Lifetime Adversities And Outcomes

Of Second-Generation Offenders

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by

Joanna L. Will, M.Ed.

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Department of Human Services
Curry School of Education
University of Virginia
Charlottesville, Virginia

APPROVAL OF THE DISSERTATION

This dissertation, “Lifetime Adversities and Outcomes of Second-Generation Offenders”, has been approved by the Graduate Faculty of the Curry School of Education in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Dr. Ann Booker Loper (Chair)

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Dr. J. Patrick Meyer

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Dr. Peter Sheras

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Dr. Joanna Lee Williams

_____Date

DEDICATION

This work is dedicated to the two strongest women I have known: my grandmothers. To Dr. Rhoda Jacobs, for teaching me that a woman with an education is an unstoppable force; and to Joan Will, in loving memory, for inspiring me to worry less, give more, and one day "pass it on."

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Overview of Three Manuscript Dissertation

This dissertation examines the experiences of second-generation offenders, defined as criminally involved individuals who experienced the incarceration or arrest of one or more parent(s) during their childhood. Within this line of research, I first investigated the retrospective reports of juvenile delinquency and markers of conduct disorder among incarcerated adults who were identified as either first- or second-generation prisoners; second-generation prisoners reported heightened levels of conduct problems, and second-generation male prisoners reported more juvenile delinquency. In my second study, I examined differences between first- and second-generation prisoners' self-reported experiences of domestic violence exposure and subsequent engagement in intimate partner violence in adulthood. Results revealed that, relative to first-generation prisoners, second-generation prisoners were exposed to more domestic violence as children, which subsequently increased risk of being a victim of intimate partner violence in adulthood. In my third study, I investigated alcohol use, binge drinking, and clinical indicators of alcohol use disorders among first- and second-generation offenders (including those who have been convicted, served community supervision, or been incarcerated) using a nationally representative dataset. This study was consistent with prior research in demonstrating significant differences in the early histories of second-generation offenders, including elevated risk of various adverse childhood experiences, but did not support the notion that second-generation offenders would demonstrate heightened alcohol use and abuse as adults.

This dissertation is written according to parameters described in the Curry School of Education Ph.D. Dissertation Manual: Manuscript Style Dissertation Guidelines. The Curry School Guidelines for a manuscript-style dissertation requires the doctoral candidate to be the principal author on three research manuscripts and submit an additional document that describes the conceptual and theoretical linkages among the three manuscripts. I am the lead author on all three studies described here. The first study, *From One Generation to the Next: Childhood Experiences of Antisocial Behavior and Parental Incarceration Among Adult Inmates,* has been published in the Journal of Offender Rehabilitation (Will, Whalen & Loper, 2014). The second study, *Second-Generation Prisoners and the Transmission of Domestic Violence,* has been published in the Journal of Interpersonal Violence (Will, Loper, & Jackson, 2014). The third study, *Alcohol Consumption and Alcohol Use Disorder Among First- and Second-Generation Offenders*, will be submitted to the appropriate referred journal upon completion.

Linking Document:

Lifetime Adversities and Outcomes of Second-Generation Offenders

Approximately 1.57 million Americans were incarcerated in state or federal correctional facilities at year-end 2013 (Carson, 2014), many of whom were parents (Glaze & Maruschak, 2008). Children who experience family member incarceration are at significantly higher risk of criminal offending and incarceration (Farrington, Coid, & Murray, 2009; Murray, Farrington, & Sekol, 2012). Those children who follow in their parents' footsteps into the criminal justice system (second-generation offenders) likely experience a greater constellation of co-occurring adversities during childhood unique to the context of justice-involved families (Novero, Loper, & Warren, 2011). Among

second-generation offenders, the net result of these challenges during early development can be seen in their adjustment difficulties while in a prison environment (Novero et al., 2011), but investigation of this particular subgroup of criminal offenders is still in its infancy. Better understanding of these offenders is crucial. Family and peer influences are strong indicators of recidivism propensity in many risk-needs responsivity measures utilized by the criminal justice system (Bonta & Andrews, 2007; Latessa & Lovins, 2010). Hence, second-generation offenders already experience a 'stacked deck' of static risk factors by virtue of their early family experiences; as defined by Bonta and Andrews (2007), static risk factors are those historical risk factors that remain constant. Identification of additional risk factors and characteristics associated with this population—particularly those dynamic risk factors that may be amenable to change—is necessary in order to optimally focus interventions to mitigate further negative outcomes.

Multiple theoretical models have been proposed to explain the contextual and temporal mechanisms whereby children of incarcerated parents are at heightened risk for criminal behavior and other poor adjustment outcomes. These models include (1) strain, (2) social control, (3) stigma or labeling, and (4) social learning perspectives.

A strain perspective posits that the incarceration of a parent creates social, emotional, and economic burdens on the family members who are left behind (Hagan & Dinovitzer, 1999). Parental incarceration places emotional strains on the remaining caregiver, not only due to absence of a loved one, but also due to increased financial and supervisory responsibilities assumed by the caregiver as a result (Schwartz-Soicher, Geller, & Garfinkel, 2011). The loss of an adult wage earner creates financial stress on the family, which in turn may be compounded by the cost of phone calls to prison or

transportation to visit the incarcerated family member (Naser & Visher, 2006). These visits can be stressful for families, especially children (Shlafer & Poehlmann, 2010). In addition, children may be compelled to take on additional responsibilities (e.g., taking care of younger siblings, getting a job) that can divert their attention away from school (Hagan & Dinovitzer, 1999). All of these family stressors can impact the child physically and emotionally. As a result, children may be at heightened risk for internalizing (e.g., depression, anxiety) or externalizing (e.g., conduct problems, delinquency) problems and maladaptive coping (e.g., substance abuse) in response to these strains.

Social control theory suggests that negative outcomes among children of incarcerated parents stem from the social support implications of parental absence. When parents are in the home, they serve as a tangible support figure for their children. Social control theory maintains that parents have the potential to guide their children in prosocial directions by virtue of being an accessible presence in the home, regardless of the parent's orientation to criminality. However, maternal or paternal incarceration results in the removal of this parental presence (Hagan & Dinovitzer, 1999). In turn, this can reduce the level and quality of parental supervision and monitoring in a child's home environment. This lack of supervision may open up more opportunities for the child to associate with delinquent peers or engage in other problem behaviors. The incarceration of a parent therefore serves as a tipping point that pushes children onto a path of maladjusted or antisocial behavior (Hagan & Dinovitzer, 1999). Notably, most studies that have identified a relation between parental incarceration and poor parental supervision or management have not distinguished whether the parenting practices occur

prior to the incarceration or as a result of incarceration (Murray, Loeber, & Pardini, 2012).

Maladjustment in children of incarcerated parents likewise has been interpreted through a stigma or labeling perspective. When a parent becomes incarcerated, the child may experience stigma, ostracizing, or bullying from schoolmates or members of his/her community (Nesmith & Ruhland, 2008). This in turn may lead to problem behavior by the child, either in response to, or as an attempt to cope or escape from, the bullying and stigma. Murray, Loeber, et al. (2012) hypothesize a self-fulfilling prophesy related to labeling, such that children of incarcerated parents may engage in deviant behavior as a result of societal expectations that children of incarcerated parents will adopt their parents criminal identities. Due to a fear of being stigmatized, many families of incarcerated parents attempt to hide the incarceration from others in the community (e.g., coworkers, neighbors, the child's school). While this secrecy reduces the potential for being stigmatized, it also precludes the family from relying upon these agencies for support and resources. In addition, this can be difficult for children who feel that they have no one to talk to about their parent's incarceration, subsequently impacting their attachment relationships with remaining caregivers (Murray & Murray, 2010).

Social learning theory suggests that children may learn and adopt behavior patterns from parents who model that behavior in the home. While not always the case, it is likely that parents who become incarcerated exhibit criminal or antisocial behaviors prior to their arrest of which their children are aware. For example, children may observe substance use, drug dealing, theft and other illegal income-earning activities by their parents, which in turn may normalize these activities for children and increase the

propensity of adopting such behaviors. With prolonged or repeated exposure, children may assume these behaviors to be the status quo. A behavior such as dealing drugs, for example, could result in financial and social awards for the parent (e.g., increased income, prestige or respect within a community in which drugs are normalized), thus compelling the observing child to emulate such activities. Substance use, including illegal drug use, is often a normalized behavior within families experiencing intergenerational incarceration patterns (Kjellstrand & Eddy, 2011; Novero et al., 2011; Roettger, Swisher, Kuhl, & Chavez, 2011). The lack of supervision that arises after parental incarceration may also allow the child more opportunities to associate with antisocial peers, whose behaviors they may also emulate (Schwinn & Schinke, 2014).

Three Studies: Experiences of Second-Generation Offenders

The three studies comprising this dissertation examine the impact of parental incarceration on (1) historical reports of child and adolescent antisocial behavior; (2) self-reported exposure to domestic violence during childhood and intimate partner violence in adulthood; (3) use and abuse of alcohol among adults in a large, nationally representative sample.

My first study in this dissertation sequence, *From One Generation to the Next: Childhood experiences of Antisocial Behavior and Parental Incarceration Among Adult Inmates* (Will, Whalen, & Loper, 2014), examined differences in the childhood histories of first and second-generation adult prisoners. Childhood experiences of interest included family and social adversities (abuse, parental mental illness), juvenile conduct disorder markers, and criminal offenses prior to age eighteen. This study used data collected in a study of adjustment and behavior among offenders incarcerated in ten state prisons (n =

418). Among the total sample of 418 offenders, 235 (56.2%) met criteria for second-generation inmate status, defined as having one or more of their parents who had either been arrested or incarcerated.

Preliminary comparisons revealed key demographic differences between first- and second-generation offenders in this study. Specifically, second-generation prisoners were relatively younger and more likely to be male than first-generation prisoners. In addition, higher rates of childhood family adversities were reported among second-generation prisoners.

As predicted, second-generation prisoners exhibited more conduct disorder behaviors during childhood relative to first-generation prisoners, based on self-report. While family adversity partially mediated this relation, parental incarceration maintained a unique predictive contribution to conduct disorder markers. Additionally, male second-generation prisoners were significantly more likely than first-generation offenders to report engagement in juvenile violent and non-violent offending, with trend effects found for drug offending and sentencing to a juvenile facility.

Post-hoc analyses revealed that the distinction between generation groups regarding both conduct disorder behaviors and juvenile delinquency was particularly impacted by gender of the incarcerated parent. Specifically, the significant distinction between first- and second-generation offenders in regard to conduct disorder and delinquency were maintained when offenders reported that only their mother or both parents were incarcerated, while the distinction between paternal-only incarceration and first-generation offenders was reduced to a non-significant trend effect.

These findings add to the body of research evidence that has identified children of incarcerated parents as a population at greater risk of antisocial and criminal activity (Murray, Farrington, et al., 2012). These results, in tandem with an earlier investigation of this sample (Novero et al., 2011), identified the importance of family contextual adversities (beyond parental incarceration) as contributory factors related to poorer outcomes among second-generation prisoners. This family adversity was examined in greater depth in the second study of this dissertation.

The second study of this dissertation, *Second-Generation Prisoners and the Transmission of Domestic Violence* (Will, Loper, & Jackson, 2014), extended the investigation of the first study by identifying specific transactional mechanisms of domestic violence present in the lives of second-generation offenders. Specifically, this study examined prisoners' historical experiences of exposure to domestic violence between parental caregivers during childhood, as well as their reports of intimate partner violence in adult relationships prior to prison. This study drew from the same data set of adult offenders from 10 prisons used in the first study of this dissertation. This second study consisted of a subsample of 293 inmates who provided valid data on violence measures of interest, of which 132 offenders (45.1%) were identified as second-generation prisoners by virtue of reporting that either their mother or father had been incarcerated. Preliminary analyses of these 293 offenders revealed the second-generation status group as significantly younger than first-generation group, consistent with demographic characteristics of the first study. While the generation groups did not differ in regards to gender, gender distinctions were found in regards to several of our outcome

variables related to intimate partner violence, and thus gender and age were both maintained as covariates in all analyses.

This study utilized an expanded measure of parental domestic violence to capture a wider range of violent behaviors in the home to which offenders had been exposed (in comparison to the single-item pertaining to domestic violence exposure used in Study 1). In an initial baseline exploration of family domestic violence transmission patterns among the entire prison sample, we discovered that offenders who experienced parental domestic violence as children (51.5% of the sample) were significantly more likely than non-exposed offenders to report subsequently engaging in intimate partner violence in their own relationships as adults. This effect, which was apparent in terms of inflicting injury upon a partner as well as being a victim of injurious assault committed by a partner, was consistent with pre-existing literature regarding domestic violence patterns within families (Hill & Nathan, 2008; Kalmuss, 1984). In addition, domestic violence exposure was particularly predictive of more severely violent acts of injury, as compared to minor injury perpetration and victimization.

We extended this investigation of the trajectory of partner violence specifically among first- and second-generation groups. As predicted, second-generation prisoners were more likely than first-generation prisoners to report exposure to parental-figure domestic violence during childhood. The second-generation group was more likely to report having been injured by an intimate partner in a pre-prison relationship; however, second- and first-generation offenders did not differ in reported rates of injury perpetration in adult relationships. Additionally, the relationship between parental incarceration and injury victimization was mediated by childhood exposure to domestic

violence, highlighting the particularly strong influence of risk factors beyond parental incarceration that contribute specifically to domestic violence outcomes among prisoners.

These two dissertation studies form a foundation of evidence identifying second-generation offenders as distinct from other offenders across a variety of contextual and long-term adjustment experiences. However, Study 1 and Study 2 both drew from the same sample of incarcerated adults in prisons from two US states. Incarcerated adults in state prison are only one subgroup of the millions of adults who are or were involved in the US criminal justice system (Carson, 2014; Glaze & Kaeble, 2014). Thus, it is unknown how second-generation offenders may fare in wider contexts beyond the prison environment. Given the considerable evidence attesting to the relation between parental incarceration and a wider scope of antisocial behavior (Aaron & Dallaire, 2010; Kjellstrand & Eddy, 2011; Murray & Farrington, 2005; Murray, Farrington, et al., 2012), it is necessary to draw upon a community-based sample of adults in order to capture the experiences of individuals who engage in criminal activity resulting in a broader variety of adjudication outcomes.

The final study in this dissertation, *Alcohol Consumption and Alcohol Use Disorder Among First- and Second-Generation Offenders*, further explored differential adjustment outcomes in second-generation adult offenders. This study directly extended past research regarding substance use outcomes among children of incarcerated parents in the Add Health dataset (Foster & Hagan, 2013; Roettger et al., 2011) by evaluating whether these findings hold within a subsample of individuals involved in the criminal justice system. Specifically, we used data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a longitudinal, community-based, and

nationally representative study, to investigate differential experiences of first- and second-generation offenders with regards to risky alcohol use patterns.

In contrast to the first two studies of state prison inmates, our third study widened our sample of offenders to include individuals who reported prior criminal convictions, incarcerations, and/or community supervision (e.g., probation) for an offense. We evaluated first- and second-generation offenders in the sample with regard to three primary outcomes: the frequency at which participants engaged in binge alcohol use as adults, alcohol consumption during participants' peak alcohol use across their lifetime, and DSM-IV symptoms of alcohol use disorder.

On average, alcohol use – and in particular, binge use – is initiated during adolescence, increases steadily over the next several years until peaking in young adulthood (early 20's), then gradually declines with age over subsequent years (Johnston, O'Malley, Bachman, Schulenberg, & Miech, 2014a, 2014b). Heavy alcohol use in late adolescence is associated with increased alcohol consumption in adulthood, higher rates of alcohol dependence, and increased risk of premature death (McCambridge, McAlaney, & Rowe, 2011). Approximately 33% of females and 50% of males who binge drink as adolescents continue to engage in binge alcohol use as adults (McCarty et al., 2004). Therefore, in order to capture the natural development, variation, and flux of alcohol use across the lifespan, we measured alcohol outcomes at multiple time points, during which we measured past 12-month patterns of alcohol use as well as participants' self-reported peak lifetime use. We evaluated alcohol outcomes at two waves of measurement: Wave III (weighted mean age = 22.32, range: 18-28) and Wave IV (weighted mean age = 28.82, range: 24-34).

Consistent with our prior two studies, second-generation offenders reported higher rates of childhood adversity, including physical abuse, parental alcoholism and lower socioeconomic status. First-generation offenders were more likely to report that their residential mother had achieved a high school or college degree. Contrary to earlier smaller prison studies, second-generation offenders were more likely to identify as a racial minority than first-generation offenders.

Preliminary bivariate analyses revealed that parental incarceration significantly predicted frequency of binge alcohol use and frequency of any alcohol use at Wave III; however, parental incarceration was unrelated to amount per use or the overall Alcohol Use Composite at Wave III. Additionally, no relation was found between parental incarceration and any Wave IV alcohol outcomes. In multiple regression models, the relations between parental incarceration and Wave III alcohol use were no longer significant with control of covariates reflecting contextual risk factors and demographic characteristics. Throughout both waves of data collection, the most significant predictors of high alcohol use outcomes included male gender and higher number of alcohol-using peers at baseline. Race was also a consistent predictor of alcohol outcomes, in that African Americans had significantly lower and less problematic alcohol use outcomes, relative to Caucasians. Surprisingly, parental alcoholism and childhood abuse were largely unrelated to alcohol outcomes in our models, with exception of a positive prediction on the number of DSM-IV symptoms.

Given the high prevalence rate of substance use disorders among forensic populations (Fazel, Bains, & Doll, 2006; James & Glaze, 2006; Kerner, Weitekamp, Stelly, & Thomas, 1997), and the relative dearth of scholarship investigating this

experience among second-generation offenders specifically, our study makes a relevant and important contribution to current literature base on generational patterns of criminality. The results of our study indicate that, among criminal offenders, parental incarceration does not have a direct effect on risky alcohol use or alcohol use disorder markers. Rather, it is more likely that, when parental incarceration occurs, it is experienced in concert with a constellation of associated adversities—such as lower socioeconomic status, residential and caregiver instability, and family substance abuse—which may in turn increase relative risk of various disconcerting outcomes. These non-significant effects for parental incarceration help elucidate the particular experiences of second-generation offenders. Specifically, our results suggest that, when intervening with children of incarcerated parents, alcohol abuse may not be of primary or immediate concern, relative to other potential areas of intervention. In sum, this line of research will hopefully shed light on the experiences of second-generation offenders and help to inform future understanding and intervention with this group of justice-involved individuals.

References

Aaron, L., & Dallaire, D. H. (2010). Parental incarceration and multiple risk experiences: Effects on family dynamics and children's delinquency. *Journal of Youth Adolescence, 39,* 1471-1484. doi:10.1007/s10964-009-9458-0

Bonta, J., & Andrews, D. A. (2007). *Risk-need-responsivity model for offender assessment and rehabilitation* (User Report 2007–06). Ottawa, Ontario: Public Safety Canada.

Carson, E. A. (2014). Prisoners in 2013. *Bureau of Justice Statistics Bulletin.* Washington, DC: US Department of Justice.

Farrington, D. P., Coid, J. W., & Murray, J. (2009). Family factors in the intergenerational transmission of offending. *Criminal Behaviour & Mental Health,* 19, 109-124. doi:10.1002/cbm.717

Fazel, S., Bains, P., & Doll, H. (2006). Substance abuse and dependence in prisoners: A systematic review. *Addiction, 101,* 181-191. doi:10.1111/j.1360-0443.2006.01316.x

Foster, H., & Hagan, J. (2013). Maternal and paternal imprisonment in the stress process. *Social Science Research, 42,* 650-669. doi: 10.1016/j.ssresearch.2013.01.008

Glaze, L. E., & Kaeble, D. (2014). Correctional populations in the United States, 2013. *Bureau of Justice Statistics Bulletin.* Washington, DC: US Department of Justice.

Glaze, L. E., & Maruschak, L. M. (2008). Parents in prison and their minor children. *Bureau of Justice Statistics Special Report.* Washington, DC: US Department of Justice.

Hagan, J., & Dinovitzer, R. (1999). Collateral consequences of imprisonment for children, communities, and prisoners. *Crime and Justice, 26,* 121-162. doi:10.1086/449296

Hill, J., & Nathan, R. (2008). Childhood antecedents of serious violence in adult male offenders. *Aggressive Behavior, 34,* 329-338. doi:10.1002/ab.20237

James, D. J., & Glaze, L. E. (2006). Mental health problems of prison and jail inmates. *Bureau of Justice Statistics Special Report.* Washington, D.C.: U.S. Department of Justice.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Miech, R. A. (2014a). Monitoring the Future national survey results on drug use, 1975-2013: Volume I, Secondary school students. Ann Arbor: Institute for Social Research, The University of Michigan.

Johnston, L. D., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Miech, R. A. (2014b). Monitoring the Future national survey results on drug use, 1975-2013: Volume II, college students and adults ages 19-55. Ann Arbor: Institute for Social Research, The University of Michigan.

Kalmuss, D. (1984). The intergenerational transmission of marital aggression. *Journal of Marriage and Family, 46,* 11-19.

Kerner, H., Weitekamp, E. G. M., Stelly, W., & Thomas, J. (1997). Patterns of criminality and alcohol abuse: Results of the Tuebingen criminal behaviour development study. *Criminal Behaviour and Mental Health, 7,* 401-420. doi:10.1002/cbm.197

Kjellstrand, J. M., & Eddy, J. M. (2011). Parental incarceration during childhood, family context, and youth problem behavior across adolescence. *Journal of Offender Rehabilitation, 50*, 18-36. doi:10.1080/10509674.2011.536720

Latessa, E. J., & Lovins, B. (2010). The role of offender risk assessment: A policy maker guide. *Victims and Offenders, 5,* 203-219. doi:10.1080/15564886.2010.485900

McCambridge, J., McAlaney, J., & Rowe, R. (2011). Adult consequences of late adolescent alcohol consumption: A systematic review of cohort studies. *PLoS Medicine*, *8*, 1-13. doi: 10.1371/journal.pmed.1000413

McCarty, C. A., Ebel, B. E., Garrison, M. M., DiGiuseppe, D. L., Christakis, D. A., & Rivara, F. P. (2004). Continuity of binge and harmful drinking from late adolescence to early adulthood. *Pediatrics*, *114*, 714-719. doi:10.1542/peds.2003-0864-L

Murray, J., & Farrington, D. P. (2005). Parental imprisonment: Effects on boys' antisocial behavior and delinquency through the life-course. *Journal of Child Psychology and Psychiatry, 46,* 1269-1278. doi:10.1111/j.1469-7610.2005.01433.x

Murray, J., Farrington, D., & Sekol, I. (2012). Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: A systematic review and meta-analysis. *Psychological Bulletin, 138*, 175-210. doi:10.1037/a0026407

Murray, J., Loeber, R., & Pardini, D. (2012). Parental involvement in the criminal justice system and the development of youth theft, marijuana use, depression, and poor academic performance. *Criminology, 50,* 255-302. doi: 10.1111/j.1745-9125.2011.00257.x

Murray, J., & Murray, L. (2010). Parental incarceration, attachment, and child psychopathology. *Attachment and Human Development, 12,* 289-309. doi:10.1080/14751790903416889

Naser, R.L., & Visher, C.A. (2006). Family members' experiences with incarceration and reentry. *Western Criminology Review, 7*, 20-31.

Nesmith, A., & Ruhland, E. (2008). Children of incarcerated parents: Challenges and resiliency, in their own words. *Children and Youth Services Review, 30*, 1119-1130. doi:10.1016/j.childyouth.2008.02.006

Novero, C., Loper, A., & Warren, J. (2011). Second-generation prisoners: Adjustment patterns for inmates with a history of parental incarceration. *Criminal Justice and Behavior, 38*, 761-778. doi:10.1177/0093854811406637

Roettger, M. E., Swisher, R. R., Kuhl, D. C. & Chavez, J. (2011). Paternal incarceration and trajectories of marijuana and other illegal drug use from adolescence into young adulthood: Evidence from longitudinal panels of males and females in the United States. *Addiction, 106*, 121–132. doi:10.1111/j.1360-0443.2010.03110.x

Schwartz-Soicher, O., Geller, A., & Garfinkel, I. (2011). The effect of paternal incarceration on material hardship. *Social Service Review, 85*, 447-473. doi:10.1086/661925

Schwinn, T. M., & Schinke, S. P. (2013). Alcohol use and related behaviors among late-adolescent urban youths: Peer and parent influences. *Journal of Child & Adolescent Substance Abuse, 23,* 58-64. doi: 10.1080/1067828X.2012.735561

Shlafer, R. J., & Poehlmann, J. (2010). Attachment and caregiving relationships in families affected by parental incarceration. *Attachment & Human Development, 12*, 395-415. doi:10.1080/14616730903417052

Will, J. L., Loper, A. B., & Jackson, S. L. (2014). Second-generation prisoners and the transmission of domestic violence. *Journal of Interpersonal Violence.* Advance online publication. doi:10.1177/0886260514555127

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From One Generation To The Next: Childhood Experiences of Antisocial Behavior and Parental Incarceration Among Adult Inmates

Joanna L. Will, Mathilde Logan Whalen, & Ann B. Loper

University of Virginia

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Abstract

The recent climb in US incarceration rates is paralleled by a growing number of children experiencing parental incarceration, some of whom follow their parents to prison as second-generation offenders. This study examines the historical experiences of 470 first- and second-generation incarcerated adults. Second-generation offenders reported more conduct disorder behaviors occurring prior to age 15, proportionately more juvenile criminal offending, and more childhood adversity than first-generation offenders. Childhood adversity partially mediated the relation between generation status and conduct disorder, but second-generation status maintained a unique direct effect. Similar analyses regarding juvenile offending among males did not support an adversity mediation model.

From one generation to the next: Childhood experiences of antisocial behavior and parental incarceration among adult inmates

Recent government data indicate that approximately 1.6 million individuals are currently in federal or state prison in the US (Guerino, Harrison, & Sabol, 2011), reflecting a steady rise in the prison population since the 1980's. With the climb in the number of incarcerated individuals, there has been parallel growth in the number of children affected by incarceration. Those children who grew up in the 1980's and 1990's are now themselves adults, and among them is a subgroup that followed their parents into prison. This cohort, which we term as second-generation offenders, has a unique history: they faced having parents involved in the justice system. This difficult experience may go hand-in-hand with other adversities during childhood. As prisons design mental health and other rehabilitative interventions for inmates, it is important to understand relevant historical events associated with this unique context.

The purpose of this study is to examine historical experiences of second-generation in contrast to those of first-generation offenders in prison. We define second-generation offender status based on a prisoner's self-reported experience of having a parent who was either arrested or incarcerated during the prisoner's childhood. Antisocial behavior is one of the most robust predictors of adult incarceration (Schaeffer, Petras, Ialongo, Poduska, & Kellam, 2003), and we examined early markers of antisocial behavior, including conduct disorder and juvenile offending, among first- and second-generation prisoners. We also examine the presence of other familial adversities that may

be experienced differentially by second-generation offenders, and further probe whether such family adversities account for observed differences between cohorts in antisocial behavior. A unique history of antisocial behavior among second-generation offenders could distinguish this cohort from their first-generation counterparts and have implications for rehabilitative efforts for inmates who themselves once dealt with having a justice-involved parent.

