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Abstract

In the juvenile justice literature, deep-end interventions such as commitment to a confinement facility are reserved for the most severe delinquents but unfortunately have been shown to have negative consequences. The current study repurposes juvenile confinement within a criminal career context to empirically examine its role in homicide offending based on data from a sample of 445 male, adult habitual criminals. Poisson regression models indicated that juvenile confinement—measured both dimensionally and categorically—predicted murder arrests despite controls for juvenile homicide offending, juvenile violent delinquency, juvenile felony adjudications, juvenile non-compliance violations, juvenile arrest charges, onset, age, three racial/ethnic classifications, career arrests, career violent index arrests, and career property index arrests. Receiver operating characteristics—area under the curve (ROC-AUC) graphs showed that juvenile confinement predicted murder significantly but modestly better than chance although career violent offending was the strongest predictor of murder perpetration.

Keywords

juvenile confinement, murder, homicide offending, delinquent careers, criminal careers

Introduction

Commitment to a confinement facility is the most severe sanction in the juvenile justice system. This deep-end placement is disproportionately reserved for the most chronic and violent juvenile

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delinquents and/or those adjudicated for the most serious delinquent offenses. Within the juvenile justice literature, there are at least three broad assessments or interpretations of the consequences of juvenile confinement. On one hand, juvenile confinement is viewed positively in that it enhances community safety by incapacitating violent young offenders, it holds these juvenile offenders accountable for their antisocial conduct, and it provides an incentive to delinquents to respond to programming and other rehabilitative efforts (cf., Bennett, DiIulio, & Walters, 1996; DeLisi, Dooley, & Beaver, 2007; Howell, 2003; Howell & Howell, 2007; Mears, 2002; Piquero & Steinberg, 2010; Redding & Howell, 2000; Tracy, 2002). From this perspective, juvenile confinement can serve deterrent, incapacitative, and rehabilitative interests.

On the other hand, juvenile confinement has been viewed negatively but for two different reasons. The first is consistent with the labeling perspective whereby mere exposure to the juvenile justice system (e.g., taken into custody and placed in detention, transfer to criminal court for prosecution, placement in adult facilities, etc.) leads to worsening social functioning and greater delinquency (Bernburg & Krohn, 2003; Bernburg, Krohn, & Rivera, 2006; Gatti, Tremblay, & Vitaro, 2009; Howell & Howell, 2007; Johnson, Simons, & Conger, 2004; Myers, 2003a, 2003b; Winner, Lanza-Kaduce, Bishop, & Frazier, 1997). To illustrate, Gatti and colleagues explored the effects of juvenile justice system interventions on offending among 779 male delinquents from low-socioeconomic neighborhoods in Montreal, Canada. They found that placement in juvenile confinement, for example, increased the odds of adult criminal offending by a factor of almost 38. They advised that:

[a] youth's involvement with the juvenile justice system was seen to have an overall negative impact on his criminal career. While mere intervention by the juvenile justice system seems to have a negative effect, *its impact increases as the type of intervention imposed becomes more intense and constrictive* (2009, p. 6, emphasis added).

From this perspective, juvenile confinement has an inadvertent effect in that the purported intervention (juvenile confinement) actually exacerbates delinquency. In other words, due to the many negative consequences stemming from severe juvenile justice response to delinquency and youth violence, there is appropriate concern about the degree to which juvenile justice policy is responsive to fluctuating and often fickle public opinion about getting tough on young offenders (cf., Auerhahn, 2008; Carmichael, 2010; Cook & Lane, 2009; Howell, 2003; Meade & Steiner, 2010; Mears, 2002; Ng, 2010; Theriot, 2009; Vogel & Vogel, 2003).

The second view, variously referred to as continuity of offending or population heterogeneity (see DeLisi, 2005; Moffitt, 1993; Nagin & Paternoster, 2000), suggests that juvenile confinement is associated with continued antisocial behavior because of the acute criminal propensities of the most severe delinquents that are committed to confinement (Brame, Mazerolle, & Piquero, 2010; DeLisi, Caudill, et al., 2010; Varano, Huebner, & Bynum, 2010). This sentiment was captured cogently by Trulson, Caeti, Marquart, and Mullings (2005) when they suggested that "It simply smacks against common sense to think that a group of the most serious, violent, and chronic delinquents, who have demonstrated official law violations for a substantial part of their life, would simply go against tradition and quit offending" (p. 19). In this way, juvenile confinement is a natural outcome for serious delinquents precisely because of their considerable delinquent potential.

