



Published in final edited form as:

Law Hum Behav. 2020 April ; 44(2): 143–156. doi:10.1037/lhb0000354.

Parental Incarceration during Childhood and Later Delinquent Outcomes Among Puerto Rican Adolescents and Young Adults in Two Contexts

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Abstract

Objectives: Childhood parental incarceration has been linked to increased rates of delinquency and arrest during adolescence and young adulthood; however, previous research has focused on White and/or Black samples rather than Latinx youth. We examined relationships between childhood parental incarceration and later delinquency and arrest among Puerto Rican youth living in Puerto Rico (majority context) and the mainland United States (minority context).

Hypotheses: We expected that childhood parental incarceration would be significantly linked to delinquent behavior and arrest. In line with acculturation theory, we hypothesized that residence (proxy for minority status) would be significantly related to delinquent outcomes and that an interaction effect would emerge between parental incarceration and residence.

Methods: Longitudinal data from the Boricua Youth Study were examined for 1294 Puerto Rican youth from the South Bronx, NY (minority context) and greater San Juan, PR (majority context).

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We conducted a series of negative binomial and logistic regressions to determine the effects of parental incarceration and residence in childhood on self-reported delinquent behavior and arrest in adolescence and young adulthood, while also examining factors previously linked to delinquency in Puerto Rican youth.

Results: Childhood parental incarceration and South Bronx residence were both linked to delinquent behavior, but not arrest, even when simultaneously examining several individual, diagnostic, environment/social, and family factors reported in childhood. However, we did not observe an interaction effect between parental incarceration and residence for either outcome.

Conclusions: Findings suggest that Puerto Rican youth with histories of parental incarceration could benefit from targeted programs aimed at preventing future delinquency.

Keywords

juvenile justice; parental incarceration; youth delinquency; BYS; Puerto Rican

An estimated 54% of the nation's incarcerated population are parents (Pew Charitable Trusts, 2010) and more than five million children in the United States have experienced parental incarceration (Murphey & Cooper, 2015). This experience is particularly prevalent among youth of color, as African American and Latinx youth are significantly more likely than White youth to have a parent in jail or prison (Glaze & Maruschak, 2010; Kjellstrand & Eddy, 2011). Children with this experience regularly demonstrate negative outcomes in several behavioral, emotional, and health-related domains compared to youth with no such history (e.g., Lee, Fang, & Luo, 2013; Murray & Farrington, 2008; Uggen & McElrath, 2014). In particular, they appear to be at increased risk for delinquent behavior and arrest (Geller, Garfinkel, Cooper, & Mincy, 2009; Murray, Farrington, Sekol, 2012a). However, prior studies investigating delinquent outcomes among youth with incarcerated parents have often failed to examine these relationships among Latinx youth (e.g., Kopak & Smith-Ruiz, 2016; Wakefield & Wildeman, 2011). Latinx youth frequently demonstrate distinct risk factors (e.g., acculturative stress, perceived discrimination, family conflict) and protective factors (e.g., enculturation, familism, parenting strategies) for delinquency compared to youth from other racial/ethnic backgrounds (Smokowski & Bacallao, 2006; Manongdo & Ramirez Garcia, 2007; Wright, Turanovic, & Rodriguez, 2016). Of note, some of these factors may largely only be applicable to Latinx youth (e.g., acculturation, enculturation, cultural stress), whereas others may apply to youth more broadly, but seem to have a comparatively stronger impact on Latinx youth (e.g., family conflict). Given the likelihood for Latinx youth to have an incarcerated parent and their distinct risk factors for delinquency, investigation into the potential effects of this experience among Latinx youth is warranted.

Throughout this manuscript, we use the term "Latinx" as a gender-neutral term to be inclusive of individuals whose identities may not align with a gender binary that could be inferred from the use of "Latino/a" (Santos, 2017). Recognizing that, as a descriptor, "Latinx" encompasses multiple subgroups representing different countries and cultures of origin, this study aims to contribute to addressing the existing research gap by investigating the relation between childhood parental incarceration and delinquent outcomes among a sample of Puerto Ricans—the second largest Latinx subgroup in the United States (Flores,

2017). Further, we examine this relation in two contexts: one in which Puerto Ricans are the majority population (i.e., in Puerto Rico) and one in which they represent a minority group (i.e., in the United States) to better understand the ways in which stressors that accompany minority status might affect the development of delinquent behaviors.

Outcomes Associated with Parental Incarceration

A considerable number of prior studies have identified negative outcomes associated with parental incarceration at various stages of youth development. For example, during childhood and early adolescence, parental incarceration history has been linked to increased internalizing (e.g., depressive, anxious) and externalizing (e.g., aggressive) behaviors (Craigie, 2011; Davis & Shlafer, 2017; Wakefield & Wildeman, 2011). Perhaps most consistently, parental incarceration has been linked with youths' delinquent behavior and justice system involvement (Murray et al., 2012a). These relationships have been observed among school-age children (e.g., Haskins, 2015; Kjellstrand & Eddy, 2011) and young adults (e.g., Murray & Farrington, 2005; Roettger & Swisher, 2011), even when controlling for other individual risk factors, such as demographic information, and environmental risk factors, such as family structure and peer pressure (e.g., Huebner & Gustafson, 2007; Swisher & Roettger, 2012). In addition to a higher propensity for delinquent behavior, young people with a history of parental incarceration may demonstrate a higher "peak" of the age-delinquency curve (i.e., display more delinquent behaviors during late adolescence) and a slower decline in these behaviors over time compared to youth with no such history (Kopak & Smith-Ruiz, 2016).

Several researchers have suggested mechanisms by which youth with a history of parental incarceration become vulnerable to adverse outcomes. For instance, the experience of parental incarceration can contribute to emotional stress for the youth and economic and emotional strain for the families (Foster & Hagan, 2013; Murray, Loeber, & Pardini, 2012b). A major disruption in a child's relationship with their incarcerated parent may create a feeling of "ambiguous loss"—characterized by uncertainty and a mismatch between psychological and physical loss—and can affect youths' ability to develop healthy relationships with adults, including remaining caregivers (Allard, 2012; Arditti, 2016; Bocknek, Sanderson, & Britner, 2009). Children of incarcerated parents also report ambivalent feelings about that parent, sometimes experiencing both positive and negative feelings or alternating between both (Shlafer & Poehlmann, 2010). They may feel significant shame and stigma, such that they attempt to hide their parents' incarceration history from peers and teachers and refrain from expressing their feelings or asking for help (Conway & Jones, 2015). Youth who strongly idealize their incarcerated parent may also develop negative feelings toward the criminal justice system and display more hostility toward authority figures (Murray & Murray, 2010).

Additionally, parental incarceration is frequently accompanied by a change in where youth live and/or attend school (Clopton & East, 2008), additional stressors that can be difficult to navigate with a support system reduced by a parent's incarceration. For families, potential financial challenges include loss of income, added financial burden for family members tasked with caregiving, and the significant cost associated with visiting a loved one in jail or

prison (Allard, 2012; Wakefield & Wildeman, 2018). Caregivers struggling to address these challenges may have less time to spend with youth and may be less equipped to provide supportive parenting or effective discipline (Murray et al., 2012a). When their family history is known, youth can face bullying and isolation from peers (Flynn, 2013; Murray et al., 2012b) and can be disadvantaged by low expectations from teachers and other authority figures (Conway & Jones, 2015; Rodriguez, Smith, & Zatz, 2009). These experiences can discourage youth from participating in school and other activities, push youth toward deviant peers, and increase youths' susceptibility to peer pressure to engage in risky or delinquent behaviors (Allard, 2012; Murray et al., 2012b; Roettger & Swisher, 2011). Taken together, these consequences of parental incarceration likely increase the risk that youth will engage in delinquent behavior and become involved in the justice system as defendants.