Impact of a History of Antisocial Behavior

There is considerable evidence that early problems with conduct disorder and other antisocial behaviors provide a pathway to adult offending (Kratzer & Hodgins, 1997; Pajer, 1998). Moffitt (1993) identified a "developmental taxonomy" of youth antisocial behavior and conduct disorder. She theorized that earlier onset of antisocial behavior corresponds to more frequent and severe antisocial behavior and offending into adulthood. Further research by Moffitt and colleagues (Moffitt, Caspi, Harrington, & Milne, 2002) confirmed that youth who start offending in childhood and adolescence have significantly higher frequencies of criminal offending in adulthood, relative to non-offending peers, and that younger onset of antisocial behavior corresponds with higher rates of violent offending. The conclusions from this body of work have been broadly supported in delinquency research. When measured from first through seventh grade, children with chronically high or increasing levels of aggression have higher rates of juvenile and adult arrests and are more likely to meet criteria for conduct disorder and antisocial personality disorder, in comparison with children who have moderate, age-appropriate levels of aggression (Schaeffer et al., 2003). Numerous recent investigations have continued to confirm the linkage between juvenile conduct disorder and offending

with adult criminal transgression (e.g. Mulder, Brand, Bullens & van Merle, 2011; Murray, Irving, Farrington, Colman, & Bloxsom, 2010).

This general pattern of association between antisocial behavior during youth and adulthood may vary depending on individual variables. Notably, patterns of juvenile antisocial activities differ by gender. Conduct disorder problems are higher in adolescent males (6 - 16%) than females (2 - 9%), and age of onset typically occurs later in females. Offenses among males diagnosed with conduct disorder more often include characteristics of confrontational aggression and violence, theft, or property destruction, whereas females with conduct disorder problems more often engage in substance use, prostitution, or age-related norm violations, such as truancy and running away from home (American Psychiatric Association, 2000; Murray & Farrington, 2010). These gender differences in patterns of behavior during youth can relate to variations in adult offending patterns (Elander, Simonoff, Pickles, Holmshaw & Rutter, 2000).

There are a myriad of associated risks that often accompany youth who engage in early antisocial behavior. In a study of trajectories to adult criminal conviction, Murray and colleagues (2010) observed that the expected chain of conduct problems at early ages predicted offending at older ages, which in turn predicted adult offending. However, they also examined the influence of other contextual risk factors, including pregnancy and birth factors (maternal smoking during pregnancy and birth complications), child factors (visual-motor skills and hyperactivity), parent factors (low cognitive stimulation, maternal depression, parental loss), and socioeconomic factors (mother's pregnancy occurring during teenage years, single mother, large family, and poor neighborhood). They found support for an accumulated risk model, in that higher risk scores were

correlated with increased conduct problems in childhood and increased criminality in adulthood. Along similar lines, in a study of adjudicated juvenile delinquents in the Netherlands, Mulder and colleagues (2011) observed that additional risk factors, such as a history of abuse and neglect, were important in understanding the developmental trajectory toward offending. Numerous studies attest that children who are victims of maltreatment are more likely to engage in antisocial behaviors and criminal offending (Loeber, Burke & Lahey, 2002; Widom, 1989) and recent scholars have emphasized the importance of accounting for such associated risks before drawing conclusions about correlational pathways to adult offending (Johnson & Easterling, 2012).

Negative Outcomes for Children of Incarcerated Parents

The previous body of research confirms the relevance of early engagement in antisocial behavior with future adult offending, and underscores the importance of understanding the predictors of youth antisocial behavior that seem to "get the ball rolling" toward adult incarceration. Given the rapid increase in the number of adult offenders during the previous three decades, it is not surprising that the experience of being the child of an incarcerated parent has gathered considerable attention as one such prominent predictor. Murray, Farrington, and Sekol (2012) conducted a meta-analysis of 40 studies linking parental incarceration to negative child outcomes. They identified an association between parental incarceration and youth antisocial behavior that was robust with control for numerous associated risks. The experience of parental incarceration places children at risk for later being incarcerated themselves (Farrington, Coid & Murray, 2009) and for increased anti-social behavior throughout their lives (Murray & Farrington, 2005, 2008). Along similar lines, Roettger and Swisher (2011) used a

national probability sample and found that paternal incarceration was associated with elevated risk for adult arrest, after control for several structural, familial, and adolescent characteristics.

Several theoretical mechanisms have been proposed to explain the impact of parental incarceration on a child's lifelong psychosocial adjustment, including antisocial behavior. Several such theories stress the disruption caused by parental incarceration that can be found directly within the family system, including strain, social control, disrupted attachment, stigma, and selection. Strain theory emphasizes the difficulty of financial strains and social instability that often result from parental incarceration (e.g., decreased family income and parental supervision) and contribute to the child's emotional adjustment (Hagan & Dinovitzer, 1999). A social control perspective stresses the impact that decreased supervision might have on a child's behavior. Children may be more apt to engage in delinquent activities when they are not being effectively monitored or disciplined (Hagan & Dinovitzer, 1999; Sampson & Laub, 1993).

An attachment perspective stresses the impact of disruptions within the family system on the developmental outcomes of children within that system (Bowlby, 1988). Children whose parents become involved with the justice system, either through arrest or through being jailed or imprisoned, may be more likely to develop an insecure attachment style (Poehlmann, 2005). The lack of stability in the child's home environment and complicated relations with caregivers may provoke feelings of insecurity in the child that, in turn, lead to increased externalizing behaviors (Hagen & Myers, 2003), marked by higher rates of conduct disorder and juvenile offending.

This disruption may be more pernicious when the mother, often the primary caregiver, is involved. Differences between the impact of maternal and paternal incarceration are just beginning to emerge in the literature. Recent findings indicate that maternal incarceration may result in more disruption, leading to greater risk for negative developmental outcomes (Murray & Murray, 2010; Novero, Loper & Warren, 2011). One way in which the experiences of maternal and paternal incarceration differ is through residential instability. While children of an incarcerated father often remain with their mother or stepmother, children of an incarcerated mother are likely to live with their grandmother (Glaze & Maruschak, 2008), or in a non-familial placement (Dallaire, 2007). Furthermore, children of an incarcerated mother are exposed to more parental criminal behavior and are more likely to self-report higher rates of maladjustment (Dallaire & Wilson, 2010).

A social stigma perspective focuses on the experience of parental incarceration in terms of its impact on the way a child or family relates to their environment. The stigma associated with parental incarceration often separates a family from supportive community resources, despite their increased level of distress and need for assistance (Hagen & Myers, 2003).

Alternatively, selection theories conceptualize the negative impact of parental incarceration within a complex web of associated adversities, such as parental mental illness (Murray & Farrington, 2008). Children of incarcerated parents are more likely than those without a history parental incarceration to experience physical and sexual abuse (Phillips, Erkanli, Keeler, Costello, & Angold, 2006). From a selection perspective, the association between parental incarceration and negative outcomes is

primarily explained by other associated risk factors (Murray & Farrington, 2008). Conversely, it may be that as multiple risk factors co-occur, they have an accumulating impact on behaviors like delinquency. This provides a perspective that incorporates the co-occurring internal and external stressors faced by families as they cope with incarceration.

Second-Generation Offenders

Individuals who grow up with justice-involved parents may face a constellation of childhood adversities that put them at a disadvantage relative to peers who do not have justice-involved parents. However, it is unclear whether this distinction between youth who grow up with a justice-involved parent and those who do not continues to apply among those youth who then go on to prison. Adverse childhood histories are evident in many prisoners. The relative importance of parental incarceration may fade among a prison population that shares numerous risk factors.

Novero and colleagues (2011) compared adjustment outcomes of first- and second-generation prisoners, defined as those who did and did not report having a parent in prison or jail during their childhood. They found that second-generation inmates experienced higher levels of childhood adversities, such as being victims of abuse or having mentally ill parents. With statistical control for these reported adversities, the researchers observed that second-generation prisoners reported more anger and institutional violence than first-generation inmates and had higher rates of write-ups for institutional misconduct. Thus, the experience of being a child with an incarcerated parent had effects that were apparent even within this larger cohort of prisoners who likewise experienced considerable childhood adversity. Among prisoners, the previous

experience of parental incarceration appears to contribute unique risk of negative outcomes above and beyond associated childhood adversities.

Based on the growing number of offenders in recent decades and the linkage between parental incarceration and adult offending, it is reasonable to assume that there is a substantial population of second-generation offenders in prisons today. It is important to better understand the historical behavior patterns among this sizeable group of second-generation inmates and determine if they differ systematically from those of first-generation inmates. Understanding the past experiences of second-generation offenders is important for professionals working with these offenders, because many prisoners may need clinical attention related to childhood experiences.

The purpose of this study was to examine historical markers of youth antisocial behavior among second-generation prison inmates, defined as those who had experienced an incarcerated or arrested parent during their youth, as contrasted to first-generation inmates who did not have justice-involved parents. We posed three questions: (1) whether first- and second-generation offenders differed in terms of a history of antisocial behavior; (2) whether first- and second-generation offenders differed in terms of other familial accumulated adversity factors; and (3) whether obtained differences in youth antisocial behavior between first- and second-generation offenders was mediated by other familial accumulated adversity factors. Pursuant to these questions, we hypothesized that second-generation prisoners would report more conduct disorder markers and more juvenile offending than first-generation inmates, and that second-generation offenders would report more accumulated familial adversity, but that differences between the

groups in familial adversity factors would not fully account for differences between first- and second-generation offenders.

Method

Participants and Procedure

Participants were recruited from ten prisons (7 male, 3 female) within two state jurisdictions and were part of a larger study regarding prisoners (Warren, Jackson, Loper, & Burnette, 2009). Within each institution, a cohort of inmates (between 50 and 200, depending upon institution population) was randomly selected and invited to participate in an interview and complete paper and pencil measures regarding their experiences prior to and during prison. The selection process resulted in a total of 470 consenting participants (37% response rate) composed of 288 men and 182 women. The demographic composition of the resulting sample was consistent with US national trends (Guerino et al., 2011), with the exception of a larger proportion of women. This intentional oversampling of women enabled sufficient sample size for gender comparisons. From this pool of 459 individuals, 418 provided sufficient information for current analyses.

Participants for the present study included 250 (59.8%) men and 168 (40.2%) women. Of this sample, 235 (56.2%) indicated having one or more parents who had either been arrested or incarcerated (second-generation offenders) in contrast to 182 (43.8%) inmates who reported that neither their mother nor father had ever been arrested or incarcerated (first-generation offenders). There were 22 cases in which inmates reported that their mother was not arrested or imprisoned, but that they were unaware of the offender status of their father, typically because they did not grow up with or know

their father. In these cases, we considered these individuals as first-generation offenders. There were no differences between this subgroup and the remaining first-generation offenders on any of the variables under consideration in the present study.

Measures

Demographics and characteristics. Participants completed a brief paper-and-pencil measure on which they were asked to report their race, age, and current sentence. An institutional file review was conducted to collect information regarding the participants' most serious current offense.

Generation status. We identified the subsample of second-generation offenders by a positive response to any of four self-report items. Items queried whether their (1) mother or (2) father had ever been arrested (two items) and whether their (3) mother or (4) father had ever been sent to jail or prison (two items).

Juvenile conduct disorder. The Structured Interview for DSM-IV Personality Disorders (SIDP-IV; Pfohl, Blum, & Zimmerman, 1995) was used to retrospectively measure participants' conduct disorder behaviors. The SIDP-IV is a semi-structured interview designed to assess the 10 DSM-IV personality disorders. As part of the adult antisocial personality scale, the measure includes assessment of youth conduct disorder, which is a criterion for antisocial personality. The conduct disorder scale of the measure mirrors the fifteen DSM-IV criteria for conduct disordered behaviors that occurred prior to 15 years of age. Based on the semi-structured interview, raters assigned a value of "1" or "0" to each of the 15 items. Responses were then summed to indicate the total number of conduct disorder markers that the participant endorsed.

Prior to collecting data, each of ten study interviewers took part in workshops to learn coding procedures. After training but prior to data collection, each of the ten interviewers independently scored ten test cases that were videotaped for coding purposes. The intraclass coefficient for interrater reliability regarding conduct disorder was .713, indicating strong agreement among raters (Landis & Koch, 1977).

Juvenile offending. From our initial pool of 418 inmates, 314 inmates self-reported their history of juvenile offending, defined as criminal acts prior to age 18. The limited number of respondents reflected varying time limits at institutions that interfered with completion of all measures. For each of fourteen types of offending, inmates indicated whether or not they had ever committed the act, the number of times the act was committed, and whether they had been arrested for the act. Inmates also reported whether they had spent time in a juvenile detention or correctional institution. For the present study, we classified offenses into categories of violent juvenile offending (aggravated assault, child abuse, homicide, robbery, stalking, simple assault), non-violent offending (burglary, fraud/forgery, disorderly conduct, theft, other non-violent), and drug offending (illegal drug use/distribution). There were not enough reported instances of sexual offending (rape, other sex crimes) to permit analyses (11 reports, 2.6% of sample). For each of the four juvenile offending variables, endorsement of at least one offense within the relevant category was scored as "1," and no reports of any such offenses within the relevant category was scored as "0." The decision to treat the data as dichotomous was based on the marked positive skew in the distributions for frequency totals within offending categories (7.95, 3.31, and 6.37, for violent, non-violent, and drug offending, respectively).

The Adverse Childhood Experiences Study Questionnaire. We used five indicators from the Adverse Childhood Experiences Study Questionnaire (ACE; Felitti, Anda, & Nordenberg, 1998) to capture the history of accumulated negative events that participants experienced prior to age 18 (range = 0 – 5). On the ACE, adversity indicators are scored as present if the participant endorses any item within each adversity category. The five adversity categories are: psychological abuse (two items), physical abuse (two items), sexual abuse (four items), witnessing violence against mother/stepmother (four items), and household mental illness (one item). The original ACE was modified in the present study to reflect adversity as perpetrated by a caregiver (mother, father, stepmother, etc.) rather than any household member. Two adversity indicators were not used in the present study. An adversity indicator regarding parental incarceration was omitted due to overlap with our primary independent variable of having a justice-involved parent. A parental substance abuse adversity indicator was also omitted due to substantial overlap with second-generation offender status (n = 178, 75.7%). We thus estimated childhood adversity based on the sum of the dichotomous (0, 1) responses to five items (range = 0 – 5).

Analysis Plan

We conducted preliminary analyses to describe our sample and determine potential variables beyond the intent of this study that require statistical control. To answer our initial question regarding differences between first and second-generation offenders on child antisocial markers, we used ANCOVA to contrast groups on the continuous conduct disorder variable, and logistic regression procedures to contrast groups on the dichotomous youth offending variables. We supplemented these analyses

by contrasts of each of three possible sub-categories of second-generation offending (mother-only, father-only, both mother and father) to the first-generation cohort. In order to respond to our second major question, we used ANCOVA to contrast ACE scores for the two cohorts, and as before, conducted supplementary analyses that included sub-categories of second-generation offenders. Finally, we used bootstrapping mediation procedures to evaluate whether accumulated family adversity factors accounted for observed patterns of relation between generation status and juvenile antisocial behavior.

Results

Preliminary Analyses

We examined the relation of each of the demographic and criminal characteristics with offender status. As reported in Table 1, proportionately more men (66.0%) reported a justice-involved parent than did women in our sample (34.0%), χ^2 (df = 1) = 8.44, p = .003, φ = .14. Inmates who reported a justice-involved parent were also younger than first-generation offenders, F (1,416) = 22.66, $p < .001$, $_p\eta^2 = .052$. There was a trend difference reflecting a somewhat larger representation of minority members (56.6% Non-White versus 43.4% White) within the second-generation cohort, χ^2 (df = 1) = 3.81, p = .060, φ = .10. In subsequent primary analyses we initially controlled for gender, age, and ethnic status of the inmate. However, as ethnic status did not afford significant prediction in any of our analyses, we dropped it as a covariate. There were no statistically significant differences between groups in terms of sentence length or offense category.

Question 1. Do first- and second-generation offenders differ in terms of a history of antisocial behavior?

Juvenile conduct disorder. ANCOVA procedures evaluated generation group differences in the number of conduct disorder markers, controlling for age and gender effects. There was a significant relation between gender and the number of juvenile conduct disorder markers, F (1,414) = 59.85, $p < .001$, ${}_p\eta^2 = .126$, with men recollecting more such events than did women. Likewise, younger inmates reported more conduct problems during their youth than did older inmates, F (1,414) = 40.06, $p < .001$, ${}_p\eta^2 = .088$. With statistical control of these two variables there remained a significant effect for offender generation status, F (1,414) = 13.97, $p < .001$, ${}_p\eta^2 = .03$, indicating that second-generation offenders reported more juvenile conduct disorder markers. Descriptive information regarding juvenile conduct disorder as well as other major variables is summarized in Table 2.

We followed this analysis with a secondary analysis in which we partitioned the second-generation offender group into those who reported having a justice-involved mother, father, or both mother and father and examined planned contrasts between each of these groups to the first-generation offender group. As expected from our previous analysis, there was a significant main effect for parental justice involvement, F (3,412) = 9.37, $p < .001$, ${}_p\eta^2 = .06$, after control for age and gender. Post-hoc planned contrasts revealed a significant difference in the number of conduct disorder markers between first-generation offenders and offenders who reported a justice-involved mother (Contrast Estimate = 1.12, $\sigma = .50$, $p = .026$), as well those who reported a justice-involved mother and father (Contrast Estimate = 2.19, $\sigma = .42$, $p < .001$). There was a trend effect for the differences between first-generation offenders and offenders who reported a justice-involved father (Contrast Estimate = .601, $\sigma = .32$, $p = .062$). Table 3 summarizes

descriptive information regarding juvenile conduct disorder for the three subsets of second-generation offenders in contrast to first-generation offenders.

Juvenile offending. A series of logistic regression analyses evaluated the relation between generation status and each of the juvenile offending variables among our sample of offenders. As predicted, after controlling for age effects, we observed significant relations between generation status and juvenile violent offending (Wald [$df = 1$] = 14.54, $p = .001$, $OR = 4.35$), juvenile non-violent offending (Wald [$df = 1$] = 13.50, $p = .001$, $OR = 3.03$), juvenile drug offending (Wald [$df = 1$] = 12.66, $p = .001$, $OR = 3.02$), and sentencing to a juvenile facility (Wald [$df = 1$] = 12.38, $p = .001$, $OR = 3.25$). However, these effects accompanied significant interaction effects indicating differential patterns between men and women for all four variables. Specifically, men and women differed in relations between generation status and juvenile violent offending (Wald [$df = 1$] = 8.23, $p = .004$, $OR = 3.69$), juvenile non-violent offending (Wald [$df = 1$] = 6.53, $p = .011$, $OR = 2.63$), juvenile drug offending (Wald [$df = 1$] = 6.27, $p = .012$, $OR = 2.57$), and sentencing to a juvenile detention facility (Wald [$df = 1$] = 5.98, $p = .015$, $OR = 2.67$).

Further analyses revealed that for all four offense variables, the generation status effect was present only for the male sample. Specifically, controlling for age effects, second-generation male offenders were more likely to report juvenile violent offenses (Wald [$df = 1$] = 5.23; $p = .022$, $OR = 2.20$; Nagelkerke $R^2 = .133$), as well as juvenile non-violent offenses (Wald [$df = 1$] = 4.43; $p = .035$, $OR = 2.35$; Nagelkerke $R^2 = .073$). There were non-significant trend effects for juvenile drug offending ($p = .065$) and for juvenile detention ($p = .086$). Each of these analyses was non-significant for the female sample.

As with the conduct disorder analyses, we conducted secondary analyses in which we subdivided the second-generation offender group by the gender of the reported justice-involved parent (mother only, father only, and both parents). As our main analyses indicated that relations between generation status and offending were not evident among the women, we limited these secondary analyses to the men only. Logistic regression analyses evaluated the relation between the categories of second-generation offender status and juvenile offending while controlling for age. The odds of correctly predicting juvenile violent offending among the three groups of second-generation offenders in contrast to first-generation offenders quadrupled if both the mother and father of the offender was arrested or incarcerated (Wald [$df = 1$] = 9.20; $p = .002$, $OR = 4.63$) or if the mother alone was incarcerated (Wald [$df = 1$] = 6.57; $p = .010$, $OR = 4.34$). There was no observed relation if only the father of the offender was arrested or incarcerated.

Question 2. Do first- and second-generation offenders differ in terms of familial adversity?

ANCOVA procedures evaluated generation group differences in the number of childhood adversity markers, controlling for age and gender effects. There was a significant relation between age and the number of juvenile childhood adversity markers, $F(1,414) = 5.967$, $p = .015$, ${}_p\eta^2 = .014$), with younger inmates recalling more adversity. The relation of gender to number of adversities was not significant, $F(1,414) = 2.971$, $p = .086$. With statistical control of these two variables, there remained a significant effect for offender generation status, $F(1,414) = 33.186$, $p < .001$, ${}_p\eta^2 = .074$.

As in previous analyses, we conducted secondary analyses in which we partitioned the second-generation offender group by the gender of the reported justice-involved parent (mother-only, father-only, both mother and father) and contrasted groups to first-generation offenders. As expected from our previous analysis, there was a significant main effect for parental justice involvement in the four groups, F (3,412) = 15.002, $p < .001$, ${}_p\eta^2 = .098$, after control for age and gender effects. Post-hoc planned contrasts revealed significant differences between each of the three second-generation cohorts and the first-generation cohort. Specifically, first-generation offenders reported fewer markers of childhood adversity than did inmates with justice-involved mothers (Contrast Estimate = .83, $p = .004$, $\sigma = .24$), inmates who reported a father who was justice-involved (Contrast Estimate = .72, $p < .001$, $\sigma = .18$), and inmates who reported both a mother and father who were justice-involved (Contrast Estimate = 1.518, $p < .001$, $\sigma = .24$).

Question 3. Are obtained differences on early markers of antisocial behavior between first- and second-generation offenders mediated by other forms of family-related childhood adversity?

We conducted a mediation analysis to evaluate whether the relation between having a justice-involved parent and youth conduct disorder was mediated by accumulated risk as measured by the number of other familial adversities. We utilized a bootstrapping method for estimating standard error for the indirect effect between generation status and conduct disorder as mediated via childhood adversities (Preacher & Hayes, 2004). This method is an extension of the Sobel's (1982) test for mediation effects, but estimates standard errors for indirect effects through a bootstrapping

technique. Results indicated that the relation between generation status and youth conduct disorder was partially mediated by the higher level of other familial adversities experienced during youth. As expected from previous analyses, the relation between generation status and number of conduct disorders (with control for gender and age) was significant, F (3,414) = 46.53, $p < .001$, $R^2 = .25$. The total model ($\beta = 1.076$, $\sigma = .28$) was partitioned into direct and indirect effects, both of which were significant. The indirect effect, representing the effect of generation status on conduct problems as mediated by childhood adversities was significant ($\beta = .4480$, Boot $\sigma = .11$, $t = 4.039$, $p < .001$). However, the direct effect, representing the contribution of generation status to prediction of conduct disorder, was also significant ($\beta = .6287$, Boot $\sigma = .2886$, $t = 2.1789$, $p = .030$). This pattern indicates that while other childhood adversities explain considerable variability in patterns of conduct disorder among the inmates, there is additional variability associated with generation status.

We performed a similar series of mediation analyses to determine whether previously obtained relations between juvenile violent and non-violent criminal activity and offender generation status among the men in our sample were mediated by concomitant familial adversities. We limited this analysis to men as previous results had indicated that juvenile offending was not related to offender generation status among women. Consistent with the previous results, the relation between generation status and a history of violent juvenile offending (controlling for age) was significant, F (2,170) = 12.66, $p < .001$, $R^2 = .13$. The total model effect ($\beta = .7869$, $\sigma = .35$) was partitioned into direct and indirect effects. However, there was no evidence to support a meditational model. The indirect effect of generational status on juvenile violent offending as

mediated by childhood adversity was not significant (β = .1819, Boot σ = .1398, n.s.), as was the case for the direct effect (β = .1388, σ = .2063, $t < 1.0$). Results for the juvenile non-violent offending were similar. Consistent with the previous results, the relation between generation status and non-violent juvenile offending (controlling for age) was significant, F (2,170) = 12.63, $p < .001$, $R^2 = .13$. The total model (β = .8533, σ = .41) was partitioned into direct and indirect effects. The indirect effect of generational status on juvenile violent offending as mediated by childhood adversity was non-significant (β = .1388, Boot σ = .2022, n.s.), as was the case for the direct effect relative to juvenile non-violent offending (β = .7220, σ = .43, $p = .095$). These results indicate that the relations between both violent and non-violent juvenile offending and offender generation status are mediated by other non-observed variables.

Discussion

The purpose of our study was to explore historical adversities and antisocial characteristics that may be prominent in the lives of second-generation prisoners. Relative to first-generation offenders, both male and female second-generation offenders reported more conduct disorder markers prior to age 15. Second-generation male offenders more frequently reported juvenile violent or non-violent offenses than did first-generation male offenders, with trend effects for drug offenses and detention. These findings are consistent with the extensive literature that associates parental incarceration with negative developmental outcomes (Murray et al., 2012). As previously mentioned, there are various theoretical underpinnings to this complex association. Although this study was limited in the extent to which the theoretical mechanisms of risk (strain,

stigma, attachment, social control, and selection) could be studied, several of these perspectives identify plausible interpretations for our findings.

For both of our major findings, follow-up analyses indicated that effects were prominent for those who grew up with a mother who was arrested or incarcerated or those with both a mother and father offender. As indicated in prior research (Dallaire, 2007; Novero et al., 2011), maternal incarceration may lead to more stressors and related maladjustment than paternal incarceration. Maternal incarceration often results in residential instability and change in caregivers for the child (Dallaire, 2007; Glaze & Maruschak, 2008), which would likely be compounded with the incarceration of both parents. This attachment disruption, with its associated implications for the child's emotional and physical stability, may cause ripple effects that ultimately contribute to externalizing delinquent behaviors (Hagen & Myers, 2003). Social control theory offers another interpretation of these findings. It is plausible that second-generation offenders lacked the protection offered by these aspects of parenting, due to the disruptions in the caregiving arrangements, loss of family financial stability (Arditti, Lambert-Shute, & Jost, 2003), and other family adversities that translate to weakened resources for monitoring children.

It is noteworthy that while this pattern was evident for conduct disorder for both men and women, it was observed only with men for criminal behaviors. This finding may be due to the lower levels of juvenile criminal offending among women (American Psychiatric Association, 2000; Murray & Farrington, 2010). Moffitt and Caspi's (2001) work on gender patterns demonstrates that delinquent girls start offending at later ages than do boys. The distinctive criminal youth experiences of second-generation female

offenders may not be as apparent prior to 18 years of age. But the less serious forms of antisocial behavior, as measured by the conduct disorder scale, may more accurately describe female prisoners' early problematic patterns of behavior.

Our results also show more childhood adversity for second-generation offenders in comparison to first-generation offenders. Offspring of incarcerated parents reported more familial adversities, including abuse and exposure to domestic violence, regardless of the gender of the incarcerated parent(s). These findings are consistent with previous research that demonstrates the high levels of stressors and related maladjustment in families that experience involvement in the justice system (Dallaire, 2007). In addition to the negative effects of limited access to the parent and exposure to criminal behavior (Clopton & East, 2008), the arrest or incarceration of a parent often leads to subsequent disruptions in the child's home environment (Arditti & Few, 2006). Furthermore, the accumulation of multiple adversities adds unique risk beyond that accounted for by the individual factors (Dallaire, 2007).

Our mediation analyses indicated that the relation between generation status and juvenile conduct disorder was partially mediated by the heightened adversities present during childhood. While those who had an incarcerated parent also reported more markers of conduct disorder, this relation was explained, in part, due to their increased exposure to other adversities during childhood. Consistent with previous research on aggregated risk (Dallaire, 2007; Murray et al., 2010), we found that as the number of reported childhood adversities accumulated for second-generation offenders, so too did the number of conduct disorder markers. It is likely that children with an incarcerated parent also experience other difficulties – such as abuse, neglect, or parental substance

abuse – leading to an overall tumultuous childhood in which they are at increased risk of engaging in antisocial behavior.