In sum, the implications of juvenile confinement for subsequent social functioning have been interpreted in different ways by prior investigators (Piquero & Steinberg, 2010). Even in cases where confinement is the most appropriate sanction, it is understood that the experience is likely to produce negative consequences for the youthful offender. Some of these negative consequences in the context of the delinquent career are examined next.

Juvenile Confinement, Delinquent Careers, and Murder

A diverse literature has examined the effects of juvenile confinement on delinquent careers and prosocial development across the life course. The balance of these studies suggests that even when controlling for relevant individual-level risk factors for offending, juvenile confinement exerts unique, deleterious effects on youths' subsequent offending, on youths' perceptions of successfully reintegrating to society, on youths' mental and physical health, educational attainments, family and peer relationships, and others (Gatti et al., 2009; Krebs, Lattimore, Cowell, & Graham, 2010; Kupchik, 2007; Marsh & Evans, 2009; Mears & Travis, 2004; Myner, Santman, Cappelletty, & Perlmutter, 1998; Snyder, 2004; Winokur, Smith, Bontrager, & Blankenship, 2008; Woolard, Odgers, Lanza-Kaduce, & Daglis, 2005). For instance, Winokur and associates (2008) examined the effect of length of stay in confinement on juvenile recidivism among nearly 17,000 Florida juveniles. They found that lengthier stays in confinement contributed to greater recidivism, and this effect was only observed among youths released from the most high-risk facilities. This effect persisted despite controls for age, gender, race, region, and prior referrals. In terms of delinquent careers, then, juvenile confinement tends to be an aggravating factor.

One reason why juvenile confinement might be associated with continued delinquency after release from custody centers on institutional misconduct. Despite the efforts of juvenile correctional officials, some confinement facilities are characterized by relatively high levels of violence, gang activity, and maladaptive responses to placement in state custody (DeLisi, Drury, et al., 2010; MacDonald, 1999; Trulson, 2007). A recent study of a cohort of 2,520 confined delinquents found that these youth committed approximately 19,000 incidents of major misconduct during their confinement (Trulson, DeLisi, Caudill, Belshaw, & Marquart, 2010). There is also evidence that engaging in misconduct while confined is associated with adult placement in the context of blended sentencing (Trulson, Caudill, Belshaw, & DeLisi, 2010) and contributes to recidivism upon release (Trulson, DeLisi, & Marquart, 2009). Taken together, misconduct often flourishes in confinement facilities which expose delinquent youth to additional deprivations that place them at risk of continued conduct problems.

Another major reason for the aggravating effect of juvenile confinement centers in part on the severe risk profile of youths who are placed in confinement. A common profile of a confined delinquent includes recurrent antisocial behavior and juvenile justice system interventions, chaotic family environments including parent and sibling criminality, gang involvement, school dropout, substance abuse and other psychiatric problems, and other social risk factors (Blackburn, Mullings, Marquart, & Trulson, 2007; Blackburn & Trulson, 2010; Cauffman, Lexcen, Goldweber, Shulman, & Grisso, 2007; Mears & Travis, 2004; Snyder, 2004; Trulson, 2007). For example, a sizeable proportion of confined youths have elevated scores on psychopathic personality traits which have been shown to be a formidable risk factor for continued delinquency (Vaughn, Freedenthal, Jenson, & Howard, 2007; Vaughn & Howard, 2005; Vaughn, Newhill, DeLisi, Beaver, & Howard, 2008). In light of these multiple risk factors, many formerly confined youths hold negative perceptions of their ability to successfully reintegrate into conventional society upon release (Sullivan, 2004). Indeed, Marsh and Evans (2009) recently found that confined youth with the least positive forecasts about their potential for success upon release also tended to be the most antisocial and institutionalized.

Interestingly, despite the primacy of criminal careers research to criminology (Blumstein & Cohen, 1987; Piquero, Farrington, & Blumstein, 2003, 2007), relatively few studies have examined homicide offending within the context of criminal careers, and even fewer studies have explored the potential contribution of juvenile confinement to subsequent murder perpetration. Heide, Spencer, Thompson, and Solomon (2001) studied 59 juvenile homicide offenders of which 10 were sentenced to youthful incarceration. They found that 60% of the total sample was returned to prison—a conservative estimate because arrests and other non-reincarceration dispositions were not considered

recidivism. Similarly, Hagan (1997) found that more than 50% of youths who had been confined for murder during adolescence were subsequently returned to prison upon convictions for other serious violent crimes such as robbery, rape, and assault. Interestingly, none of those confined for murder during adolescence were subsequently convicted of murder.