Cultural Context

Existing research indicates that youth and families of color may be particularly harmed by the negative effects of parental incarceration (e.g., Pager, 2007; Roettger & Swisher, 2011); however, many studies in this area have focused on samples of solely or mostly Black and/or White youth (e.g., Phillips, Erkanli, Keeler, & Costello, 2006; Wakefield & Wildeman, 2011), thereby reducing the external validity of their findings and limiting their generalizability to other racial/ethnic groups (Nagayama Hall, Yip, & Zárate, 2016). When Latinx youth are included in research samples, they often make up a small proportion, which reduces the likelihood of finding significant relationships (e.g., Craigie, 2011). Given the frequency with which parental incarceration occurs for this population in the United States—2.5 times more often than for White youth (Glaze & Maruschak, 2010)—it is important to identify the potential impacts of this experience among Latinx youth, who may experience unique differences related to their cultural context (e.g., Pérez, Jennings, & Gover, 2008; Jennings et al., 2010). Further, given the heterogeneity across Latinx groups (Burchard et al., 2005), focusing on one subgroup can provide a more targeted contribution to the literature. Here, we concentrate on Puerto Ricans, the second largest Latinx group in the United States (Flores, 2017) and in state prisons (Martinez, 2004), whose adolescent arrest patterns are similar to those of Black youth (Tapia, 2015).

Puerto Rican context.

Because Puerto Rico is an unincorporated U.S. territory, individuals born on the island are American citizens and can freely travel throughout the United States. However, Puerto Ricans have also developed a unique culture that reflects their Spanish, indigenous Taíno, and African heritage (Batista Estrada, Zoucha, & Duarté-Velez, 2019). Although both Spanish and English serve as official languages in Puerto Rico, Spanish predominates, as an overwhelming majority (94.2%) of island residents speak Spanish at home and more than three quarters (77.5%) of residents speak English “less than very well” (U.S. Census Bureau, 2017). Traditionally, Puerto Rican culture has emphasized values like *familismo*/familism—a focus on immediate and extended family interdependence, loyalty, and obligation; *respeto*/respect—showing respect and warmth when interacting with others; and *personalismo*/personalism—a valuing of inner qualities (e.g., the ability to build relationships with others) for self-worth, without need for material success (Canino & Canino Stolberg, 2001; Capielo,

Delgado-Romero, & Stewart, 2015; Garcia-Preto, 2005). As a result, Puerto Ricans often develop strong bonds with nuclear and extended family members and other individuals in their communities (e.g., neighbors, colleagues) and are encouraged to rely upon these personal networks for support and assistance (Garcia-Preto, 2005).

In 2016, an estimated 3.3 million people lived in Puerto Rico, whereas nearly 5.5 million individuals with Puerto Rican heritage lived in the mainland United States (Román, 2018). Despite their status as the second largest Latinx group in the nation, stateside Puerto Ricans consistently demonstrate higher rates of behavioral health disorders compared to other Latinx groups and island Puerto Ricans (Alegría et al., 2007; Canino et al., 2019); further, they tend to fare worse in socioeconomic status indicators (e.g., income, education) compared to many other Latinx groups (Capielo et al., 2015; Otiniano Verissimo, Grella, Amaro, & Gee, 2014). It has been suggested that experiences of discrimination, marginalization, and isolation associated with minority racial/ethnic group membership contribute to adverse outcomes for this group (Garcia-Preto, 2005; Pérez et al., 2008; Ramos-Olazagasti et al., 2013). Additionally, acculturative stress, difficulties reconciling traditional Puerto Rican cultural beliefs and language with the dominant mainland cultural expectations (e.g., trying to succeed in a mainland American culture focused on external achievements without losing the traditional valuation of warm interpersonal relationships emphasized in Puerto Rican culture), is thought to contribute to adverse outcomes observed for Puerto Ricans in the mainland United States, whether they immigrated from the island or were born stateside (Capielo et al., 2015; Duarte et al., 2008; Garcia-Preto, 2005).

Potential contributors to delinquency.

Acculturation—the process of adapting to a dominant culture—has been linked to delinquency in Puerto Rican and other Latinx samples, such that racial/ethnic minority youth who become more assimilated to the mainstream culture demonstrate increased rates of delinquency and violence (e.g., Jennings et al., 2016; Smokowski, David-Ferdon, & Stroupe, 2009). Drawing from general strain theory (Agnew, 2001), the acculturation theory of delinquency posits that the process of acculturation creates stressors for minority group members who, if lacking requisite resources for support, may engage in maladaptive coping behaviors, such as delinquency (Pérez et al., 2008). For some stateside Puerto Rican youth, the cultural context and expectations associated with being at home and with family members might be considerably different from the cultural context and expectations associated with attending school, spending time with peers, or entering the job market. These differences—which may also be combined with experiences of discrimination—can cause youth living as part of a minority ethnic group significant stress (Pérez et al., 2008). Further, differences in acculturation between youth and their parents, can contribute to intergenerational conflict (a component of acculturative stress), which can mediate the relationship between acculturation and conduct problems (Smokowski, David-Ferdon, & Stroupe, 2009).

In contrast, on the island, Puerto Rican youth are part of the majority and predominant culture, so their at-home experiences will likely mirror their peers' experiences, many teachers and other authority figures will identify with the same ethnic/cultural group and

an interaction effect would emerge between parental incarceration and residence in their relation to both delinquent outcomes. Finally, though we focused on main and interaction effects of parental incarceration and site/minority status on delinquent outcomes, we also examined several individual (i.e., sensation seeking, delinquent behavior, acculturation, cultural stress), diagnostic (i.e., internalizing and externalizing disorder), family (i.e., parent's use of coercive discipline, parent-child relationship quality) and environment/social factors (i.e., exposure to violence, stressful life events, peer delinquency, social support) that have been previously linked to delinquency among school-age Puerto Rican youth. We seek to explore whether these variables still demonstrate significant effects when they are included in a comprehensive model.

Method

Procedure and Participants

Data were collected from participants in the Boricua Youth Study (Bird et al., 2006), a longitudinal study of children and caregivers of Puerto Rican descent in South Bronx, NY (SBx) and the San Juan and Caguas metro area in Puerto Rico (PR). Researchers utilized a multistage probability sample design during participant recruitment. Randomly selected household clusters served as the primary sampling units and were defined, first, based on the 1990 Census and then adjusted for the 2000 Census results when they became available. Within the household clusters, targeted households were randomly selected. Youth participants were recruited between the ages of 5 and 13 and interviewed at three annual time points between 2000 and 2004 (Wave 1 through Wave 3); they were then contacted between 2013 and 2017 to complete a Wave 4 interview (82.8% retention rate, excluding ineligible individuals). Approximately 2.3% of the original Wave 1 sample ($n = 58$) was ineligible for Wave 4 interviews because of incarceration ($n = 21$; 0.8%) or death ($n = 37$; 1.5%); 4.7% of the original sample ($n = 118$) refused to be interviewed at Wave 4 and 8.6% of the original sample ($n = 214$) could not be located. Of note, the vast majority of young adult participants from the PR subsample (91%) were still living in Puerto Rico at the time of their Wave 4 interview; fewer than five of the PR participants had moved to the South Bronx. Among the young adults from the SBx subsample, 86% were still living in or within 100 miles of the South Bronx (e.g., other parts of the Bronx or New York City); just seven SBx participants had moved to Puerto Rico.

