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Self-Control Versus Psychopathy: A Head-to-Head Test of General Theories of Antisociality

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Abstract

Self-control and psychopathy are prominent general theories of antisociality that, although present a very similar type of individual, have not often been studied in tandem, and few studies have conducted a head-to-head test of their association with serious delinquency and youth violence. Using a near census of institutionalized delinquents from Missouri, the current study found that both low self-control and psychopathy were significantly associated with various forms of delinquency and severe/chronic delinquency as measured by 90th percentile on the distribution. However, low self-control was associated with more forms of delinquency, and victimization and youth with the lowest levels of self-control were at greatest risk for pathological delinquency relative to those with the most psychopathic personality. Both self-control and psychopathy are essential for understanding the most severe variants of delinquency, and more head-to-head tests are encouraged to assess the strength of criminological theories.

Keywords

self-control, psychopathy, general theory, delinquents, juvenile justice, youth violence

General theories of antisociality posit that a syndrome, constellation of traits, or individual construct is responsible for explaining involvement in diverse forms of antisocial behavior. These theories share at least three important features. First, general theories locate the fundamental causes of crime at the individual level in the name of specific deficits, symptoms, or features that are theorized to engender behavioral problems. Second, general theories assert that whatever their fundamental concept, its effects are sweeping, robust, and general. In this way, the fundamental concept is able to explain variance not only in antisocial behavior but also in cognate problem behaviors that are indicative of maladjustment, such as substance use; increased mortality and reduced psychiatric and physical health; and interrelated relationship, school, and work problems. Third, the theories are parsimonious.

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In the social and behavioral sciences, two of the most influential general theories of antisocial conduct are psychopathy and self-control theory. Although these theories are distinct, they are similar in their presentation of the antisocial individual as one who is lacking in self-regulation, who is egocentric and indifferent to others, who is poorly tempered and has low emotional and behavioral regulation, and who gravitates toward shortsighted, hedonistic, action-oriented pursuits. Surprisingly, little research has examined these theories in tandem, and few prior investigators have conducted a "head-to-head" empirical test of psychopathy versus self-control as predictors of serious delinquency and violence.

Self-Control

Self-control, the basic capacity to regulate one's emotions and behaviors, is implicated in a variety of theories in psychology, neuroscience, and criminal justice (Baumeister, Vohs, & Tice, 2007; Casey, 2015; DeLisi & Vaughn, 2014; Denson, DeWall, & Finkel, 2012; Heatherton & Wagner, 2011; Moffitt et al., 2011). Although these theories are important in their own right, there is little doubt that the most influential self-control theory in criminology is the one promulgated in *A General Theory of Crime* (1990). In that influential book, Gottfredson and Hirschi (1990) advanced that ineffective parenting practices inculcated low self-control which in their model was characterized by self-centeredness, low gratification delay, poor temper, action orientation, risk-taking, and preference for simple tasks. According to Gottfredson and Hirschi, low self-control was *the* quintessential predictor of crime and other maladaptive behaviors that are often correlated with criminal offending, such as relationship strife, substance use, work problems, school problems, infidelity, financial problems, and others.

Empirical work has consistently supported their claims. The low self-control syndrome has been linked to an array of criminal and imprudent behaviors among diverse samples of participants including jail inmates (Malouf et al., 2014; Ward, Nobles, & Fox, 2015), parolees (DeLisi, Hochstetler, & Murphy, 2003), probationers (Taylor, Hiller, & Taylor, 2013), institutionalized delinquents (DeLisi & Vaughn, 2008; Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005), and sex offenders (Ha & Beauregard, 2016) among correctional or clinical samples and children (Coyne & Wright, 2014; Houts, Caspi, Pianta, Arseneault, & Moffitt, 2010), adolescents and emerging adults (Beaver, DeLisi, Mears, & Stewart, 2009; Nedelec & Beaver, 2014), adults (Diamond, 2016; Moffitt, Poulton, & Caspi, 2013), and elderly adults (Wolfe, Reisig, & Holtfreter, 2016) from general population or community samples.[1]

In addition to the relevance of self-control to conduct problems among disparate samples, there is impressive empirical support for its relation to disparate forms of crime, including violent offending, property offending, delinquency, severe delinquency, and victimization. Among violent crime, investigators have linked low self-control to homicide (Eisner, 2001; Piquero et al., 2005), sex offending (Clevenger, Navarro, & Jasinski, 2016), domestic violence (Sellers, 1999), dating violence (Jennings, Park, Tomsich, Gover, & Akers, 2011), gang violence (Olate, Salas-Wright, Vaughn, & Yu, 2015), and generalized violence (Larson, Vaughn, Salas-Wright, & DeLisi, 2015). Property offenses including shoplifting (Piquero & Tibbetts, 1996); theft, auto theft, and property damage (Burton, Evans, Cullen, Olivares, & Dunaway, 1999); and burglary, larceny, auto theft, and arson (DeLisi, 2001) have also been shown to be more likely among individuals with lower self-control.

Numerous studies have reported that salience of low self-control to generalized offending and overall delinquent involvement (Baron, 2003; Sacarellos et al., 2016; Vaughn, Beaver, DeLisi, Perron, & Schelbe, 2009; Walters & DeLisi, 2013) as well as more severe manifestations of crime such as life-course-persistent antisocial conduct and career criminality (DeLisi, 2016a; Piquero, Moffitt, & Wright, 2007; Vaughn, DeLisi, Beaver, & Wright, 2009). Self-control has also proven

useful in understanding the nexus between offending and victimization. The same person-specific characteristics that facilitate crime also facilitate being a victim, and several prior studies have shown associations between low self-control and personal, property, sexual, and online forms of victimization (Bossler & Holt, 2010; Franklin, Franklin, Nobles, & Kercher, 2012; Higgins, Jennings, Tewksbury, & Gibson, 2009; Holt, Turner, & Exum, 2014; Schreck, 1999; Turanovic & Pratt, 2013; Ward, Fox, Tillyer, & Lane, 2015).[2] In sum, low self-control is a powerful correlate of diverse forms of delinquency, victimization, and other negative life outcomes. As Moffitt and her colleagues (2011, p. 2693) suggested, "The need to delay gratification, control impulses, and modulate emotional expression is the earliest and most ubiquitous demand that societies place on their children, and success at many life tasks depends critically on children's mastery of such self-control."