In their study of inmate homicide in the Texas Department of Criminal Justice between 2000 and 2008, Cunningham, Sorensen, Vigen, and Woods (2010) found extensive evidence of juvenile and criminal history among 52 homicide offenders and their 35 homicide victims. Half of inmate killers had prior juvenile probation involvement, 44% of homicide offenders had been placed in detention homes or hospitals, and 18% of them had been committed to juvenile reformatories. Langevin (2003) compared the offending careers and psychosocial characteristics of 36 sexual homicide offenders, 80 sexually aggressive offenders, 23 sexual sadist offenders, and 611 general sex offenders. He found that more than 27% of homicide offenders had been confined to reformatories during adolescence, which was significantly higher than the other offender groups. DiCataldo and Everett (2008) compared the social and delinquent histories of 33 adolescents adjudicated delinquent or awaiting trial for murder and 38 adolescents committed for violent albeit nonhomicide offenses. Curiously, they found that the social histories of homicide offenders were generally *less* problematic than nonhomicide offenders. For example, fewer than 3% of the homicide group had four or more prior out-of-home placements but nearly 10% of the nonhomicide group had multiple placements. More importantly, the homicide group had fewer prior adjudications and delayed onset of confinement than the nonhomicide group.

Based on data from 654 homicide offenders selected from 8 states, DeLisi and Walters (2011) recently tested an interactive model where multiple homicide offending was a function of prisonization and concurrent instrumental violent offending. They controlled for an assortment of correlates of violent offending including age, race, gender, criminal history, prior incarcerations, and contemporaneous involvement in rape, robbery, kidnapping, and burglary. They found that offenders with multiple prior confinements who were subsequently released and continued to commit instrumentally violent crimes were likely to murder multiple victims. Although some of the offenders in their data had been confined as adolescents, they did not specifically focus on the predictive validity of juvenile confinement on murder perpetration.

Current Focus

In sum, deep-end interventions such as commitment to a confinement facility are reserved for the most severe delinquents, but research has shown that this sanction has multiple negative consequences. The current study repurposes juvenile confinement from a juvenile justice context to a criminal career context to empirically examine its role in homicide offending based on data from 445 male, adult habitual criminals. It is hypothesized that juvenile confinement is also associated with serious antisocial behavior in adulthood, namely homicide offending.

Method

Participants and Procedures

From 1995 to 2000, the senior author was employed as a pretrial services officer or bond commissioner at a large, adult, urban jail located in the western United States. In this jurisdiction, bond commissioners served as judicial officers and worked in conjunction with sheriff deputies within the county jail. Their function was to interview all criminal defendants brought to the jail and to obtain employment, residency, and criminal history for setting bond. Bond commissioners had the authority to release eligible defendants on recognizance bonds. This work experience permitted constant

access (the bond commissioner unit was staffed 24 hours) to all arrestees who were brought to the jail during this period.

In this jurisdiction, the bond commissioner unit conducted a pilot study to identify the most recidivistic offenders to determine their eligibility for various social service policies (e.g., a program designed to meet the needs of indigent, transient offenders) and prosecutorial efforts (e.g., selective prosecution using habitual offender statutes). Approximately 50 offenders comprised the original “frequent offender” roster, with their criminal histories contained an average of 30 arrest charges. Based on this selection criterion, any offender whose record contained 30 arrest charges was classified as a frequent offender upon approval from the chief district judge and district attorney’s office. Frequent offenders, because of their habitual criminal conduct, were precluded from receiving personal recognition bonds. From 1995 to 2000, the bond commissioner unit processed 25,640 defendants, 500 of whom (less than 2%) qualified for frequent/habitual offender status. These 500 offenders were, in effect, the population of a 6-year census of official criminal offenders processed in this jurisdiction. Importantly, although the offenders were processed at one facility, their criminal activity can and did occur in multiple jurisdictions. As expected, the study group was overwhelmingly comprised of males ($n = 445$, 89%) compared to females ($n = 55$, 11%). Among the females, none had been confined as adolescents and only four committed murder during their criminal career, thus they were excluded from the analyses. The final analytic sample was ($n = 445$) male offenders.