In accordance with institutional review board (IRB) requirements in each site, informed consent was obtained from all participants 18 years of age or older in SBx and 21 years of age or older in PR; younger youth signed assent forms and informed consent for their participation was obtained from their parents or guardians. Interviews were conducted in either English or Spanish (or both), depending on participant preference. Participants were compensated for their time after completing each interview. Study procedures were approved by the IRB affiliated with the University of Puerto Rico Medical School, Columbia University/New York State Psychiatric Institute, Cambridge Health Alliance, and Massachusetts General Hospital.

In the current study, we examined data from 1294 youth participants who completed interviews at Wave 3 and Wave 4 and were at least 10 years of age during their Wave 3

interview, as these participants would have completed all selected measures. In this subsample, at Wave 3, participants ranged in age from 10 to 17 years ($M = 13.07$, $SD = 1.71$) and, at Wave 4, they ranged in age from 19 to 29 years ($M = 24.14$, $SD = 2.08$). The sample was relatively even in terms of both gender breakdown (51.8% male) and residence at the time of recruitment (54.9% in Puerto Rico). Within the PR sample, 95.8% of participants were born in Puerto Rico and 4.2% were born in the mainland United States and within the SBx sample, 89.9% of participants were born in the mainland United States and 10.1% were born in Puerto Rico.

Measures

At each wave of data collection, participants completed structured interviews that elicited information regarding individual, family, and environment/social characteristics that have been linked to delinquent outcomes. Measures without a Spanish version underwent translation, back-translation, appropriate adaptation for use with Puerto Rican individuals, and repeated review to ensure cross-cultural equivalence and accessibility for participants with limited literacy. Detailed information regarding the selection of study measures, their psychometric properties, and their prior use with Puerto Rican samples can be found elsewhere (Bird et al., 2006; Canino et al., 2004). In the current study, we used data gathered during Wave 3 interviews as independent predictor variables; the measures used to collect these data are described below.

Individual factors.—Sensation seeking was measured via a 10-item scale, abbreviated from the Sensation Seeking Scale for Children (SSSC; Russo et al., 1993). Total scores represent a sum of all yes/no items endorsed and higher scores represent more preference for thrill- and adventure-seeking acts (e.g., jumping from an airplane, riding a motorcycle). At Wave 3, this measure demonstrated fair internal consistency ($\alpha = 0.77$) in the current sample.

To assess youths' self-reported delinquent behavior at Wave 3, participants were first warned about the potentially sensitive nature of the questions, reminded that their answers would be confidential, and asked to provide honest responses. Youth were then asked to report whether they had committed each of 34 delinquent acts within the previous year (no/yes). Questions were based on the Elliott delinquency scale (Elliott, Huizinga, & Ageton, 1985), a common self-report measure; example items included: "In the past year have you gone or tried to go into a building to steal something?" and "In the past year have you been involved in a gang fight?" Positive endorsements were summed to create a delinquent behavior variety score, as this type of scale has demonstrated improved reliability and validity for measuring antisocial behavior compared to frequency scales (Bendixen, Endresen, & Olweus, 2003); higher scores reflected a greater variety of delinquent behaviors. At Wave 3, this measure demonstrated fair internal consistency ($\alpha = 0.77$) for the examined sample.

Acculturation was measured via a 9-item scale, modeled after the Cultural Life Style Inventory (CLSI; Mendoza, 1989), assessing language and entertainment preferences, social affiliations, and cultural identification and pride. A sample question was "What television programs do you watch?" with response options including: "only Spanish," "mostly

Spanish,” “both English and Spanish/about equal,” “mostly English,” and “only English.” Each response option was scored on a 0 to 4 scale and a total score was calculated by averaging responses across the nine scale items. Higher scores on this measure indicated greater preference for English/US (non-Puerto Rican) cultural characteristics. This measure demonstrated excellent internal consistency ($\alpha = 0.92$) in this sample.

Participants also responded to a 16-item cultural stress scale, which was based on the Hispanic Stress Inventory (HSI; Cervantes, Padilla, & Salgado de Snyder, 1990) and focused on common stressors for Latino populations. For example, one item asked youth whether they “have found it difficult to mix Puerto Rican/Latino culture and American culture.” Although the HSI was initially developed for adults, it has been previously used with adolescent samples and demonstrated both internal consistency and test-retest reliability (Cervantes et al., 2006; Santisteban et al., 2005). Available responses for all items on this scale were yes or no and scores were calculated by averaging all non-missing items; therefore, participant scores ranged from 0 to 1. Participants with higher scores on this measure endorsed increased cultural stress. At Wave 3, this measure demonstrated fair internal consistency ($\alpha = 0.77$) in the examined sample.

Behavioral health variables.—During the Wave 3 interview, child participants completed components of the youth version of the Diagnostic Interview Schedule for Children-IV (DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) and caregivers completed components of the adult informant version of the measure about their child. For this study, youth were noted to have an internalizing disorder at Wave 3 if they met criteria for: major depressive disorder, generalized anxiety disorder, posttraumatic stress disorder, panic disorder, social phobia, or separation anxiety. Youth were said to have an externalizing disorder at Wave 3 if they met criteria for: attention-deficit/hyperactivity disorder (ADHD), conduct disorder, oppositional defiant disorder (ODD), or substance abuse or dependence. Of note, only caregivers completed components focused on youths’ ADHD and ODD, as parents are considered the preferred informant for these diagnoses (Bird, Gould, & Staghezza, 1992). Thus, for these two disorders, caregiver responses to the DISC-IV were used to determine diagnosis; for the other disorders, youth data were used to identify whether diagnostic criteria were met at Wave 3. Both variables related to behavioral health diagnoses were dichotomous to reflect the absence or presence of a relevant diagnosis.

Environment and social context factors.—Participants were asked about their exposure to 11 forms of violence (e.g., being threatened, being shot with a gun) including whether they had experienced it directly, observed it, or heard about it happening to someone else (Raia, 1995; Richters & Martinez, 1993). Responses were weighted such that when youth reported experiencing violence directly, they received a score of 3 for that item, if they reported witnessing the act of violence happening to someone else, they received a score of 2 for that item, and if they reported hearing about the act happening to someone they knew, they received a score of 1 for that item. Item values were then summed to create a total score.

Participants also completed a measure, based on the Stressful Life Event Screening Questionnaire (SLESQ; Goodman et al., 1998a), regarding whether they had experienced any of 21 stressful life events (e.g., parental divorce, death of a loved one) in the previous year. Items were deemed endorsed for the purposes of this measure if the given event occurred and the participant stated that it had affected them “a lot.” Total scores were calculated by summing the number of endorsed items, with higher scores indicating a history of more stressful life events.

Youth participants were also asked to estimate how many of their friends had engaged in a series of delinquent behaviors over the previous year; their responses comprised a measure of peer delinquency (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). As an example, youth were asked: “During the past year, how many of your friends have stolen something worth more than \$50?”; their response options included: “only a few or none of them,” “about half of them,” and “most of them.” Each response option was scored on a 0 to 2 scale and a total score was calculated by averaging responses across the 16 items. Youth with higher scores on this measure perceived greater proportions of delinquent peers. At Wave 3, this measure demonstrated good internal consistency ($\alpha = 0.88$) in the current sample.