While our results partially supported an aggregated risk model, we found that the direct effect of parental incarceration was maintained even after controlling for the other adversities, indicating that generation status also makes a unique contribution to the prediction of conduct disorder patterns. Akin to Novero et al. (2011)'s findings, our results do not align with selection perspectives, which would propose that these other adversities fully account for conduct disorder, rather than parental justice-involvement. Rather, results imply that having a parent involved in the justice system is a unique experience with potentially long-lasting effects. While Novero et al.'s study indicated that second-generation prisoners differ from first-generation offenders in terms of increased institutional misconduct in prison and decreased ability to cope with a prison environment, we found that these maladaptive coping strategies may not only be present in adulthood, but may actually begin at a younger age for second-generation offenders. This is evidenced by the fact that they engage in more conduct disorder behavior during youth than is the case for those offenders who did not experience a justice-involved parent. These results have particular salience for mental health professionals working within the legal system. The generational status of prisoners can be seen as a possible indicator of a more prominent history of conduct problems, the knowledge of which can help in tailoring appropriate interventions for these inmates.

Our mediation analyses did not afford an explanation for our association between generation status and juvenile offending among men. Although a significant main effect was found for generation status and juvenile offending, with second-generation prisoners

reporting higher rates of violent and non-violent offending, neither the direct effect of generation status nor the indirect effect of childhood adversities served to explain the relation. This pattern indicates that there are other unexplored factors that mediate the relation between generation status and juvenile offending. Plausibly, these unmeasured effects may reflect other correlated adversities associated with generational status. It is also possible that the smaller sample size of the men-only subsample limited our ability to detect this more complex effect.

It is also possible that the interplay of childhood adversity and the context of having a justice-involved parent was more accurately reflected in indices of conduct disorder than in indices of juvenile offending. Our measure of conduct disorder included a broad array of types and severity of behaviors, whereas the dichotomous indications of juvenile offending represented narrower and more extreme manifestations of antisocial behavior. As a result, those who commit criminal acts in youth may have been more embedded in an antisocial context, and thus less impacted by other familial or environmental factors like parental arrest or incarceration. In addition, conduct disorder markers are relevant to behaviors prior to age 15, while juvenile offending was marked by offenses committed prior to age 18. Generally, juvenile offending typically occurs in later adolescence (Murray & Farrington, 2010) when family factors may be less influential on the behaviors of the teen as compared to the role of family factors during earlier time periods of childhood. As such, there are likely other risk factors that are stronger predictors of a history of juvenile offending, such as peers or neighborhoods. Environmental factors such as toxic neighborhoods (Schonburg & Shaw, 2007; Tolan, Gorman-Smith, & Henry, 2003), criminally-oriented peers (Herrenkohl et al., 2007), and

school support (Sprott, Jenkins, & Doob, 2005) may better explain the relation between juvenile offending and generation status.

Our study is limited by the nature of both the data and analyses. Group assignment and outcomes of the present study were based on individuals' self-reports and recollections. As we did not have access to pre-incarceration records for offending or family variables, is possible that participants misremembered certain events or behaviors. As many of the items pertained to sensitive or socially undesirable information, it is also possible that participants under-reported these events related to key variables of interest. Furthermore, this retrospective approach to the current study limits the implications of our findings. We elected to examine parental justice involvement on a broad scale, rather than only parental incarceration or arrest, in the current study. This allowed us to better capture the variety of ways in which parental criminality resulted in legal involvement. Nevertheless, our findings do not differentiate the impact of parental absence associated with incarceration or the trauma of witnessing a parent's arrest or criminal behavior. In addition, the age of parental incarceration or arrest and the individual's own offending was not reported. Consequently, although our findings offer the identification of experiences that introduce additional risk and enhanced prediction, we are unable to support a causal relation between parental justice involvements and conduct disorder markers and juvenile offending.

Future research projects should track these variables so that the length and time of the parent's incarceration may be controlled for in future studies. Controlling for these variables in future studies would serve to further clarify the link between parental justice involvement and youth antisocial behavior. Such study designs may also reduce the

potential impact of reporting error that was introduced by the retrospective design of the current study.

In the current study, we statistically controlled for age because this variable was associated with our independent variable of parental incarceration status, along with several of our dependent variables. However, the age difference in cohort itself raises the question of why second-generation offenders as a group are younger than offenders who grow up without justice-involved parents. The answer plausibly lies in the patterns of arrests and incarcerations over the past 40 years. Since 1972, the US prison system has seen continual yearly increases in the number of incarceration adults, and these numbers did not level off until 2010 (Guerino et al., 2011). A net result of these patterns is a likely "bubble effect" whereby more children during this period grow up with incarcerated parents and then, consistent with well-documented generational patterns of criminal behavior, themselves end up in the justice system. Assuming this to be the case, it is likely that we will continue to see a greater density of second-generation offenders within our justice system. These individuals as a group have a unique history and family context that can be relevant to their adjustment and rehabilitation. As a nation, the dramatic increase in arrest and incarceration patterns has awakened us to the need to create interventions for affected children. Early intervention efforts targeted toward children of incarcerated parents, particularly those with early evidence of conduct problems, should be explored in future research. But there may also be a need to address the rehabilitative and mental health needs of this growing cohort within our prison system that either did not receive or was resistant to such interventions. Our study indicates that this group has more antisocial and delinquent historical factors that may well be relevant to their

amenity to rehabilitation. However, to date there has been very little research about the characteristics, needs, or intervention readiness of this group. Research efforts are needed to better understand this growing population as we prepare for their likely increasing numbers.

References

American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR). Washington, DC: American Psychiatric Association.

Arditti, J. A., & Few, A. L. (2006). Mother's reentry into family life following incarceration. *Criminal Justice Policy Review, 17*, 103-123. doi: 10.1177/0887403405282450

Arditti, J. A., Lambert-Shute, J., & Joest, K. (2003). Saturday morning at the jail: Implications of incarceration for families and children. *Family Relations: Interdisciplinary Journal of Applied Family Studies, 52*, 195-204. doi: 10.1111/j.1741-3729.2003.00195.x

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development.* USA: Basic Books.

Clopton, K. L., & East, K. K. (2008). "Are other kids like me?": Children with a parent in prison. *Early Childhood Education Journal, 36*, 195-198. doi: 10.1007/s10643-008-0266-z

Dallaire, D. H. (2007). Incarcerated mothers and fathers: A comparison of risks for children and families. *Family Relations, 56,* 440-453. doi: 10.1111/j.1741-3729.2007.00472.x

Dallaire, D. H., & Wilson, L. C. (2010). The relation of exposure to parental criminal activity, arrest, and sentencing to children's maladjustment. *Journal of Child and Family Studies, 19,* 404-418. doi: 10.1007/s10826-009-9311-9

Elander, J., Simonoff, E., Pickles, A., Holmshaw, J., & Rutter, M. (2000). A longitudinal study of adolescent and adult conviction rates among children referred to psychiatric services for behavioural or emotional problems. *Criminal Behaviour and Mental Health, 10,* 40-59. doi: 10.1002/cbm.342

Farrington, D. P., Coid, J. W., & Murray, J. (2009). Family factors in the intergenerational transmission of offending. *Criminal Behaviour & Mental Health,* 19, 109-124. doi: 10.1002/cbm.717

Felitti, V. J., Anda, R. F., & Nordenberg, D. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventative Medicine, 14*, 245-258. doi: 10.1016/S0749-3797(98)00017-8

Glaze, L. E., & Maruschak, L. M. (2008). *Parents in prison and their minor children.* Washington, DC: US Department of Justice, Bureau of Justice Statistics.

Guerino, P., Harrison, P. M., & Sabol, W. J. (2011). Prisoners in 2010. *Bureau of Justice Statistics Bulletin.* Washington, DC: US Department of Justice.

Hagan, J., & Dinovitzer, R. (1999). Collateral consequences of imprisonment for children, communities, and prisoners. *Crime and Justice, 26,* 121-162. doi: 10.1086/449296

Hagen, K. A., & Myers, B. J. (2003). The effect of secrecy and social support on behavioral problems in children of incarcerated women. *Journal of Child and Family Studies, 12*, 229-242. doi: 10.1023/A:1022866917415

Herrenkohl, T. I., McMorris, B. J., Catalano, R. F., Abbott, R. D., Hemphill, S. A., & Toumbourou, J. W. (2007). Risk factors for violence and relational aggression in adolescence. *Journal of Interpersonal Violence, 22,* 386-405. doi: 10.1177/0886260506296986

Johnson, E. I., & Easterling, B. (2012). Understanding unique effects of parental incarceration on children: Challenges, progress, and recommendations. *Journal of Marriage and Family, 74*, 342-356. doi: 10.1111/j.1741-3737.2012.00957.x

Kratzer, L. & Hodgins, S. (1997). Adult outcomes of conduct disorder: A cohort study. *Journal of Abnormal Child Psychology, 25,* 65-81. doi: 10.1023/A:1025711525255

Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159-174. doi: 10.2307/2529310

Loeber, R., Burke, J. D., & Lahey, B. B. (2002). What are adolescent antecedents to antisocial personality disorder? *Criminal Behaviour and Mental Health, 12,* 24-36. doi: 10.1002/cbm.48

Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674-701. doi: 10.1037/0033-295X.100.4.674

Moffitt, T. E., & Caspi, A. (2001). Childhood predictors differentiate life-course persistent and adolescence-limited antisocial pathways among males and females. *Development and Psychopathology, 13*, 355-375. doi: 10.1017/S0954579401002097

Moffitt, T. E., Caspi, A., Harrington, H., & Milne, B. J. (2002). Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology, 14*, 179-207. doi: 10.1017/S0954579402001104

Mulder, E., Brand, E., Bullens, R., & van Marle, H. (2011). Risk factors for overall recidivism and severity of recidivism in serious juvenile offenders. *International Journal of Offender Therapy and Comparative Criminology, 55,* 118-135. doi: 10.1177/0306624X09356683

Murray, J., & Farrington, D. (2005). Parental imprisonment: Effects on boy's antisocial behavior and delinquency through the life-course. *Journal of Child Psychology and Psychiatry*, *46*, 1269−1278. doi: 10.1111/j.1469-7610.2005.01433

Murray, J., & Farrington, D. P. (2008b). Parental imprisonment: Long-lasting effects on boys' internalizing problems through the life course. *Development and Psychopathology, 20,* 273-290. doi: 10.1017/S0954579408000138

Murray, J. & Farrington, D. P. (2010). Risk factors for conduct disorder and delinquency: Key findings from longitudinal studies. *Canadian Journal of Psychiatry, 55*, 633-642.

Murray, J., Farrington, D., & Sekol, I. (2012). Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: A systematic review and meta-analysis. *Psychological Bulletin, 138*, 175-210. doi: 10.1037/a0026407

Murray, J., Irving, B., Farrington, D. P., Colman, I., & Bloxsom, C. A. J. (2010). Very early predictors of conduct problems and crime: Results from a national cohort study. *Journal of Child Psychology and Psychiatry, 51*, 1198-1207. doi: 10.1111/j.1469-7610.2010.02287.x

Murray, J., & Murray, L. (2010). Parental incarceration, attachment, and child psychopathology. *Attachment and Human Development, 12,* 289-309. doi: 10.1080/14751790903416889

Novero, C., Loper, A., & Warren, J. (2011). Second-generation prisoners: Adjustment patterns for inmates with a history of parental incarceration. *Criminal Justice and Behavior, 38*, 761-778. doi: 10.1177/0093854811406637

Pajer, K. A. (1998). What happens to "bad" girls? A review of the adult outcomes of antisocial girls. *American Journal of Psychiatry, 155,* 862-870.

Pfohl, B., Blum, N., & Zimmerman, M. (1995). Structured interview for DSM-IV personality (SIDP-IV). Iowa City, IA: The University of Iowa.

Phillips, S. D., Erkanli, A., Keeler, G. P., Costello, E. J., & Angold, A. (2006). Disentangling the risks: Parent criminal justice involvement and children's exposure to family risks. *Criminology and Public Policy, 5,* 677-703. doi: 10.1111/j.1745-9133.2006.00404.x

Poehlmann, J. (2005). Representations of attachment relationships in children of incarcerated mothers. *Child Development, 76*, 679-696. doi: 10.1111/j.1467-8624.2005.00871.x

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*, 717-731. doi:10.3758/BF03206553

Roettger, M. E., & Swisher, R. R. (2011). Associations of fathers' history of incarceration with sons' delinquency and arrest among black, white, and Hispanic males in the United States. *Criminology, 49*, 1109-1147 doi: 10.1111/j.1745-9125.2011.00253.x

Sampson, R., & Laub, J. (1993). *Crime in the making: Pathways and turning points through life.* Boston: Harvard University Press.

Schaeffer, C. M., Petras, H., Ialongo, N., Poduska, J., & Kellam, S. (2003). Modeling growth in boys' aggressive behavior across elementary school: links to later criminal involvement, conduct disorder, and antisocial personality disorder. *Developmental Psychology, 39*, 1020-1035. doi: 10.1037/0012-1649.39.6.1020

Schonberg, M. A., & Shaw, D. S. (2007). Do the predictors of child conduct problems vary by high- and low-levels of socioeconomic and neighborhood risk? *Clinical Child and Family Psychology, 10,* 101-136. doi: 10.1007/s10567-007-0018-4

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological Methodology* (pp. 290-312). Washington DC: American Sociological Association.

Sprott, J. B., Jenkins, J. M., & Doob, A. N. (2005). The importance of school: Protecting at-risk youth from early offending. *Youth Violence and Juvenile Justice, 3,* 59-77. doi: 10.1177/1541204004270943

Tolan, P. H., Gorman-Smith, D., & Henry, D. B. (2003). The developmental ecology of urban males' youth violence. *Developmental Psychology, 39,* 274-291. doi: 10.1037/0012-1649.39.2.274

Warren, J. I., Jackson, S., Loper, A. B., & Burnette, M. (2009). Risk markers for sexual predation and victimization in prison. *National Institute of Justice*.

Widom, C. S. (1989). The cycle of violence. *Science, 244*, 160-166. doi: 10.1126/science.2704995

Table 1
Characteristics of First and Second-Generation Offenders

	First-Generation	Second-Generation	Comparison
	n (%)	*n* (%)	
Race			
White	96 (53.0%)	102 (43.4%)	$\chi^2 = 3.80$, $df = 1$, $p = .060$,
Non-White	85 (47.0%)	133 (56.6%)	$\varphi = .10$
Gender			
Male	95 (51.9)	155 (66.0%)	$\chi^2 = 8.44$, $df = 1$, $p = .004$,
Female	88 (48.1)	80 (34.0%)	$\varphi = .14$
Offense			
Violent	98 (53.6%)	131 (55.7%)	$\chi^2 = 1.32$, $df = 4$, $p = .858$
Sex	23 (12.6%)	31 (13.2%)	
Property	31 (16.9%)	33 (14.0%)	
Drug	25 (13.7%)	29 (12.3%)	
Other	6 (03.3%)	11 (04.7%)	
Sentence (years)			
> 1 year	12 (06.6%)	14 (06.1%)	$\chi^2 < 1.0$, $df = 5$, $p = .99$
1 - 5	48 (26.5%)	66 (28.7%)	
6 - 10	34 (18.8%)	39 (17.0%)	
11-20	34 (18.8%)	45 (19.6%)	
20 - Life	53 (29.3%)	66 (28.7%)	
	M (SD)	*M (SD)*	
Age at interview	40.27 (10.72)	35.52 (9.63)	$F(1,416) = 22.65$, $p = .001$, $_p\eta^2 = .052$

Note. Offense is most serious offense per institutional records.

Table 2
Description of Major Variables for First- and Second-Generation Offenders

	First-Generation			*Second-Generation*		
	Men	*Women*	*Total*	*Men*	*Women*	*Total*
	M(SD)	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*	*M(SD)*
	n = 95	*n = 88*	*n = 183*	*n = 155*	*n = 80*	*n = 235*
Conduct Disorder	4.42 (3.10)	2.45 (2.30)	3.47 (2.91)	6.06 (3.23)	3.74 (2.81)	5.27 (3.28)
Child Adversity	1.33 (1.52)	1.72 (1.56)	1.51 (1.55)	2.43 (1.65)	2.63 (1.62)	2.50 (1.64)
Juvenile Criminal Activity	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Violent	20 (33.9%)	9 (12.3%)	29 (22.0%)	64 (56.1%)	12 (17.6%)	76 (41.8%)
Non-Violent	43 (71.7%)	35 (49.3%)	78 (59.5%)	98 (86.7%)	43 (61.4%)	141 (77.0%)
Drug	30 (50.8%)	20 (28.6%)	50 (38.8%)	76 (67.9%)	29 (42.0%)	105 (58.0%)
Juvenile Detention	26 (42.6%)	15 (23.1%)	41 (32.5%)	66 (61.1%)	25 (37.3%)	91 (52.0%)

Note. Conduct Disorder = Frequency of DSM-IV Conduct Disorder Markers (Max = 15). Juvenile Criminal Activity = Self-report of at least one incidence prior to age 18. Variable sample sizes for Juvenile Criminal Activity reflect incomplete information from some respondents.

Table 3. *Three Cohorts of Second-Generation Offenders Contrasted to First-Generation Offenders: Follow-Up Analysis of Significant Two-Group Comparisons*

	Second-Generation: Parent Offender			First-Generation
	Mother	Father	Both Parents	
	n = 38	*n* = 135	*n* = 62	*n* = 183
Conduct Disorder [a]	5.38 (3.79)	4.66 (3.02)	6.54 (3.18)	3.47 (2.91)
Child Adversity[a]	2.40 (1.60)	2.24 (1.63)	3.11 (1.54)	1.51 (1.55)
Juvenile Criminal Activity[b]	*n* = 20	*n* = 62	*n* = 32	*n* = 59
Violent	14 (70.0%)	26 (41.9%)	24 (75.0%)	20 (33.9%)
Non Violent	17 (85.0%)	55 (85.0%)	26 (86.7%)	43 (71.7%)

[a] Mean and Standard Deviation for Conduct Disorder and Childhood Adversity with entire sample.
[b] Subsample size and percentage for men only who completed criminal history measure.
Note. Conduct Disorder = Frequency of DSM-IV Conduct Disorder Markers (Max = 15). Child Adversity = Number of markers of childhood adversity (Max = 5).

Second-Generation Prisoners and the Transmission of Domestic Violence

Joanna L. Will, Ann B. Loper, & Shelly L. Jackson

University of Virginia

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Abstract

Adult inmates who experienced the incarceration of a parent, known as "second-generation prisoners", experience unique challenges and are at heightened risk for experiencing other adversities throughout the lifespan. Our study investigated one specific, and previously un-explored, type of adversity – domestic violence – within a sample of 293 incarcerated adults. We examined the relation between generation status (first- or second-generation prisoners), childhood exposure to domestic violence, and participation in adult relationship violence prior to incarceration. Results indicate that prisoners who had been exposed to domestic violence in childhood were more likely to engage in intimate partner violence resulting in inflicted and received injury. Relative to first-generation prisoners, second-generation prisoners reported more childhood domestic violence exposure and were more likely to have been injured by a relationship partner. However, this relation between second-generation status and injury victimization was mediated by domestic violence exposure. These results support an intergenerational pattern of domestic violence and suggest that second-generation prisoners are a unique population worthy of future investigation and mental health intervention.

Second-Generation Prisoners and the Transmission of Domestic Violence

The number of incarcerated individuals in the United States has significantly increased over the past several decades. Concurrently, the number of children with one or more parents in state or federal prison rose by 80% between 1991 and 2007 (Glaze & Maruschak, 2008; West & Sabol, 2008). While there has been considerable study regarding the impact of parental incarceration on youth (Murray, Farrington, & Sekol, 2012), little is known about the experiences of those children of prisoners who themselves go on to be incarcerated as adults, or "second-generation prisoners" (Novero, Loper, & Warren, 2011). The likely problematic family history of these adults may confer special strains or risks within the group. The purpose of this study was to investigate one well-researched risk factor for children in troubled families, childhood exposure to domestic violence, within an offender sample. In the current study, we contrast the experiences of first and second-generation prisoners relative to such childhood exposure and the subsequent experience and use of violence in their adult intimate relationships.

The Impact of Parental Incarceration

As the number of incarcerated parents has increased over the past several decades, recent attention has focused on the effects of parental incarceration on childhood development and outcomes (Makariev & Shaver, 2010). Children of incarcerated parents are at higher risk of academic problems, mental health issues, substance use, antisocial behavior (Murray & Farrington, 2008a, 2008b; Murray et al., 2012), and serious

delinquency (Kjellstrand & Eddy, 2011; Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001), as well as adult arrest and incarceration (Farrington, Coid, & Murray, 2009; Murray & Farrington, 2005; Murray, Janson, & Farrington, 2007). In addition to parental absence due to incarceration, children of incarcerated parents often experience other parental-related risk factors during childhood that put them at heightened risk for overall maladjustment, including family conflict, low maternal education, parental mental illness, and parental drug use (Aaron & Dallaire, 2010; Dallaire, 2007; Sameroff, Bartko, Baldwin, Baldwin, & Seifer, 1998). They are also more likely to identify as a member of an ethnic minority group compared to children who do not experience parental incarceration (Glaze & Maruschak, 2008). In addition, these children may be subjected to a unique set of incarceration-related risk factors that may increase their vulnerability toward criminality, such as the incarceration of multiple family members and residential instability as a result of parental incarceration (Dallaire, 2007).

Second-generation prisoners, compared to first-generation prisoners, report higher rates of conduct disorder behaviors and juvenile offending (Will, Whalen, & Loper, 2014) and experience significantly more adverse childhood experiences leading up to their legal involvement (Dannerbeck, 2005; Novero et al., 2011). Accumulated risk theory (Sameroff et al., 1998) predicts that the greater the number of risks, the worse the outcomes. In a study of contextual and incarceration-related risk factors experienced by incarcerated mothers and fathers, Dallaire (2007) found that the percentage of prisoners' adult children who were incarcerated increased as the number of family risk variables similarly increased. While several of these studies (Dallaire, 2007; Dannerbeck, 2005)

have identified childhood abuse as a contextual risk factor, exposure to parental violence has been largely unexplored in parental incarceration research.

The Impact of Childhood Exposure to Domestic Violence

According to Evans, Davies, and DeLillo (2008), "exposure to domestic violence occurs when children see, hear, are directly involved in (i.e., attempt to intervene), or experience the aftermath of physical or sexual assaults that occur between their caregivers" (p. 132). It is estimated a minimum of 15 million children are exposed to domestic violence in dual-parent households alone (McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Greene, 2006). The rates of early domestic violence exposure are likely to be high for individuals who become incarcerated. For example, in one study of childhood experiences of incarcerated American Indian/Alaska Native women, De Ravello, Abeita, and Brown (2008) found that 72% reported witnessing violence against their mother/stepmother when they were children and up to 83.8% reported adulthood involvement in violent relationships. Similarly, Greene, Haney, and Hurtado (2000) found that the percentage of incarcerated women who report witnessing family violence during their childhood (60%) was very similar to the percentage who report that their children had been exposed to violence in the home (70%).

Exposure to domestic violence is a unique adverse experience that is similar to parental incarceration in that the child is not a direct victim (as in abuse or neglect situations). Research conducted with prisoners (Gover, MacKenzie, & Armstrong, 2000; Martin, Cotton, Browne, Kurz, & Robertson, 1995) and community samples (Spaccarelli, Sandler, & Roosa, 1994) alike find that childhood exposure to domestic violence adversely impacts children throughout their lives. Children who have been exposed to

domestic violence are at increased risk for internalizing and externalizing behaviors (Evans et al., 2008; Yates, Dodds, Sroufe, & Egeland, 2003), anxiety and depressive symptoms (Adams, 2006; Gover et al., 2000; Martin et al., 1995; Murrell, Christoff, & Henning, 2007; Spaccarelli et al., 1994), trauma (Evans et al., 2008), and childhood aggressive and delinquent behaviors (Fantuzzo & Lindquist, 1989), which can extend into adulthood (Murrell et al., 2007). With the exception of Yates et al. (2003), many studies have not statistically controlled for other traumatic experiences, such as being a victim of abuse, in measuring outcomes related to domestic violence exposure.

Intergenerational Transmission of Partner Violence

Exposure to violence between parents increases the likelihood that the child will use similar behaviors in his or her own adult intimate relationships (Ehrensaft, Cohen, Brown, Smailes, Chen, & Johnson, 2003; Kalmuss, 1984; Murrell et al., 2007). The theoretical underpinnings of intergenerational violence transmission are rooted in social learning theory (Bandura, 1977; Dannerbeck, 2005; Murrell et al., 2007), which posits that when a parent models violent behavior, the child learns and adopts similar conflict resolution strategies (Kalmuss, 1984). This theory has been supported by several general population studies of intergenerational violence (Ehrensaft et al., 2003; Kalmuss, 1984), as well as within prisoner-specific samples (Hill & Nathan, 2008). In particular, Kalmuss's research suggests that intimate partner violence is adopted as a role-specific strategy, in that intergenerational violence transmission is more likely to occur when a child has witnessed parental violence, as opposed to when a child is a victim of parental physical abuse in a home. Murrell and colleagues' study of 1099 men convicted of battery revealed that men with higher exposure to violence in childhood were more likely

to engage in both intimate and non-intimate partner violence as adults. These findings are an important foundation for the current study's investigation into the transmission of domestic violence among incarcerated individuals.

Current Study

Our study seeks to better understand the unique experiences of second-generation prisoners by comparing their adversities and violence patterns to those of first-generation prisoners, including their subsequent experiences of violence in their adult intimate relationships. To this aim, we developed the following hypotheses: Hypothesis 1-A: Prisoners who have been exposed to parental-figure domestic violence during childhood, as contrasted to those prisoners who have not, will be more likely to report perpetrating violent behavior that results in a partner's injury, and will be more likely to be the victim of injurious violence at the hands of a partner. Hypothesis 1-B: Domestic violence exposure will likewise be predictive of the severity of injury victimization and perpetration. These hypotheses are consistent with previous findings attesting to this relationship (Ehrensaft et al., 2003; Murrell et al., 2007) but add confirmation that the relation holds within the more restricted range of individuals in prison. Hypothesis 2: Second-generation prisoners will be more likely to report childhood exposure to parental-figure domestic violence compared to first-generation prisoners, in consideration of previous findings attesting to high rates of childhood adversities experienced by second-generation juvenile and adult prisoners (Dannerbeck, 2005; Novero et al., 2011). Hypothesis 3: In contrast to their first-generation counterparts, second-generation prisoners will be more likely to report perpetrating violence in their adult relationships and more likely to report injurious victimization at the hands of a partner. While no

study to date has directly investigated this hypothesis, children of incarcerated parents have been found to be at heightened risk of engaging in antisocial behaviors on a broader scale (Murray & Farrington, 2008b; Murray et al., 2012). Hypothesis 4: Assuming the confirmation of previous hypotheses, we expect that the relation between generation status and adult domestic violence perpetration and victimization will be mediated by the higher levels of childhood exposure to parental-figure domestic violence. Thus, with the inclusion of exposure to domestic violence as a predictor, the previously observed relation between generation status and adult domestic violence will be significantly reduced. Numerous studies have identified potential covariates of relevance to the present study, including gender, age, and type of offense. A series of preliminary analyses evaluate the impact of these constructs.