During bond interviews which were legal proceedings conducted under oath, defendants self-reported their criminal history, including all police contacts, arrests, court actions, and sentences. Self-reports can yield arrests and other criminal activities that do not appear on official records, arguably rendering them a more accurate reflection of an individual’s true criminal past. The self-report method is problematic with career criminals, however. The most serious career criminals have offending careers that include potentially hundreds of arrests, convictions, and various punishments. Their careers often span decades and chronicle events when defendants were frequently intoxicated on alcohol and other illicit substances. For these and other reasons, the validity and internal consistency of self-reports from the worst offenders may be the least reliable (Roberts & Wells, 2010; Simon, 1999; Sutton, 2010). Therefore, self-reported criminal histories were supplemented with official records from the Interstate Identification Index (III) system. Under the III system, the Federal Bureau of Investigation (FBI) maintains an automated criminal record containing an FBI number and state identification number (SID) for each state holding criminal history information on an individual. The III records are accessed using the National Crime Information Center (NCIC) telecommunications lines that retrieve criminal records from computerized repositories based on offender fingerprints and other biographical data. It is conventional to utilize both official and self-reported measures of criminal offending to verify the reliability and validity of criminal career data (Brame, Fagan, Piquero, Schubert, & Steinberg, 2004; Farrington et al., 2003; Geerken, 1994; Hochstetler, DeLisi, & Puhmann, 2007; Lynam, Piquero, & Moffitt, 2004).

Independent Variables

Juvenile confinement was operationalized both dimensionally, or the number of times previously incarcerated ($M = .20$, $SD = .73$, range = 0–9), and categorically, whether ever previously confined ($M = .10$, $SD = .30$, range = 0–1). Most ($n = 400$, 89.9%) offenders were not confined as juveniles, whereas others ($n = 45$, 10.1%) were. Within the behavioral sciences and specifically in psychiatry, the current paradigm reconsiders categorical diagnoses as continuously distributed traits, thus we were interested in examining juvenile confinement with both dimensional and categorical specifications to see whether it is a cumulative effect or once-only exposure to confinement that produces deleterious results. In all, 20 (4.5%) offenders were confined once as adolescents, 16 (3.6%) offenders were confined twice as adolescents, 7 (1.6%) offenders were confined three times as

adolescents, 1 (0.2%) offender was confined five times during adolescence, and 1 (0.2%) delinquent was confined nine times during childhood and adolescence.

Juvenile homicide offending ($M = .01$, $SD = .15$, range = 0–2) is a serious risk factor for subsequent involvement in lethal violence (Heide, 2003; Myers, 2004). Indeed, Heide and Solomon (2003) suggested, “our clinical experiences and available follow-up data leave no doubt that there are some youths who should never be released. These are the ones that are so badly damaged that rehabilitation appears unlikely. *These are the adolescents who if released to society, even as adults, are likely to reoffend and possible even kill again*” (p. 21, italicized emphasis added). Of the 445 males, 441 (99.1%) did not commit juvenile murder, 2 offenders were arrested for a juvenile murder and 2 offenders were arrested for 2 juvenile murders.

Delinquent history was operationalized with five measures: juvenile violent index included arrests for rape, armed robbery, aggravated assault, and kidnapping ($M = .28$, $SD = 1.01$, range = 0–9); juvenile felony adjudications ($M = .64$, $SD = 1.67$, range = 0–11); juvenile noncompliance including probation violations and violation of bond conditions ($M = 1.22$, $SD = 3.99$, range = 0–31); juvenile arrest charges ($M = 7.08$, $SD = 15.41$, range = 0–134); and a dichotomous measure of early onset of police contact (before age 14 = 1; after age 14 = 0, $M = .20$, $SD = .40$, range = 0–1). Prior researchers (DeLisi, 2006; Moffitt, Lynam, & Silva, 1994; Patterson, 1995; Simons, Wu, Conger, & Lorenz, 1994) have shown age 14 to be a useful threshold at differentiating early from late starting delinquents.