To measure social support, youth were administered a five-item scale—developed based on the work of Thoits (1995)—that focused on determining whether youth received practical and emotional support from family and friends. For example, one item asked youth: “How often do you tell your friends or your family when you are happy or sad?” Responses were scored on a 0 to 2 scale and a total score was calculated by averaging responses across the five scale items—higher scores indicate higher perceived social support (Bird et al., 2006). At Wave 3, this measure demonstrated low internal consistency ($\alpha = 0.59$) in the examined sample.

Family factors.—Youth participants were administered a five-item scale, adapted from the Parental Discipline Scale (Goodman et al., 1998b), to assess their caregivers’ use of coercive discipline, such as ignoring or acting cold towards the child or yelling and swearing at the child in response to a mistake or misbehavior. Total scores were calculated by summing the number of endorsed items, higher scores represent greater endorsement of such caregiver discipline techniques. At Wave 3, this measure demonstrated low internal consistency ($\alpha = 0.58$) in the examined sample, which may reflect the low number of items or the fact that caregivers may not use multiple methods of coercive discipline.

Finally, we used data from the caregiver interview to examine the strength of the child’s relationship with his/her mother; this variable has also been identified as “maternal warmth” (e.g., Bird et al., 2006). Specifically, caregivers were asked to complete a 13-item scale assessing the quality of the mother-child relationship. As an example, one item asked the caregiver: “How much do you/does she enjoy being with [youth]?” Each response option was scored on a 0 to 3 scale and a total score was calculated by averaging responses across the 13 scale items. Higher scores represented the caregiver’s perception of a higher quality relationship. At Wave 3, this measure demonstrated good internal consistency ($\alpha = 0.82$) in the examined sample.

Exposure variables.—Site was determined based on youths' reported residence during their Wave 1 interview (i.e., South Bronx/minority status, or Puerto Rico/majority status). At Wave 4, participants were asked, retrospectively, whether they had ever experienced parental incarceration (i.e., "Has your [mother, father] ever spent time in jail or prison?"); participants were informed that parents could be biological, adoptive, step-parents, or another parental figure. If participants endorsed this experience, they were asked to provide their age the first time that parent was incarcerated (i.e., "How old were you when [she/he] went to jail or prison the first time?"). If participants reported that a parent's incarceration occurred when they were 18 years of age or younger, they were said to have a history of childhood parental incarceration. If youth stated that they did not know whether their parent had been incarcerated, this information was extracted from the caregiver's Wave 4 survey.

Outcome variables.—Youth were also asked whether they had been arrested since their Wave 3 interview (i.e., "Have you ever been arrested or picked up by the police for anything other than a minor traffic offense?" If so, "Did this happen after you were [age at W3 interview]?"). Finally, the delinquent behavior measure described above was also administered at Wave 4. However, youth were asked whether they had engaged in several forms of delinquent behavior since their Wave 3 interview (as opposed to in the previous year); positive endorsements were once again summed to create a delinquent behavior variety score.

Statistical Analysis

Analyses were conducted with Stata Version 14.2 (StataCorp, 2015) and were weighted to account for nonresponse rates given the multi-wave sampling design. Responses were also post-stratified by age and gender to represent the general population within each site (i.e., SBx or PR) at Wave 1 using BYS site-specific weights. We utilized a series of logistic and negative binomial regressions to evaluate the effect of both parental incarceration and minority status on delinquency outcomes. To better account for the sampling, stratification, and clustering associated with a complex survey design when calculating variance, we used Taylor series linearization (West, 2008) to estimate robust standard errors for all regression models.

First, youths' report of arrest at Wave 4 (no, yes) was examined as an outcome via logistic regression, with childhood parental incarceration (no, yes), gender (male as reference category), and age at Wave 3 as independent variables ("Benchmark Model"). Next, we added youth residence (PR, SBx) as another independent variable (Model 1) and tested an interaction of parental incarceration and residence to determine whether the relation between parental incarceration and reported arrest varied depending on youths' minority or majority ethnic status. We then incorporated several individual (i.e., sensation seeking, self-reported delinquent behavior, acculturation, cultural stress), behavioral health (i.e., internalizing disorder, externalizing disorder), environment/social (i.e., exposure to violence, stressful life events, peer delinquency, social support), and family (i.e., coercive discipline, parent-reported parent-child relationship quality) factors—measured at Wave 3—into the analysis (Model 2). These analyses were used to control for any site differences in these

characteristics and to determine if such “baseline” characteristics demonstrated a significant link to later arrest.

After completing these analyses with youth-reported arrest as the outcome variable, we repeated a similar series of analyses using negative binomial regression models with variety of delinquent behaviors reported at Wave 4 as the continuous outcome variable. We selected this method of analysis given the skewed nature of the count outcome variable.

Results

After applying weighting procedures, 15.7% of youth participants reported that they experienced parental incarceration during childhood; 13.7% reported that only a father figure had been incarcerated, 0.9% reported that only a mother figure had been incarcerated, and 1.1% reported that both of their parents or parental figures had been incarcerated. Youths’ age at the time of their first parental incarceration experience ranged from 0 to 18 years ($M = 5.73$, $SD = 5.33$). The majority of participants endorsing childhood parental incarceration resided in the South Bronx ($n = 148$); far fewer youth resided in Puerto Rico ($n = 46$). Additionally, 12.6% of youth respondents reported that they had been arrested during adolescence and young adulthood. On average, youth reported engaging in 2.60 unique delinquent behaviors at Wave 4 ($SE = 0.11$, range = 0 to 28). Table 1 includes additional descriptive data and Table 2 displays a correlation matrix with all independent variables examined in this study.

Youth-reported Arrest at Wave 4

Our logistic regression analysis utilized youths’ report of arrest at Wave 4 as an outcome and childhood parental incarceration, gender, and age at Wave 3 as independent variables. Results are displayed in Table 3 and indicate that, in the benchmark model, history of parental incarceration and male gender both demonstrated significant positive relationships with arrest at Wave 4. When residence at Wave 1 was added as an independent variable in Model 1, South Bronx residence and male gender were both significantly and positively related to reported arrest, but parental incarceration was not. No significant interaction effect between childhood parental incarceration and minority status was observed. Next, we examined Model 2, which included several individual, behavioral health, family, and environment/social factors measured at Wave 3. We found that, although residence was no longer significant, gender remained significant in the same direction. Additionally, two baseline factors were significantly and positively related to later arrest: youths’ sensation seeking and exposure to violence. See Table 3 for detailed logistic regression results.

Youth-reported Delinquent Behavior at Wave 4

Next, comparable negative binomial regressions were conducted using youths’ self-reported delinquent behavior at Wave 4 as the outcome. Once again, our benchmark model indicated that childhood parental incarceration and male gender both demonstrated significant positive relationships with our outcome variable. However, unlike results for youth-reported arrest, the Model 1 analysis revealed that *both* childhood parental incarceration and residence were significantly and positively related to self-reported delinquent behavior, as was male gender.

Again, no significant interaction between childhood parental incarceration and residence was observed. Finally, when we incorporated several individual, behavioral health, family, and environment factors into the analysis (Model 2), we observed many significant relationships with youths' reported delinquent behavior at Wave 4. Specifically, childhood parental incarceration, South Bronx residence, and male gender were significantly and positively related to this outcome variable, as were several factors measured at Wave 3, including: sensation seeking, delinquent behavior, and exposure to violence. Several additional factors demonstrated significant negative relationships with delinquent behavior at Wave 4, including youths' age, externalizing diagnosis, and parent-reported quality of the parent-child relationship. See Table 4 for detailed results of all negative binomial regression analyses.