Methods

Participants and Procedure

The current study uses archival data from a larger study of prison behavior (Warren & Jackson, 2013). Data were originally collected from 10 prisons in two states, one in the south and one in the midwest United States. Each institution invited between 50 and 200 randomly selected prisoners to complete the survey. A total of 471 prisoners agreed to participate, reflecting a 37% response rate that is consistent with other similar prison studies (Struckman-Johnson & Struckman-Johnson, 2000, 2002; Wolff, Blitz, Shi, Bachman, & Siegel, 2006). Female prisoners were purposefully oversampled in the original study in order to support gender comparisons. As a result, the total sample was comprised of 288 males and 181 females. Comparisons revealed that general population inmates were more likely to be serving shorter sentences but were otherwise similar (e.g.,

with respect to age, race, gang affiliation, severity of offense) to study participants. Due to time limitations, the primary measure used in this study (Revised Conflict Tactic Scale) was not administered to 144 of these inmates and thus they were excluded from the sample. Of the remaining inmates, a total of 293 participants (161 men and 132 women) provided valid data on the variables of interest and were included in the current analyses. Comparison of sample participants to excluded (i.e., cases excluded due to missing data) indicated no differences in terms of education level, age, minority status, or marital status. Sample participants were more likely to be female, while excluded inmates were more likely to report that their most current offense was violent (as opposed to non-violent).

Measures

Generation status. A demographic questionnaire included two items in which prisoners responded "yes" or "no" as to whether (1) their mother or (2) their father had ever been sent to jail or prison during the prisoner's childhood. Those who endorsed the incarceration of either parent were classified as "second-generation" prisoners, while those who did not endorse either parental incarceration item were classified as "first-generation" prisoners. Individuals who reported not knowing the incarceration status of one parent (e.g., growing up without knowing the parent) and responded "no" on the other parent item were classified as "first-generation" prisoners.

Adverse Childhood Experiences Study Questionnaire: Expanded. Exposure to childhood domestic violence was assessed by a modified 10-item Adverse Childhood Experiences Questionnaire (ACE; Felitti et al., 1998). The ACE is a self-report instrument designed to measure the history of negative events experienced in childhood.

Our measure of childhood exposure to parental-figure domestic violence consisted of 10 yes/no items: four items from the original ACE assessing domestic violence perpetrated by a paternal figure (father, stepfather, or mother's boyfriend) against one's mother or stepmother, four expanded items assessing similar forms of domestic violence perpetrated by one's maternal figure against one's father or stepfather, and two expanded items capturing threats of violence between parent figures. These 10 items demonstrated good reliability (full scale Cronbach's alpha .91). Inspection of the distribution for the scale, however, revealed a skewed pattern with nearly half (48.5%) of the sample having a "0" total for the ten-item scale. We therefore elected to transform the continuous score into a dichotomous variable (see Farrington & Loeber, 2000, for further rationale on dichotomization of skewed distributions). The Exposure group consisted of prisoners who endorsed a "yes" response to one or more of the 10 domestic violence items, while those who had not endorsed "yes" to any of these items were classified as No Exposure.

The ACE also generates a separate indicator for physical abuse by which the individual indicates whether any of 2 exemplars occurred as committed by a parent (e.g., "push, grab, shove, or slap you").

Revised Conflict Tactic Scale: Injury. The Revised Conflict Tactic Scale (CTS2; Strauss, Hamby, Boney-McCoy, & Sugarman, 1996) is a self-report instrument containing five scales, including the presently used Injury scale. Given the retrospective nature of the study, violent acts that result in injury are plausibly more easily remembered than those without injury. Therefore, as a measure of violence perpetration and victimization in adult relationships, we used the 12-item Injury scale (3 item pairs reflecting minor injury and 3 item pairs reflecting severe injury). Prisoners reported how

many times they had been the victim of violence by an intimate partner resulting in their injury (e.g., "I had a sprain, bruise, or small cut because of a fight with my partner") and how many times they had used violence against a partner that resulted in their partner's injury (e.g., "My partner had a sprain, bruise, or small cut because of a fight with me") within the year prior to their incarceration. All items are rated on a Likert scale, ranging from 0 ("this has never happened") to 6 ("more than 20 times in the past year"), with the additional option to choose 7 ("not in the past year, but it did happen before"). Items within the Injury Perpetration and Victimization scales demonstrated good internal reliability (Cronbach's alpha .84 and .86, respectively). Straus (2001) provides multiple methods for scoring the CTS2. We elected to use the "Ever Prevalence" method, wherein any lifetime occurrence represents manifestation of the event (Straus, 2001), to create two versions of the Injury scales. First, two dichotomous (yes/no) variables were created: (1) lifetime perpetration of violence against an intimate partner resulting in their injury (perpetrated injury) and (2) lifetime victimization by an intimate partner resulting in an injury (victim injury). Second, two categorical variables were created in order to reflect the severity and dangerousness of the injury acts: (1) no injury, (2) minor only (only items on the minor injury subscale were endorsed), and (3) severe (one or more severe acts of injury were endorsed), allowing for a broader understanding of domestic violence (Straus, 2001).

Results

Sample Description and Descriptive Statistics

Demographic characteristics of this sample are presented in Table 1. Of the 293 participants, 45.1% (n = 132) reported that one or both of their parents had been

incarcerated during their childhood (second-generation prisoners), while 54.9% (n = 161) had not experienced the incarceration of a parent (first-generation prisoners). Of the total sample, 51.5% (n = 151) reported that they had been exposed to one or more acts of domestic violence committed by a parental figure during their childhood, while 48.5% (n = 142) had not.

We tested a number of variables for possible covariates (see Table 1). No demographic differences were found between the first- and second-generation groups except for age at the time of the interview; second-generation prisoners (M = 34.35 years) were significantly younger than first-generation prisoners (M = 39.21 years), t (288) = -4.04, $p < .001$. We found that a significantly higher proportion of women (43%) than men (27%) reported victim injury, χ^2 (1) = 8.76, p = .003, φ = .173. However, no statistically significant difference was found between men (26%) and women's (36%) perpetration of injury, χ^2 (1) = 3.11, p = .08. Consequently, we controlled for both gender and age at time of interview in all analyses. Potential covariates were also examined in relation to our other primary variables of interest, with predominantly non-significant results. Specifically, there were no apparent relations between our primary variables and gender, race, education, marital status, type of most recent offense, length of incarceration, and age at time of interview. Consistent with previous research (Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008), exposure to domestic violence was found to be highly related to childhood physical abuse, χ^2 (1) = 53.46, p < .001, φ = .43. Seventy percent of those who endorsed exposure to domestic violence also reported childhood abuse, while 70% of those who had not been exposed to domestic

violence similarly did not experience abuse, suggesting strong overlap between these variables.

Hypothesis 1

Binary logistic regression was used to investigate the relation between exposure to domestic violence and CTS2 Injury scales (perpetration and victimization). As predicted, individuals in the Exposure group (36.4%) were more likely than those in the No Exposure group (23.9%) to report perpetrating injury, χ^2 (1) = 4.80, p =.03, Nagelkerke R^2 = .066, b = .577, Wald = 4.72, OR 1.78. Post-hoc analyses using multinomial logistic regression were conducted to determine whether severity of perpetrating injury (none, minor only, severe) was differentially related to exposure to domestic violence. The trinomial variable was dummy coded with 'no violence' as the reference category. The overall multinomial model was significant, χ^2 (6) = 15.12, p = .019, Cox & Snell R^2 = .05, Nagelkerke R^2 = .06. Exposure to domestic violence was not a significant predictor of perpetrating minor injury (b =.43, Wald χ^2 (1) = 1.54, p = .21), although it did significantly predict perpetrating severe injury (b =.71, Wald χ^2 (1) = 4.29, p = .04), providing partial support for our hypothesis.

Also consistent with our hypothesis, prisoners in the Exposure group (41.1%) were significantly more likely to report victim injury than those in the No Exposure group (26.8%), χ^2 (1) = 6.56, p = .01, Nagelkerke R^2= .08, b = .66, Wald= 6.43, OR 1.93. Post-hoc analyses were conducted to determine whether severity of victim injury (none, minor only, severe) was differentially related to exposure to domestic violence. The overall model was statistically significant, χ^2 (6) = 26.2, p < .001, Cox & Snell R^2 = .09, Nagelkerke R^2 = .11. Exposure to domestic violence did not predict minor levels of

victim injury (b = .62, Wald χ^2 (1) = 3.07, p = .08), although it did contribute to severe victim injury, with a corresponding predictive risk ratio of 2.0 for those who had been exposed to domestic violence, (b = .69, Wald χ^2 (1) = 4.62, p =.032).

Given the strong overlap between exposure to domestic violence and childhood physical abuse, each of these models was re-analyzed with inclusion of physical abuse as a covariate. However, as expected, the direct relationship between each of these variables and the injury scales were reduced below significance, as was the full model. Thus, inclusion of both physical abuse and domestic violence exposure essentially eliminated the impact of both variables. For this reason, and in consideration of the conceptual focus of this study on violence exposure rather than physical victimization, childhood physical abuse was excluded from our remaining analyses.

Hypothesis 2

Binary logistic regressions evaluated the relation between generation status and reported exposure to domestic violence during childhood. After controlling for gender and age at the time of interview, second-generation compared to first-generation prisoners were significantly more likely to report exposure to domestic violence, confirming our hypothesis, χ^2 (1) = 20.42, p < .001, Nagelkerke R^2 = .11, Wald = 19.62, OR = 3.09 (Table 2).

Hypothesis 3

Binary logistic regression evaluated the relation between generation status and the two CTS2 Injury outcome variables, after controlling for the gender and age at the time of interview. Support for our predictions were mixed (Table 3). Contrary to our hypothesis, second-generation prisoners were not more likely than first-generation

prisoners to perpetrate injury. However, the overall binary model was significant, χ^2 (3) = 13.33, p = .006, Nagelkerke R^2 = .059. Gender emerged as a predictor; females were more likely than males to perpetrate injury, after statistical control of other model variables. In contrast, second-generation prisoners were significantly more likely than first-generation prisoners to report victim injury, χ^2 (1) = 4.67, p = .03, Nagelkerke R^2 = .07, b = .57, Wald = 4.62, with statistical control for the contribution of being female.

Hypothesis 4

Logistic regression analysis was used to test whether generation status continued to relate to victim injury with the inclusion of domestic violence exposure as a predictor (controlling for gender and age at time of interview). Given that generation status did not contribute significantly to perpetrating injury, the mediation analysis was conducted only with victim injury (Table 4). With inclusion of the domestic violence exposure predictor, generation status (b = .43) was no longer a significant predictor of victim injury. Exposure to domestic violence (b = .55, OR: 1.74) absorbed variation associated with generation status that was observed in previous analyses, suggesting that generation status and victim injury is mediated by exposure to domestic violence.

Discussion

The results of this study reveal new evidence that distinguishes those who follow in their parents' footsteps to prison – those we call second-generation prisoners – from other incarcerated individuals. Our results indicate that many offenders enter prison with a history of trauma experienced as children, and this trauma is even more likely if the prisoner has a parent who has been incarcerated. Furthermore, this early trauma in the form of exposure to domestic violence may negatively impact adult intimate

relationships. Within our study population, exposure to domestic violence predicted severe (as opposed to minor) perpetration of injury and being the victim of an injury by a partner. Being a second-generation prisoner was related to being injured by a partner. The relation between generation status and reported injury by a partner was mediated by the higher levels of exposure to domestic violence evident within the second-generation cohort.

Consistent with previous research (Hill & Nathan, 2008; Kalmuss, 1984), exposure to childhood domestic violence was predictive of a prisoner's inflicting upon and receiving injury from an intimate partner. In comparison to Kalmuss's intergenerational study of severe marital aggression, our findings are unique in that we revealed distinctions between minor and severe violence. Domestic violence exposure made a particularly salient contribution to predicting *severely* violent acts, but not minor acts: Prisoners exposed to parental violence were significantly more likely to cause and to be the recipient of severe injury than those who were not exposed to domestic violence. According to social learning theory (Bandura, 1977; Dannerbeck, 2005; Murrell et al., 2007), witnessing parental violence puts children at increased risk of repeating this pattern in their adult relationships, as was observed in our study. It may be that domestic violence exposure is just one of a multitude of risk factors experienced by these children. Accumulated risk theory (Sameroff et al., 1998) would suggest that multiple risk factors is associated with worse outcomes, in this case, *severe* injury perpetration and victimization. However, when we included two strongly correlated risk factors (childhood physical abuse and exposure to domestic violence) in the same model, neither

experience was predictive of intimate partner violence above and beyond the other, hence reducing support for the accumulated risk hypothesis.

The high degree of overlap between physical abuse and domestic violence exposure has been frequently documented in past studies, particularly in incarcerated populations (Green et al., 2000; Herrenkohl et al., 2008). Relatively few prisoners in our study were exposed to domestic violence without also experiencing physical abuse, and those who did not experience domestic violence were also unlikely to experience abuse. However, the aim of the present study was to investigate domestic violence through the lens of social learning theory, rather than accumulated risk theory, and consequently we elected to focus analyses solely on domestic violence exposure. The increased risk of intimate partner violence among victims of childhood abuse has been well established (Malinosky-Rummel & Hansen, 1993), while lesser attention has been paid to domestic violence exposure as a precursor to partner violence. We sought to investigate the effects of modeled physical violence rather than direct physical violence on relationship outcomes of physical victimization and perpetration in the form of injury. Additionally, the reduced variance afforded by our sample due to this high degree of overlap limited our ability to parse out the implications of these adversities independently. Our measure of physical abuse was also a single dichotomous indicator by which inmates endorsed any one of a number of possible acts of physical abuse. Future studies that enable more detailed measurement of the two constructs will be useful in untangling these experiences.

The results of this study clearly signal that investigation into domestic violence should not just assess prevalence, but also severity, of violent acts. As suggested by

previous researchers (Lucente, Fals-Stewart, Richards, & Goscha, 2001; Straus, 2001), dividing the CTS2 Injury scales into minor and severe violence provided a clearer picture of the degree of conflict in relationships. It is plausible that the minor injury scales represent less consequential acts of violence; amongst the myriad of other contextual risk factors that prisoners have experienced, the likelihood of perpetrating or receiving these minor injuries may not be particularly swayed by turbulent parental relationships. Where domestic violence exposure may have primary predictive value is when the violence is serious enough to result in a severe injury. Minor injuries may be more prevalent, but severe injuries may be more indicative of higher levels of violence in the relationships. In addition, it is necessary to distinguish severity of physical injury from emotional injury. While our results spotlight differential severity patterns related to physical injury, the degree to which an individual experiences emotional trauma resulting from intimate partner violence may not be synonymous with the degree of physical harm that is inflicted or received.

Incarcerated individuals, regardless of generation status, often report a history of exposure to domestic violence and other childhood adversities (Dannerbeck, 2005; De Ravello et al., 2008; Greene et al., 2000). In our study, 51.5% of prisoners reported previous childhood exposure to domestic violence. These rates are quite high in comparison to nonclinical samples (12.5%, Felitti et al., 1998), underscoring the complex preexisting traumas and adversities in the lives of many individuals entering the US prison system. However, second-generation prisoners are at notably higher risk of experiencing these co-occurring childhood adversities (Dallaire, 2007; Dannerbeck, 2005; Novero et al., 2011). To our knowledge, this is the first study to compare first- and

second-generation prisoners with regard to their exposure to domestic violence committed by one or more parent figures. As predicted, second-generation prisoners were more likely to report childhood exposure to domestic violence than first-generation prisoners.

Because second-generation prisoners have higher rates of childhood adversity, possibly including exposure to domestic violence (Dannerbeck, 2005; Novero et al., 2011), and given that childhood exposure to domestic violence is related to intimate partner violence (Ehrensaft et al., 2003; Kalmuss, 1984; Murrell et al., 2007), we predicted that second-generation prisoners would be more likely to injure their intimate partner and be more likely to be injured by their intimate partner. We found partial support for our hypothesis. Generation status predicted a prisoner's likelihood of being injured by an intimate partner, but not on the prisoner having injured an intimate partner. One possible explanation for this finding is that prisoners who are children of incarcerated parents view their experiences through a lens that emphasizes their own victimization to a greater degree than do other prisoners. Future research will need to identify the mechanisms responsible for this intriguing finding. Surprisingly, when investigating Hypothesis 3, we found a significant gender effect; females were more likely than males to report injury perpetration, even after controlling for age and generation status. This finding is notable in light of the fact that most studies have found that men and women initiate intimate partner violence at approximately equal rates (Straus, 2009). However, there is some evidence that women perpetrate partner assault more than their male partners (Archer, 2002), lending support to our findings. In addition, the prevalence rate of female self-reported injury in our study (35.6%) is slightly lower or

comparable to that of other studies with incarcerated populations. In a similar survey of female prisoners by Jones and colleagues (2002), 45% of incarcerated women reported perpetrating injury as measured by the CTS2.

Although we found that generation status was related to being injured by an intimate partner, we sought to determine whether this association was mediated by the effect of childhood exposure to domestic violence. Indeed, parental incarceration did not contribute to being injured by a partner directly, but rather was related to exposure to domestic violence, which in turn afforded a significant prediction of injury victimization in adulthood. Second-generation inmates clearly experience a differential trajectory of family violence than their first-generation counterparts. Consistent with social modeling theory, the inmates' childhood experiences of parental violence contribute principally to the likelihood of joining the intergenerational violence pattern.

Implications for Practice

Individuals who follow along their parents' footsteps into the criminal justice system are more likely than first-generation offenders to enter prison carrying the memory of complex trauma in the form of exposure to multiple adversities. The results of this study underscore the need for early intervention with children exposed to adversities such as domestic violence, particularly for children whose parents are incarcerated. Children's exposure to domestic violence impacts their perception and understanding of normal and healthy relationships, and may ultimately facilitate the repetition of these relationship dynamics in their own intimate relationships in adulthood. The substantial degree of overlap among those offenders who were exposed to parental domestic violence and those who were victims of abuse reveals multiple risk factors that

may have impacted their understanding of appropriate conflict-resolution strategies and broader relationship dynamics.

This relationship has important implications for intervention with prisoners. Throughout the corrections process, from prison intake to risk assessments, representatives of the corrections system benefit from gathering a comprehensive background of the prisoner, including a history of exposure to domestic violence. For prison personnel, learning that a prisoner has been exposed to domestic violence can serve as a red flag for additional evaluation of the prisoner's history with regard to other adverse experiences in the home (e.g., abuse, parental incarceration). While we cannot assert a causal relation between childhood exposure to domestic violence and intimate partner violence, the presence of this childhood adversity in particular (as measured in this study) also serves as an indicator for additional inquiry into the prisoner's history of intimate relationships. Although this study inquired about intimate relationships prior to prison, prisoners also have intimate relationships while incarcerated, some of which are violent (Warren & Jackson, 2013). Thus, prisoners may benefit from additional services related to education on healthy relationships.

Limitations and Directions for Future Research

While our findings add to an understanding of the complexities of the lives of second-generation prisoners, several limitations should be considered. First, the generalizability of our results to the greater US prison population may be limited by the low response rate (37%), the higher proportion of females in the sample, and that significantly more non-respondents than respondents reported their most recent offense to be violent. However, this rate is similar to comparable studies of prison behavior

(Struckman-Johnson & Struckman-Johnson, 2000, 2002; Wolff et al., 2006). Second, our study used self-report data, and prisoners' recollections of childhood experiences may be limited by the developmental period at which events occurred and the significant length of time that passed between childhood and time of data collection. While self-report data is a beneficial means of collecting information in the context of domestic violence research, it cannot be corroborated. Future studies would benefit from incorporating multiple sources, including court documentation and family interviews, to gain comprehensive insight into the experiences of second-generation prisoners. Additionally, the use of dichotomous variables for both the parental incarceration and the domestic violence exposure may have restricted variation, potentially diminishing power.

We did not ask prisoners to report the age or time period at which the parental incarceration and parental domestic violence occurred. As a result, the temporal relationship of these two experiences is unknown. Future research into the timeline of adversities experienced by offenders will improve our understanding of the directionality (or co-occurrence) of family domestic violence and parental incarceration. Other home environment variables (e.g., whether the incarcerated parent was previously living in the home; the degree of parent-child closeness) and environmental characteristics (exposure to neighborhood violence and media violence) are worthy of future investigation, as these variables may differentially impact adjustment and offending outcomes relative to prisoner generation status. Disentangling the impact of domestic violence exposure from abuse and other forms of victimization is particularly needed. Moreover, our study did not investigate other acts of domestic violence not resulting in an injury. Future studies should be undertaken to determine the extent to which domestic violence exposure

contributes to the broader category of relationship violence, not just those resulting in harm that is physically visible or necessitates medical attention.

Conclusions

The trauma that prisoners experience as children in the form of exposure to domestic violence has implications for the quality of their intimate relationships in adulthood, and particularly impacts severe forms of injury, whether as a victim or offender. Furthermore, this trauma is more likely to be experienced when the prisoner had a parent who has been incarcerated. Although second-generation status is important in differentiating rates of exposure to domestic violence and in predicting injury perpetration and victimization, second-generation status does not directly impact injury victimization. Rather, it is second-generation prisoners' exposure to domestic violence that accounts for the association between second-generation status and injury victimization, providing compelling evidence for the importance of early intervention.

References

Aaron, L., & Dallaire, D. H. (2010). Parental incarceration and multiple risk experiences: Effects on family dynamics and children's delinquency. *Journal of Youth Adolescence, 39,* 1471-1484. doi: 10.1007/s10964-009-9458-0

Adams, C. M. (2006). The consequences of witnessing family violence on children and implications for family counselors. *The Family Journal, 14,* 334-341. doi: 10.1177/1066480706290342

Archer, J. (2002). Sex differences in physically aggressive acts between heterosexual partners: A meta-analytic review. *Aggression and Violent Behavior, 7,* 313-351. doi: 10.1016/S1359-1789(01)00061-1

Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice Hall.

Dallaire, D. (2007). Incarcerated mothers and fathers: A comparison of risks for children and families. *Family Relations, 56,* 440-453. doi: 10.1111/j.1741-3729.2007.00472.x

Dannerbeck, A. M. (2005). Differences in parenting attributes, experiences, and behaviors of delinquent youth with and without a parental history of incarceration. *Youth Violence and Juvenile Justice, 3,* 199-213. doi: 10.1177/1541204005276260x

De Ravello, L., Abeita, J., & Brown, P. (2008). Breaking the cycle/Mending the hoop: Adverse childhood experiences among incarcerated American Indian/Alaska Native women in New Mexico. *Health Care for Women International, 29,* 300-315, doi: 10.1080/07399330701738366

Ehrensaft, M. K., Cohen, P., Brown, J., Smailes, E., Chen, H., & Johnson, J. G. (2003). Intergenerational transmission of partner violence: A 20-year prospective study. *Journal of Consulting and Clinical Psychology, 71*, 741–753. doi: 10.1037/0022-006X.71.4.741

Evans, S. E., Davies, C., & DeLillo, D. (2008). Exposure to domestic violence: A meta-analysis of child and adolescent outcomes. *Aggression and Violent Behavior, 13,* 131-140. doi: 10.1016/j.avb.2008.02.005

Fantuzzo, J. W., & Lindquist, C. U. (1989). The effects of observing conjugal violence on children: A review and analysis of research methodology. *Journal of Family Violence, 4*, 77-94.

Farrington, D. P., Coid, J. W., & Murray, J. (2009). Family factors in the intergenerational transmission of offending. *Criminal Behaviour & Mental Health,* 19, 109-124. doi: 10.1002/cbm.717

Farrington, D. P., Jolliffe, D., Loeber, R., Stouthamer-Loeber, M., & Kalb, L. M. (2001). The concentration of offenders in families, and family criminality in the prediction of boys' delinquency. *Journal of Adolescence, 24,* 579-596. doi:10.1006/jado.2001.0424

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health, 10,* 100-122. doi: 10.1002/cbm.349

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., … Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) study. *American Journal of Preventive Medicine, 14,* 245-258. doi: 10.1016/S0749-3797(98)00017-8

Glaze, L. E., & Maruschak, L. M. (2008). *Parents in prison and their minor children.* Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Gover, A. R., Mackenzie, D. L., & Armstrong, G. S. (2000). Importation and deprivation explanations of juveniles' adjustment to correctional facilities. *International Journal of Offender Therapy and Comparative Criminology, 44,* 450-467. doi: 10.1177/0306624X00444004

Greene, S., Haney, C., & Hurtado, A. (2000). Cycles of pain: Risk factors in the lives of incarcerated mothers and their children. *The Prison Journal, 80, 3-23.* doi: 10.1177/0032885500080001001

Herrenkohl, T. I., Sousa, C., Tajima, E. A., Herrenkohl, R. C., & Moylan, C. A. (2008). Intersection of child abuse and children's exposure to domestic violence. *Trauma, Violence, & Abuse, 9*, 84-99. doi: 10.1177/1524838008314797

Hill, J., & Nathan, R. (2008). Childhood antecedents of serious violence in adult male offenders. *Aggressive Behavior, 34,* 329-338. doi: 10.1002/ab.20237

Jones, N. T., Ji, P., Beck, M., & Beck, N. (2002). The reliability and validity of the Revised Conflict Tactics Scale (CTS2) in a female incarcerated population. *Journal of Family Issues, 23,* 441-457. doi: 10.1177/0192513X02023003006

Kalmuss, D. (1984). The intergenerational transmission of marital aggression. *Journal of Marriage and Family, 46,* 11-19.

Kjellstrand, J. M., & Eddy, J. M. (2011). Parental incarceration during childhood, family context, and youth problem behavior across adolescence. *Journal of Offender Rehabilitation, 50*, 18-36. doi: 10.1080/10509674.2011.536720

Lucente, S. W., Fals-Stewart, W., Richards, H. J., & Goscha, J. (2001). Factor structure and reliability of the Revised Conflict Tactics Scales for incarcerated female substance abusers. *Journal of Family Violence, 16,* 437-450. doi: 10.1023/A:1012281027999

Makariev, D. W., & Shaver, P. R. (2010). Attachment, parental incarceration and possibilities for intervention: An overview. *Attachment & Human Development, 12,* 311-331. doi: 10.1080/14751790903416939

Malinosky-Rummell, R., & Hansen, D. J. (1993). Long-term consequences of childhood physical abuse. *Psychological Bulletin, 114*, 68-79. doi: 10.1037/0033-2909.114.1.68

Martin, S. L., Cotton, N. U., Browne, D. C., Kurz, B., & Robertson, E. (1995). Family violence and depressive symptomatology among incarcerated women. *Journal of Family Violence, 10,* 399-411. doi: 10.1007/BF02110713

McDonald, R., Jouriles, E. N., Ramisetty-Mikler, S., Caetano, R., & Green, C. E. (2006). Estimating the number of American children living in partner-violent families. *Journal of Family Psychology, 20,* 137-142. doi: 10.1037/0893-3200.20.1.137

Murray, J., & Farrington, D. P. (2005). Parental imprisonment: Effects on boys' antisocial behavior and delinquency through the life-course. *Journal of Child Psychology and Psychiatry, 46,* 1269-1278. doi: 10.1111/j.1469-7610.2005.01433.x

Murray, J., & Farrington, D. P. (2008a). The effects of parental imprisonment on children. In M. Tony (Ed.), *Crime and justice: A review of research* (Vol. 37, pp. 133-206). Chicago, IL: University of Chicago Press.