Psychopathy

For over 200 years, psychopathy has been utilized by researchers in psychiatry, psychology, and forensic science to explain broadband involvement in problem behaviors. Psychopathy is a personality disorder that is constituted by a constellation of affective, interpersonal, lifestyle, and behavioral features that coalesce into an individual who is selfish and narcissistic, impulsive, mean, antagonistic, manipulative, fearless, aggressive, uncaring, and unemotional. The latter characteristic is of particular importance because the paramount feature of psychopathy is reduced emotional connection to others that manifests in guiltlessness, remorselessness, callousness, and low empathy. Although scholars generally agree about the core characteristics of psychopathy, there are dozens of theories of psychopathy that focus on various features of the disorder such as its relation to autonomic functioning, social cognitive features, and its genetic etiology. Indeed, much of the "theorizing" about psychopathy is achieved by developing diverse measures of the condition (cf. Boduszek & Debowska, 2016; Boduszek, Debowska, Dhingra, & DeLisi, 2016; Dhingra & Boduszek, 2013; Frick, Ray, Thornton, & Kahn, 2014; Hare & Neumann, 2008; Miller & Lynam, 2012; Vaughn & Howard, 2005).

Empirical linkages between psychopathy and diverse forms of antisocial conduct and delinquency are moderate to strong and this attests to the generality of the psychopathy construct. Indeed, early behavioral problems, poor behavioral controls, juvenile delinquency, and criminal versatility are diagnostic criteria in the most widely used measure of psychopathy, the Psychopathy Checklist–Revised (PCL-R; Hare, 1991). For violent offending, psychopathy has been shown to be significantly associated with homicide (Häkkänen-Nyholm & Hare, 2009; Woodworth & Porter, 2002), sexual violence (Reidy, Lilienfeld, Berke, Gentile, & Zeichner, 2016; Robertson & Knight, 2014), and multiple violent offenses including murder, gun assaults, and aggravated assault (McCuish, Corrado, Hart, & DeLisi, 2015). Psychopathy is significantly associated with property crimes, drug offending, and other offense behaviors (Colins, Andershed, & Pardini, 2015; Colins, Vermeiren, De Bolle, & Broekaert, 2012; Pechorro, Andershed, Ray, Maroco, & Gonçalves, 2015; Pechorro et al., 2014) and involvement in the criminal justice system (Beaver, Boutwell, Barnes, Vaughn, & DeLisi, 2015).

Among both adolescents and adults, psychopathy is associated with a versatile delinquent career that spans multiple forms of delinquency (Flexon, 2015, 2016; Flexon & Meldrum, 2013) including pathological forms of delinquency, such as life-course-persistent offending and severe 5% offending (Boduszek, Belsher, Dhingra, & Ioannou, 2014; Corrado, DeLisi, Hart, & McCuish, 2015; McCuish, Corrado, Lussier, & Hart, 2014; Vaughn, Howard, & DeLisi, 2008). For example, Farrington, Ullrich, and Salekin (2010) examined the linkages between psychopathy scores and subsequently being a chronic offender using data from the Cambridge Study in Delinquent Development. Those who scored in the 90th percentile on Factor 1 on the PCL-R Screening Version (PCL: SV; Hart, Cox, & Hare, 2005) were nearly 21 times more likely to become a chronic offender. Those who scored in the 90th percentile on Factor 2 of the PCL: SV were nearly 26 times more likely to be a chronic

offender. When total scores on the measure were considered, the associations between psychopathy and serious criminal offending were even more pronounced. Those who scored in the 90th percentile on the PCL: SV total score were 65 times more likely to be convicted of a crime and 44 times more likely to become a chronic offender.

Although psychopathy is strongly associated with proactive and reactive forms of delinquency, it also is linked to increased victimization. Several studies have shown that psychopathic offenders not only have increased prevalence of childhood and adolescent victimization and abuse (Gretton, Hare, & Catchpole, 2004; Tatar, Cauffman, Kimonis, & Skeem, 2012) but also increased likelihood of victimization as a consequences of their involvement in antisocial dangerous lifestyles and exposure to violent offenders (Fanti & Kimonis, 2013; Farrington, Loeber, Stallings, & Homish, 2008; Silver, Piquero, Jennings, Piquero, & Leiber, 2011; Vaughn, Edens, Howard, & Toney Smith, 2009). For example, Farrington, Loeber, Stallings, and Homish (2008) analyzed data from the Pittsburgh Youth Study and found that psychopathic features significantly predicted both homicide offending and homicide victimization among the adolescents in their data, but the effects were especially predictive of being murdered. For instance, guiltlessness was associated with a 4-fold greater likelihood of homicide victimization. Hyperactivity and impulsivity increased the odds of being murdered 3 times and callous-unemotional traits increased the odds of being murdered by a factor of 2.5.[3] In sum, psychopathy is a powerful correlate of delinquency, youth violence, and victimization and has been invoked as the explanatory construct in a unified theory of crime (DeLisi, 2009, 2016b).

Integration of Self-Control and Psychopathy

Although self-control and psychopathy have developed largely independently, there have been prior attempts of integration. For example, one of the newer measures of psychopathy is the Comprehensive Assessment of Psychopathic Personality (CAPP; Cooke, Hart, Logan, & Michie, 2012) which includes 33 symptoms that are grouped into six domain areas reflecting attachment, behavior regulation or constraint, cognition, dominance or status relations, emotion, and the self. Attachment pertains to affiliative relations and is comprised of four symptoms (detached, uncommitted, unempathic, and uncaring). Behavior regulation or constraint is comprised of six symptoms (lacks perseverance, unreliable, reckless, restless, disruptive, and aggressive). Cognition is comprised of five symptoms (suspicious, lacks concentration, intolerant, inflexible, and lacks planfulness). Dominance that relates to status relations is comprised of six symptoms (antagonistic, domineering, deceitful, manipulative, insincere, and garrulous). Emotion is comprised of five symptoms conveying general lack of emotion (lacks anxiety, lacks pleasure, lacks emotional depth, lacks emotional stability, and lacks remorse). Self is comprised of seven symptoms (self-centered, self-aggrandizing, sense of uniqueness, sense of entitlement, sense of invulnerability, self-justifying, and unstable self-concept). The CAPP traits entirely overlap with low self-control traits that are commonly found in attitudinal measures of self-control. In other words, some measures of psychopathy are ostensibly measures of low self-control.

Empirically, a handful of studies have integrated self-control and psychopathy. Wiebe (2003) used structural equation modeling to explore the factors that underlain psychopathy as measured by the PCL-R and multiple measures of self-control among an undergraduate sample. Twelve factors emerged that included anger, antisocial cognitions, low attachment, low diligence, guiltlessness, impulsive sociability, low commitment, manipulativeness, low respect, risk seeking, shortsightedness, and sullenness. In the best-fitting model, a two-factor structure was found linking self-control and psychopathy. This included an antisociality factor characterized by risk seeking, antisocial cognitions, manipulativeness, anger, low commitment, and delinquency and a self-direction factor characterized by shortsightedness and low diligence. In noting their empirical overlap, Wiebe (2003, p. 324) observed that "the construct of psychopathy contains traits and tendencies that help to flesh out the portrait of the offender painted by self-control theory."

