-924.
38. Egeland B, Sroufe LA (1981) Attachment and early maltreatment. *Child Dev* 52(1):44-52.
39. Parker, J. S., & Benson, M. J. (2004). Parent-adolescent relations and adolescent functioning: Self-esteem, substance abuse, and delinquency. *Adolescence* 39(155):519-530.
40. Craig JM (2016) Which bond matters more? Assessing the differential strengths of parental bonding measures on adolescent delinquency over time. *Youth Violence and Juvenile Justice* 14(3):225-242.
41. Connell J, Wellborn J (1991) Competence, autonomy, and relatedness: A motivational analysis of self-system process. In M. Gunnar & L. Sroufe (Eds.), *Self processes in development: Minnesota Symposium on Child Development* (pp. 43-77). Hillsdale, NJ: Erlbaum.
42. Rosenfeld LB, Richman JM, Bowen GL (1998) Low social support among at-risk adolescents. *Children & Schools* 20(4):245-260.
43. Crosnoe R, Erickson KG, Dornbusch SM (2002) Protective functions of family relationships and school factors on the deviant behavior of adolescent boys and girls reducing the impact of risky friendships. *Youth & Society* 33(4):515-544.
44. Henry KL, Knight KE, Thornberry TP (2012) School disengagement as a predictor of dropout, delinquency, and problem substance use during adolescence and early adulthood. *J Youth Adolesc* 41(2):156-166.
45. Mrug S, Windle M (2008) Moderators of negative peer influence on early adolescent externalizing behaviors: Individual behavior, parenting, and school connectedness. *The Journal of Early Adolescence* 29(4): 518-540.
46. Mrug S, Windle M (2009) Bidirectional influences of violence exposure and adjustment in early adolescence: Externalizing behaviors and school connectedness. *Journal of Abnormal Child Psychology* 37(5): 611-623.
47. Coie JD, Dodge KA (1998) Aggression and antisocial behavior. In N. Eisenberg (Ed.), *Handbook of child psychology, Social, emotional, and personality development* (pp. 779-862). Hoboken, NJ, US: John Wiley & Sons Inc.
48. Steketee M, Junger M, Junger-Tas J (2013) Sex differences in the predictors of juvenile delinquency: Females are more susceptible to poor environments; males are influenced more by low self-control. *Journal of Contemporary Criminal Justice* 29(1):88-105.
49. Puzanchera C (2014) *Juvenile arrests 2012*. Office of Juvenile Justice and Delinquency Prevention.
50. Asscher JJ, Van der Put CE, Stams GJJ (2015) Gender differences in the impact of abuse and neglect victimization on adolescent offending behavior. *J Fam Violence* 30:215-225.
51. Miller K (2007) Traversing the spatial divide? Gender, place, and delinquency. *Feminist Criminology* 2(3):202-222.
52. Piquero AR, Brame R, Moffitt TE (2005) Extending the study of continuity and change: Gender differences in the linkage between adolescent and adult

- offending. *Journal of Quantitative Criminology* 21(2): 219-243.
54. Tracy PE, Kempf-Leonard K, Abramoske-James S (2009) Gender differences in delinquency and juvenile justice processing evidence from national data. *Crime & Delinquency* 55(52):171-215.
55. LaGrange TC, Silverman RA (1999) Low self-control and opportunity: Testing the general theory of crime as an explanation for gender differences in delinquency. *Criminology* 37(1):41-72.
56. Butts JA, Snyder HN (1997) The youngest delinquents: Offenders under age 15. Office of Juvenile Justice and Delinquency Prevention, *Juvenile Justice Bulletin*.
57. Barnes GM, Welte JW, Hoffman JH (2002) Relationship of alcohol use to delinquency and illicit drug use in adolescents: Gender, age, and racial/ethnic differences. *Journal of Drug Issues* 32(1):153-178.
58. Minor KI, Hartmann DJ, Terry S (1997) Predictors of juvenile court actions and recidivism. *Crime and Delinquency* 43(3):328-344.
59. Myers DL (2003) The recidivism of violent youth in juvenile and adult court: A consideration of selection bias. *Youth Violence and Juvenile Justice* 1(1):79-101.