Total criminal career was operationalized with three measures: career arrest charges ($M = 61.2$, $SD = 31.7$, range = 30–267), career violent index arrests excluding murder but including kidnapping ($M = 3.96$, $SD = 4.59$, range = 0–43), and career property index arrests (burglary, larceny, auto theft, and arson; $M = 13.61$, $SD = 13.46$, range = 0–104). Finally, four demographic controls were also included age ($M = 39.91$, $SD = 10.96$, range = 18–74) and dichotomous terms for White ($n = 240$, 53.9%), Hispanic ($n = 128$, 28.8%), and African American ($n = 51$, 11.5%).

Dependent Variable

Career murder arrests was a count variable including arrests for first-degree murder, second-degree murder, or manslaughter over the entire criminal career ($M = 0.11$, $SD = 0.38$, range = 0–3). Most ($n = 406$, 91.2%) offenders were never arrested for murder, whereas 31 (6.9%) offenders had 1 murder arrest, 7 (1.6%) offenders had 2 murder arrests, and 1 (0.2%) offender had 3 murder arrests. The receiver operating characteristics–area under the curve (ROC-AUC) analyses (discussed below) required a binary outcome variable that indicated career murder arrests (*no* = 0; *yes* = 1; $M = .09$, $SD = .30$).

Analytical Strategy

In criminal careers research, outcome variables are often counts of discrete events, such as arrests, convictions, sentences, or in the current study, murder arrests. Unlike conventional ordinary least squares (OLS) regression, the Poisson model takes into account the nonnegative, integer values of the dependent variable. The Poisson regression model assumes that the data are equally dispersed meaning that the conditional variance equals the conditional mean. To ensure this, postestimation goodness-of-fit diagnostics were conducted using STATA 9.2. For model 1 where a dimensional measurement of juvenile confinement was used, the model $\chi^2 = 195.26$, $p = 1.00$. For model 2, where a categorical measurement of juvenile confinement was used, the model $\chi^2 = 198.64$, $p = 1.00$. These values show that the truncated distribution of murder arrests, which is the type of rare event perfectly suited for Poisson regression, are not characterized by overdispersion. If the model χ^2 coefficients had been significant, negative binomial regression would be appropriate.

Table 1. Poisson Regression Model of Career Murder Arrests ($n = 445$)

Variable	Estimate	Robust SE	z Score
Juvenile confinement (dimensional)	.60	.22	2.74*
Juvenile murder	2.56	.56	4.54*
Juvenile violent index	-.09	.12	-0.80
Juvenile felony adjudications	-.24	.19	-1.22
Juvenile noncompliance	-.04	.07	-0.58
Juvenile arrest charges	-.01	.02	-0.46
Onset	.15	.46	0.32
Age	.03	.02	1.77
White	.03	.64	0.04
African American	-.79	.86	-0.92
Hispanic	-.33	.73	-0.45
Career arrests	-.01	.01	-1.20
Career violent index arrests	.08	.02	3.60*
Career property index arrests	.02	.01	1.54
Wald χ^2			237.61*
Log pseudo-likelihood			-143.89
Pseudo R^2			.182

* $p < .01$.

In addition, we were interested in the predictive validity of the significant covariates from the Poisson regression models of a dichotomous measure of career murder offending ($no = 0$; $yes = 1$). ROC curves plot the sensitivity (true positives) versus 1-specificity (false positives) and the greater the AUC, the stronger the predictive validity of the covariate (Metz, Herman, & Shen, 1998). Values of 0.50 represent mere chance classification or that an independent variable is associated with a dependent variable as if flipping a coin. Values that approach 1.0 indicate that the independent variable is strongly associated with the occurrence of the dependent variable. In other words, ROC-AUC analysis is a useful visual way to see the classification accuracy of an independent variable on a binary outcome/dependent variable.

Findings

As shown in Table 1, male offenders with greater commitments to confinement during adolescence were significantly more likely to be arrested for murder during their criminal career (estimate = .60, $z = 2.74$). Two additional significant effects emerged. Juvenile homicide offending predicted career murder arrests (estimate = 2.56, $z = 4.54$) and career violent index arrests which included rape, armed robbery, aggravated assault, and kidnapping were also significantly predicted career murder arrests (estimate = .08, $z = 3.60$).

Figure 1 displays ROC-AUC analyses of the ability of the three significant covariates at predicting a dichotomous career murder arrest outcome. All three variables predicted career murder status better than chance (model $\chi^2 = 7.81$, $p = .02$). The best predictor was career violent index offending (sensitivity = .68, $SE = .04$) followed by juvenile confinements (sensitivity = .59, $SE = .03$) and juvenile murder (sensitivity = .55, $SE = .02$).