Using the same Missouri Division of Youth Services (DYS) data as the current study, Vaughn, DeLisi, Beaver, Wright, and Howard (2007) found that psychopathic narcissism accounted for most of the variance between low self-control and delinquency and suggested that low self-control was likely subsumed by constituent elements of psychopathic personality. Relatedly, Jonason and Tost (2010) reported significant correlations between self-control and psychopathy where participants with the lowest self-control were more psychopathic using data from an undergraduate sample. Flexon and Meldrum (2013) found that both low self-control and psychopathy were associated with violent delinquency among a nationally representative panel study of youth, but their effects were smaller than effects for peer violent behavior suggesting the importance of social learning theory. Flexon, Meldrum, Young, and Lehmann (2016) used data also from a student sample and found significant correlations between attitudinal measure of low self-control and the Dark Triad which is comprised of psychopathy, narcissism, and Machiavellianism. A structural equation model found that low self-control was significantly associated with substance use and offending but not victimization, while the Dark Triad was significantly associated with offending and victimization but not substance use. Low self-control and the Dark Triad were also significantly correlated with each other.

Two recent studies using community samples of youth from Saudi Arabia explored the associations between self-control, psychopathy, and conduct problems. Wright et al. (2016) found that low self-control was predictive of delinquency on its own, in a model with the Dark Triad (which was also significant), and in a model with both measures and an interaction term between low self-control and the Dark Triad. The standardized coefficient for the interaction term was nearly 3 times larger than that for the Dark Triad and nearly 4 times larger than low self-control. For violent delinquency, low self-control was only significant when Dark Triad features were not specified, and in the full model, the interaction term was 2.5 times larger than psychopathy and 7 times larger than self-control. These results flipped for drug delinquency where low self-control was more robust and consistently related compared to the Dark Triad, but the interaction term had the largest effect. The study suggests that low self-control and psychopathy should be considered in tandem to understand the most severely antisocial youth. Connolly et al. (2016) conducted latent class analysis and found evidence of a small subgroup of Saudi youth (just 8.6% of their sample) who were characterized by high aggression, high psychopathic traits, and low self-control. The full range of delinquent behaviors including truancy, fighting, theft, aggravated assault, auto theft, and others were strongly predictive of membership in this class. In other words, for the most violent and delinquent youth, psychopathy and low self-control are central parts of their personality.

Current Aim

As general theories, self-control and psychopathy enjoy a certain prominence in criminology and psychology, and although they present an individual who is very similar in personality and behavioral functioning, the literatures are mostly divergent. Among prior studies that have integrated self-control and psychopathy, most have used samples of undergraduates and there is mixed evidence about the relative importance of self-control vis-à-vis psychopathy and their relation to externalizing problems. Using a sample of institutionalized youth, the current study performs a head-to-head test of these theories to empirically examine their relative value for understanding diverse forms of delinquency and victimization.

Method

Participants and Procedures

All youth receiving services in the Missouri State DYS were asked to participate in the research study. Eligible youth completed a survey instrument assessing demographic characteristics,

substance use patterns, psychiatric symptoms, annual offending, personality traits, and information about time in custody. Estimated time to complete the interview was 40–70 min. Most youth commitments to DYS care are new and only a small percentage represent youth with prior DYS commitments. Generally, youth were committed for a variety of transgressions including major and minor felonies.

Previous pilot work with DYS institutions had shown a high level of willingness to participate and 728 interviews were conducted. Of these, four were stopped when interviewers determined that youth were too functionally impaired to complete the interview, and one youth elected not to complete the interview. These five interviews were not included in the data set. Two youths were transferred to other facilities while interviewers were in the facility and were not available for interviewing. Finally, 10 youths listed on facility rosters when interviewers arrived were on furlough and could not be interviewed. Of 740 youths potentially eligible to participate, 728 were available for interview of which all began the interview and 723 completed it. This translates into a 97.7% response rate.

Formal written consent was obtained from the deputy director for Treatment Services for the DYS. DYS administrators, facility managers, and staff were fully aware of the research project. Adolescents were notified of the upcoming project and informed that participation was voluntary and what it would entail. Research project staff were available to answer any questions that youth or staff had regarding this process or the project in general. Youths were only allowed to participate if they had the consent of DYS and had provided their own assent. Youths were informed that their decision whether to participate would in no way impact any legal situation or standing within or outside of DYS. Youths who signed informed assent completed the interview battery. Formal written consent was obtained by DYS, all study protocols were approved by the Washington University Institutional Review Board and the project received certificates of confidentiality from National Institute on Drug Abuse (NIDA) and the Federal Office of Human Research Protections. Study subjects were individually interviewed and given US$10 for their participation. DYS staff supervised the movement into the on-site interview room and the return movement to previous activity. All eligible DYS youth were interviewed by trained graduate students using measures that gathered information on demographic characteristics, substance use, personality traits, psychiatric symptomatology, and prior offending and victimization.

Measures

Psychopathy. The Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) and its short-form variant (PPI-SF; Lilienfeld & Hess, 2001) are leading self-report measures of psychopathy. A modified 56-item version of the PPI-SF (mPPI-SF) was used ($\bar{x} = 94.46$, $SD = 6.25$, range = 88–120). The PPI-SV is considered a "pure" personality inventory of psychopathy because it contains no items directly assessing antisocial behaviors. The PPI family of measures have demonstrated validity and reliability among institutionalized and clinical samples (Andershed, Köhler, Louden, & Hinrichs, 2008; DeLisi et al., 2014; Johnson, Sellbom, & Phillips, 2014; Veen, Andershed, Stevens, Doreleijers, & Vollebergh, 2011).

Low self-control. The 15-item Low Self-Control Scale (DeLisi & Vaughn, 2008) was used to operationalize Gottfredson and Hirschi's mode of low self-control. Exemplar items include "you get bored easily," "I generally prefer to act first and think later," and "I quickly become very annoyed at people who do not give me what I want." Items were standardized into *z*-scores and subjected to exploratory factor analysis that suggested a single dominant factor. Maximum likelihood factor analysis was performed with consideration of one to four factors. Reduction in χ^2 fit indices as we proceeded from one to four factors indicated unidimensionality. Internal consistency reliability for the Low Self-Control Scale showed good reliability ($\alpha = .83$).

Sociodemographics. Controls for sex (87% male, coded as 0 and 13% female, coded as 1), African American (33%, coded as 1), Hispanic (4%, coded as 1), age ($\bar{x} = 15.49$, $SD = 1.23$, range = 11–20), and prior year welfare receipt (40% yes, coded as 1 and 60% no, coded as 0) were included to guard against confounding effects based on their associations with serious delinquency and violence among youth (DeLisi & Vaughn, 2016; Doherty & Ensminger, 2014; Piquero, Jennings, Diamond, & Reingle, 2015; Trulson, Haerle, Caudill, & DeLisi, 2016).