Murray, J., & Farrington, D. P. (2008b). Parental imprisonment: Long-lasting effects on boys' internalizing problems through the life course. *Development and Psychopathology, 20,* 273-290. doi: 10.1017/S0954579408000138

Murray, J., Farrington, D., & Sekol, I. (2012). Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: A systematic review and meta-analysis. *Psychological Bulletin, 138*, 175-210. doi: 10.1037/a00264071

Murray, J., Janson, C., & Farrington, D. P. (2007). Crime in adult offspring of prisoners: A cross-national comparison of two longitudinal samples. *Criminal Justice and Behavior, 34,* 133-149. doi: 10.1177/0093854806289549

Murrell, A. R., Christoff, K. A., & Henning, K. R. (2007). Characteristics of domestic violence offenders: Associations with childhood exposure to violence. *Journal of Family Violence, 22,* 523-532. doi: 10.1007/s10896-007-9100-4

Novero, C. M., Loper, A. B., & Warren, J. I. (2011). Second-generation prisoners: Adjustment patterns for inmates with a history of parental incarceration. *Criminal Justice and Behavior, 38,* 761-778. doi: 10.1177/0093854811406637

Sameroff, A. J., Bartko, W. T., Baldwin, A., Baldwin, C., & Seifer, R. (1998). Family and social influences on the development of child competence. In C. Feiring & M. Lewis (Eds.), *Families, risk and competence* (pp. 161-185). Mahwah, NJ: Lawrence Erlbaum.

Spaccarelli, S., Sandler, I. N., & Roosa, M. (1994). History of spouse violence against mother: Correlated risks and unique effects in child mental health. *Journal of Family Violence, 9,* 79-98. doi: 10.1007/BF01531970

Straus, M. A. (2001). Scoring the CTS2 and CTSPC. Durham, NM: University of New Hampshire, Family Research Laboratory. Retrieved from: http://gauss.unh.edu/~mas2/CTS28a3.pdf

Straus, M. A. (2009). Gender symmetry in partner violence: Evidence and implications for prevention and research. In D. J. Whitaker & J. R. Lutzker (Eds.), *Preventing partner violence: Research and evidence-based intervention strategies* (pp. 245-271). Washington, DC: American Psychological Association. doi: 10.1037/11873-011

Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The Revised Conflict Tactics Scales (CTS2): Development and preliminary psychometric data. *Journal of Family Issues, 17,* 283-316. doi: 10.1177/019251396017003001

Struckman-Johnson, C. & Struckman-Johnson, D. (2000). Sexual coercion rates in seven Midwestern prison facilities for men. *The Prison Journal, 80*, 379-390. doi: 10.1177/0032885500080004004

Struckman-Johnson, C. & Struckman-Johnson, D. (2002). Sexual coercion reported by women in three Midwestern prisons. *Journal of Sex Research, 39,* 217-227. doi: 10.1080/00224490209552144

Warren, J. I., & Jackson, S. L. (2013). *Risk Markers for Sexual Victimization and Predation in Prison*. New York, NY: Routledge/Taylor & Francis Group.

West, H. C., & Sabol, W. J. (2008). *Prisoners in 2007.* Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Will, J. L., Whalen, M. L., & Loper, A. B. (2014). From one generation to the next: Childhood experiences of antisocial behavior and parental incarceration among adult inmates. *Journal of Offender Rehabilitation, 53,* 1-21. doi: 10.1080/10509674.2014.887606

Wolff, N., Blitz, C. L., Shi, J., Bachman, R., & Siegel, J. A. (2006). Sexual violence inside prisons: Rates of victimization. *Journal of Urban Health, 83(5),* 835-848. doi: 10.1007/s11524-006-9065-2

Yates, T. M., Dodds, M. F., Sroufe, L. A., Egeland, B. (2003). Exposure to partner violence and child behavior problems: A prospective study controlling for child physical abuse and neglect, child cognitive ability, socioeconomic status, and life stress. *Development and Psychopathology, 15,* 199-218. doi: 10.1017.S0954579403000117

Table 1
Characteristics of First- and Second-Generation Prisoners

	First-generation prisoners (n = 161)		Second-generation prisoners (n = 132)		
	n	%	*n*	%	
Gender					χ^2 (1) = 3.11, p =.08
Male	81	50.3	80	60.6	
Female	80	49.7	52	39.4	
Ethnicity					χ^2 (1) = 1.59, p =.21
White	78	48.4	55	41.7	
Non-white					
African-American	64	39.8	52	39.4	
American Indian or Alaska Native	3	1.9	3	2.3	
Hispanic/Latino	12	7.5	13	9.8	
Other	2	1.2	9	6.8	
Education					χ^2 (1) = 2.83, p =.09
< HS	21	13.0	27	20.5	
GED/HS+	139	86.3	105	79.5	
Marital status[a]					χ^2 (2) = 2.86, p =.24
Never married	61	37.9	63	47.7	
Previously married	56	34.8	41	31.1	
Married	43	26.7	28	21.2	
Offense[b]					χ^2 (1) = 1.23, p =.27
Violent	96	59.6	88	66.7	
Non-violent	63	39.1	44	33.3	
Exposure to parental domestic violence[c]					χ^2 (1) = 24.28, p <.001***, φ = .29
Yes	62	38.5	89	67.4	
No	99	61.5	43	32.6	
Childhood physical abuse					χ^2 (1) = 4.15, p =.04*, φ = .12
Yes	71	44.1	74	56.1	
No	90	55.9	58	43.9	
	M		*M*		
Length of incarceration (months)	70.53		67.21		t (285) = -0.41, p = .68
Age at time of interview (years)	39.21		34.35		t (288) = -4.04, p < .001**

Note: * p <.05, ** p <.01, *** p <.001

[a] Previously married = separated, divorced, or widowed; Married = married or in common-law marriage

[b] Offense = current offense resulting in incarceration (most serious); Violent = homicide, robbery, assault, sex offense, other crimes against persons; Nonviolent = property, drug, other offense

[c] Reported χ^2 not corrected for covariates

Table 2
Logistic Regression: Exposure to Domestic Violence Among First- and Second-Generation Prisoners

	Model 1	Model 2
	b (SE)	*b* (SE)
Constant	1.03 (.58)	-.82 (.73)
Age	-.02 (.01)*	-.01 (.01)
Gender (ref. category = female)	-.06 (.24)	-.18 (.25)
Second-Generation Status		1.13 (.26)***
Model Statistics		
χ^2 (Model) difference		20.42***
Model χ^2	4.38	25.00***
Nagelkerke R^2	.02	.11

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3
Logistic Regression: Injury Among First- and Second-Generation Prisoners

	Injury Perpetration		*Injury Victimization*	
	Model 1	Model 2	Model 1	Model 2
	b (SE)	*b* (SE)	*b* (SE)	*b* (SE)
Constant	1.03 (.64)	.19 (.79)	1.12 (.62)	.15 (.76)
Age	-.03 (.01)	-.03 (.01)	-.02 (.01)	-.01 (.01)
Gender (ref. category = female)	-.49 (.26)	-.54* (.26)	-.76** (.25)	-.83** (.26)
Second-Generation Status		.49 (.27)		.57* (.27)
Model Statistics				
χ^2 (Model) Difference		3.30		4.67*
Model χ^2	9.03*	12.33**	10.77**	15.44**
Nagelkerke R^2	.04	.06	.05	.07

Note: * p <.05, ** p <.01, *** p <.001

Table 4
Logistic Regression: Victim Injury as Mediated by Domestic Violence Exposure

	Model 1	Model 2	Model 3
	b (SE)	*b* (SE)	*b* (SE)
Constant	1.12 (.62)	.15 (.76)	-.55 (.84)
Age	-.02 (.01)	-.01 (.01)	-.01 (.01)
Gender (ref. category = female)	-.76 (.25)**	-.83 (.26)**	-.82 (.26)**
Second-Generation Status		.57 (.27)*	.43 (.28)
Exposure to Domestic Violence			.55 (.27)*
Model Statistics			
χ^2 (Model) difference		4.67*	4.31*
Model χ^2	10.77**	15.44**	19.74**
Nagelkerke R^2	.05	.07	.09

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Alcohol Consumption and Alcohol Use Disorder Among First- and Second-Generation Offenders

Joanna L. Will & Ann B. Loper

University of Virginia

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Alcohol Consumption and Alcohol Use Disorder Among First- and Second-Generation Offenders

Approximately 1.57 million Americans were incarcerated in state or federal correctional facilities at year-end 2013 (Carson, 2014) while another 4.75 million adults were on community supervision, such as parole or probation (Glaze & Kaeble, 2014). In totality, one in 35 adults in the US are under some form of correctional supervision (Glaze & Kaeble, 2014). The majority of these offenders are parents (Glaze & Maruschak, 2008), and children of incarcerated parents often follow in their parents' footsteps into the criminal justice system (Farrington, Coid, & Murray, 2009; Murray, Farrington, & Sekol, 2012; Yonai, Levine, & Glicksohn, 2012). While recent investigations have identified these "second-generation prisoners" as a unique subpopulation among incarcerated offenders (Novero, Loper, & Warren, 2011; Will, Loper, & Jackson, 2014; Will, Whalen, & Loper, 2014), little is known about the experiences of second-generation offenders outside of prison settings. Our study uses data from a longitudinal, community-based, and nationally representative study—the National Longitudinal Study of Adolescent to Adult Health—to investigate differential experiences of past and current criminal offenders with regards to risky alcohol use patterns. Specifically, we compare first- and second-generation offenders on adult outcomes of binge drinking, alcohol use frequency and amount, and DSM-IV markers of alcohol use disorders. Given the high prevalence rate of substance use disorders among forensic populations (Fazel, Bains, & Doll, 2006; James & Glaze, 2006; Kerner,

Weitekamp, Stelly, & Thomas, 1997), and the relative dearth of scholarship investigating this experience among second-generation offenders, our study is a relevant and important contribution to current literature on generational patterns of criminality.

Children of Incarcerated Parents

Adverse implications of parental incarceration. Parental incarceration can result in significant disruption in the home environment. When a primary caretaker is incarcerated, children may be relocated to live with their relatives or foster caregivers (Dallaire, 2007; Glaze & Maruschak, 2008). Even for those who remain with their primary caretaker, the disruption to the household status quo due to the absence of an incarcerated parent can have reverberating effects on the child's functioning and well being. Both in childhood and throughout their lifespan, children of incarcerated parents are at increased risk of experiencing internalizing disorders, including depression and anxiety (Murray & Farrington, 2008), as well as externalizing disorders such as conduct problems (Kjellstrand & Eddy, 2011). Parental criminality and incarceration significantly increase children's risk of substance use and abuse (Foster & Hagan, 2013; Midgley & Lo, 2013). Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), Roettger, Swisher, Kuhl, and Chavez (2011) found that children of incarcerated fathers were at increased risk of using marijuana and illegal drugs. In a similar study of Add Health participants, Foster and Hagan (2013) identified paternal incarceration as a risk factor for offspring's substance role problems (e.g., disruptions with work or school due to alcohol or drug use) in young adulthood, while maternal incarceration predicted depressive symptoms but was unrelated to substance role problems after controlling for familial and environmental variables. Surprisingly, few

studies have investigated alcohol-specific use and abuse among children of incarcerated parents. Studies in this area indicate a bivariate relation between household member incarceration and adult offspring binge drinking and alcoholism (Dube, Anda, Felitti, Edwards, & Croft, 2002), although Strine and colleagues (2012) found that, after control for household drinking and demographic variables, incarceration of a household member predicted alcohol problems only among male children, not female children.

Murray, Loeber and Pardini (2012) point to the importance of identifying the temporal relations between parental incarceration and other risk factors, such as parental absence, when drawing conclusions from studies of children with incarcerated parents. Selection effects may occur, whereby children experience strains such as financial and residential instability, family substance abuse, or mental health issues that pre-date the incarceration of a parent. These effects could account for the increased risk of children of incarcerated parents to engage in problem behavior or develop poor coping skills, rather than the parental incarceration itself. For example, compared to their peers, children of incarcerated parents are more likely to report disadvantaged socioeconomic status and exposure to parental mental illness and substance use (Aaron & Dallaire, 2010; Dannerbeck, 2005; Kjellstrand & Eddy, 2011; Phillips, Erkanli, Keeler, Costello, & Angold, 2006; Shlafer, Poehlmann, & McCall, 2012). Incarcerated parents often describe high rates of conflict in their prior homes, including domestic violence (DeHart & Altshuler, 2009). These selection effects related to an unstable environment may create risk for poor child adjustment before the parent has even gone to jail or prison.

Second-generation offenders. Children who experience parental incarceration are more likely to engage in antisocial behaviors and criminal delinquency during

adolescence (Kjellstrand & Eddy, 2011; Farrington, Jolliffe, Loeber, Stouthamer-Loeber, & Kalb, 2001; Murray & Farrington, 2005), as well as experience arrest and incarceration into adulthood (Farrington, Coid, & Murray, 2009; Huebner & Gustafson, 2007; Murray & Farrington, 2005; Murray, Janson, & Farrington, 2007). When these children go on to become incarcerated or otherwise involved in the legal system, they are known as "second-generation offenders." Research stemming from a study of inmate behavior in 10 midwest and southern U.S. correctional facilities (Novero et al., 2011) revealed several unique characteristics relevant to second-generation offenders that distinguish them from other inmates. Among this prison sample, second-generation prisoners were more likely than first-generation prisoners to report experiences of physical, psychological, and sexual abuse during childhood, parental substance abuse and mental illness (Novero et al., 2011), and exposure to parental domestic violence (Will, Loper, et al., 2014). Prior to coming to prison as adults, second-generation prisoners exhibited more problematic behavior reflective of conduct disorder and were more likely to engage in juvenile delinquency than their first-generation counterparts (Will, Whalen, et al., 2014).

Once incarcerated as adults, second-generation prisoners are more likely than first-generation prisoners to exhibit problematic adjustment in the institutional setting, as evidenced by higher rates of self-reported anger, violence perpetration, and institutional write-ups for misconduct (Novero et al., 2011). These findings were maintained above and beyond the effect of childhood adversities, suggesting that the experience of parental incarceration relates to increased risk of poor coping skills among those children who ultimately become involved in the legal system (Novero et al., 2011).

Together, these studies indicate that prisoners with family histories of incarceration experience a constellation of risk factors distinct from other offenders. Although adults in the criminal justice system, as a whole, report significantly higher rates of past trauma, mental health concerns, and substance abuse in comparison to the general population (Fazel et al., 2006; Kraanen, Scholing, & Emmelkamp, 2012; Steadman, Osher, Robbins, Case, & Samuels, 2009; Wolff, Frueh, Shi, Gerardi, Fabrikant, & Shumann, 2011), "offenders" are a widespread and heterogeneous population with varying individual, social, and environmental characteristics. Narrowing in on the experiences of second-generation offenders can elucidate a distinct group of offenders who may require targeted support and interventions to address risk factors unique from those of other offenders.

Theoretical perspectives. Multiple theoretical models have been proposed to explain the contextual and temporal mechanisms whereby children of incarcerated parents are at heightened risk for criminal behavior and other poor adjustment outcomes. The models are not exclusive, and each captures an alternate context for understanding these youth.

A strain perspective posits that the incarceration of a parent creates social, emotional, and economic burdens on family members who are left behind (Hagan & Dinovitzer, 1999). Parental incarceration places emotional strains on the remaining caregiver, not only due to absence of a loved one, but also due to resulting increased financial and supervisory responsibilities assumed by the caregiver (Schwartz-Soicher, Geller, & Garfinkel, 2011). The loss of an adult wage earner creates financial stress on the family, which in turn may be compounded by the cost of phone calls to prison or

transportation to visit the incarcerated family member (Naser & Visher, 2006). These visits can be stressful for families, especially children (Shlafer & Poehlmann, 2010). All of these family stressors can impact the child physically and emotionally. As a result, children may be at heightened risk for internalizing (e.g., depression, anxiety) or externalizing (e.g., conduct problems, delinquency) problems and maladaptive coping (e.g., substance abuse) in response to these strains.

Maladjustment in children of incarcerated parents likewise has been interpreted through a stigma or labeling perspective. Murray, Loeber, and Pardini (2012) hypothesize a self-fulfilling prophesy related to labeling, such that children of incarcerated parents may engage in deviant behavior as a result of societal expectations that they will adopt their parents criminal identities. Additionally, when a parent becomes incarcerated, the family may be cut off from supportive resources from the community (Hagen & Myers, 2003), or the child may experience stigma, ostracizing, or bullying from schoolmates or members of his/her community. This in turn may lead to problem behavior by the child, either in response to, or as an attempt to cope or escape from, the bullying and stigma (Shlafer & Poehlmann, 2010).

Social learning theory suggests that children learn and adopt behavior patterns from parents who model that behavior in the home. While not always the case, it is likely that parents who become incarcerated exhibit criminal or antisocial behaviors prior to their arrest of which their children are aware. For example, children may observe drug dealing, substance use, theft, and other illegal income-earning activities by their parents, which in turn may normalize these activities for children and increase the propensity of adopting such behaviors. The lack of supervision that arises after parental incarceration

may create more opportunities for the child to associate with antisocial peers or engage in delinquent behaviors, whose behaviors they may also emulate. The incarceration of a parent may therefore be a tipping point that pushes children onto a path of maladjusted or antisocial behavior (Hagan & Dinovitzer, 1999; Murray, Loeber, et al., 2012).

These three models provide differing perspectives that illuminate mechanisms by which parental incarceration may contribute not only to a child's criminal involvement, but also to other adverse adjustment and behavioral outcomes, such as substance abuse. The three theories as not mutually exclusive and may represent the ecological circumstances that become associated with problematic behavior rather than direct causes of problems. This concern is prominent in the literature relating to understanding parental incarceration effects. The parental incarceration may directly cause problems or alternately may be part of a constellation of associated adversities that, in concert, lead to negative outcomes for youth.

Alcohol Use Disorders

In the present study, we explore patterns of problematic alcohol use among individuals with a criminal history who both did and did not experience the incarceration of a parent in childhood. As described above, parental incarceration has been linked to problems with alcohol use among males (Strine et al., 2012), as well as to use of marijuana and other illegal drugs (Roettger et al., 2011) among children. The relation between parental incarceration and alcohol use in an offender population warrants investigation, given the well-documented correlation between alcohol use disorders and broader criminal offending and legal system involvement.

Alcohol use and criminal offending. Alcohol use disorders are one of the most

common mental health concerns experienced by criminal offenders (James & Glaze, 2006; Kerner et al., 1997; Kraanen et al., 2012). Prevalence rates of alcohol abuse and dependence among prison and jail inmates range from 30% to 50% (James & Glaze, 2006; Karberg & James, 2005); in contrast, 12-month prevalence rates of alcohol abuse and dependence in the general population are estimated at 4.7% and 3.8%, respectively (Hasin, Stinson, Ogburn, & Grant, 2007).

Alcohol use and abuse relate to criminality in a variety of ways. As Kerner et al. (1997) summarized, "the more the subject is involved in delinquency, the more he is drinking" (pp. 411). Approximately one-third of offenses committed by convicted offenders occur under the influence of alcohol (Karberg & James, 2005), and continued substance use can have problematic consequences for those who are on community supervision or have criminal records that include drug- or alcohol-related convictions (Swogger, Conner, Walsh, & Maisto, 2011). In van der Put, Creemers, and Hoeve's (2014) study of adolescents on probation, those with a substance use disorder experienced significantly more accumulated dynamic risk factors and were more likely to recidivate than substance-abstaining offenders and substance-using offenders who did not evidence a substance use disorder. As such, presence of a substance use disorder is considered to be a strong risk factor for recidivism on many risk assessment instruments utilized by the criminal justice system (Latessa & Lovins, 2010), such as Bonta and Andrews' (2007) Risk-Need-Responsivity Model.

Substance use and criminality likely interact in a bidirectional fashion. Kerner et al. (1997) found that individuals involved in heavy drinking and recurrent criminal activity in combination are more likely to experience a "socially marginalized" lifestyle

of poor social bonds, employment instability, and financial burden, relative to those who experience only heavy alcohol use, only criminal behavior, or neither during adolescence. In evaluating long-term outcomes of this group, the researchers concluded that heavy drinking impedes social reintegration and reduces the likelihood of criminal desistance over time; however, when individuals do desist from criminal activity in adulthood, heavy drinking concurrently subsides (Kerner et al.). Similarly, Walters (2014) found that individuals who reported both substance use and criminal involvement during adolescence were more likely to report continued engagement in both activities in adulthood, relative to those who reported only one of these experiences. Walters' "worst of both worlds" hypothesis attributes particular complexity to the co-occurrence of criminal offending and substance abuse in tandem, in that "continued involvement in drug use may inhibit the natural maturing out of crime process commonly observed in criminals" (Walters, 2014, pp. 2), and vice versa, thereby limiting the potential for healthy adjustment.

Risk factors for heavy drinking and alcohol use disorders. Given the association between alcohol use and offending, it is useful to examine risk factors that lead youth to abuse alcohol. Identifying these risks, and possible overlap of those risks with those for having an incarcerated parent, can help in understanding common mechanisms that could potentiate alcohol problems among children who grow up with a criminally involved parent.

Parenting factors have a particularly prominent role in predicting adolescent alcohol use and abuse. Parental alcoholism and substance use increases children's risk of substance abuse (Knight, Menard, & Simmons, 2014) through a combination of factors,

including increased genetic predisposition (Nurnberger et al., 2004), social modeling of substance use behavior (Redman, 2010) and the impact of parental substance abuse on parenting style and quality of parental monitoring (Stice & Barrera, 1995). In a longitudinal study by Barnes, Reifman, Farrell, and Dintcheff (2004), parental alcohol use related to lower parental monitoring, which in turn significantly predicted higher baseline levels and a steeper slope over time of adolescents' alcohol misuse (measured by a composite measure of frequency of binge drinking, being drunk, and amount consumed). Several studies point to an interaction effect of genetic and environmental factors (Dick & Kendler, 2012). According to Kendler, Gardner, and Dick (2011), genetic factors (e.g., family alcoholism) have a stronger effect on children's alcohol use "when social constraints are minimized (e.g., low parental monitoring, low prosocial behavior and low parental bonding), or when the environment permits easy access to alcohol and/or encourages its use (e.g., high alcohol availability or high peer deviance)" (pp. 1513). Poor parental management, including parental absence, may leave the door open for an adolescent to engage in antisocial or illegal activity with reduced repercussions. When parents are absent (for example, while incarcerated), adolescents may also be more likely to turn to their peers for validation and approval of their behaviors. Community-based studies consistently demonstrate that affiliation with substance-abusing peers significantly increases adolescents' risk of alcohol use and abuse (Crawford & Novak, 2002; Schwinn & Schinke, 2013) and may account for more variance in alcohol outcomes than parenting-related factors (Windle, 2010).

Many adversities common to criminal offenders—history of child abuse and parental substance abuse, for example—are also frequently implicated as risk factors for

the development of substance use disorders, both in the general population and within offender studies. Children and adolescents may begin to engage in binge alcohol or other substance use in order to cope with familial or social adversities, such as parental absence or addiction, abuse/victimization, or other trauma (Bowles, DeHart, & Webb, 2012; Wright, Fagan, & Pinchevsky, 2013). In general, individuals who experience trauma and other adversities during childhood are more likely to develop alcohol problems (Fenton et al., 2013; Kilpatrick et al., 2000; Shin, Miller, & Teicher, 2013). In their longitudinal study of adolescent binge drinking trajectories using the Add Health sample, Shin et al. (2013) found that teens who experienced physical abuse and neglect demonstrated quicker increases in frequency of binge alcohol use throughout adolescence and maintained higher rates of binge use throughout young adulthood than those who did not experience any childhood maltreatment. Among offenders, Swogger et al. (2011) found that childhood physical abuse predicted alcohol use disorder, while sexual abuse was predictive of drug use disorder.

These findings are particularly relevant to the present study, because prior investigations have revealed that second-generation offenders report proportionally more childhood abuse and exposure to domestic violence compared to other offenders (Novero et al., 2013; Will, Loper, et al., 2014). The experience of parental incarceration can be conceptualized as a situation in which the child is a victim, particularly due to the ripple effects of incarceration on the child's residential and financial stability, caregiver capacity for providing responsible supervision, and disrupted attachment to the incarcerated parent (Dallaire, 2007; Poehlmann, Dallaire, Loper, & Shear, 2010; Schwartz-Soicher et al., 2011). Given this constellation of risks, children of incarcerated

parents may have limited opportunities for learning healthy coping strategies and may in turn seek coping strategies that provide instant gratification, such as substance use (Turanovic & Pratt, 2013). Risky substance use is more likely among individuals with low self-control (Gottfredson & Hirschi, 1990; Turanovic & Pratt, 2013), a characteristic that often typifies criminal offenders (Cauffman, Steinberg, & Piquero, 2005). Gottfredson and Hirschi (1990) posit that "the major 'cause' of low self-control... appears to be ineffective child-rearing" (pp. 97); however, genetic factors also appear to play a significant role in self-control, both in isolation and with respect to the relation between self-control and substance use behaviors (Boisvert, Boutwell, Barnes, & Vaske, 2013).

In light of this evidence, second-generation offenders may be at heightened risk of problematic substance use behaviors. From a strain theory perspective, deviant behavior such as substance abuse and criminal offending reflects coping behaviors initiated in response to stressful life events (Agnew, 1992; Turanovic & Pratt 2013). Parental incarceration is likely to be particularly stressful for a child, yet this event is often excluded from traditional measures of traumatic stressors (Foster & Hagan, 2013).

Present Study

While the aforementioned studies on differences between first- and second-generation prisoners lay important groundwork regarding potential distinctions among offender subgroups, to date no study has compared first- and second-generation offenders among a nationally representative community-based sample, nor have past studies investigated alcohol abuse outcomes. Hence, it is unclear if the results of past studies—which focus on a narrow scope of offenders incarcerated in state prison—can be generalized for patterns of alcohol abuse among criminal offenders across the US, many

of whom may be incarcerated in county jails or federal prisons, receive supervision via community-based probation or parole supervision, or have matriculated out of the legal system. The current study fills this research gap by investigating differences in generational offending groups using the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative study involving data collection across four waves from 1994 to 2009.

This study directly extends past research regarding substance use outcomes among children of incarcerated parents in the Add Health dataset (Foster & Hagan, 2013; Roettger et al., 2011) by evaluating whether this trend is maintained within a subsample of individuals involved in the criminal justice system. This study is also the first to compare first- and second-generation offenders on alcohol abuse outcomes. We anticipated that second-generation offenders—by virtue of their inflated history of childhood adversities and potentially compromised past parental monitoring and support—would evidence poorer outcomes related to risky alcohol use in later life, as compared to first-generation offenders. We evaluated three primary outcomes: alcohol consumption during participants' self-reported peak use, the frequency at which participants engaged in binge alcohol use as adults, and DSM-IV symptoms of alcohol use disorder. In order to fully capture an offender population—and in consideration of fact that over three-quarters of prisoners recidivate within five years of release (Durose, Cooper, & Snyder, 2014)— our sample included any individuals who reported criminal involvement in adulthood, regardless of their current status and/or involvement in the legal system. Hence, some "offenders" were no longer involved in the legal system by the time at which outcomes were evaluated. In view of conflicting evidence about direct

versus indirect effect of parental incarceration, our analyses included a series of contextual variables that have frequently been associated with risky drinking patterns and alcohol use disorders in previous research. We explored these variables independently and within analytical models in order to narrow in on the particular processes occurring in childhood that predict alcohol outcomes. Two research questions were addressed:

1. *Does a history of parental incarceration increase offenders' risk of more frequent and severe alcohol use in adulthood?* Children of incarcerated parents are at heightened risk of substance abuse outcomes (Dube et al., 2002; Foster & Hagan, 2013), potentially as a result of children's use of substances to cope with the strain of parental incarceration. Thus, we hypothesized that second-generation offenders would be more likely than first-generation offenders to engage in binge drinking and report higher frequency of alcohol use at discrete time points in early adulthood, as well as during their self-identified time period of heaviest alcohol use.
2. *Are second-generation offenders more likely than first-generation offenders to develop an alcohol use disorder?* By evaluating responses to questions posed at Wave IV regarding problematic consequences of alcohol use, we anticipated that second-generation offenders would endorse, on average, more DSM-IV markers of alcohol use disorder than first-generation offenders.