Discussion

This study examined the relations between childhood parental incarceration and delinquent outcomes among Puerto Rican youth living in the mainland United States (minority ethnic status) and Puerto Rico (majority ethnic status). Findings suggest that both parental incarceration and South Bronx residence (minority status) were linked to self-reported delinquent behavior in later adolescence and young adulthood even when controlling for several individual, environment/social, and family factors. However, neither parental incarceration nor residence were associated with later *arrest* when other relevant variables were simultaneously examined.

These findings diverge from previous studies of largely White and/or Black samples that found significant connections between parental incarceration and youths' justice system involvement (e.g., Conway & Jones, 2015; Murray et al., 2012b). However, our findings also align with extant research that identified links between parental incarceration and delinquent or antisocial behavior (e.g., Swisher & Roettger, 2012; Wakefield & Wildeman, 2011). Further, previous examination of this sample of Puerto Rican youth has suggested that gender, sensation seeking, and exposure to violence were each associated with delinquent behavior at Wave 3 (Bird et al., 2007; Maldonado-Molina et al., 2009)—this study provides further evidence of the lasting nature of these relationships, as they were still observed at Wave 4, even when controlling for other important factors. Importantly, the fact that initially significant connections between parental incarceration and delinquent outcomes were weakened—and sometimes made nonsignificant—with the addition of other relevant independent variables supports the idea that risk factors other than parental incarceration more meaningfully demonstrate a relationship with delinquent outcomes among Puerto Rican youth (Conway & Jones, 2015).

Youth experiencing childhood parental incarceration may be more likely to engage in later delinquent behavior for a variety of reasons. For example, this ambiguous loss and its accompanying stressors (e.g., family residential and economic instability) may serve as strains with which youth cope by engaging in delinquent behavior (Agnew, 2012). Additionally, by disrupting the parent-child relationship, parental incarceration may negatively impact youths' ability to develop healthy relationships with other adults who could serve as positive role models (Allard, 2012; Bocknek et al., 2009). Further, the stigma

associated with parental incarceration may lead to bullying and social biases among peers, teachers, and other authority figures that can discourage youth from engaging in prosocial activities and contribute to a self-fulfilling prophecy that youth will engage in delinquent behaviors like their parent (Phillips & Gates, 2011). The fact that a significant relationship was observed for delinquent behavior but not for arrest may be explained by prior research demonstrating that most delinquent behaviors do not result in arrest (Krohn, Thornberry, Gibson, & Baldwin, 2010) and factors such as demographic and neighborhood characteristics contribute to youths' likelihood of arrest even when controlling for early delinquency (e.g., Kirk, 2008).

Like parental incarceration, youths' residence was significantly linked to delinquent behavior during later adolescence and young adulthood in the full model, but not to self-reported arrest. Specifically, Puerto Rican participants from the South Bronx reported more acts of delinquency than their counterparts in Puerto Rico. Importantly, we observed this effect even when controlling for acculturation and cultural stress, neither of which demonstrated a significant relation with delinquency. Thus, this finding does not seem to support the acculturation theory of delinquency, which suggests that individuals in minority ethnic groups face unique stressors, such as acculturative stress and discrimination, that increase the likelihood of engaging in delinquent behaviors (Pérez et al., 2008). Instead, it may be that minority status has served as a proxy for other important site differences, such as community attitudes toward delinquency or opportunities to engage in delinquent behavior, that would contribute to this significant outcome.

Alternatively, there may be aspects of acculturation and cultural stress relevant to delinquency outcomes that are not assessed by the available measures. For instance, the cultural stress measure includes four items related to concerns about English proficiency, which may not be relevant to the English-speaking South Bronx sample. Additional items inquire about both external (e.g., family arguments) and internal manifestations of strife that may not occur with equal frequency or contribute equally to feelings of acculturative stress. Similarly, scholars have raised concerns about the ability for existing measures to adequately assess acculturation (e.g., Cabassa, 2003; Martinez, Schwartz, Their, & McClure, 2018). Further research might seek to utilize alternative measures of acculturation and cultural stress to better determine how these factors might contribute to observed relationships.

Additionally, because acculturation theory posits that the risk for delinquency is greater for individuals who lack sufficient support (e.g., from imprisoned family members), we expected that the experience of childhood parental incarceration would have a stronger effect on youth with minority status (i.e., Puerto Rican youth in the South Bronx); however, this interaction effect was not observed. It may be that Puerto Rican youth, regardless of whether they reside in Puerto Rico or the mainland United States are similarly negatively affected by the experience of childhood parental incarceration—perhaps because of a shared cultural valuing of family relationships (e.g., Garcia-Preto, 2005) that could contribute to heightened feelings of loss for children separated from a parent because of incarceration. Thus, interventions to support youth who have experienced this loss may be effective in both sites.

In addition to the main variables of interest, we observed significant relationships between several variables and the examined delinquent outcomes. Specifically, childhood exposure to violence, childhood sensation seeking, and gender were each significantly related to both delinquent behavior and arrest, whereas childhood parent-child relationship quality (as reported by parents), age at Wave 3, and externalizing behavior were significantly linked to later-reported delinquency in the full model. Youth frequently exposed to violence may become socialized to believing such behaviors are typical and/or appropriate (Patchin, Huebner, McCluskey, Varano, & Bynum, 2006); they may also become hypervigilant to safety concerns and more reactive, acting out with confrontational and/or antisocial behaviors in response to neutral or provoking stimuli (Brady, Gorman-Smith, Henry, & Tolan, 2008). This risk is surely heightened among young men who act impulsively and/or seek out adrenaline-inducing activities (Trentacosta, Hyde, Shaw, & Cheong, 2009). Youth who have developed strong relationships with their non-incarcerated parent may be more protected from the effects of these risk factors—parents may serve as a model for prosocial behaviors and youth who have a strong relationship with their parents may seek parental guidance rather than turn to peers, with whom they may be more likely to engage in delinquent acts that can lead to justice system involvement.

Surprisingly, both Wave 3 age and externalizing disorder diagnosis were significantly and *negatively* related to self-reported delinquent behaviors. The age-related finding might be explained via memory effects. More specifically, it is likely that participants who were younger at their Wave 3 interviews were also younger at their Wave 4 interviews, and therefore closer in time to the age range at which delinquent behavior peaks (i.e., 15–19; Shulman, Steinberg, & Piquero, 2013) and more likely to remember engaging in these types of behaviors. This effect might represent a limitation regarding the method of measuring this outcome that should be examined through future research. Of note, a bivariate analysis examining the relation between externalizing disorder and delinquent behavior produced a significant *positive* relationship between these variables, in line with expectations, so the negative relationship observed in the full model might reflect our controlling for several other relevant variables.