Behavioral controls. Controls for lifetime Attention-Deficit/Hyperactivity Disorder (ADHD) diagnosis (63% no, coded as 0 and 37% yes, coded as]), past-year polysubstance use ($\bar{x} = 27.47$, $SD = 19.23$, range = 0–102), onset of antisocial conduct ($\bar{x} = 10.56$, $SD = 2.76$, range = 3–16), onset of police contact ($\bar{x} = 11.07$, $SD = 2.58$, range = 3–16), and onset of juvenile court appearance ($\bar{x} = 12.65$, $SD = 2.06$, range = 4–16) were included. Numerous prior studies have linked these constructs to serious delinquency, youth violence, and delinquent careers (Caudill & Trulson, 2016; Chen, 2015; Corrado, McCuish, Hart, & DeLisi, 2015; DeLisi, Neppl, Lohman, Vaughn, & Shook, 2013; McCuish, Lussier, & Corrado, 2016; Trulson, 2007; Vahl et al., 2014).

Self-reported delinquency and victimization. The Self-Report of Delinquency (Elliott, Huizinga, & Ageton, 1985; Elliott, Huizinga, & Menard, 1989) is a widely used self-report instrument that includes 18 items reflecting property and violent forms of delinquency and victimization that the youth engaged in the form of delinquency in the prior 12 months. Response categories are *never* = 0, *once or twice in the last year* (scored as 1.5) = 1, *1 time every 2–3 months* = 2, *1 time a month* = 3, *1 time every 2–3 weeks* = 4, *1 time a week* = 5, *2–3 times per week* (scored as 2.5) = 6, *1 time a day* = 7, and *2–3 times a day* = 8. Separate measures were created for violent offending ($\bar{x} = 10.36$, $SD = 9.46$, range = 0–48), property offending ($\bar{x} = 14.03$, $SD = 11.85$, range = 0–55), total self-reported delinquency ($\bar{x} = 24.39$, $SD = 18.49$, range = 0–99), and victimization (= 6.31, $SD = 5.90$, range = 0–32).

Analysis

Two analytical techniques were used. First, hierarchical negative binomial regression models were conducted for violent offending, property offending, self-reported delinquency, and victimization. For each dependent variable, three models were conducted. In Model 1, only psychopathy and low self-control were specified. In Model 2, sociodemographics were added, and in Model 3, behavioral controls were added. Second, epidemiological tables of odds were used to compare low self-control and psychopathy at 1 *SD* above and below the mean for four binary outcomes (violent offending at the 90th percentile, property offending at the 90th percentile, self-reported delinquency at the 90th percentile, and victimization at the 90th percentile). Epidemiological tables of odds are useful for case-control and cross-sectional data to examine the odds of an outcome occurring, such as being in the 90th percentile on self-reported offending, based on score on an underlying variable, such as psychopathy and low self-control. Epidemiological tables include a test of homogeneity which indicates whether the odds of the outcomes are equal across values of the predictor variable and the score test for trend of odds which indicates whether a positive effect is observed as values on the predictor value increase.[4]

Results

Negative Binomial Regression Model for Violent Offending

As shown in Table 1, psychopathy was not significantly associated with violent offending across all three models. Conversely, low self-control was strongly associated with violent offending in Model 1 ($b = .040$, $z = 7.14$, $p < .001$) which was the baseline model, in Model 2 ($b = .037$, $z = 6.88$,

Table 1. Hierarchical Negative Binomial Regression Models for Violent Offending.

	Model 1			Model 2			Model 3		
Variable	*b*	RSE	*Z*	*b*	RSE	*Z*	*b*	RSE	*Z*
Variables of interest									
Psychopathy	−0.001	.003	−0.48	0.006	.003	1.72	0.003	.003	0.89
Low self-control	0.040	.006	7.14***	0.037	.005	6.88***	0.033	.005	6.09***
Sociodemographics									
Sex				−0.046	.100	−0.45	0.051	.103	0.49
African American				0.501	.072	6.91***	0.615	.078	7.88***
Hispanic				0.306	.201	1.52	0.274	.181	1.51
Age				−0.019	.027	−0.72	−0.012	.030	−0.39
Welfare receipt				−0.037	.067	−0.56	−0.013	.066	−0.20
Behavioral controls									
ADHD							0.032	.071	0.45
Past-year drug use							0.008	.002	4.37***
Crime onset							−0.031	.019	−1.67
Arrest onset							0.009	.020	0.45
Juvenile court onset							−0.061	.019	−3.24***
Wald χ^2	80.47***			132.49***			188.25***		
Log pseudolikelihood	−2,391.20			−2,338.26			−2,212.25		
n	719			709			673		

Note. *b* = unstandardized negative binomial regression coefficient; RSE = robust standard error; *Z* = z-score.
*$p < .05$. **$p < .01$. ***$p < .001$.

$p < .001$) that included sociodemographics, and in Model 3 ($b = .033$, $z = 6.09$, $p < .001$) which is the full model that included behavioral controls. In the full model, African American status ($b = .615$, $z = 7.88$, $p < .001$), past-year drug use ($b = .008$, $z = 4.37$, $p < .001$), and juvenile court onset ($b = -.061$, $z = -3.24$, $p < .001$) were also significantly associated with violent offending.

Negative Binomial Regression Model for Property Offending

As shown in Table 2, both psychopathy and low self-control were significantly associated with property offending across all three models. In Model 1, psychopathy ($b = .013$, $z = 3.92$, $p < .001$) and low self-control ($b = .025$, $z = 4.72$, $p < .001$) were strongly associated with property offending. Their effects became larger in Model 2 with the inclusion of sociodemographics and reduced in Model 3. In Model 3, in addition to psychopathy ($b = .011$, $z = 3.36$, $p < .001$) and low self-control ($b = .020$, $z = 4.00$, $p < .001$), African American status ($b = .380$, $z = 5.02$, $p < .001$) and past-year drug use ($b = .011$, $z = 6.43$, $p < .001$) were significantly associated with property offending.

Negative Binomial Regression Model for Self-Reported Delinquency

As shown in Table 3, both psychopathy ($b = .007$, $z = 2.239$, $p < .05$) and low self-control ($b = .032$, $z = 6.59$, $p < .001$) were significantly associated with self-reported delinquency although the effect for low self-control was larger and reached greater significance. These effects remained in Model 2 with the inclusion of sociodemographics as well as in the full model (Model 3). In the fully specified model, psychopathy ($b = .008$, $z = 2.73$, $p < .01$), low self-control ($b = .026$, $z = 5.92$, $p < .001$),

Table 2. Hierarchical Negative Binomial Regression Models for Property Offending.