Methods

Participants

The current study used data from the National Longitudinal Study of Adolescent to Adult Health (Add Health; Harris, 2009). Add Health is a school-based, four-wave

panel study of a nationally representative cohort of American adolescents. Following an initial Wave I survey of approximately 90,000 youth enrolled in grades 7 through 12, approximately 20,745 randomly selected students participated in Wave I in-home interviews in 1994 and 1995. Wave I also included in-home interviews with approximately 17,000 primary caregivers. The 20,745 students interviewed at Wave I were followed and invited to participate in surveys and interviews again in 1996 (Wave II), 2001 to 2002 (Wave III) and 2008 to 2009 (Wave IV). Youth from several demographic groups were purposefully oversampled at Wave I, including twins, individuals with disabilities, African Americans with college-educated parents, and individuals of Chinese, Cuban, and Puerto Rican descent.

Data used in the current study came from Waves I, III, and IV. Control and explanatory variables pertaining to demographic characteristics and childhood experiences were taken from the Wave I adolescent interview and in-home caregiver interview, with exception of childhood abuse, which was retrospectively evaluated at Wave IV. Dependent variables pertaining to substance use were drawn from Waves III (age 18-26) and IV (age 24-32).

The sample used in this study included male and female participants from the Add Health dataset who reported having been convicted of (or sentenced for) a criminal offense during adulthood, defined as age 18 or older. At Wave IV, participants were queried about their criminal history. Participants were included in our sample if they endorsed having either (1) been convicted of or pled guilty to any charges other than a minor traffic violation, (2) spent time in a jail, prison, juvenile detention center, or other correctional facility, or (3) been on probation for an offense. Participants who did not

report a criminal conviction according to these criteria were excluded from our sample. Given that our study focused on the impact of parental incarceration during childhood development, participants who experienced parental incarceration only after age 18 were excluded from the study sample. Using these criteria, we identified 2,539 criminal offenders eligible for our study and analysis of Wave IV outcomes: of these, 2029 participated in Waves I, III, and IV and were therefore eligible for analyses pertaining to Wave III as well.

Measures

Independent variables.

Parental incarceration. At Wave IV, participants were asked four questions regarding the incarceration of their parents ("[Has/did] your [biological father/biological mother/father figure/mother figure] ever [spent/spend] time in jail or prison?"). Participants were also queried regarding their age at the time of their parents' first incarceration and last release from jail/prison. Participants were identified as second-generation offenders if they reported experiencing parental incarceration prior to age 18. First-generation prisoners were identified as those who did not report any parental incarceration in their lifetime, including those with parent(s) incarcerated solely prior to their birth.

Demographic control variables. To identify the demographic composition of participants in this study, we evaluated the sample on key variables drawn from the Wave I dataset.

Age. Participants' age at Wave IV was calculated by date of interview and date of birth.

Sex. Participant biological sex was determined by the evaluator administering the survey based on physical observation and respondent self-report.

Ethnicity. Based upon multiple questions pertaining to ethnic background from adolescent's interview, we constructed a 4-group ethnicity variable (Caucasian, African-American, Hispanic, and other), dummy-coded with a reference category of Caucasian.

Maternal public assistance. Participants reported if their mother received public assistance, such as welfare (yes/no).

Maternal education. Parental education was captured by participants' reports of their residential mother's highest level of education on a 10-point ordinal scale ranging from "never went to school" (1) to "professional training beyond a four-year college or university" (10). Responses were recoded into a three-level categorical variable (did not complete high school; completed high school or GED; obtained college degree).

Explanatory variables. Potential explanatory variables included factors frequently implicated in prior research with offender and substance abuser groups.

Childhood abuse. Childhood abuse was assessed retrospectively at Wave IV with the question, "Before your 18th birthday, how often did a parent or adult caregiver hit you with a fist, kick you, or throw you down on the floor, into a wall, or down stairs?" Responses to this item were provided on a 6-point Likert scale, which we recoded into a dichotomous item capturing whether a participant did or did not experience abuse.

Parents' alcohol problems. Caregivers were asked whether the participants' (1) biological mother, or (2) biological father "had alcoholism" (yes/no).

Peer alcohol use. At Wave I, participants were asked, "Of your 3 best friends, how many drink alcohol at least once a month?" Responses ranged from 0 to 3.

Parental control. Parental control was measured by six dichotomous items asked at Wave I as to whether adolescents' parents let them make their own decisions about various activities, such as curfew time, watching TV, and bedtime. The items were summed together to create a scale with range 0 – 6, consistent with past research using this measure (Harris-McCoy & Ciu, 2013). Internal reliability of the scale in Harris-McCoy and Ciu's (2013) study with the entire Add Health population was .60. Among our offender sample, Cronbach's alpha of this measure was .587, indicating relatively poor reliability.

Dependent variables. In order to account for variation in alcohol use patterns across the lifespan—especially among criminal offenders, whose alcohol use may fluctuate relative to their legal status (e.g., alcohol use may decline while incarcerated or on probation)—we evaluated alcohol use outcomes at several points in time.

Wave IV alcohol use composite. We created a composite measure of alcohol use from items at Wave IV capturing patterns of peak alcohol use and frequency of binge drinking. Peak alcohol use was identified by the frequency of alcohol consumption during the lifetime period at which participants were drinking most (either during the year prior to data collection, or during a period identified by the participant as the period of highest use) and the number of drinks consumed, on average, per use. Binge drinking was measured by the item, "During the past 12 months, on how many days did you drink [5 or more/4 or more] drinks in a row?"; the number of drinks posed in the item varied dependent upon whether the participant was male or female, respectively.

Responses to past-year alcohol use frequency and past-year binge use frequency were provided on a 6-point Likert scale, while responses to lifetime frequency were

provided on a 7-point Likert scale. While most value categories were consistent across variables, several were not: Responses to the lifetime frequency item included "1 or 2 days in the past 12 months" and "Once a month or less (3 to 12 days in the past 12 months)," while past-year frequency item responses included "Less than 1 day a month" and "1 day a month." These values were recoded to a single category, "1 day a month or less," within each respective variable. Additionally, the lifetime frequency variable included separate response categories for "1 day a week" and "2 days a week," which were recoded into a single category to maintain consistency with the values in the past-year frequency items. After recoding, each frequency variable used an identical ordinal scale, with response categories of: "Never" (0), "1 day a month or less" (1), "2 or 3 days a month" (2), "1 or 2 days a week" (3), "3 to 5 days a week" (4), "Every day or almost every day" (5).

Highest lifetime frequency, highest lifetime amount, and binge use frequency were then summed into a continuous scale (range 0-28). Alpha reliability of this composite variable was .627.

Wave III alcohol use composite. A parallel composite variable was created using Wave III variables pertaining to frequency of alcohol use within the preceding 12 months, amount consumed per use, and frequency of binge alcohol use in the same period. Response values for the two frequency variables were recoded to the ordinal scale used for Wave IV frequency variables (range 0-5), requiring two responses ("1 or 2 days in the past 12 months" and "Once a month or less") to be recoded into a single response of "1 day a month or less." Consistent with the Wave IV alcohol use composite, all three

alcohol use variables were summed to create a composite, continuous scale (range 0-28). Alpha reliability of this composite variable was .630.

Alcohol disorder markers. At Wave IV, a subset of participants who surpassed an excessive drinking checkpoint were queried on 13 items mapping onto DSM-IV diagnostic criteria for Alcohol Abuse (4 criteria) and Alcohol Dependence (7 criteria). Variables were combined in accordance with Add Health coding procedures, dichotomized and then summed to create an 11-point scale capturing the number of DSM-IV symptoms endorsed (see Appendix D). Item scores for individuals who did not complete these items due to not surpassing the excessive drinking checkpoint were each recoded to 0. Cronbach's alpha reliability of this composite variable was .876.

Data Analysis

Analyses for the current study were conducted using survey statistical procedures for complex samples in the Stata 14 program. Selection of sample weights and subpopulation procedures were carried out in accordance with guidelines for Add Health data provided by the Carolina Population Center (Chen & Chantala, 2014). We conducted all analyses using the subpopulation command of Stata, which allowed us to investigate our sample based on the exclusionary criteria described above while ensuring appropriate estimation of variances. Our analyses included various dependent variables measured at Wave III and Wave IV. In accordance with Add Health guidelines (Chen & Chantala, 2014), sampling weights were chosen based on the wave from which dependent variables were measured. Therefore, we created two subpopulations: Subpopulation 1 was used for analyses of Wave III outcomes and included individuals present at Waves I, III, and IV (*n*

= 2029), while Subpopulation 2 was used for analyses of Wave IV outcomes and included individuals present at Waves I and IV (n = 2,539).

Of our total subpopulation (n = 2539), approximately 36.55% were missing data on one or more explanatory variables, and approximately 2.52% were missing data on one or more outcome variables (see Appendix B). We employed multiple imputation for chained equations (MICE) in Stata version 14 to compensate for missing data. Multiple imputation is preferable to other approaches to missing data (e.g., listwise deletion, mean imputation), because it reduces the potential for biased estimates. Multiple imputation replaces missing values using an iterative, chained procedure to impute values for missing data in multiple distinct datasets. Creating multiple datasets increases accuracy of standard errors and takes into account the uncertainty that is an inherent limitation in single imputation approaches (Azur, Stuart, Frangakis, & Leaf, 2011). Statistical analyses are conducted on each dataset, and point estimates and standard errors are then combined using the Stata mi estimate command to produce a single result. MICE is a specific type of multiple imputation that allows for a more flexible model inclusive of both categorical and continuous variables (White, Royston, & Wood, 2011). In the current study, missing values were imputed separately for Subpopulation 1 and Subpopulation 2 (ten iterations, each), in order to account for appropriate sampling weights within the imputation models.

Our imputation models included all variables used in our analyses as well as relevant sample weights (see Appendix B). The imputation models included dependent variables, because excluding dependent variables increases risk of coefficients biased toward zero (Allison, 2002; Young & Johnson, 2010). Research is mixed regarding the appropriateness of including imputed dependent variables in analytical models (Young &

Johnson, 2010). Omitting cases with imputed dependent variable values in our main analyses did not affect the pattern of our results; therefore, we elected to include those cases in the models presented here.

Given the longitudinal nature of the Add Health study, attrition between Wave I to Wave IV was evident. SPSS was used to evaluate potential differences among those who did versus did not attrit between Waves I and IV within the sample of participants who were included in the initial sampling frame. Comparison of those who participated in Wave IV data collection (n = 14,800) with those who attrited after Wave I (i.e., those who did not participate in Wave IV; n = 4,124) revealed that the attrition group had significantly higher rates of alcohol use at Wave I, χ^2 (6) = 25.47, $p < .001$, Cramér's V = .054. Because statistically significant results are not uncommon in large datasets, and the small effect size indicates a relatively weak relationship, we assume this data is missing at random and elected to continue with the proposed study.

Results

Characteristics of Sample

We divided our sample of offenders into two groups—first-generation offenders and second-generation offenders—based on the Parental Incarceration variable. Prior to data imputation, we conducted a series of bivariate analyses (chi-square and mean estimation analyses) among Subpopulation 2 to compare first-generation and second-generation offenders on key demographic and explanatory variables (Appendix C). Tables 1 and 2 present descriptive information of the two subpopulations after imputation of missing data. Descriptive patterns were consistent across subpopulations. First- and second-generation offenders significantly varied with regard to race, with second-

generation offenders more likely to identify as African American and less likely to identify as Caucasian (rates of Hispanic and other racial identity were relatively consistent across the two generational groups). Relative to first-generation offenders, second-generation offenders were significantly more likely to experience maternal alcoholism, paternal alcoholism, and physical abuse. Second-generation offenders also reported a residential mother with a lower level of education and higher rate of public assistance at Wave I relative to their first-generation counterparts. Among participants in Subpopulation 2, parental incarceration status did not relate to Wave IV alcohol use outcomes. In contrast, in Subpopulation 1, parental incarceration was related to frequency of binge alcohol use and frequency of any alcohol use at Wave III, but was not related to amount per use nor to the Alcohol Use Composite at Wave III. No issues of collinearity were identified among the variables included in our analyses.

Alcohol Use

We conducted a series of multiple regressions and ordered logistic regressions to investigate our first research question regarding the relation between parental incarceration and risky alcohol use. We investigated alcohol use outcomes at Wave III (weighted mean age = 22.32, range: 18-28) and again at Wave IV (weighted mean age = 28.82, range: 24-34).

Wave III alcohol use. Among Subpopulation 1, bivariate analyses revealed a significant relation between parental incarceration and frequency of Wave III alcohol use, F (1, 91.1) = 5.90, p = .02, as well as frequency of Wave III binge use, F (1, 116.7) = 8.49, p = .004. Parental incarceration did not relate to amount of alcohol consumed per

use at Wave III, F (1, 120.7) = .60, p = .44, nor did it predict the Alcohol Use Composite measure, F (1, 115.6) = 3.14, p = .08.

We analyzed these findings by conducting further multiple regression (for continuous amount and composite variables) and ordered logistic regression (for ordinal frequency variables). After inclusion of demographic and explanatory covariates, the first regression model predicting Wave III composite alcohol use (Table 3) was significant overall, F (14, 124.5) = 8.88, $p < .001$, average R^2 = .11 across imputation models; however, parental incarceration did not significantly predict the composite alcohol use outcome, t = - 0.30, p = .77. Rather, Wave III Alcohol Use Composite scores were positively predicted by male gender, higher peer alcohol use, and having a residential mother who obtained a high school degree/GED or college degree. Wave III Alcohol Use Composite scores were negatively predicted by age and African American race.

We replicated these analyses on the three variables comprising the Wave III alcohol composite separately (frequency of use, amount per use, and frequency of binge use). Results of these analyses were relatively consistent with results from the composite measure: African American race and female gender consistently predicted lower alcohol outcomes. Analysis of the individual variables revealed that age predicted only amount of alcohol consumed per use, with higher ages corresponding to lower alcohol consumption amount, whereas peer alcohol use demonstrated stronger predictive value in the models for frequency of past year use and binge use. Having a mother with a high school or college degree positively predicted alcohol use frequency and binge use frequency, while this finding was not as robust for amount of alcohol consumed per use.

Wave IV alcohol use. We next investigated parallel outcomes seven years later, at Wave IV, using Subpopulation 2. Preliminary investigation revealed that parental incarceration did not significant relate to Wave IV Alcohol Use Composite scores, F (1, 113.4) = .03, p = .86, nor did it relate to individual scores on the three variables comprising this composite: frequency of any alcohol use (F (1, 123.3) = .08, p = .78), amount per use (F (1, 112) = .67, p = .42), and frequency of binge use (F (1, 114) = 2.04, p = .16).

Investigation of the Wave IV alcohol use composite with inclusion of covariates revealed similar results, with a significant overall model, F (14, 123.7) = 16.51, $p < .001$, average R^2 = .134, but no predictive effect for parental incarceration status (t = 1.26, p = .21); see Table 4. Rather, the most significant predictors of alcohol use were higher rates of peer alcohol use, lower parental control, and male gender. Offenders who identified as African American or Hispanic had significantly lower alcohol scores relative to Caucasian offenders. The remaining variables, including maternal and paternal alcoholism, were not statistically significant.

We replicated these analyses on the three variables comprising the alcohol composite separately (Table 4). Results of these analyses were relatively consistent with results from the composite Wave IV measure, as well as the parallel Wave III measures. Peer alcohol use and male gender maintained a positive predictive effect across all three models. Similarly, African American race negatively predicted all three alcohol outcomes, while Hispanic race negatively predicted all but binge use frequency. The predictive effect of maternal education level varied by model, in that offenders with a mother achieving a college degree reported more frequent peak alcohol use and more

frequent binge use, but maternal education had no effect on amount of alcohol per use. Lower parental control and lack of maternal public assistance predicted higher alcohol use frequency only, while physical abuse only predicted alcohol use frequency. Lastly, age was a significant predictor in the binge use frequency model, but was non-significant in the other models.

DSM-IV Markers of Alcohol Use Disorder

To capture other indicators of risky alcohol use, we investigated DSM-IV symptoms of alcohol abuse and dependence assessed at Wave IV (Table 5). Detailed description of individual DSM-IV markers is presented in Appendix D. Multiple regression of the summed DSM-IV markers revealed an overall significant model, F (14, 124.6)=15.57, p <.001, average R^2 = .101, but no predictive effect of parental incarceration (t = -0.11, p = .91). Consistent with other Wave IV alcohol outcomes, higher peer alcohol use, higher levels of maternal education, male gender, and Caucasian race (relative to African American and Hispanic race) were most predictive of elevated rate of DSM-IV symptomatology. Additionally, childhood physical abuse and biological mother's alcoholism emerged as significant predictors unique to the DSM-IV markers model.

Discussion

This research, undertaken with a sample of criminal offenders from a large, community sample of adults in the United States, investigated the relation between parental incarceration and adult children's alcohol use. Results confirmed previous research regarding the higher rates of childhood adversity among second-generation offenders relative to first-generation offenders. Specifically, second generation offenders

were more likely to experience lower SES in childhood (as measured by maternal education and receiving public assistance), maternal and paternal alcoholism, and physical abuse. The racial composition of second-generation offenders included more individuals identifying as African American, whereas first-generation offenders were more likely to identify as Caucasian.

However, the present study did not support our hypothesis that offender generation groups would have distinct patterns of alcohol abuse. We hypothesized that parental incarceration would predict higher rates of risky alcohol use and increased problems associated with use. Preliminary analyses revealed some evidence that parental incarceration predicted frequent binge alcohol use in early adulthood (Wave III)—albeit in a direction opposite to that we anticipated—but these effects were better explained by other variables and did not endure over time.

Results of our study revealed several key demographic and contextual predictors of alcohol outcomes among this offender population, including socioeconomic status, race, gender, parental management, and peer alcohol use. Consistent with prior research (Chartier, Hesselbrock, & Hesselbrock, 2011; Haberstick et al., 2014), men were significantly more likely than women to report consuming alcohol in higher amounts and increased frequency at Wave III (mean age = 22.32) and again at Wave IV (mean age = 28.82). Maternal education level—particularly having a mother who achieved a college degree or higher—was predictive of elevated alcohol use and abuse in early adulthood. Maternal education level is often used as a proxy for socioeconomic status, and results of our study are consistent with a wider literature attesting to higher rates of alcohol abuse among individuals from higher socioeconomic backgrounds (Haberstick et al., 2014).

Many research studies have elucidated distinctions among racial and ethnic groups with regard to alcohol use and abuse. Our results were consistent with the weight of the evidence that identifies white individuals, and to a lesser extent Hispanic individuals, at higher risk of binge alcohol use relative to African Americans during adolescence (Kilpatrick et al., 2000; Wu, Woody, Yang, Pan, & Blazer, 2011). Relative to Caucasian offenders, African Americans in our study reported significantly less frequent alcohol use and binge drinking, lower amount of alcohol consumed per use, and were less likely to experience negative consequences from drinking associated with DSM-IV markers of an alcohol use disorder. These findings differ somewhat from an earlier study of racial distinctions in alcohol outcomes in Add Health by Watt and Rogers' (2007), in which African American adolescents were more likely than white adolescents to engage in alcohol use but had similar binge alcohol use. The inconsistency in outcomes is likely due to measurement distinctions; whereas Watt and Rogers (2007) measured binge use by a dichotomous variable, our study measured binge use with an ordinal frequency variable, thereby capturing greater variation and a more nuanced picture of binge drinking. Our results ultimately revealed that African Americans were less likely than whites to engage in binge use, and this race effect remained constant throughout all analyses of alcohol use outcomes, speaking to the endurance and strength of this finding into offenders' late 20's and early 30's. There is some research evidence to suggest an interaction between age and race, such that African Americans report lower alcohol problems relative to Caucasians during adolescence, but ultimately report relatively higher prevalence of alcohol problems in adulthood (Mulia, Ye, Greenfield, & Zemore, 2009). Our divergent findings may implicate criminal justice involvement as a

potential confounding factor, and future research with offender populations is needed to further explore these distinctions.

Additionally, affiliation with alcohol-using friends in early adolescence was one of the strongest predictors of risky drinking throughout adulthood and alcohol use disorder symptoms. These findings are consistent with a larger line of research attesting to the strong potential for susceptibility to peer influence during adolescence and the robust link previously identified between substance using peers and alcohol use outcomes (Crawford & Novak, 2002; Schwinn & Schinke, 2014; Watt & Rogers 2007; Windle, 2010). Results of our study reveal that even among criminal offenders, early exposure to alcohol-using peers has long-lasting impacts on alcohol use into adulthood. Given that deviant peer groups are also a strong predictive risk factor for criminal offending (Brauer & De Coster, 2015), it appears that individuals involved in the legal system are at particularly high risk of susceptibility to peer influence across multiple domains.

The relation between parental alcoholism and children's substance abuse outcomes is well documented in the research literature (Chassin, Rogosch, & Barrera, 1991; Knight et al., 2014; Nurnberger et al., 2004). However, in our study of criminal offenders, parental substance abuse did not predict offenders' frequency or amount of alcohol use at either Wave III or IV after control for related risk factors. Interestingly, the only relation between parental alcoholism and children's alcohol use outcomes occurred at Wave IV, in that maternal alcoholism significantly predicted DSM-IV alcohol use disorder symptoms, net of control variables. Similarly, childhood physical abuse predicted DSM-IV symptoms but not any other alcohol use items. The DSM-IV measure and the Alcohol Use Composite measure appeared to measure unique aspects of alcohol

use, and it is possible that the measure of DSM-IV symptoms better captured the experience of risky and problematic alcohol use. Maternal alcoholism and physical abuse appear to relate to negative alcohol use outcomes only at the most dysfunctional degree, i.e., at the point at which alcohol use significantly interferes with individuals' functioning, relationships, and/or livelihood.

Prior research implicates parental control as a mediating factor in the relation between parental alcohol use and adolescent alcohol use (Barnes et al., 2004), and this theory could help to explain our results. Research by Harris-McCoy and Cui (2013) suggests that children who experience low levels of parental control are at higher risk of delinquency and criminality throughout adolescence and early adulthood. We included parental control in our analyses, but our measure had relatively low internal consistency reliability and as a result may not have captured a unidimensional construct of parental control. In spite of this measurement limitation, results of our study tentatively suggest that the negative consequences of low parental control and monitoring during childhood extend beyond increased risk of criminal engagement, to the point of further increasing risk of risky alcohol use in later adulthood among those who do become criminally involved. Although parental control did not predict alcohol use at Wave III, it did predict peak lifetime alcohol use patterns and diagnostic symptoms of alcohol abuse and dependence measured at Wave IV. It is also noteworthy that—in contrast to Barnes et al.'s (2004) study—we found no relation between parental control and parental incarceration in our offender sample. Future research on the potential mediating impact of parental control will benefit from use of valid and reliable measures.

Ultimately, our results did not support our research hypotheses regarding a

potential relation between childhood parental incarceration and adult alcohol use outcomes among criminal offenders. This outcome is surprising, because parental incarceration often co-occurs with other adversities—including childhood trauma and parental substance abuse—and results in negative outcomes for children, such as illegal drug use and criminal delinquency (Foster & Hagan, 2013; Huebner & Gustafson, 2007; Murray, Farrington, & Sekol, 2012). Many of these experiences are identified as risk factors contributing to the development of substance abuse, which is a common experience among individuals involved in the criminal justice system. Therefore, we explored parental incarceration as a potential explanatory factor in understanding and predicting substance abuse, but did not find evidence for this hypothesis.

Results of this study indicate that parental incarceration does not increase adult children's risk of alcohol abuse, at least among offenders. Preliminary bivariate analyses found that parental incarceration did not relate to lifetime alcohol outcomes measured at Wave IV but did relate to frequency of alcohol use and binge use at Wave III in an unanticipated direction: second-generation offenders reported drinking alcohol slightly less frequently than first-generation offenders. These results raise the possibility of an influence of parental incarceration on alcohol use that is stronger during childhood and dissipates over time, although the nature of this relation is unclear. The impacts of parental incarceration could vary depending upon the living situation or degree of parent-child closeness prior to incarceration, and it is plausible that parental incarceration may benefit the child if the parent had previously been harming the child or otherwise contributing to a chaotic or unstable home environment. Future research investigating alcohol use at an earlier age—i.e., more immediately following parental incarceration

during childhood, prior to age 18—is needed in order to identify the possibility of a "wearing off" effect of parental incarceration related to risky alcohol use among children as well as the directionality of this effect.

Nevertheless, the relation between parental incarceration and alcohol use does not occur in a vacuum: once other demographic and explanatory variables were included in our model, parental incarceration no longer predicted alcohol use outcomes among offenders. A recent meta-analysis by Murray, Farrington, & Sekol, 2012 did not find evidence of a relation between of parental incarceration and children's drug use, and our findings suggest that parental incarceration is similarly unrelated to children's alcohol use when such analyses are conducted with rigorous consideration of other explanatory processes. The second-generation offender group included a higher concentration of African Americans and included more children of mothers with low educational attainment. Yet, race and maternal education were two demographic variables that strongly predicted alcohol use outcomes: Caucasian offenders and those with more highly educated mothers were more likely to use alcohol and experience symptoms of alcohol use disorders. Thus, controlling for race and maternal education may have washed away potential impacts of parental incarceration.

In consideration of the fact that criminal offending and substance use are so closely intertwined (Karberg & James, 2005; Kerner et al., 1997; van der Put et al., 2014), it is also possible that the individuals identified in prior studies of parental incarceration and alcoholism as being at higher risk of substance use disorders are the ones who are becoming criminally involved. Therefore, our study of criminal offenders may inherently reduce the variance of alcohol patterns captured in general population

studies, creating more challenges in teasing apart potential relationships between alcohol use and parental incarceration. Indeed, the rates of alcohol abuse (17.81%) and alcohol dependence (27.04%) seen in our offender sample are substantially higher than the rates of alcohol abuse (11.8%) and dependence (13.2%) reported in the entire Add Health population (Haberstick et al., 2014).

Another plausible explanation is that any adverse impacts of parental incarceration and parental alcoholism seen among general population samples are not as strong or apparent among offender populations, who are more likely to experience a host of other historical adversities and ongoing stressors. In other words, criminal offenders may have lives so highly saturated with trauma, stress, and related risk factors that parental incarceration and alcoholism no longer contribute significant risk above and beyond these other hardships. Kinner, Alati, Najman, and Williams (2007) similarly found that effects of parental incarceration on adolescent alcohol abuse and internalizing and externalizing behaviors became non-significant after controlling for other risk factors, thus leading the researchers to conclude, "in the context of general disadvantage, paternal arrest and imprisonment may have relatively little impact on child functioning at age 14" (pp. 1153).

Conversely, it may be that the well-documented influence of parental incarceration on offspring antisocial behavior and legal involvement is largely unrelated to substance abuse. That is, parental incarceration may more directly impact violent and non-violent criminal offending reflecting antisocial traits, rather than offending that involves or relates to substance abuse in particular. Future research exploring trends in offending patterns and timing of parental incarceration will help to elucidate substance

abuse amongst children of incarcerated parents.