Taken together, these findings may identify a population of Latinx youth with increased vulnerability for delinquent behavior (and potentially justice system involvement) in later adolescence and young adulthood: Puerto Rican boys living in areas where they are an ethnic minority who have histories of childhood parental incarceration, especially when that history exists in conjunction with increased sensation-seeking tendencies and high exposure to violence. In that same vein, these findings may also identify potential targets for intervention among youth with this experience (e.g., reducing sensation-seeking, providing additional support in highly violent communities, strengthening youths' relationships with their parents/caregivers) that could be explored in future research. Additionally, professionals who conduct forensic assessments might consider childhood parental incarceration as a static risk factor for future delinquency within this population; however, they should do so within the context of a comprehensive, culturally competent examination of an individual's static and dynamic risk and protective factors—in line with best practice (e.g., Heilbrun, 2009; Shepherd & Lewis-Fernandez, 2016). Larger proposed criminal justice reforms may also have implications for youth with justice-involved parents—for instance,

utilizing more community-based alternatives to incarceration, reducing the length of prison sentences, and providing more support for family visitation, taken together, might better allow youth to maintain and strengthen relationships with parents and prevent negative outcomes associated with parental incarceration.

Limitations

Potential limitations include restricting the sample to youth who completed interviews at both Waves 3 and 4, as we would have been unable to examine data from young people who were incarcerated at either time point. Thus, participant delinquency and arrest may have been underreported in the current study. However, just 0.8% of the original sample was ineligible at Wave 4 because of incarceration and weighting techniques were utilized to account for overall nonresponse rates. We also did not have information about the length of parents' incarceration, the child's age at the time, whether youth were living with or otherwise attached to the incarcerated parent, or whether youth were able to visit with their parent during his/her incarceration—these factors could influence youths' response to the experience and their later outcomes and, therefore, should be explored in future research. The temporal nature of findings was also difficult to account for in the current study. For example, although we observed significant relations between childhood parental incarceration and later delinquent behavior, these two factors might both reflect factors that pre-existed a parent's arrest and incarceration and were not captured in this study. Additionally, because youths' Wave 3 risk factors could have been measured *after* parental incarceration occurred, those characteristics may have been caused by the parental incarceration itself—therefore, controlling for these risk factors in statistical analyses may have underestimated the effects of parental incarceration on the examined outcomes.

Regarding measures, our method of assessing externalizing disorders (i.e., ADHD, ODD) relied upon caregiver-reported symptoms, a technique that may differ from standard methods of clinical assessment and diagnosis. However, this technique has been utilized and validated in previous studies (e.g., Jensen et al., 1999). In addition, our measures of coercive discipline use and social support demonstrated low internal consistency—both in Wave 3 and in prior Waves of the BYS (e.g., Bird et al., 2006). As a result, these constructs might not have been adequately assessed and may, in fact, contribute more significantly to delinquent outcomes than we could determine. Finally, our Wave 4 outcome measures (i.e., self-reported arrest and variety of delinquent behavior) may have been vulnerable to social desirability bias and/or memory limitations given the 9- to 12-year time span; these vulnerabilities may have contributed to underreporting of outcomes, but did not prevent observation of significant relationships.

Future Research

In addition to addressing the limitations described above, future research should further explore the significant relations identified in the current study. Perhaps by using qualitative measures, investigators can more closely examine youth who do and do not engage in delinquent behavior and become justice-involved after experiencing parental incarceration to better identify the risk and protective factors that contribute to these differential outcomes. Additionally, studies might seek to develop intervention programs for youth with

incarcerated parents targeting the risk factors described here (e.g., reducing sensation seeking, strengthening parent-child relationships, providing additional support for youth in highly violent communities) and evaluate the efficacy of such methods. Although the risk factors identified seem especially relevant for Puerto Rican youth, such programs may also be appropriate for young people from other racial/ethnic backgrounds—thus, evaluations of these programs might investigate whether effects vary by youth characteristics.

Further investigation should also explore environment/social variables not included in our analysis, such as where youth live during a parent's incarceration (e.g., with another parent, in foster care) and neighborhood safety and community cohesiveness/support, that might help to explain youths' adjustment to a parent's incarceration. Future research could investigate whether youth who experience the incarceration of other family members (e.g., siblings, aunts or uncles) demonstrate similar outcomes to those observed among youth whose parents are incarcerated. Finally, given the heterogeneity of Latinx groups (Burchard et al., 2005) and the fact that this study focused only on young people with Puerto Rican heritage, additional studies might explore potential relationships between childhood parental incarceration and delinquent outcomes among youth with other Latinx backgrounds.

Conclusion

Experiencing parental incarceration during childhood has been linked to several negative outcomes, including an increased risk for delinquent behavior and arrest. However, before the current study, research in this area had largely been conducted with samples of White and/or Black youth. Our findings from a longitudinal research study spanning childhood to young adulthood contribute to closing this research gap and suggest that Puerto Rican youth who experience childhood parental incarceration may also demonstrate increased risk for later delinquent behavior, but not necessarily increased risk of arrest. Other individual, family, and environmental risk and protective factors were identified and might identify useful targets for future delinquency prevention programs within this population. Given that Latinx youth are one of the largest and fastest-growing youth populations in the United States (Lopez, Krogstad, & Flores, 2018), future research should prioritize further characterizing modifiable risk and protective factors among Latinx samples to prevent delinquency and promote optimal youth outcomes.

Acknowledgments

Research reported in this publication was supported by funding from the National Institutes of Health, including: MH098374 (Alegría, Canino, Duarte), MH56401 (Bird), DA033172 (Duarte), AA020191 (Duarte), and T32MH019733 (NeMoyer). The content of this article is solely the responsibility of the authors and does not necessarily represent the views of the National Institutes of Health. Some of the data from this paper were previously presented at the annual conference of the American Psychology-Law Society in Memphis, TN (March 2017). The authors wish to acknowledge the contribution of the dedicated research staff that contributed to data collection and express gratitude for the participants who are part of the Boricua Youth Study and its follow up components.

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Public Significance Statement:

This study suggests that Puerto Rican youth who experience childhood parental incarceration are at increased risk for later delinquency, a finding consistent with prior studies of White and Black youth. Sensation seeking, exposure to violence, and parent-child relationship quality were also linked to later delinquency among Puerto Rican youth and may be useful targets for prevention programs within this population.

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Table 1.Weighted descriptive statistics of youth/young adult sample, divided by site ($N = 1,294$).