	Model 1			Model 2			Model 3		
Variable	*b*	RSE	*Z*	*b*	RSE	*Z*	*b*	RSE	*Z*
Variables of interest									
Psychopathy	0.013	.003	3.92***	0.018	.003	5.28***	0.011	.003	3.36***
Low self-control	0.025	.005	4.63***	0.025	.005	4.72***	0.020	.005	4.00***
Sociodemographics									
Sex				0.057	.101	0.56	0.083	.100	0.84
African American				0.336	.072	4.69***	0.380	.076	5.02***
Hispanic				0.387	.178	2.17*	0.302	.158	1.91
Age				0.025	.029	0.85	0.002	.031	0.08
Welfare receipt				−0.070	.065	−1.07	−0.037	.063	−0.59
Behavioral controls									
ADHD							−0.083	.066	−1.25
Past-year drug use							0.011	.002	6.43***
Crime onset							−0.027	.016	−1.66
Arrest onset							0.001	.017	0.03
Juvenile court onset							−0.034	.018	−1.88
Wald χ^2	104.27***			149.18***			195.15***		
Log pseudolikelihood	−2,600.64			−2,550.22			−2,418.62		
N	719			709			673		

Note. *b* = unstandardized negative binomial regression coefficient; RSE = robust standard error; *Z* = z-score.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3. Hierarchical Negative Binomial Regression Models for Self-Reported Delinquency.

	Model 1			Model 2			Model 3		
Variable	*b*	RSE	*Z*	*b*	RSE	*Z*	*b*	RSE	*Z*
Variables of interest									
Psychopathy	0.007	.003	2.39*	0.013	.003	4.42***	0.008	.003	2.73**
Low self-control	0.032	.005	6.59***	0.031	.005	6.61***	0.026	.004	5.92***
Sociodemographics									
Sex				0.013	.083	0.16	0.072	.081	0.89
African American				0.406	.061	6.66***	0.480	.064	7.51***
Hispanic				0.361	.178	2.03*	0.293	.152	1.93
Age				0.004	.023	0.18	−0.004	.025	−0.14
Welfare receipt				−0.056	.056	−1.02	−0.030	.053	−0.55
Behavioral controls									
ADHD							−0.040	.055	−0.72
Past-year drug use							0.010	.001	6.66***
Crime onset							−0.028	.015	−1.91
Arrest onset							0.003	.016	0.19
Juvenile court onset							−0.045	.016	−2.90***
Wald χ^2	120.18***			180.66***			260.10***		
Log pseudolikelihood	−2,944.54			−2,881.24			−2,712.74		
N	719			709			673		

Note. *b* = unstandardized negative binomial regression coefficient; RSE = robust standard error; *Z* = z-score.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 4. Hierarchical Negative Binomial Regression Models for Victimization.

	Model 1			Model 2			Model 3		
Variable	*b*	RSE	*Z*	*b*	RSE	*Z*	*b*	RSE	*Z*
Variables of interest									
Psychopathy	0.006	.003	1.69	0.011	.004	2.95**	0.009	.004	2.52*
Low self-control	0.025	.006	4.21***	0.024	.006	4.27***	0.020	.006	3.51***
Sociodemographics									
Sex				−0.106	.107	−0.99	−0.063	.111	−0.57
African American				0.407	.076	5.33***	0.506	.079	6.42***
Hispanic				0.502	.200	2.51*	0.464	.183	2.53*
Age				0.061	.028	2.22*	0.043	.031	1.39
Welfare receipt				−0.029	.068	−0.42	0.016	.068	0.24
Behavioral controls									
ADHD							0.026	.074	0.35
Past-year drug use							0.009	.002	4.79***
Crime onset							−0.005	.015	−.035
Arrest onset							−0.016	.017	−0.92
Juvenile court onset							−0.023	.021	−1.11
Wald χ^2	53.81***			102.48***			144.02***		
Log pseudolikelihood	−2,055.24			−2,007.74			−1,888.87		
n	719			709			673		

Note. *b* = unstandardized negative binomial regression coefficient; RSE = robust standard error; *Z* = z-score.
*$p < .05$. **$p < .01$. ***$p < .001$.

African American status ($b = .480$, $z = 7.51$, $p < .001$), past-year drug use ($b = .010$, $z = 6.66$, $p < .001$), and juvenile court onset ($b = -.045$, $z = -2.90$, $p < .001$) were significantly associated with self-reported delinquency.

Negative Binomial Regression Model for Victimization

As shown in Table 4, psychopathy was not significantly associated with victimization in Model 1, however, low self-control ($b = .025$, $z = 4.21$, $p < .001$) was. The addition of sociodemographics in Model 2 indicates evidence of suppression effects as the relationship between psychopathy and victimization became significant ($b = .011$, $z = 2.95$, $p > .01$). Three sociodemographic factors, African American status, Hispanic status, and age, were also significantly associated with victimization in Model 2. In the full model, psychopathy ($b = .009$, $z = 2.52$, $p < .05$), low self-control ($b = .020$, $z = 3.51$, $p < .001$), African American status ($b = .506$, $z = 6.42$, $p < .001$), Hispanic status ($b = .464$, $z = 2.53$, $p < .05$), and past-year drug use ($b = .009$, $z = 4.79$, $p < .001$) were significantly associated with victimization.

Epidemiological Tables of Odds for Chronic Violent Offending

As shown in Figure 1, both low self-control and psychopathy were strong predictors of chronic violent offending. For low self-control, the odds of being in the 90th percentile for violent delinquency were 3%, 7%, 11%, and 53% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 73.46$, $p < .0001$) indicated that the odds of being chronically violent were not the same at each level of the