The dichotomous measurement of juvenile confinement produced substantively similar effects as shown in Table 2. Male offenders that had been confined during adolescence were significantly more likely to be arrested for murder during their criminal career (estimate = .99, $z = 2.53$). Juvenile murder offending (estimate = 3.41, $z = 4.54$) and career violent index offending for rape, armed robbery, aggravated assault, and kidnapping (estimate = .08, $z = 3.61$) were also significant. In

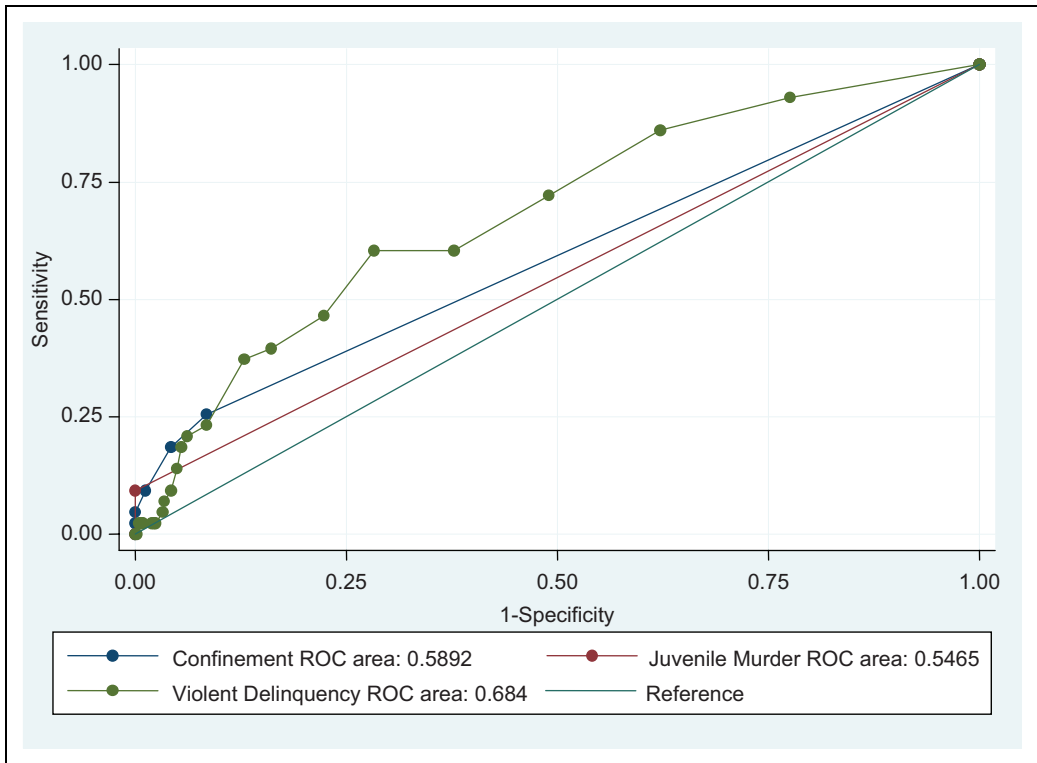


Figure 1. ROC-AUC graph with dimensional juvenile confinement. Note: AUC = area under the curve; ROC = receiver operating characteristics.

Table 2. Poisson Regression Model of Career Murder Arrests (*n* = 445)

Variable	Estimate	Robust SE	z Score
Juvenile confinement (categorical)	.99	.39	2.53*
Juvenile murder	3.41	.75	4.54*
Juvenile violent index	-.12	.12	-0.97
Juvenile felony adjudications	.17	.11	1.61
Juvenile noncompliance	-.15	.06	-2.44*
Juvenile arrest charges	-.04	.03	-1.33
Onset	.16	.44	0.36
Age	.02	.02	1.10
White	.12	.67	0.17
African American	-.79	.91	-0.87
Hispanic	-.29	.76	-0.38
Career arrests	-.01	.01	-1.15
Career violent index arrests	.08	.02	3.61*
Career property index arrests	.02	.02	1.06
Wald χ^2			193.80*
Log pseudo-likelihood			-145.58
Pseudo R^2			.173

* *p* < .01.