Limitations

One limitation of our study is the attrition of the original Add Health population. Several key variables were only asked during Wave IV; thus, our sample was limited to only those participants who maintained participation throughout the entire study. Extensive efforts were made to follow-up with participants at each wave, including those who become incarcerated. Nevertheless, comparison of our subpopulation to attrited participants revealed the latter had higher rates of baseline alcohol use. It is possible that the attrited participants ultimately engaged more actively and frequently in the activities we sought to investigate (namely, criminal activity and risky, disordered alcohol use).

Additionally, our analyses are not longitudinal, and therefore we cannot assume a causal relation between parental incarceration (offender generation status) and outcome drinking behaviors. Our study is also limited by nature of the survey design. This study included several sensitive topics, including parental incarceration and abuse history, which may have increased the risk for participants to distort or withhold information due to embarrassment or perceived pressure to provide a certain response. Data pertaining to sensitive or illegal topics was collected using an audio-assisted self-interview technology (Audio CASI), in order to mitigate this limitation to the greatest extent possible.

An additional limitation of the study is the composition of questions afforded by the survey. Although participants were asked about their alcohol use patterns during their period of heaviest use, they did not report the time/age at which their heaviest use occurred, which limits the conclusions we can draw from our results. Similarly, information about the timing of the participants' parental incarceration is limited; while

participants were queried regarding their age the first time they experienced the incarceration of a parent, we are unable to ascertain the length of the incarceration period. It is plausible that individuals' experiences and outcomes may differ depending upon the timing, duration, and nature of parental incarceration patterns that we were unable to measure with the available data.

Lastly, we qualify our results with consideration to the fact that involvement in the justice system—through community supervision or incarceration, for example—may inherently limit an individual's access to alcohol use or otherwise serve as a deterrent by threatening negative consequences for continued alcohol use (e.g., probation revocation). We attempted to circumvent this potential limitation by investigating alcohol use frequencies and disordered symptoms across the lifespan, and specifically during the point in time participants identified as the period of most significant use. Nevertheless, we cannot rule out the potential that individuals—even those who engage in risky alcohol use and demonstrate disordered symptoms—may be at increased risk of becoming involved in the legal system, and their resulting legal consequences may impede the development of further alcohol problems. Indeed, many individuals conduct offenses while under the influence of alcohol and enter jail and prison with pre-existing substance use disorders (James & Glaze, 2006; Karberg & James, 2005), and thus their subsequent legal involvement may serve as a natural stopgap for their use.

Conclusion

Despite these limitations, the results of our study provide an important contribution to the emerging field of research on second-generation offenders. This study is the first to confirm within a nationally representative sample that first- and second-

generation offenders have divergent childhood experiences, with second-generation offenders coming from lower socioeconomic households with greater exposure to physical abuse and parental alcoholism. Although second-generation offenders in this study experienced a more complex array of childhood adversities, however, they reported similar rates of alcohol use and were no more likely to develop alcohol use disorders than first-generation offenders. These results suggest that, when intervening with children of incarcerated parents who are involved in criminal activity, alcohol abuse may not be of primary or immediate concern, relative to other potential areas of intervention. Further research on second-generation offenders experiences throughout the lifespan is an important and necessary step in order to identify the areas of greatest need and optimal timing for intervention among children of incarcerated parents.

References

Aaron, L., & Dallaire, D. H. (2010). Parental incarceration and multiple risk experiences: Effects on family dynamics and children's delinquency. *Journal of Youth Adolescence, 39,* 1471-1484. doi:10.1007/s10964-009-9458-0

Agnew, R. (1992). Foundation for a general strain theory of crime and delinquency. *Criminology, 30,* 47-87.

Allison, P. D. (2002). *Missing data*. Thousand Oaks, CA: Sage.

Azur, M. J., Stuart, E. A., Frangakis, C., & Leaf, P. J. (2011). Multiple imputation by chained equations: What is it and how does it work? *International Journal of Methods in Psychiatric Research, 20,* 40-49. doi:10.1002/mpr.329

Barnes, G. M., Reifman, A. S., Farrell, M. P., & Dintcheff, B. A. (2004). The effects of parenting on the development of adolescent alcohol misuse: A six-wave latent growth model. *Journal of Marriage and Family*, *62*, 175-186. doi:10.1111/j.1741-3737.2000.00175.x

Bonta, J., & Andrews, D. A. (2007). *Risk-need-responsivity model for offender assessment and rehabilitation* (User Report 2007–06). Ottawa, Ontario: Public Safety Canada.

Bowles, M. A., DeHart, D., & Webb, J. R. (2012). Family influences on female offenders' substance use: The role of adverse childhood events among incarcerated women. *Journal of Family Violence*, *27*, 681-686. doi: 10.1007/s10896-012-9450-4

Boisvert, D., Boutwell, B. B., Barnes, J. C., & Vaske, J. (2013). Genetic and environmental influences underlying the relationship between low self-control and substance use. *Journal of Criminal Justice*, *41*, 262-272. doi: 10.1016/j.jcrimjus.2013.05.007

Brauer, J. R., & De Coster, S. (2015). Social relationships and delinquency: Revisting parent and peer influence during adolescence. *Youth & Society, 47,* 374-394. doi: 10.1177/0044118X12467655

Carson, E. A. (2014). Prisoners in 2013. *Bureau of Justice Statistics Bulletin.* Washington, DC: US Department of Justice.

Cauffman, E., Steinberg, L., & Piquero, A. R. (2005). Psychological, neuropsychological and physiological correlates of serious antisocial behavior in adolescence: The role of self-control. *Criminology, 43,* 133-176. doi:10.1111/j.0011-1348.2005.00005.x

Chartier, K. G., Hesselbrock, M. N., & Hesselbrock, V. M. (2011). Alcohol problems in young adults transitioning from adolescent to adulthood: The association with race and gender. *Addictive Behaviors, 36,* 167-174. doi:10.1016/j.addbeh.2010.10.007

Chassin, L., Rogosch, F., & Barrera, M. (1991). Substance use and symptomatology among adolescent children of alcoholics. *Journal of Abnormal Psychology, 100*, 449-463.

Chen, P., & Chantala, K. (2014). Guidelines for analyzing add health data. Carolina Population Center: University of North Carolina at Chapel Hill.

Crawford, L. A., & Novak, K. B. (2002). Parental and peer influences on adolescent drinking: The relative impact of attachment and opportunity. *Journal of Child & Adolescent Substance Abuse, 12,* 1-26. doi: 10.1300/J029v12n01_01

Dallaire, D. H. (2007). Incarcerated mothers and fathers: A comparison of risks for children and families. *Family Relations, 56,* 440-453. doi:10.1111/j.1741-3729.2007.00472.x

Dannerbeck, A. M. (2005). Differences in parenting attributes, experiences, and behaviors of delinquent youth with and without a parental history of incarceration. *Youth Violence and Juvenile Justice, 3,* 199-213. doi:10.1177/1541204005276260x

DeHart, D. D., & Altshuler, S. J. (2009). Violence exposure among children of incarcerated mothers. *Child and Adolescent Social Work Journal, 26,* 467-479. doi:10.1007/s10560-009-0184-y

Dick, D. M., & Kendler, K. S. (2012). The impact of gene-environment interaction on alcohol use disorders. *Alcohol Research: Current Reviews, 34,* 318-324.

Dube, S. R., Anda, R. F., Felitti, V. J., Edwards, V. J., & Croft, J. B. (2002). Adverse childhood experiences and personal alcohol abuse as an adult. *Addictive Behaviors, 27,* 713-725. doi: 0306-4603/02/$

Durose, M. R., Cooper, A. D., & Snyder, H. N. (2014). Recidivism of prisoners released in 30 states in 2005: Patterns from 2005 to 2010. *Bureau of Justice Statistics Special Report.* Washington, DC: US Department of Justice.

Farrington, D. P., Coid, J. W., & Murray, J. (2009). Family factors in the intergenerational transmission of offending. *Criminal Behaviour & Mental Health,* 19, 109-124. doi:10.1002/cbm.717

Farrington, D. P., Jolliffe, D., Loeber, R., Stouthamer-Loeber, M., & Kalb, L. M. (2001). The concentration of offenders in families, and family criminality in the prediction of boys' delinquency. *Journal of Adolescence, 24,* 579-596. doi:10.1006/jado.2001.0424

Fazel, S., Bains, P., & Doll, H. (2006). Substance abuse and dependence in prisoners: A systematic review. *Addiction, 101,* 181-191. doi:10.1111/j.1360-0443.2006.01316.x

Fenton, M. C., Geier, T., Keyes, K., Skodol, A. E., Grant, B. F., & Hasin, D. S. (2013). Combined role of childhood maltreatment, family history, and gender in the risk for alcohol dependence. *Psychological Medicine, 43,* 1045-1057. doi:10.1017/S0033291712001729

Foster, H., & Hagan, J. (2013). Maternal and paternal imprisonment in the stress process. *Social Science Research, 42,* 650-669. doi: 10.1016/j.ssresearch.2013.01.008

Glaze, L. E., & Kaeble, D. (2014). Correctional populations in the United States, 2013. *Bureau of Justice Statistics Bulletin.* Washington, DC: US Department of Justice.

Glaze, L. E., & Maruschak, L. M. (2008). Parents in prison and their minor children. *Bureau of Justice Statistics Special Report.* Washington, DC: US Department of Justice.

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

Haberstick, B. C., Young, S. E., Zeiger, J. S., Lessem, J. M., Hewitt, J. K., & Hopfer, C. J. (2014). Prevalence and correlates of alcohol and cannabis use disorders in the United States: Results from the national longitudinal study of adolescent health. *Drug and Alcohol Dependence, 136,* 158-161. doi:10.1016/j.drugalcdep.2013.11.022

Hagan, J., & Dinovitzer, R. (1999). Collateral consequences of imprisonment for children, communities, and prisoners. *Crime and Justice, 26,* 121-162. doi:10.1086/449296

Hagen, K. A., & Myers, B. J. (2003). The effect of secrecy and social support on behavioral problems in children of incarcerated women. *Journal of Child and Family Studies, 12*, 229-242. doi:10.1023/A:1022866917415

Harris, K. M. (2009). The National Longitudinal Study of Adolescent to Adult Health (Add Health), Waves I & II, 1994–1996; Wave III, 2001–2002; Wave IV, 2007-2009 [machine-readable data file and documentation]. Chapel Hill, NC: Carolina Population Center, University of North Carolina at Chapel Hill. doi:10.3886/ICPSR27021.v9

Harris-McCoy, D., & Ciu, M. (2013). Parental control, adolescent delinquency, and young adult criminal behavior. *Journal of Child and Family Studies, 22*, 836-843. doi: 10.1007/s10826-012-9641-x

Hasin, D. S., Stinson, F. S., Ogburn, E., & Grant, B. F. (2007). Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States. *Archives of General Psychiatry, 64,* 830-842. doi: 10.1001/archpsyc.64.7.830.

Huebner, B. M., & Gustafson, R. (2007). The effect of maternal incarceration on adult offspring
involvement in the criminal justice system. *Journal of Criminal Justice 35,* 283-296. doi:10.1016/j.jcrimjus.2007.03.005

James, D. J., & Glaze, L. E. (2006). Mental health problems of prison and jail inmates. *Bureau of Justice Statistics Special Report.* Washington, D.C.: U.S. Department of Justice.

Karberg, J. C., & James, D. J. (2005). Substance dependence, abuse, and treatment of jail inmates, 2002. *Bureau of Justice Statistics Special Report.* Washington, DC: US Department of Justice.

Kendler, K. S., Gardner, C., & Dick, D. M. (2011). Predicting alcohol consumption in adolescence from alcohol-specific and general externalizing genetic risk factors, key environmental exposures and their interaction. *Psychological Medicine, 41,* 1507-1516. doi:10.1017/S003329171000190X

Kerner, H., Weitekamp, E. G. M., Stelly, W., & Thomas, J. (1997). Patterns of criminality and alcohol abuse: Results of the Tuebingen criminal behaviour development study. *Criminal Behaviour and Mental Health, 7,* 401-420. doi:10.1002/cbm.197

Kilpatrick, D. G., Acierno, R., Saunders, B., Resnick, H. S., Best, C. L., & Schnurr, P. P. (2000). Risk factors for adolescent substance abuse and dependence: data from a national sample. *Journal of Consulting and Clinical Psychology*, *68*, 19-30. doi: 10.1037/0022-006X.68.1.19

Kinner, S. A., Alati, R., Najman, J. M., & Williams, G. M. (2007). Do paternal arrest and imprisonment lead to child behaviour problems and substance use? A longitudinal analysis. *Journal of Child Psychology and Psychiatry, 48,* 1148-1156.

doi:10.1111/j.1469-7610.2007.01785.x

Kjellstrand, J. M., & Eddy, J. M. (2011). Parental incarceration during childhood, family context, and youth problem behavior across adolescence. *Journal of Offender Rehabilitation, 50*, 18-36. doi:10.1080/10509674.2011.536720

Knight, K. E., Menard, S., & Simmons, S. B. (2014). Intergenerational continuity of substance use. *Substance Use & Misuse*, *49*, 221-233. doi:10.3109/10826084.2013.824478

Kraanen, F. L., Scholing, A., & Emmelkamp, P. M. G. (2012). Substance use disorders in forensic psychiatry: Differences among different types of offenders. *International Journal of Offender Therapy and Comparative Criminology, 56,* 1201-1219. doi:10.1177/0306624X11420252

Latessa, E. J., & Lovins, B. (2010). The role of offender risk assessment: A policy maker guide. *Victims and Offenders, 5,* 203-219. doi:10.1080/15564886.2010.485900

Midgley, E. K., & Lo, C. C. (2013). The role of a parent's incarceration in the emotional health and problem behaviors of at-risk adolescents. *Journal of Child & Adolescent Substance Abuse, 22*, 85-103. doi:10.1080/1067828X.2012.730350

Mulia, N., Ye, Y., Greenfield, T. K., & Zemore, S. E. (2009). Disparities in alcohol-related problems among white, black, and Hispanic Americans. Alcoholism, Clinical and Experimental Research, 33(4), 654−662. doi:10.1111/j.1530-0277.2008.00880.x

Murray, J., & Farrington, D. P. (2005). Parental imprisonment: Effects on boys' antisocial behavior and delinquency through the life-course. *Journal of Child Psychology and Psychiatry, 46,* 1269-1278. doi:10.1111/j.1469-7610.2005.01433.x

Murray, J., & Farrington, D. P. (2008). Parental imprisonment: Long-lasting effects on boys' internalizing problems through the life course. *Development and Psychopathology, 20,* 273-290. doi:10.1017/S0954579408000138

Murray, J., Farrington, D., & Sekol, I. (2012). Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: A systematic review and meta-analysis. *Psychological Bulletin, 138*, 175-210. doi:10.1037/a0026407

Murray, J., Janson, C., & Farrington, D. P. (2007). Crime in adult offspring of prisoners: A cross-national comparison of two longitudinal samples. *Criminal Justice and Behavior, 34,* 133-149. doi:10.1177/0093854806289549

Murray, J., Loeber, R., & Pardini, D. (2012). Parental involvement in the criminal justice

system and the development of youth theft, marijuana use, depression, and poor academic performance. *Criminology, 50,* 255-302. doi: 10.1111/j.1745-9125.2011.00257.x

Naser, R.L., & Visher, C.A. (2006). Family members' experiences with incarceration and reentry. *Western Criminology Review, 7*, 20-31.

Novero, C., Loper, A., & Warren, J. (2011). Second-generation prisoners: Adjustment patterns for inmates with a history of parental incarceration. *Criminal Justice and Behavior, 38*, 761-778. doi:10.1177/0093854811406637

Nurnberger Jr., J. I., Wiegand, R., Bucholz, K., O'Connor, S., Meyer, E. T., Reich, T., …Porjesz, B. (2004). A family study of alcohol dependence: Coaggregation of multiple disorders in relatives of alcohol dependent probands. *Archives of General Psychiatry,* 61, 1246-1256. doi:10.1001/archpsyc.61.12.1246.

Phillips, S. D., Erkanli, A., Keeler, G. P., Costello, E. J., & Angold, A. (2006). Disentangling the risks: Parent criminal justice involvement and children's exposure to family risks. *Criminology and Public Policy, 5,* 677-703. doi:10.1111/j.1745-9133.2006.00404.x

Poehlmann, J., Dallaire, D., Loper, A. B., & Shear, L. D. (2010). Children's contact with their parents in prison: Research findings and recommendations. *American Psychologist, 65*, 575-598. doi:10.1037/a0020279

Redman, D. (2010). Substance use motives related to social reinforcement among people with a history of incarceration. *Journal of Social Work, 10,* 23-41. doi:10.1177/1468017309349988

Roettger, M. E., Swisher, R. R., Kuhl, D. C. & Chavez, J. (2011). Paternal incarceration and trajectories of marijuana and other illegal drug use from adolescence into young adulthood: Evidence from longitudinal panels of males and females in the United States. *Addiction, 106*, 121–132. doi:10.1111/j.1360-0443.2010.03110.x

Schwartz-Soicher, O., Geller, A., & Garfinkel, I. (2011). The effect of paternal incarceration on material hardship. *Social Service Review, 85*, 447-473. doi:10.1086/661925

Schwinn, T. M., & Schinke, S. P. (2013). Alcohol use and related behaviors among late-adolescent urban youths: Peer and parent influences. *Journal of Child & Adolescent Substance Abuse, 23,* 58-64. doi: 10.1080/1067828X.2012.735561

Shin, S. H., Miller, D. P., & Teicher, M. H. (2013). Exposure to childhood neglect and physical abuse and developmental trajectories of heavy episodic drinking from early adolescence into young adulthood. *Drug and Alcohol Dependence, 127,* 31-38. doi:10.1016/j.drugalcdep.2012.06.005

Shlafer, R. J., & Poehlmann, J. (2010). Attachment and caregiving relationships in families affected by parental incarceration. *Attachment & Human Development, 12*, 395-415. doi:10.1080/14616730903417052

Shlafer, R. J., Poehlmann, J., & McCall, N. D. (2012). Maternal jail time, conviction, and arrest as predictors of children's 15-year antisocial outcomes in the context of a nurse home visiting program. *Journal of Clinical Child & Adolescent Psychology, 41,* 38-52. doi: 10.1080/15374416.2012.632345

Steadman, H. J., Osher, F. C., Robbins, P. C., Case, B., & Samuels, S. (2009). Prevalence of serious mental illness among jail inmates. *Psychiatric Services, 60,* 761-765. doi:10.1176/appi.ps.60.6.761

Stice, E., & Barrera, M. (1995). A longitudinal examination of the reciprocal relations between perceived parenting and adolescents' substance use and externalizing behaviors. *Developmental Psychology*, *31*, 322-334. doi: 10.1037/0012-1649.31.2.322

Strine, T. W., Dube, S. R., Edwards, V. J., Prehn, A. W., Rasmussen, S., Wagenfeld, M., ... & Croft, J. B. (2012). Associations between adverse childhood experiences, psychological distress, and adult alcohol problems. *American Journal of Health Behavior*, *36*, 408-423. doi:http://dx.doi.org/10.5993/AJHB.36.3.11

Swogger, M. T., Conner, K. R., Walsh, Z., & Maisto, S. A. (2011). Childhood abuse and harmful substance use among criminal offenders. *Addictive Behaviors, 36,* 1205-1212. doi:10.1016/j.addbeh.2011.07.025

Turanovic, J. J., & Pratt, T. C. (2013). The consequences of maladaptive coping: integrating general strain and self-control theories to specify a causal pathway between victimization and offending. *Journal of Quantitative Criminology*, *29*(3), 321-345. doi: 10.1007/s10940-012-9180-z

van der Put, C. E., Creemers, H. E., & Hoeve, M. (2014). Differences between juvenile offenders with and without substance use problems in the prevalence and impact of risk and protective factors for criminal recidivism. *Drug and Alcohol Dependence, 134,* 267-274. doi:10.1016/j.drugalcdep.2013.10.012

Walters, G. D. (2014). Criminal and substance involvement from adolescence to adulthood: Precursors, mediators, and long-term effects. *Justice Quarterly, (ahead of print),* 1-19. doi:10.1080/07418825.2014.890736

Watt, T. T., & Rogers, J. M. (2007). Factors contributing to differences in substance use among black and white adolescents. *Youth & Society, 39,* 54-74. doi: 10.1177/0044118X06296701

White, I. R., Royston, P., & Wood, A. M. (2010). Multiple imputation using chained equations: Issues and guidance for practice. *Statistics in Medicine, 30,* 377-399. doi: *10.1002/sim.4067*

Will, J. L., Loper, A. B., & Jackson, S. L. (2014). Second-generation prisoners and the transmission of domestic violence. *Journal of Interpersonal Violence.* Advance online publication. doi:10.1177/0886260514555127

Will, J. L., Whalen, M. L., & Loper, A. B. (2014). From one generation to the next: Childhood experiences of antisocial behavior and parental incarceration among adult inmates. *Journal of Offender Rehabilitation, 53,* 1-21. doi:10.1080/10509674.2014.887606

Wolff, N., Frueh, B. C., Shi, J., Gerardi, D., Fabrikant, N., & Schumann, B. E. (2011). Trauma exposure and mental health characteristics of incarcerated females self-referred to specialty PTSD treatment. *Psychiatric Services*, *62*(8), 954-958. doi:10.1176/appi.ps.62.8.954

Windle, M. (2010). Parental, sibling, and peer influences on adolescent substance use and alcohol problems. *Applied Developmental Science, 4,* 98-110. doi: 10.1207/S1532480XADS0402_5

Wright, E. M., Fagan, A. A., & Pinchevsky, G. M. (2013). The effects of exposure to violence and victimization across life domains on adolescent substance use. *Child Abuse & Neglect*, *37*, 899-909. doi:10.1016/j.chiabu.2013.04.010

Wu, L., Woody, G. E., Yang, C., Pan, J., & Blazer, D. (2011). Racial/ethnic variations in substance-related disorders among adolescents in the United States. *Archives of General Psychiatry, 68,* 1176-1185. doi: 10.1001/archgenpsychiatry.2011.120

Yonai, S., Levine, S. Z., & Glicksohn, J. (2012). Trajectories of crime and familial characteristics: A longitudinal national population-based study. *Crime & Delinquency*, Advance online publication. doi:10.1177/0011128712453674

Young, R., & Johnson, D. (2010). *Imputing the missing Y's: Implications for survey producers and survey users*. Retrieved from http://www.amstat.org/sections/srms/proceedings/y2010/ Files/400142.pdf

Table 1
Characteristics[a] *of the Total Sample in Subpopulation 1 (Cases Observed at Waves I, III, and IV), and of Respective Offender Generation Groups*

	Total Sub-population	First-Generation Offenders	Second-Generation Offenders	
Demographic Variables				
Age at Wave III	22.32 (.14)	22.34 (.15)	22.24 (.20)	F (1,115.8) = 0.40, p = .52
Gender (male)	75.56% (.01)	76.06% (.01)	73.72% (.03)	F (1,109.8) = 0.54, p = .46
Race				F (1,118.9) = 16.88, p<.001
Caucasian	70.17% (.03)	72.94% (.03)	60.01% (.04)	
African-American	18.63% (.03)	16.60% (.02)	26.04% (.04)	
Hispanic	7.09% (.01)	6.21% (.01)	10.31% (.03)	
Other	4.11% (.01)	4.24% (.01)	3.62% (.02)	
Mother's education				F (1,79.8) = 13.52, p <.001
Did not graduate HS	20.96% (.02)	18.34% (.02)	30.54% (.03)	
Obtained HS diploma/ GED	59.16% (.02)	60.42% (.02)	54.53% (.03)	
Obtained college degree	19.89% (.02)	21.24% (.02)	14.93% (.03)	
Public assistance	13.50% (.02)	9.20% (.01)	29.23% (.04)	F (1,96.9) = 44.9, p < .001
Explanatory Variables				
Parental control	4.34 (.06)	4.35 (.07)	4.30 (.10)	F (1,110.7) = 0.31, p = .58
Biological mother alcoholism	4.92% (.01)	3.08% (.01)	11.62% (.02)	F (1,54.7) = 19.2, p < .001
Biological father alcoholism	21.99% (.01)	16.13% (.01)	43.38% (.03)	F (1,78.2) = 59.37, p <.001
Physical abuse	23.62% (.01)	18.90% (.01)	40.89% (.04)	F (1,110.9) = 38.29, p < .001
Peer alcohol use at Wave I	1.42 (.06)	1.38 (.07)	1.57 (.10)	F (1,114.4) = 3.22, p = .08

[a] Analyses are weighted to account for survey design. Cell entries represent means (standard deviations) for continuous variables and proportions for categorical variables.

Dependent Variables				
Wave III Alcohol Use Composite	8.44 (.27)	8.61 (.28)	7.81 (.47)	F (1,115.6) = 3.14, p = .08
Wave III amount per use	4.84 (.17)	4.90 (.18)	4.63 (.35)	F (1,120.7) = 0.60, p = .44
Wave III frequency of use				F (1, 91.1) = 5.90, p = .02
None	20.49% (.02)	19.15% (.02)	25.37% (.03)	
1 day a month or less	19.39% (.01)	18.54% (.01)	22.51% (.03)	
2 or 3 days a month	14.07% (.01)	14.23% (.01)	13.49% (.02)	
1 or 2 days a week	26.04% (.02)	28.06% (.02)	18.65% (.03)	
3-5 days a week	13.95% (.01)	13.97% (.01)	13.84% (.02)	
Every day/almost every day	6.07% (.01)	6.05% (.01)	6.13% (.02)	
Wave III binge use frequency				F (1,116.7) = 8.49, p = .004
None	34.31% (.02)	32.77% (.02)	39.93% (.03)	
1 day a month or less	23.01% (.01)	24.52% (.02)	26.79% (.03)	
2 or 3 days a month	11.63% (.01)	11.80% (.01)	11.02% (.02)	
1 or 2 days a week	19.38% (.01)	20.77% (.02)	14.29% (.02)	
3-5 days a week	6.92% (.01)	7.28% (.01)	5.57% (.01)	
Every day/almost every day	2.76% (.01)	2.86% (.01)	2.40% (.01)	

Table 2
Characteristics[a] *of the Total Sample in Subpopulation 2 (Cases Observed at Waves I and IV), and of Respective Offender Generation Groups*

	Total Sub-population	First-Generation Offenders	Second-Generation Offenders	
Demographic Variables				
Age at Wave IV	28.82 (.14)	28.85 (.14)	28.69 (.18)	F (1,122.8) = 1.44, p = .23
Gender (male)	76.13% (.01)	77.10% (.01)	72.70% (.02)	F (1,119.5) = 2.86, p = .09
Race				F (1,110.3) = 10.50, p = .002
Caucasian	68.77% (.03)	70.89% (.03)	61.31% (.04)	
African-American	20.19% (.03)	18.41% (.03)	26.45% (.04)	
Hispanic	6.70% (.01)	6.21% (.01)	8.44% (.02)	
Other	4.33% (.01)	4.49% (.01)	3.80% (.02)	
Mother's Education				F (1, 54) = 14.32, p < .001
Did not graduate HS	20.82% (.02)	18.43% (.02)	29.21% (.03)	
Obtained HS diploma/GED	59.79% (.02)	60.68% (.02)	56.64% (.03)	
Obtained college degree	19.40% (.02)	20.89% (.02)	14.14% (.02)	
Public assistance	15.03% (.02)	10.85% (.01)	29.73% (.04)	F (1, 48.8) = 52.03, p < .001
Explanatory Variables				
Parental control	4.33 (.06)	4.35 (.06)	4.27 (.09)	F (1, 107.6) = 0.83, p = .36
Biological mother alcoholism	5.17% (.01)	3.51% (.01)	11.01% (.02)	F (1, 85.8) = 20.85, p < .001
Biological father alcoholism	21.94% (.01)	16.35% (.01)	41.60% (.04)	F (1,41.4) = 51.14, p < .001
Physical abuse	24.62% (.01)	20.24% (.01)	40.04% (.03)	F (1,121.3) = 41.55, p < .001

[a] Analyses are weighted to account for survey design. Cell entries represent means (standard deviations) for continuous variables and proportions for categorical variables.