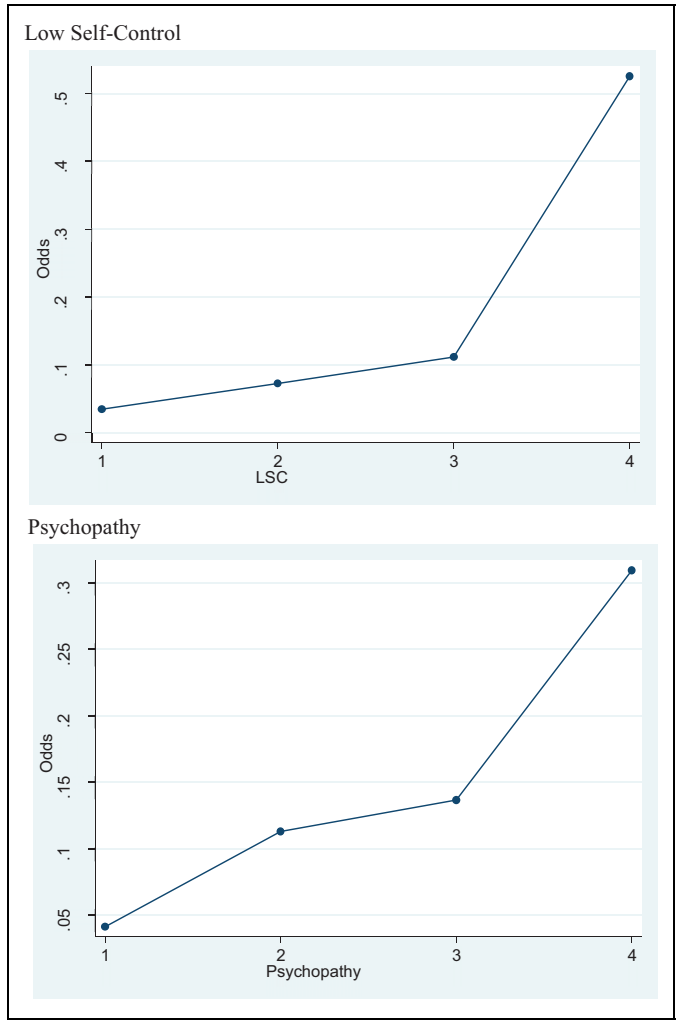

Figure 1. Chronic violent offending as a function of low self-control and psychopathy.

low self-control measure, and the score test for trend of odds ($\chi^2 = 52.36$, $p < .0001$) supported the significant positive effect of low self-control on chronic violent offending. For psychopathy, the odds of being in the 90th percentile for violent delinquency were 4%, 11%, 14%, and 31% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 22.92$, $p < .0001$) indicated that the odds of being chronically violent were not the same at each level of psychopathy, and the score test for trend of odds ($\chi^2 = 19.80$, $p < .0001$) supported the significant positive effect of psychopathy on chronic violent offending.

Epidemiological Tables of Odds for Chronic Property Offending

As shown in Figure 2, both low self-control and psychopathy were strong predictors of chronic property offending. For low self-control, the odds of being in the 90th percentile for property delinquency were 4%, 7%, 16%, and 28% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 26.08$,

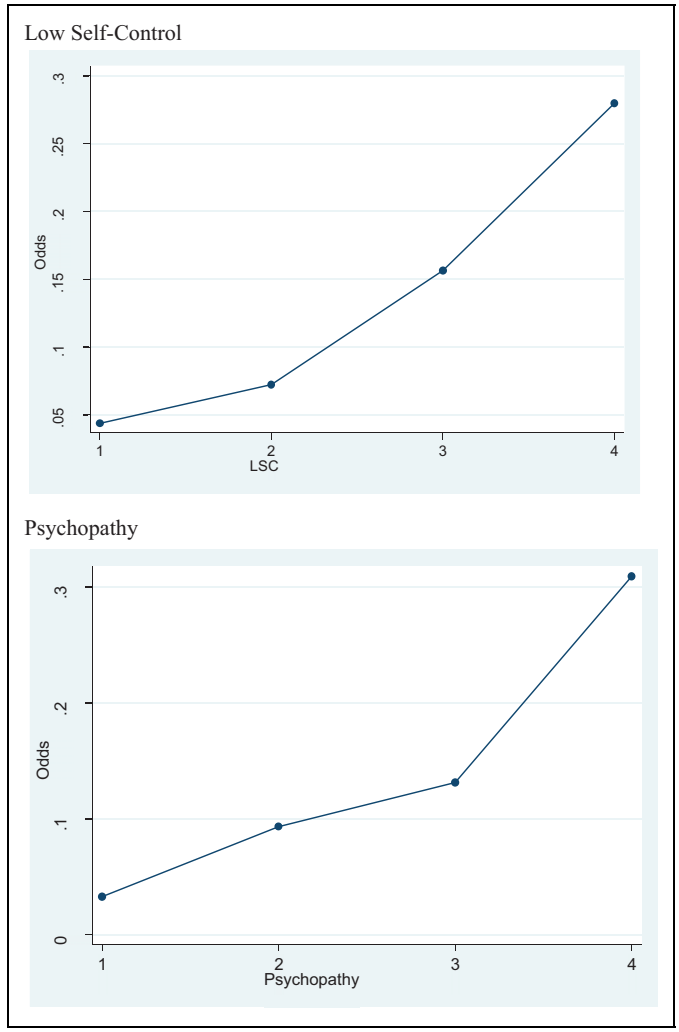

Figure 2. Chronic property offending as a function of low self-control and psychopathy.

$p < .0001$) indicated that the odds of being a chronic property offender were not the same at each level of the low self-control measure, and the score test for trend of odds ($\chi^2 = 24.63$, $p < .0001$) supported the significant positive effect of low self-control on chronic property offending. For psychopathy, the odds of being in the 90th percentile for property delinquency were 3%, 9%, 13%, and 31% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 27.56$, $p < .0001$) indicated that the odds of being a chronic property offender were not the same at each level of psychopathy, and the score test for trend of odds ($\chi^2 = 24.43$, $p < .0001$) supported the significant positive effect of psychopathy on chronic property offending.

Epidemiological Tables of Odds for Chronic Self-Reported Delinquency

As shown in Figure 3, both low self-control and psychopathy were strong predictors of chronic self-reported delinquency. For low self-control, the odds of being in the 90th percentile for delinquency were 3%, 7%, 9%, and 40% for those who scored 2 *SD* below the mean, 1 *SD* below the mean,