| | Total Sample | | Puerto Rico | | South Bronx | | Difference |
|--------------------------------------|--------------|------|-------------|------|-------------|------|-----------------|
| | Mean/Freq | SE | Mean/Freq | SE | Mean/Freq | SE | <i>p</i> -value |
| Site at W1 | | | | | | | |
| PR (majority) | 55.7% | 0.03 | -- | -- | -- | -- | -- |
| Bronx (minority) | 44.3% | 0.03 | -- | -- | -- | -- | -- |
| Parental Incarceration | | | | | | | |
| Neither parent was incarcerated | 84.3% | 0.01 | 92.8% | 0.01 | 73.7% | 0.02 | < .001 |
| At least one parent was incarcerated | 15.7% | 0.01 | 7.2% | 0.01 | 26.3% | 0.02 | |
| W4 Outcomes | | | | | | | |
| Arrest reported at W4 | 12.6% | 0.01 | 6.6% | 0.01 | 20.0% | 0.02 | < .001 |
| Delinquent behavior reported at W4 | 2.6 | 0.11 | 1.8 | 0.10 | 3.7 | 0.15 | < .001 |
| W3 Age (10–17) | 13.0 | 0.05 | 13.1 | 0.07 | 13.0 | 0.07 | .86 |
| W4 Age (19–29) | 24.1 | 0.08 | 24.2 | 0.12 | 24.1 | 0.11 | .62 |
| Gender | | | | | | | |
| Male | 49.8% | 0.01 | 49.8% | 0.02 | 50.7% | 0.02 | .75 |
| Female | 50.2% | 0.01 | 50.2% | 0.02 | 49.3% | 0.02 | |
| W3 Individual Factors | | | | | | | |
| Sensation seeking | 3.9 | 0.08 | 3.7 | 0.12 | 4.3 | 0.11 | < .001 |
| Delinquent behavior | 1.2 | 0.06 | 0.6 | 0.06 | 1.8 | 0.10 | < .001 |
| Acculturation | 1.7 | 0.06 | 0.9 | 0.03 | 2.6 | 0.02 | < .001 |
| Cultural Stress | 0.1 | 0.00 | 0.1 | 0.00 | 0.1 | 0.00 | < .001 |
| W3 Behavioral Health Factors | | | | | | | |
| Internalizing Disorder | 3.8% | 0.01 | 3.4% | 0.01 | 4.3% | 0.01 | .43 |
| Externalizing Disorder | 9.2% | 0.01 | 8.6% | 0.01 | 10.0% | 0.01 | .42 |
| W3 Family Factors | | | | | | | |
| Coercive discipline | 0.2 | 0.02 | 0.2 | 0.03 | 0.3 | 0.03 | .07 |
| Parent-child relationship quality | 2.5 | 0.01 | 2.5 | 0.02 | 2.5 | 0.02 | .94 |
| W3 Environment/Social Factors | | | | | | | |
| Exposure to violence | 2.1 | 0.15 | 1.0 | 0.10 | 3.5 | 0.26 | < .001 |
| Stressful life events | 0.5 | 0.04 | 0.4 | 0.03 | 0.5 | 0.06 | .04 |
| Peer delinquency | 0.1 | 0.01 | 0.1 | 0.01 | 0.1 | 0.01 | .14 |
| Social support | 2.0 | 0.02 | 2.1 | 0.02 | 1.9 | 0.02 | < .001 |

Table 2.

Correlation matrix for examined variables.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|----|
| 1. Childhood parental incarceration | 1.00 | | | | | | | | | | | | | | | |
| 2. Female gender | -0.01 | 1.00 | | | | | | | | | | | | | | |
| <i>p-value for correlation</i> | .77 | | | | | | | | | | | | | | | |
| 3. Age at Wave 3 interview | -0.02 | 0.05 | 1.00 | | | | | | | | | | | | | |
| <i>p-value for correlation</i> | .38 | .05 | | | | | | | | | | | | | | |
| 4. Minority status | 0.26 | -0.04 | 0.03 | 1.00 | | | | | | | | | | | | |
| <i>p-value for correlation</i> | <.001 | .13 | .17 | | | | | | | | | | | | | |
| 5. Sensation Seeking | 0.03 | -0.21 | 0.30 | 0.12 | 1.00 | | | | | | | | | | | |
| <i>p-value for correlation</i> | .22 | <.001 | <.001 | <.001 | | | | | | | | | | | | |
| 6. Delinquent Behavior | 0.06 | -0.07 | 0.25 | 0.26 | 0.34 | 1.00 | | | | | | | | | | |
| <i>p-value for correlation</i> | .02 | .01 | <.001 | <.001 | <.001 | | | | | | | | | | | |
| 7. Acculturation Score | 0.22 | -0.08 | -0.01 | 0.86 | 0.16 | 0.24 | 1.00 | | | | | | | | | |
| <i>p-value for correlation</i> | <.001 | <.01 | .76 | <.001 | <.001 | <.001 | | | | | | | | | | |
| 8. Cultural Stress Score | -0.04 | -0.06 | -0.30 | -0.15 | -0.07 | 0.00 | -0.14 | 1.00 | | | | | | | | |
| <i>p-value for correlation</i> | .13 | .02 | <.001 | <.001 | .01 | .89 | <.001 | | | | | | | | | |
| 9. Coercive discipline | 0.02 | -0.06 | -0.13 | 0.01 | 0.06 | 0.13 | 0.01 | 0.29 | 1.00 | | | | | | | |
| <i>p-value for correlation</i> | .45 | .03 | <.001 | .78 | .02 | <.001 | .77 | <.001 | | | | | | | | |
| 10. Parent-child relationship quality | -0.02 | 0.08 | -0.07 | -0.01 | -0.08 | -0.14 | 0.00 | -0.08 | -0.16 | 1.00 | | | | | | |
| <i>p-value for correlation</i> | .55 | <.01 | .01 | .68 | <.01 | <.001 | .97 | <.01 | <.001 | | | | | | | |
| 11. Exposure to violence | 0.06 | -0.12 | 0.08 | 0.22 | 0.22 | 0.37 | 0.17 | 0.08 | 0.15 | -0.12 | 1.00 | | | | | |
| <i>p-value for correlation</i> | .03 | <.001 | <.01 | <.001 | <.001 | <.001 | <.001 | <.01 | <.001 | <.001 | | | | | | |
| 12. Stressful life events | 0.03 | 0.02 | -0.23 | 0.01 | -0.02 | 0.04 | 0.00 | 0.13 | 0.15 | -0.06 | 0.31 | 1.00 | | | | |
| <i>p-value for correlation</i> | .30 | .44 | <.001 | .61 | .51 | .09 | .88 | <.001 | <.001 | .02 | <.001 | | | | | |
| 13. Peer delinquency | 0.01 | -0.04 | -0.03 | 0.05 | 0.06 | 0.19 | -0.01 | 0.19 | 0.18 | -0.15 | 0.23 | 0.16 | 1.00 | | | |
| <i>p-value for correlation</i> | .65 | .08 | .22 | .05 | .02 | <.001 | .75 | <.001 | <.001 | <.001 | <.001 | <.001 | | | | |
| 14. Social support | -0.01 | 0.10 | 0.02 | -0.21 | -0.01 | -0.11 | -0.15 | 0.01 | -0.02 | 0.10 | -0.06 | 0.02 | -0.07 | 1.00 | | |
| <i>p-value for correlation</i> | .66 | <.001 | .44 | <.001 | .74 | <.001 | <.001 | .76 | .38 | <.001 | .03 | .40 | .01 | | | |
| 15. Internalizing Disorders | 0.04 | 0.04 | 0.06 | 0.01 | 0.00 | 0.00 | -0.02 | 0.05 | 0.01 | -0.06 | 0.11 | 0.12 | 0.07 | -0.01 | 1.00 | |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|--------------------------------|------|-------|------|------|------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|------|
| <i>p-value for correlation</i> | .17 | .14 | .02 | .81 | .85 | .96 | .34 | .03 | .81 | .02 | <.001 | <.001 | <.01 | .84 | | |
| 16. Externalizing Disorders | 0.00 | -0.12 | 0.01 | 0.04 | 0.08 | 0.16 | 0.05 | 0.07 | 0.15 | -0.29 | 0.15 | 0.03 | 0.13 | -0.03 | 0.11 | 1.00 |
| <i>p-value for correlation</i> | .97 | <.001 | 0.56 | .17 | <.01 | <.001 | .05 | .01 | <.001 | <.001 | <.001 | .18 | <.001 | .20 | <.001 | |

Table 3.