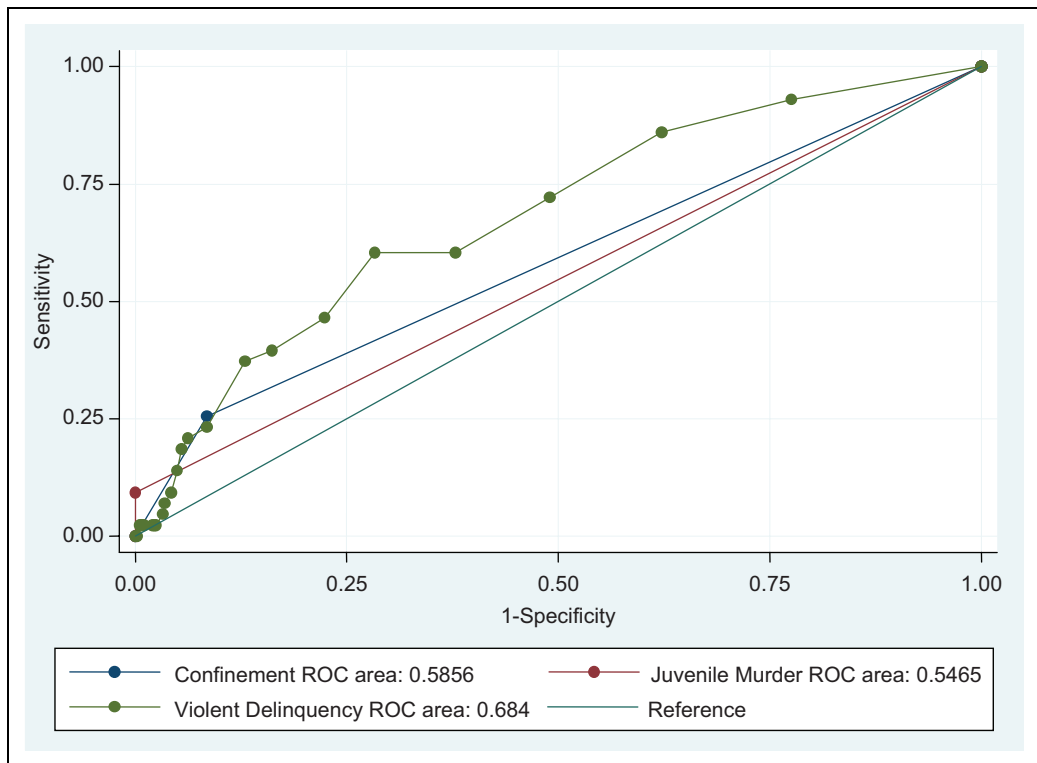


Figure 2. ROC-AUC graph with categorical juvenile confinement. Note: AUC = area under the curve; ROC = receiver operating characteristics.

addition, juvenile noncompliance arrests (estimate = $-.15$, $z = 2.44$) were negatively associated with career murder arrests.

Figure 2 displays ROC-AUC analyses of the ability of three significant covariates at predicting a dichotomous career murder arrest outcome (the negative predictor juvenile noncompliance was not used). All three variables predicted career murder status better than chance (model $\chi^2 = 7.92$, $p = .01$). Again, career violent index offending (sensitivity = $.68$, $SE = .04$) was the best predictor, followed by juvenile confinement status (sensitivity = $.59$, $SE = .03$) and juvenile murder offending (sensitivity = $.55$, $SE = .02$).

Discussion

In many ways, the juvenile justice and criminal justice systems are proverbially between a rock and a hard place when dealing with serious, chronic, and violent offenders. Irrespective of the deterrent, incapacitative, or rehabilitative benefits that stem from placing delinquent youths in confinement facilities, deep-end placements have also been shown to exacerbate antisocial behaviors, reduce social functioning, and disrupt successful reintegration to society (Gatti et al., 2009; Johnson et al., 2004; Mears & Travis, 2004; Myers, 2003a, 2003b; Stewart, Simons, Conger, & Scaramella, 2002; Trulson et al., 2009; Trulson, DeLisi et al., 2010).

The current study stepped outside the traditional use of juvenile confinement as it relates to the administration of juvenile justice and repackaged this process as a possible distal predictor of homicide offending within the broader criminal career. When measured categorically, juvenile

confinement was associated with an eventual arrest for murder suggesting that *among offenders who become life-course-persistent or career criminals*, commitment to a confinement facility during adolescence is a potential risk factor for homicide offending. When measured dimensionally, the effects of juvenile confinement remained significant and were slightly stronger than the categorical operationalization. Put another way, for the male habitual offenders in the current sample, the road to murder in part began with commitment to a confinement facility during adolescence.