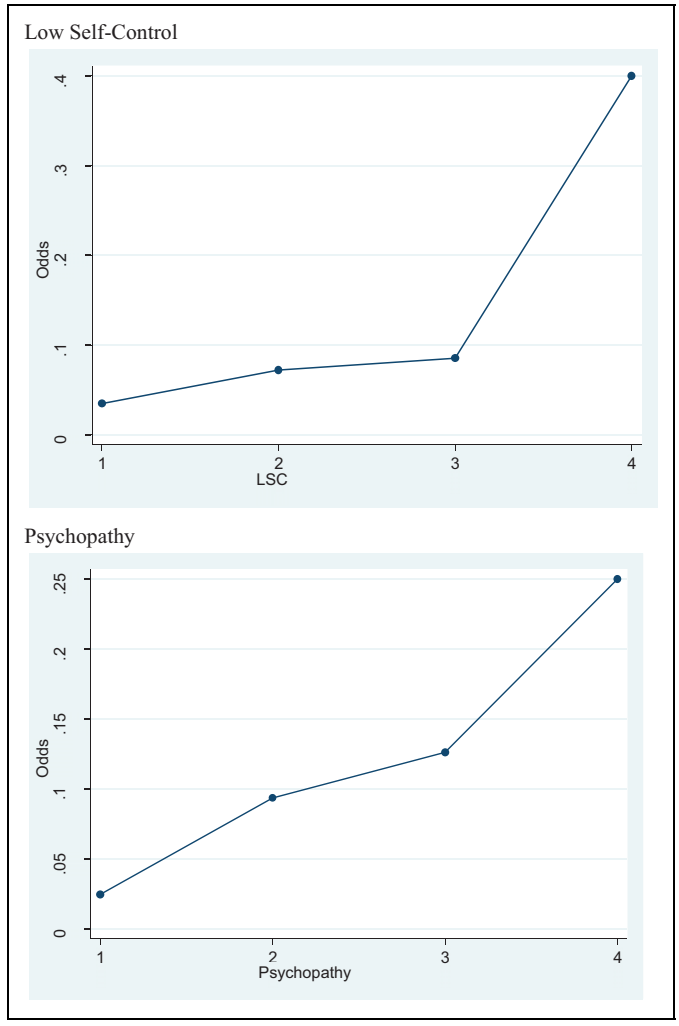

Figure 3. Chronic self-reported delinquency as a function of low self-control and psychopathy.

1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 54.72$, $p < .0001$) indicated that the odds of being chronically delinquent were not the same at each level of the low self-control measure, and the score test for trend of odds ($\chi^2 = 36.37$, $p < .0001$) supported the significant positive effect of low self-control on chronic delinquency. For psychopathy, the odds of being in the 90th percentile for delinquency were 2%, 9%, 13%, and 25% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 21.10$, $p < .0001$) indicated that the odds of being chronically delinquent were not the same at each level of psychopathy, and the score test for trend of odds ($\chi^2 = 19.71$, $p < .0001$) supported the significant positive effect of psychopathy on chronic delinquency.

Epidemiological Tables of Odds for Chronic Victimization

As shown in Figure 4, both low self-control and psychopathy were strong predictors of chronic self-reported victimization. For low self-control, the odds of being in the 90th percentile for victimization were 6%, 7%, 13%, and 26% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD*

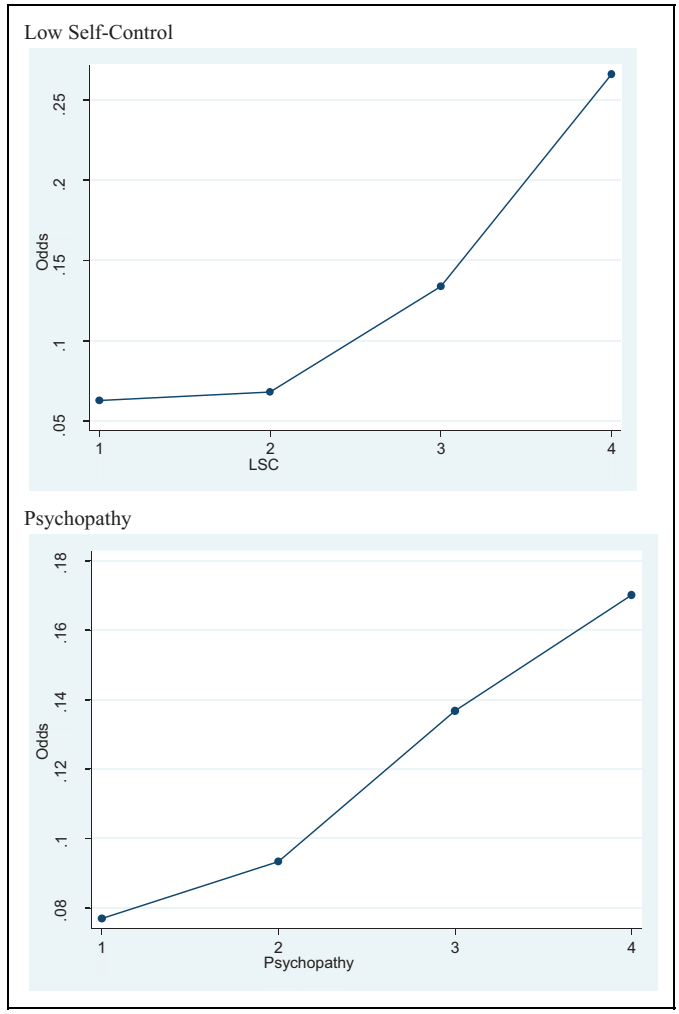

Figure 4. Chronic victimization as a function of low self-control and psychopathy.

above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 21.80$, $p < .0001$) indicated that the odds of being chronically victimized were not the same at each level of the low self-control measure, and the score test for trend of odds ($\chi^2 = 18.52$, $p < .0001$) supported the significant positive effect of low self-control on chronic victimization. For psychopathy, the odds of being in the 90th percentile for victimization were 8%, 9%, 14%, and 17% for those who scored 2 *SD* below the mean, 1 *SD* below the mean, 1 *SD* above the mean, and 2 *SD* above the mean. The test of homogeneity ($\chi^2 = 5.07$, $p < .17$) indicated that the odds of being chronically victimized delinquent were comparable across levels of psychopathy, and the score test for trend of odds ($\chi^2 = 4.90$, $p < .03$) narrowly supported the significant positive effect of psychopathy on chronic victimization.

Discussion

Self-control and psychopathy are similar yet distinct general theories of antisociality; despite their prominence, a surprisingly small literature has integrated them and few studies have conducted a

head-to-head test. Indeed, many studies have shown associations between low self-control (Burke & Loeber, 2015; Jackson & Beaver, 2013, 2015; Ray, Thornton, Frick, Steinberg, & Cauffman, 2016; Vaughn, Salas-Wright, DeLisi, & Maynard, 2014) and psychopathy (DeLisi et al., 2014; Dhingra & Boduszek, 2013; Flexon & Meldrum, 2013; Pechorro et al., 2013; Pechorro, Gonçalves, et al., 2014; Pechorro, Poiares, et al., 2014) and the most serious, chronic, and violent forms of juvenile delinquency. The current findings demonstrate that both constructs are importantly related to serious delinquency and violence. Which is better?

The winner of the head-to-head test in the current study was low self-control. Low self-control was significantly associated with violent offending, property offending, self-reported delinquency, and victimization in the negative binomial regression models. Comparatively, psychopathy was not significantly associated with violent offending in any model, was significantly associated with property offending and self-reported delinquency, and was intermittently associated with victimization. In the epidemiological tables of odds, there was clear evidence that a gradient of low self-control and psychopathy was associated with chronic forms of violent offending, property offending, total offending, and victimization. Those who were the most psychopathic and who had the lowest self-control were most likely to be a serious offender. However, the effects depended on the outcome variable. For violent offending, the odds were more pronounced among those with the greatest deficits in self-control (53%) compared to those who were the most psychopathic (31%). For property offending, the odds were slightly greater among high psychopathy (31%) compared to the lowest self-control (28%). For chronic delinquency, youth with the lowest self-control had 40% odds of offending at the 90th percentile compared to 25% of those who were the most psychopathic. For victimization, the respective odds were 26% for lowest self-control and 17% for highest psychopathy. In terms of engaging in pathological forms of delinquency, extreme deficits in self-control are more predictive than extreme psychopathy scores.