60. Trulson CR, Marquart JW, Mullings JL, Caeti TJ (2005). In between adolescence and adulthood: Recidivism outcomes of a cohort of state delinquents. *Youth Violence and Juvenile Justice* 3(4):355-387.
61. Morrison L, Gutman LM, McLoyd VC, Tokoyawa T (2005) Financial strain, neighborhood stress, parenting behaviors, and adolescent adjustment in urban African American families. *Journal of Research on Adolescence* 15(4):425-449.
62. Lahlah E, Lens KM, Bogaerts S, van der Knaap LM (2013) When love hurts: Assessing the intersectionality of ethnicity, socio-economic status, parental connectedness, child abuse, and gender attitudes in juvenile violent delinquency. *Child Abuse & Neglect* 37(1):1034-1049.
63. Ozen S, Ece A, Oto R, Tirasci Y, Goren S (2005) Juvenile delinquency in a developing country: A province example in Turkey. *International Journal of Law and Psychiatry* 28:430-441.
64. Jarjoura GR, Triplett RA, Brinker GP (2002) Growing up poor: Examining the link between persistent childhood poverty and delinquency. *Journal of Quantitative Criminology* 18(2):159-187.
65. Pagani L, Boulerice B, Vitaro F, Tremblay RE (1999) Effects of poverty on academic failure and delinquency in boys: A change and process model approach. *Journal of Child Psychology and Psychiatry* 40(8): 1209-1219.
66. Farrington DP, Ttofi MM, Piquero AR (2016) Risk, promotive, and protective factors in youth offending: Results from the Cambridge study in delinquent development. *Journal of Criminal Justice* 45:63-70.
67. Heimer K (1997) Socioeconomic status, subcultural definitions, and violent delinquency. *Social Forces* 75(3):799-833.
68. Rekker R, Pardini D, Keijsers L, Branje S, Loeber R, et al. (2015) Moving in and out of poverty: the within-individual association between socioeconomic status and juvenile delinquency. *PLoS one* 10(11): e0136461.
69. Pung PW, Yaacob SN, Baharudin R, Osman S (2015). Low self-control, peer delinquency and aggression among adolescents in Malaysia. *Asian Social Science* 11(21):193-202.
70. Svensson R, Pauwels L (2008) Is a risky lifestyle always "risky"? The interaction between individual propensity and lifestyle risk in adolescent offending: A test in two urban samples. *Crime & Delinquency* 56(4): 608-626.
71. Wilcox P, Gialopsos BM, Land KC (2013) Multilevel criminal opportunity. In F. T. Cullen & P. Wilcox (Eds.), *Handbook of Criminological Theory*. New York: Oxford University Press.
72. Akers RL (1997) *Criminological theories: Introduction and evaluation* (2<sup>nd</sup> ed.). Los Angeles, CA: Roxbury.
73. Grossman KE, Grossman K (1990) The wider concept of attachment in cross-cultural research. *Human Development* 33(1):31-47.
74. Kissner J, Pyrooz DC (2009) Self-control, differential association, and gang membership: A theoretical and empirical extension of the literature. *Journal of Criminal Justice* 37:478-487.

75. Miethe TD, Meier RF (1990) Opportunity, choice, and criminal victimization: A test of a theoretical model. *Journal of Research in Crime & Delinquency* 27(3):243-266.
76. National Gang Center. (n.d.). National youth gang survey analysis.
77. Office of Juvenile Justice and Delinquency Prevention (OJJDP) Statistical Briefing Book (2015, December). Juvenile arrest rate trends.
78. Stewart EA (2003) School social bonds, school climate, and school misbehavior: A multilevel analysis. *Justice Quarterly* 20(3):575-604.
79. Wallace LN (2015) Armed kids, armed adults? Weapon carrying from adolescence to adulthood. *Youth Violence Juv Justice* 15(1):84-98.
80. Wang J, Iannotti RJ, Nansel TR (2009) School bullying among adolescents in the United States: Physical, verbal, relational, and cyber. *Journal of Adolescent Health* 45(4):368-375.