Factors linked to self-reported arrest at Wave 4: Logistic regression results ($N = 1,294$).

| | Benchmark Model | | | | Model 1 | | | Model 2 | | |
|--|-------------------|--------------|--------|-------------------|--------------|--------|-------------------|---------------|--------|--|
| | OR | 95% CI | p | OR | 95% CI | p | OR | 95% CI | p | |
| Childhood parental incarceration | 2.39 | [1.44, 3.96] | < .01 | 1.69 | [0.97, 2.95] | .06 | 1.77 | [0.96, 3.25] | .07 | |
| Gender (reference: male) | 0.32 | [0.22, 0.48] | < .001 | 0.32 | [0.21, 0.48] | < .001 | 0.34 | [0.21, 0.54] | < .001 | |
| Age at Wave 3 interview | 1.11 | [0.99, 1.25] | .08 | 1.11 | [0.99, 1.26] | .08 | 1.00 | [0.87, 1.16] | .98 | |
| Bronx residence (Minority status) | -- | -- | -- | 3.08 | [1.80, 5.25] | < .001 | 2.85 | [0.66, 12.32] | .16 | |
| Childhood Individual Factors | | | | | | | | | | |
| Sensation seeking | -- | -- | -- | -- | -- | -- | 1.08 | [1.00, 1.16] | .05 | |
| Delinquent behavior | -- | -- | -- | -- | -- | -- | 1.06 | [0.97, 1.16] | .19 | |
| Acculturation | -- | -- | -- | -- | -- | -- | 0.87 | [0.43, 1.75] | .69 | |
| Cultural stress | -- | -- | -- | -- | -- | -- | 0.49 | [0.11, 2.15] | .35 | |
| Childhood Behavioral Health | | | | | | | | | | |
| Internalizing disorder | -- | -- | -- | -- | -- | -- | 0.94 | [0.29, 3.02] | .91 | |
| Externalizing disorder | -- | -- | -- | -- | -- | -- | 1.23 | [0.62, 2.44] | .55 | |
| Childhood Family Factors | | | | | | | | | | |
| Coercive discipline | -- | -- | -- | -- | -- | -- | 1.22 | [0.91, 1.64] | .18 | |
| Parent-child relationship quality | -- | -- | -- | -- | -- | -- | 0.67 | [0.41, 1.07] | .09 | |
| Childhood Environment & Social Factors | | | | | | | | | | |
| Exposure to violence | -- | -- | -- | -- | -- | -- | 1.06 | [1.03, 1.10] | < .01 | |
| Stressful life events | -- | -- | -- | -- | -- | -- | 1.13 | [0.97, 1.31] | .13 | |
| Peer delinquency | -- | -- | -- | -- | -- | -- | 1.11 | [0.37, 3.34] | .86 | |
| Social support | -- | -- | -- | -- | -- | -- | 1.41 | [0.99, 2.00] | .05 | |
| Model Fit Statistics | | | | | | | | | | |
| F-adjusted test | $F(9,253) = 0.93$ | | | $F(9,253) = 0.66$ | | | $F(9,253) = 7.99$ | | | |
| P-value | 0.50 | | | 0.74 | | | < 0.001 | | | |

Note: Except for parent-child relationship quality and some externalizing disorders (i.e., ODD and ADHD), which were collected from parent interviews at Wave 3, all data regarding individual, diagnostic family, and environmental factors were collected during the youth participant's Wave 3 interview.

Note: Final models are reported without interaction terms, as no significant interaction between parental incarceration and residence was observed.

Table 4. Factors linked to delinquent behavior reported at Wave 4: Negative binomial regression results ($N = 1,294$).

| | Benchmark Model | | | | Model 1 | | | | Model 2 | | | |
|--|---------------------|------------|---------------|----------|---------------------|------------|---------------|----------|---------------------|------------|---------------|----------|
| | <i>b</i> | <i>IRR</i> | 95% <i>CI</i> | <i>p</i> | <i>b</i> | <i>IRR</i> | 95% <i>CI</i> | <i>p</i> | <i>b</i> | <i>IRR</i> | 95% <i>CI</i> | <i>p</i> |
| Childhood parental incarceration | 0.62 | 1.85 | [1.58, 2.17] | < .001 | 0.41 | 1.51 | [1.26, 1.80] | < .001 | 0.41 | 1.51 | [1.26, 1.81] | < .001 |
| Gender (reference: male) | -0.53 | 0.59 | [0.50, 0.68] | < .001 | -0.54 | 0.58 | [0.50, 0.67] | < .001 | -0.47 | 0.62 | [0.54, 0.71] | < .001 |
| Age at Wave 3 interview | -0.01 | 0.99 | [0.96, 1.03] | .76 | -0.01 | 0.99 | [0.96, 1.03] | .74 | -0.06 | 0.94 | [0.91, 0.98] | .01 |
| Bronx residence (Minority status) | -- | -- | -- | -- | 0.60 | 1.83 | [1.57, 2.12] | < .001 | 0.31 | 1.37 | [1.00, 1.86] | .05 |
| Childhood Individual Factors | | | | | | | | | | | | |
| Sensation seeking | -- | -- | -- | -- | -- | -- | -- | -- | 0.04 | 1.05 | [1.02, 1.07] | < .01 |
| Delinquent behavior | -- | -- | -- | -- | -- | -- | -- | -- | 0.04 | 1.04 | [1.01, 1.08] | .01 |
| Acculturation | -- | -- | -- | -- | -- | -- | -- | -- | 0.09 | 1.09 | [0.92, 1.28] | .31 |
| Cultural stress | -- | -- | -- | -- | -- | -- | -- | -- | 0.16 | 1.17 | [0.68, 2.03] | .56 |
| Childhood Behavioral Health | | | | | | | | | | | | |
| Internalizing disorder | -- | -- | -- | -- | -- | -- | -- | -- | -0.01 | 0.99 | [0.68, 1.43] | .95 |
| Externalizing disorder | -- | -- | -- | -- | -- | -- | -- | -- | -0.21 | 0.81 | [0.66, 0.98] | .03 |
| Childhood Family Factors | | | | | | | | | | | | |
| Coercive discipline | -- | -- | -- | -- | -- | -- | -- | -- | 0.03 | 1.03 | [0.95, 1.13] | .46 |
| Parent-child relationship quality | -- | -- | -- | -- | -- | -- | -- | -- | -0.30 | 0.74 | [0.63, 0.86] | < .001 |
| Childhood Environment & Social Factors | | | | | | | | | | | | |
| Exposure to violence | -- | -- | -- | -- | -- | -- | -- | -- | 0.03 | 1.03 | [1.01, 1.04] | < .001 |
| Stressful life events | -- | -- | -- | -- | -- | -- | -- | -- | 0.01 | 1.01 | [0.96, 1.07] | .67 |
| Peer delinquency | -- | -- | -- | -- | -- | -- | -- | -- | -0.03 | 0.97 | [0.79, 1.20] | .79 |
| Social support | -- | -- | -- | -- | -- | -- | -- | -- | 0.08 | 1.08 | [0.93, 1.26] | .29 |
| Model Fit Statistics | | | | | | | | | | | | |
| Chi-square goodness of fit | $\chi^2(4) = 40.12$ | | | | $\chi^2(4) = 34.47$ | | | | $\chi^2(4) = 28.55$ | | | |
| <i>p</i> -value | < .001 | | | | < .001 | | | | < .001 | | | |

Note: Except for parent-child relationship quality and some externalizing disorders (i.e., ODD and ADHD), which were collected from parent interviews at Wave 3, all data regarding individual, diagnostic family, and environmental factors were collected during the youth participant's Wave 3 interview.

Note: Final models are reported without interaction terms, as no significant interaction between parental incarceration and residence was observed.