The patent fingerprints of low self-control and psychopathy are all over serious delinquency and youth violence. It is important to observe, however, that other covariates in the negative binomial regression models were also highly significant and at times had larger *z*-scores than either self-control or psychopathy. For instance, African American status exerted the strongest association with violent offending, self-reported delinquency, and victimization, and past-year polysubstance use had the largest effect for property offending. Thus, even though general theorists are occasionally strident and sweeping in their statements about the explanatory power of their central construct (e.g., DeLisi, 2009; Hare, 1996; Gottfredson & Hirschi, 1990), other variables matter too and can have predictive validity that exceeds those of the general construct.

Although the current study aim was rather academic in the sense of a head-to-head theoretical examination, the implications of the findings for the treatment and supervision of serious delinquents are clear. First, self-control and psychopathy can be readily measured with a host of attitudinal scales and can be measured using secondary data depending on the training and expertise of the rater. This is important for juvenile justice practitioners because knowing a youth's level of self-control and psychopathy can inform their assessment, treatment regimen, and other decisions about the appropriate placement within the juvenile justice system. In the event that a youth presents with severe deficits in self-control and/or severe psychopathic features, the successful rehabilitation of that youth is more difficult, and potentially even doubtful given the early emergence of these deficits and their moderate to high stability across life (Beaver, Wright, DeLisi, & Vaughn, 2008; Coyne & Wright, 2014; Jennings, Higgins, Akers, Khey, & Dobrow, 2013; Jo & Bouffard, 2014; Moffitt et al., 2011, 2013). Indeed, Gottfredson and Hirschi (1990, pp. 255–256) forecast generally grim news for the treatment of juvenile/criminal offenders who have serious deficits in self-control:

> Because low self-control arises in the absence of the powerful inhibiting forces of early childhood, it is highly resistant to the less powerful inhibiting forces of later life, especially the relatively weak forces of

the criminal justice system. The common expectation that short-term changes in the probabilities of punishment (such as arrest) or in the severity of punishment (such as length of sentence) will have a significant effect on the likelihood of criminal behavior misconstrues the nature of self-control.

Similar skepticism surrounds the treatment of psychopathy. Fortunately, there are already interventions in place that target the deficits of low self-control and psychopathy and have shown promising evaluation results. For example, the Stop Now and Plan (SNAP) program is an intervention for boys between ages 6 and 11 years who already have exhibited clinical levels of externalizing and antisocial behaviors, many of whom have already been contacted by police. The SNAP curriculum contains group-based modules where children are taught anger management, managing group pressure, and how to respond in social settings in a prosocial, nonaggressive way. The group sessions include feedback, role-play, and problem-solving to provide conventional as opposed to antisocial reactions. An evaluation study found that youth who participated in SNAP had 3 times fewer delinquent charges at follow-up than controls and were nearly 50% less likely to have been in juvenile court at follow-up compared to controls (Burke & Loeber, 2015). Although the current wards are older than SNAP program participants, the same lessons would apply in helping them recover better emotional and behavioral regulation.

Despite the uniqueness of the presents study results, there are limitations that we encourage future research investigations to overcome. First, the data were entirely self-reported by the juvenile and there were no administrative records or interview data from practitioners to augment the youth reports and break up the endogenous shared method variance inherent in a study such as this. An additional limitation is the inability to infer causal effects of low self-control and psychopathy on various forms of offending owing to the lack of temporal ordering of study variables that are a weakness of cross-sectional studies. Although these are important limitations, the present study findings provide a useful comparison for juvenile justice practitioners who are familiar with these key constructs. We encourage future work on the use of other measures of psychopathy and poor self-control in an effort to distill what specific features are most relevant to the likelihood of future offending.

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Notes

1. The broad scope and reach of self-control theory is also evidenced by research findings from studies that utilized data from China (Nie, Li, & Vazsonyi, 2016), Czech Republic (Vazsonyi, Jiskrova, Ksinan, & Blatny, 2016), Japan (Vazsonyi, Wittekind, Belliston, & Van Loh, 2004), South Korea (Jo & Zhang, 2014), Turkey (Özdemir, Vazsonyi, & Çok, 2013), Austria, Belgium, and Slovenia (Hirtenlehner, Pauwels, & Mesko, 2015), Hungary, Japan, the Netherlands, and Switzerland (Vazsonyi & Belliston, 2007), and 25 European nations (Vazsonyi, Machackova, Sevcikova, Smahel, & Cerna, 2012) that have supported Gottfredson and Hirschi's (1990) contentions.
2. The self-control crime literature is voluminous and cannot be thoroughly reviewed in a journal article. Several meta-analyses (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012; Duckworth & Kern, 2011; Pratt & Cullen, 2000; Pratt, Turanovic, Fox, & Wright, 2014; Walters, 2001, 2016) and books (Hassin, Ochsner, & Trope, 2010; Hay & Meldrum, 2015) provide more comprehensive coverage.

3. Numerous meta-analyses attest to the empirical linkages between psychopathic features and various forms of crime, delinquency, violence, and related maladaptive behaviors (DeCuyper, De Pauw, De Fruyt, De Bolle, & De Clercq, 2009; Edens & Campbell, 2007; Edens, Campbell, & Weir, 2007; Leistico, Salekin, DeCoster, & Rogers, 2008; Olver, Stockdale, & Wormith, 2009; Salekin, Rogers, & Sewell, 1996; Walters, 2003). Space limitations prevent an exhaustive review of these literatures.
4. All regression models were examined for multicollinearity. In the full models for violent offending, property offending, and victimization, the mean Variance inflation factor (VIF) = 1.36 and tolerance values ranged from .45 to .97 with none near the <.1 value. In the full model for self-reported delinquency, the mean VIF = 1.37, and tolerance values ranged from .46 to .97 with none near the <.1 value. Before selecting robust standard errors, all negative binomial regression models were also examined to ensure that it was the correct specification (compared to a Poisson model). The likelihood ratio test of α for all models confirmed that the negative binomial estimator was correct ($\chi^2 = 2{,}227.89$, $p < .0001$ for the full model in Table 1; $\chi^2 = 3{,}016.04$, $p < .0001$ for the full model in Table 2; $\chi^2 = 3{,}997.32$, $p < .0001$ for the full model in Table 3; and $\chi^2 = 1{,}086.63$, $p < .0001$ for the full model in Table 4).

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