Peer alcohol use at Wave I	1.42 (.06)	1.39 (.06)	1.51 (.10)	F (1,111.6) = 1.67, p = .20
Dependent Variables				
Wave IV Alcohol Use Composite	10.41 (.28)	10.39 (.28)	10.48 (.53)	F (1,113.4) = 0.03, p = .86
Wave IV amount per use	6.11 (.20)	6.05 (.20)	6.33 (.36)	F (1,112) = 0.67, p = .42
Wave IV frequency of use				F (1,123.3) = 0.08, p = .78
None	15.98% (.01)	15.05% (.01)	19.23% (.03)	
1 day a month or less	10.71% (.01)	11.05% (.01)	9.53 % (.02)	
2 or 3 days a month	7.47% (.01)	7.32% (.01)	7.99 % (.02)	
1 or 2 days a week	17.85% (.01)	18.70% (.01)	14.87% (.02)	
3-5 days a week	25.08% (.01)	25.49% (.01)	23.64% (.03)	
Every day/almost every day	22.92% (.01)	22.40% (.01)	24.74% (.03)	
Wave IV binge use frequency				F (1,114) = 2.04, p = .16
None	36.73% (.02)	35.31% (.02)	41.73% (.04)	
1 day a month or less	27.60% (.01)	28.67% (.01)	23.88% (.03)	
2 or 3 days a month	11.27% (.01)	10.91% (.01)	12.52% (.02)	
1 or 2 days a week	14.32% (.01)	14.94% (.01)	12.13% (.02)	
3-5 days a week	7.54% (.01)	7.49% (.01)	7.71% (.01)	
Every day/almost every day	2.54% (.004)	2.68% (.004)	2.03% (.01)	
DSM-IV total # markers	2.39 (.11)	2.40 (.12)	2.35 (.21)	F (1,116.6) = 0.05, p = .82
Meets criteria for alcohol use disorder diagnosis	44.85% (.02)	45.29% (.02)	43.32% (.03)	F (1,123) = 0.34, p = .56
DSM-IV Abuse	17.81% (.02)	18.17% (.01)	16.55% (.03)	
DSM-IV Dependence	27.04% (.01)	27.11% (.02)	26.78% (.03)	

Table 3
Multiple and Ordered Logistic Regressions on the Wave III Alcohol Use Composite and Three Variables Comprising the Composite

	Alcohol Use Composite		Alcohol Amount per Use		Alcohol Use Frequency		Binge Use Frequency	
	b (SE)	*t*	*b* (SE)	*t*	*b* (SE)	*t*	*b* (SE)	*t*
Age at Wave III	-0.29 (.12)	-2.34*	-0.24 (.09)	-2.74**	0.00 (.04)	-0.04	-0.06 (.04)	-1.77
Gender (female)	-1.73 (.39)	-4.46***	-0.77 (.29)	-2.69**	-0.52 (.12)	-4.28***	-0.72 (.13)	-5.72***
Race[a] = African American	-3.68 (.54)	-6.81***	-2.37 (.34)	-6.96***	-0.80 (.20)	-3.96***	-1.26 (.24)	-5.31***
Race[a] = Hispanic	-0.93 (.90)	-1.03	-0.53 (.63)	-0.85	-0.17 (.21)	-0.83	-0.29 (.27)	-1.08
Race[a] = Other	0.20 (.90)	0.22	-0.08 (.69)	-0.11	0.30 (.32)	0.94	0.13 (.22)	0.59
Mother obtained high school degree/GED[b]	1.58 (.54)	2.91**	0.83 (.39)	2.15*	0.57 (.15)	3.76***	0.53 (.18)	3.01**
Mother obtained college degree[b]	2.00 (.68)	2.95**	0.75 (.45)	1.68	0.89 (.21)	4.29***	0.85 (.22)	3.80***
Public assistance	-0.95 (.61)	-1.55	-0.34 (.45)	-0.76	-0.44 (.17)	-2.61*	-0.41 (.21)	-1.96
Parental control[c]	0.19 (.13)	1.49	0.09 (.09)	1.05	0.07 (.04)	1.61	0.06 (.04)	1.35
Paternal alcoholism	0.20 (.56)	0.36	-0.13 (.40)	-0.32	0.21 (.18)	1.15	0.20 (.17)	1.18

[a] Comparison category: Caucasian
[b] Comparison category: Did not graduate high school
[c] Higher scores reflect lower parental control

Maternal alcoholism	-0.27 (.99)	-0.27	-0.17 (.69)	-0.25	-0.22 (.31)	-0.70	-0.07 (.32)	-0.23
Physical abuse	0.13 (.47)	0.28	-0.03 (.34)	-0.08	0.13 (.14)	0.96	0.02 (.14)	0.16
Peer alcohol use	0.59 (.19)	3.06**	0.26 (.14)	1.88	0.18 (.06)	3.19**	0.23 (.05)	4.26***
Parental incarceration	-0.16 (.53)	-0.30	0.15 (.39)	0.39	-0.17 (.15)	-1.13	-0.18 (.15)	-1.18
_Constant	13.12 (2.80)	4.69***	9.56 (2.02)	4.74				
F	(14, 124.5) = 8.88***		(4, 124) = 5.57***		(14, 124.8) = 8.46***		(14, 124.8) = 11.98***	
Average R^2	.11		.074					

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

Table 4
Multiple and Ordered Logistic Regressions on the Wave IV Alcohol Use Composite and Three Variables Comprising the Composite

	Alcohol Use Composite		Alcohol Amount per Use		Alcohol Use Frequency		Binge Use Frequency	
	b (SE)	*t*	*b* (SE)	*t*	*b* (SE)	*t*	*b* (SE)	*t*
Age at Wave IV	-0.21 (.12)	-1.69	-0.12 (.08)	-1.50	-0.03 (.03)	-0.99	-0.07 (.03)	-2.53*
Gender (female)	-2.25 (.34)	-6.58***	-1.57 (.23)	-6.81***	-0.39 (.10)	-3.70***	-0.36 (.10)	-3.68***
Race[a] = African American	-4.79 (.50)	-9.65***	-3.43 (.34)	-10.15***	-0.87 (.13)	-6.79***	-0.87 (.15)	-5.77***
Race[a] = Hispanic	-1.77 (.78)	-2.29*	-1.18 (.55)	-2.13*	-0.47 (.19)	-2.44*	-0.31 (.23)	-1.36
Race[a] = Other	0.21 (1.25)	0.17	0.10 (.91)	0.11	-0.20 (.23)	-0.90	0.40 (.31)	1.30
Mother obtained high school degree/GED[b]	0.52 (.58)	0.90	0.15 (.42)	0.36	0.27 (.14)	1.93	0.15 (.16)	0.94
Mother obtained college degree[b]	1.25 (.68)	1.83	0.19 (.48)	0.40	0.75 (.18)	4.19***	0.45 (.18)	2.46*
Public assistance	-0.87 (.60)	-1.45	-0.31 (.41)	-0.77	-0.39 (.15)	-2.53*	-0.29 (.18)	-1.66
Parental control[c]	0.31 (.14)	2.22*	0.17 (.10)	1.69	0.09 (.04)	2.67**	0.06 (.03)	1.81
Paternal alcoholism	0.18 (.48)	0.38	0.15 (.34)	0.44	0.15 (.15)	0.99	-0.07 (.16)	-0.46

[a] Comparison category: Caucasian
[b] Comparison category: Did not graduate high school
[c] Higher scores reflect lower parental control

Maternal alcoholism	1.21 (.90)	1.35	0.70 (.63)	1.12	0.29 (.23)	1.28	0.33 (.27)	1.22
Physical abuse	0.51 (.46)	1.11	0.22 (.29)	0.74	0.31 (.13)	2.33*	0.06 (.14)	0.40
Peer alcohol use	0.53 (.15)	3.47**	0.30 (.11)	2.79**	0.12 (.04)	2.90**	0.15 (.04)	3.46**
Parental incarceration	0.56 (.45)	1.26	0.56 (.31)	1.77	0.07 (.13)	0.56	-0.06 (.15)	-0.37
_Constant	15.10 (.3.34)	4.52***	9.35 (2.32)	4.03				
F	(14, 123.7) = 16.51***		(14, 123.6) = 17.06***		(14, 124.5) = 11.25***		(14, 123.6) = 11.11***	
Average R^2	.134		.124					

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

Table 5
Multiple Regression on Wave IV DSM-IV Markers

	b (SE)	*t*
Age at Wave IV	-0.12 (.05)	-2.38*
Gender (female)	-0.32 (.16)	-1.99*
Race[a] = African American	-1.34 (.17)	-7.84***
Race[a] = Hispanic	-0.70 (.32)	-2.19*
Race[a] = Other	-0.21 (.40)	-0.52
Mother obtained high school degree/GED[b]	0.34 (.19)	1.83
Mother obtained college degree[b]	1.14 (.29)	3.90***
Public assistance	-0.34 (.24)	-1.43
Parental control[c]	0.13 (.05)	2.39*
Paternal alcoholism	0.11 (.23)	0.48
Maternal alcoholism	1.06 (.44)	2.40**
Physical abuse	0.58 (.18)	3.18**
Peer alcohol use	0.29 (.07)	3.98***
Parental incarceration	-0.02 (.19)	-0.11
Constant	4.65 (1.43)	3.26**
F	(14, 124.6) = 15.57***	
Average R^2	.101	

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

[a] Comparison category: Caucasian
[b] Comparison category: Did not graduate high school
[c] Higher scores reflect lower parental control

Appendix A
Survey Questions from Add Health Used in Study 3

Criminal Offending Items *(Wave IV In-home Interview):*

1. Have you ever been arrested?
2. Have you ever been convicted of or pled guilty to any charges other than a minor traffic violation?
3. How old were you when you were convicted or pled guilty?
4. How old were you the first time you were convicted or pled guilty to something?
5. How old were you the last time you were convicted of or pled guilty to something?
6. Have you ever been on probation for an offense?
7. Have you ever spent time in a jail, prison, juvenile detention center or other correctional facility?
8. How old were you when you went to jail, prison, juvenile detention center or other correctional facility?
9. How old were you the first time you went to jail, prison, juvenile detention or other correctional facility?
10. How old were you when you went to jail, prison, juvenile detention or other correctional facility this time?
11. Since your 18th birthday, about how much total time have you spent in jail or prison?
12. Interview conducted in prison

Parental Incarceration Items *(Wave IV In-home Interview):*

1. (Has/did) your biological mother ever (spent/spend) time in jail or prison?
2. How old were you when your biological mother went to jail or prison?
3. How old were you when your biological mother was released from jail or prison (most recently)?
4. (Has/did) your biological father ever (spent/spend) time in jail or prison?
5. How old were you when your biological father went to jail or prison?
6. How old were you when your biological father was released from jail or prison (most recently)?
7. (Has/did) your (mother figure) ever (spent/spend) time in jail or prison?
8. How old were you when your (mother figure) went to jail or prison?
9. How old were you when your (mother figure) was released from jail or prison (most recently)?
10. (Has/did) your (father figure) ever (spent/spend) time in jail or prison?
11. How old were you when your (father figure) went to jail or prison?
12. How old were you when your (father figure) was released from jail or prison (most recently)?

Control Variables *(Wave IV In-home Interview)***:**

Race

1. What is your race?

Maternal Education

1. How far in school did (residential mother) go?

Public Assistance

1. Does (residential mother) receive public assistance, such as welfare?

Peer Alcohol Use

1. Of your 3 best friends, how many drink alcohol at least once a month?

Parental Control

- Do your parents let you make your own decisions about:
    1. The time you must be home on weekend nights?
    2. The people you hand around with?
    3. What you wear?
    4. How much television you watch?
    5. Which television programs you watch?
    6. What time you go to bed on weeknights?

Control Variables *(Wave I Parent Interview)***:**

Parental Alcoholism

- For each of the following health problems…please tell me whether (his/her) biological mother or (his/her) biological father has it now:
    1. Alcoholism: (his/her) biological mother has?
    2. Alcoholism: (his/her) biological father has?

Control Variables (*Wave IV In-home Interview):*

Physical Abuse

1. Before your 18th birthday, how often did a parent or adult caregiver hit you with a fist, kick you, or throw you down on the floor, into a wall, or down stairs?

Outcome Variables *(Wave III In-home Interview*):

Wave III Alcohol Use Composite

Alcohol Frequency

1. During the past 12 months, on how many days did you drink alcohol?

Alcohol Amount

2. Think of all the times you have had a drink during the past 12 months. How many drinks did you usually have each time? A "drink" is a glass of wine, a can of beer, a wine cooler, a shot glass of liquor, or a mixed drink.

Binge Use

3. During the past 12 months, on how many days did you drink 5 or more drinks in a row?

Outcome Variables *(Wave IV In-home Interview*):

Wave IV Alcohol Use Composite

Peak Frequency

1. During the past 12 months, on how many days did you drink alcohol?
2. Was there ever a period in your life when you drank more alcohol than you do now?
3. During the period when you drank the most, on how many days did you drink?

Peak Amount

4. Think of all the times you have had a drink during the past 12 months. How many drinks did you **usually** have each time? A "drink" is a glass of wine, a can or bottle of beer, a wine cooler, a shot glass of liquor, or a mixed drink
5. Was there ever a period in your life when you drank more alcohol than you do now?
6. During the period when you drank the most, how many drinks did you usually have each time?

Binge Use

7. During the past 12 months, on how many days did you drink {5 or more/4 or more} drinks in a row?

DSM-IV Alcohol Abuse

1. How often has your drinking interfered with your responsibilities at work or school?
2. How often have you been under the influence of alcohol when you could have gotten yourself or others hurt, or put yourself or others at risk, including unprotected sex?
3. How often have you had legal problems because of your drinking, like being arrested for disturbing the peace or driving under the influence of alcohol, or anything else?
4. How often have you had problems with your family, friends, or people at work or school because of your drinking?
5. Did you continue to drink after you realized drinking was causing you problems with family, friends, or people at work or school?

DSM-IV Alcohol Dependence

1. Have you ever found that you had to drink more than you used to in order to get the effect you wanted?
2. Has there ever been a period when you spent a lot of time drinking, planning how you would get alcohol, or recovering from a hangover?
3. Have you often had more to drink or kept drinking for a longer period of time than you intended?
4. Has there ever been a period of time when you wanted to quit or cut down on your drinking?
5. When you decided to cut down or quit drinking, were you able to do so for at least one month?
6. During the first few hours of not drinking, do you experience withdrawal symptoms such as the shakes, feeling anxious, trouble getting to sleep or staying asleep, nausea, vomiting, or rapid heart beats?
7. Have you ever continued to drink after you realized drinking was causing you any **emotional** problems (such as feeling irritable, depressed, or uninterested in things or having strange ideas) or causing you any **health** problems (such as ulcers, numbness in your hands/feet or memory problems)?
8. Have you ever given up or cut down on important activities that would interfere with drinking like getting together with friends or relatives, going to work or school, participating in sports, or anything else?

DSM-IV Diagnosis

1. Did {at least three of} these experiences occur together in a 12-month period?

Appendix B.1
Missing Data Statistics and Imputation Models in Study 3: Subpopulation 1

	Observations per *m*			
Variable	Complete	Incomplete	Imputed[a]	Total
Gender	14798	2	0	14800
Race	14788	12	5	14800
Physical Abuse	14627	173	128	14800
Maternal Alcoholism	12407	2393	1910	14800
Paternal Alcoholism	11615	3185	2553	14800
Mother Education	13332	1468	1173	14800
Public Assistance	13840	960	765	14800
Peer Alcohol Use	14512	288	210	14800
Parental Control	14466	334	263	14800
Parental Incarceration	14439	361	277	14800
Wave III Alcohol Amount	11498	3302	787	14800
Wave III Alcohol Frequency	12095	2705	192	14800
Wave III Binge Frequency	12059	2741	228	14800

Stata 14 Syntax of Multiple Imputation Model[b]:

mi impute chained (logit) *Gender* (mlogit) *Race* (logit) *Physical Abuse* (logit) *Maternal Alcoholism* (logit) *Paternal Alcoholism* (ologit) *Mother Education* (logit) *Public Assistance* (pmm) *Peer Alcohol Use* (regress) *Parental Control* (logit) *Parental Incarceration* (pmm) *Wave III Alcohol Amount* (ologit) *Wave III Alcohol Frequency* (ologit) *Wave III Binge Frequency = W3_Age PSUSCID Region Weight Subpopulation1,* augment add(10) force

Conditional models:

Gender: logistic regression
Race: multinomial logistic regression
Physical Abuse: logistic regression

[a] Imputed is the minimum across *m* of the number of filled-in observations.
[b] Variable names are italicized. *PSUSCID*, *Region*, and *Weight* are three variables used to weight data appropriately after imputation. *PSUSCID* = primary sampling unit; *Region* = stratum variable; *Weight* = cross-sectional sampling weight of young adults enrolled in Grade 7-12 during 1994-1995 who participated in Wave III data collection in 2001 (*n* = 14,322)

Maternal Alcoholism: logistic regression
Paternal Alcoholism: logistic regression
Mother Education: ordered logistic regression
Public Assistance: logistic regression
Peer Alcohol Use: predictive mean matching
Parental Control: linear regression
Parental Incarceration: logistic regression
Wave III Alcohol Amount: predictive mean matching
Wave III Alcohol Frequency: ordered logistic regression
Wave III Binge Frequency: augmented ordered logistic regression

Appendix B.2
Missing Data Statistics and Imputation Models in Study 3: Subpopulation 2

	Observations per *m*			
Variable	Complete	Incomplete	Imputed[a]	Total
Gender	14798	2	2	14800
Race	14788	12	12	14800
Physical Abuse	14627	173	173	14800
Maternal Alcoholism	12407	2393	2393	14800
Paternal Alcoholism	11615	3185	3185	14800
Mother Education	13332	1468	1468	14800
Public Assistance	13840	960	960	14800
Peer Alcohol Use	14512	288	288	14800
Parental Control	14466	334	334	14800
Wave IV Marijuana Use	14779	21	21	14800
Parental Incarceration	14439	361	361	14800
Peak Alcohol Amount	14631	169	169	14800
Peak Alcohol Frequency	14717	83	83	14800
Binge Use Frequency	14682	118	118	14800
DSM Abuse Item 1	14795	5	5	14800
DSM Abuse Item 2	14793	7	7	14800
DSM Abuse Item 3	14795	5	5	14800
DSM Abuse Item 4	14795	5	5	14800
DSM Dependence Item 1	14796	4	4	14800
DSM Dependence Item 2	14793	7	7	14800
DSM Dependence Item 3	14794	6	6	14800
DSM Dependence Item 4	14790	10	10	14800
DSM Dependence Item 5	14792	8	8	14800
DSM Dependence Item 6	14790	10	10	14800
DSM Dependence Item 7	14789	11	11	14800

[a] Imputed is the minimum across *m* of the number of filled-in observations.

Stata 14 Syntax of Multiple Imputation Model[b]:

mi impute chained (logit) *Gender* (mlogit) *Race* (logit) *Physical Abuse* (logit) *Maternal Alcoholism* (logit) *Paternal Alcoholism* (ologit) *Mother Education* (logit) *Public Assistance* (pmm) *Peer Alcohol Use* (regress) *Parental Control* (ologit) *Wave IV Marijuana Use* (logit) *Parental Incarceration* (pmm) *Alcohol Peak Amount* (ologit) *Alcohol Peak Frequency* (ologit) *Binge Use Frequency* (logit) *DSM Abuse Item 1* (logit) *DSM Abuse Item 2* (logit) *DSM Abuse Item 3* (logit) *DSM Abuse Item 4* (logit) *DSM Dependence Item 1* (logit) *DSM Dependence Item 2* (logit) *DSM Dependence Item 3* (logit) *DSM Dependence Item 4* (logit) *DSM Dependence Item 5* (logit) *DSM Dependence Item 6* (logit) *DSM Dependence Item 7 = W4_Age PSUSCID Region Weight Subpopulation2,* augment add(10) force

Conditional models:

Gender: logistic regression
Race: multinomial logistic regression
Physical Abuse: logistic regression
Maternal Alcoholism: logistic regression
Paternal Alcoholism: logistic regression
Mother Education: ordered logistic regression
Public Assistance: logistic regression
Peer Alcohol Use: predictive mean matching
Parental Control: linear regression
Wave IV Marijuana Use: ordered logistic regression
Parental Incarceration: logistic regression
Alcohol Peak Amount: predictive mean matching
Alcohol Peak Frequency: ordered logistic regression
Binge Use Frequency: augmented ordered logistic regression
DSM Abuse Item 1: augmented logistic regression
DSM Abuse Item 2: augmented logistic regression
DSM Abuse Item 3: augmented logistic regression
DSM Abuse Item 4: augmented logistic regression
DSM Dependence Item 1: augmented logistic regression
DSM Dependence Item 2: augmented logistic regression
DSM Dependence Item 3: augmented logistic regression
DSM Dependence Item 4: augmented logistic regression
DSM Dependence Item 5: augmented logistic regression
DSM Dependence Item 6: augmented logistic regression
DSM Dependence Item 7: augmented logistic regression

[b] Variable names are italicized. *PSUSCID*, *Region*, and *Weight* are three variables used to weight data appropriately after imputation. *PSUSCID* = primary sampling unit; *Region* = stratum variable; *Weight* = cross-sectional sampling weight of young adults enrolled in Grade 7-12 during 1994-1995 who participated in Wave IV data collection in 2008 (*n* = 14,800)

Appendix C

Characteristics of First- and Second-Generation Offenders (unweighted data)[a] in Study 3

Subpopulation 2	First-Generation Offenders *(n = 1901)*	Second-Generation Offenders *(n = 542)*	
Age	29.08 (1.72)	28.89 (1.73)	t (2441) = 2.28, p = .02*, Cohen's d[b] = .11
Gender (male)	73.49% (1397)	69.74% (378)	χ^2 (1) = 2.98, p = .08
Race			χ^2 (1) = 21.22, p < .001***, Cramér's V = .09
Caucasian	61.93% (1176)	52.58% (285)	
African-American	24.59% (467)	32.10% (174)	
Hispanic	7.11% (135)	10.15% (55)	
Other	6.37% (121)	5.17% (542)	
Mother's Education			χ^2 (1) = 24.71, p < .001***, Cramér's V =.11
Did not graduate high school	16.46% (279)	26.13% (121)	
Obtained high school diploma/ GED	59.06% (1001)	55.29% (256)	
Obtained college degree	24.48% (415)	18.57% (86)	
Mother public assistance	9.35% (165)	24.39% (119)	χ^2 (1) = 78.46, p < .001***, Cramér's V = .19
Parental control	4.37 (.03)	4.32 (.06)	t (2391)=0.70, p = .48
Biological mother alcoholism	3.38% (53)	9.21% (41)	χ^2 (1) = 26.42, p < .001***, Cramér's V = .11
Biological father alcoholism	14.23% (207)	35.12% (144)	χ^2 (1) = 91.41, p < .001***, Cramér's V = .22
Physical Abuse	22.28% (418)	38.20% (204)	χ^2 (1) = 55.03, p < .001***, Cramér's V = .15
Peer alcohol use	1.39 (1.22)	1.52 (1.22)	t (2398) = -2.18, p = .03*, Cohen's d = -.11
Wave IV Alcohol Use Composite	10.34 (7.01)	10.28 (7.54)	t (2392) = 0.20, p = .84

[a] Categorical/binary variables are described by % (n) of valid data in each category; continuous variables described by mean (SD) of valid data in each category.

[b] All Cohen's d are corrected for uneven groups

Wave IV amount per use	5.68 (4.57)	5.79 (5.00)	t (2398)=-0.49, p =.62
Wave IV frequency of use			χ^2 (5) = 5.25, p =.39
None	16.79% (317)	19.89% (107)	
1 day a month or less	10.49% (198)	10.59% (57)	
2 or 3 days a month	7.68% (145)	8.55% (46)	
1 or 2 days a week	18.17% (343)	15.43% (83)	
3-5 days a week	24.84% (469)	22.86% (123)	
Every day/almost every day	22.03% (416)	22.68% (122)	
Wave IV binge use frequency			χ^2 (5) = 4.69, p = .46
None	38.74% (728)	43.07% (230)	
1 day a month or less	26.88% (505)	23.03% (123)	
2 or 3 days a month	10.80% (203)	10.30% (55)	
1 or 2 days a week	13.36% (251)	13.30% (71)	
3-5 days a week	7.45% (140)	7.87% (42)	
Every day/almost every day	2.77% (52)	2.43% (13)	
Wave IV number of DSM-IV markers	3.94 (.08)	4.13 (.16)	t (1355) = -1.03, p = .30
Subpopulation 1	*(n = 1540)*	*(n = 422)*	
Wave III Composite Alcohol Use	8.33 (.16)	7.89 (.34)	t (1811) = 1.23, p = .22
Wave III amount per use	4.74 (4.24)	4.55 (4.54)	t (1817) = .76, p= .45
Wave III frequency of use			χ^2 (5) = 13.65, p =. 02*
None	20.47%	24.94%	
1 day a month or less	19.67%	22.03%	
2 or 3 days a month	14.62%	15.74%	
1 or 2 days a week	26.25%	17.92%	
3-5 days a week	13.36%	13.08%	
Every day/almost every day	5.65%	6.30%	
Wave III binge use frequency			χ^2 (5) = 6.23, p = .28
None	37.4%	42.40%	
1 day a month or less	24.33%	23.53%	
2 or 3 days a month	11.00%	10.78%	
1 or 2 days a week	18.00%	14.22%	
3-5 days a week	7.13%	6.13%	
Every day/almost every day	2.13%	2.94%	

Appendix D:
Frequencies of DSM-IV Markers by Generation Groups in Study 3[a]

	First-Generation Offenders		Second-Generation Offenders	
	%	SE	%	SE
Alcohol Abuse				
1. Drinking interfered with responsibilities at work or school	20%	.02	21%	.03
2. Frequent use of alcohol when physically hazardous; putting self or others at risk	36%	.02	34%	.03
3. Legal problems because of alcohol use	17%	.01	17%	.02
4. Recurrent problems with family, friends, or people at work or school due to alcohol use	19%	.01	18%	.03
Alcohol Dependence				
1. Tolerance to alcohol (having to drink more than used to in order to achieve desired effect)	30%	0.02	31%	0.03
2. Spending excessive time drinking, planning how to get alcohol, or recovering from a hangover	32%	0.02	31%	0.03
3. Having more to drink or drinking for a longer period of time than originally intended	43%	0.02	42%	0.04
4. Persistent desire or unsuccessful efforts to cut down or control use	8%	0.01	5%	0.01
5. Experience withdrawal symptoms within first few hours of not drinking	6%	0.01	7%	0.02
6. Continued alcohol use despite drinking causing emotional or physical health problems	16%	0.01	15%	0.02
7. Important social, occupational, or recreational activities given up because of alcohol use	13%	0.01	14%	0.02

[a] Analyses are weighted to account for survey design.