What are the implications of these findings? Do they suggest that if serious delinquents are committed to confinement facilities that they will inevitably commit murder? That is unlikely for two important reasons. First, murder is a rare event in the criminal career and the preponderance of even serious and habitual offenders go their entire career without a homicide offense. Second, the current data are an exceedingly high-risk, even pathological, sample of offenders. Thus, the continuity between their delinquent and criminal careers is not equivalent to most offenders.

That juvenile confinement was associated with murder was interesting in that most of the other measures of juvenile delinquency and juvenile justice involvement (with the exception of juvenile homicide offending) had null effects on a subsequent arrest for murder. In Model 2 where juvenile confinement was measured categorically, juvenile noncompliance was negatively associated with homicide offending. Similarly, neither onset nor the demographic controls were significant which generally conflicts with research showing that racial and ethnic minorities are disproportionately involved in violent offending (D'Alessio & Stolzenberg, 2009; Elliott, 1994) including murder (D'Alessio & Stolzenberg, 2009; DeLisi et al., 2007; Walsh, 2005), compared to Whites. Turning to total criminal career measures, chronic offending as measured by career arrests and serious property offending was not associated with homicide offending. However, career arrests for rape, armed robbery, aggravated assault, and kidnapping predicted career murder arrests in both models. Moreover, the ROC-AUC graphs indicated that career violent index offending was the strongest predictor of the binary measure of homicide offending with sensitivity coefficients approximately 10% greater than the sensitivity for juvenile confinement. This meshes with research, indicating that that frequent, continued involvement in serious violence can potentially culminate in lethal violence (Farrington, Loeber, Stallings, & Homish, 2008; Kyvsgaard, 2003; Myers, 2004; Vaughn, DeLisi, Beaver, & Howard, 2009).

There are caveats associated with the current findings and limitations of the current study that are important to consider as a heuristic for future research. First, although the offenders in the current sample are characterized by extensive, even extreme criminal careers—which is a plus when studying offending patterns—they are not representative of most samples of adolescent or adult offenders. It is an enriched sample and the external validity of the findings to less severe samples is unknown. It is critical that this point be understood. Very few youths who are committed to confinement facilities perpetrate homicide either before, during, or after their commitment to a confinement facility. Evidenced by research using diverse samples of serious offenders (Cunningham et al., 2010; DeLisi, 2001; Vaughn et al., 2009), homicide is very rare, thus statistical associations between early life variables and subsequent homicide offending should be interpreted cautiously.

Second, the analyses only included male offenders. This is an important limitation given the interrelationship between gender, offending careers, and murder. For instance, several scholars (e.g., Adinkrah, 2008; Collins, 2010; Eckhardt & Pridemore, 2009; Reckdenwald & Parker, 2010; Schwartz, 2008) demonstrated that there are clear differences in terms of offender motivation, situational contexts, victim selection, comorbid offending, and sheer prevalence of murder between males and females. In this way, it is unknown whether juvenile confinement would also have distal predictive effects on murder among women—particularly given the dearth of contextual data in the current study, which is a third limitation. This segues to a final limitation which is that although these data are temporally graded (e.g., there is information on offending behavior occurring at different life stages), they are nevertheless cross-sectional. As such, we were unable to examine true longitudinal effects of the ways that juvenile confinement and other offending variables lead to murder.

In the end, the current study is a modest attempt to build an empirical bridge between the juvenile justice and criminal careers literatures using constructs that are likely meaningful to both. A recurrent theme in juvenile justice research is that deep-end placements in confinement are justified and necessary to the extent that they target the most recalcitrant delinquents for whom graduated sanctions and other interventions have failed. But it is recognized that juvenile confinement carries with it assorted costs relating to exposure to institutional violence (Peterson-Badali & Koegl, 2002), enhanced recidivism (Baglivio, 2009; Bowles & Florackis, 2007; Winokur et al., 2008), and continued maladjustment. Indeed, even when other important measures of juvenile delinquency and juvenile justice contacts are considered, juvenile confinement could be a distant background factor in the lives of serious adult male habitual offenders who one day commit murder.

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