Published in final edited form as:

Crime Delinq. 2010 July ; 56(3): 327–357. doi:10.1177/0011128710372478.

Sex Differences in Trajectories of Offending Among Puerto Rican Youth

Wesley G. Jennings, Ph.D.,
University of Louisville

Mildred M. Maldonado-Molina, Ph.D.,
University of Florida

Alex R. Piquero, Ph.D.,
Florida State University

Candice L. Odgers, Ph.D.,
University of California-Irvine

Hector Bird, Ph.D., and
Columbia University

Glorisa Canino, Ph.D.
University of Puerto Rico

Abstract

Although sex is one of the strongest correlates of crime, contentions remain regarding the necessity of sex-specific theories of crime. The current study examines delinquent trajectories across sex among Puerto Rican youth socialized in two different cultural contexts (Bronx, United States and San Juan, Puerto Rico). Results indicate: similar substantive offending trajectories across males and females within each cultural context; that males exhibit a higher frequency of offending and higher levels of risk factors for delinquency; and there more similarities than differences in how risk/protective factors relate to patterns of offending across male versus female youth. Study limitations and implications for sex-specific criminological theories are also discussed.

Keywords

sex; crime; trajectories; Hispanics

A consistent criminological fact is that males commit more crime than females, especially serious, person-oriented offenses (Braithwaite, 1989). Although the Uniform Crime Reports suggest an upward trend in the percentage of female arrests for assault, similar analyses of victimization and self-report data provide evidence of strong stability (Steffensmeier, Schwartz, Zhong, & Ackerman, 2005). Regardless, that females engage in less crime than males remains a robust finding (Zahn, Brumbaugh, Steffensmeier, Feld, Morash, Chesney-Lind, Miller, Payne, Gottfredson, & Kruttschnitt, 2008). Yet, the near-universal consensus regarding the lower participation of females in crime is where agreement regarding sex differences in offending ends. Researchers are divided as to the reasons why sex differences in offending exist. This controversy has spurred a larger debate about whether sex-specific

theories of crime and intervention are necessary. Three conflicting conclusions have been proffered to resolve this debate.

The first of these conflicting conclusions argues that sex differences are the norm and require a unique theoretical framework. Specifically, proponents of this view suggest that criminological theorizing was developed by men and our general theories of crime are not necessarily general as they are more geared toward explaining male criminality (Leonard, 1982; Naffine, 1985; Daly & Chesney-Lind, 1988). Proscribing to a different conflicting conclusion, Zahn (2007) notes that while girls and boys experience many of the same risk factors, they differ in sensitivity to and rate of exposure to these risk factors, and further that some risk and protective factors are especially sex-sensitive. Steffensmeier and Allan (1996) indicate that while the casual patterns underlying crime for females often overlaps with those for males, there are still important sex differences that produce the larger discrepancies observed, and these differences may be clarified by studying differences in sex norms, moral development and affiliative concerns, social control, physical strength and aggression, and sexuality, all of which work to condition sex differences in criminal opportunities, motives, and contexts. Finally, the last of these three conflicting conclusions suggests that an increased focus on sex differences may not be warranted because the causal processes are more similar than different. That is, the complexity associated with developing sex-specific models may be an inefficient means of gaining leverage on the causes of crime. For instance, Moffitt, Caspi, Rutter, and Silva (2001) claim that because their analysis of antisocial behavior in the Dunedin Birth Cohort found few sex differences in the causes, correlates, and consequences of antisocial behavior that future research should benefit from adopting a more parsimonious explanation of crime causation.

Reconciling these conflicting views is difficult because empirical research is still developing. While there has been an increased focus on girls' antisocial behavior over the last two decades (Giordano, Cernkovich, Stoff, Breiling, & Maser, 1997; Moffitt et al., 2001; Moretti, Odgers, & Jackson, 2004; Odgers & Moretti, 2002; Pepler, Madsen, Webster, & Levene, 2005; Putallaz & Bierman, 2004), most knowledge about delinquency has been based on samples of young men. In short, there has not been sufficient attention paid to female delinquency generally, and over the life-course in particular (Cernkovich, Lanctôt, & Giordano, 2008; MacDonald & Chesney-Lind, 2001; Lanctôt & Le Blanc, 2002). The other difficulty stems from research that has been emerging from two separately-evolving disciplines of psychology and criminology, which has resulted in little integration of findings related to girls' delinquency. Also, researchers have often relied on diverse populations of young women to draw conclusions regarding female pathways into delinquency. Examinations of female-specific pathways have been conducted in large epidemiological studies, high-risk clinical samples, and among juvenile offenders. Thus, resolving the incongruent summaries reviewed above may require a careful discussion of selection mechanisms and sample characteristics that underlie each set of research findings.

We seek to contribute to this literature in several ways. First, we gather prospective, self-reported delinquency information among male and female youth who were followed for three years. Second, we focus on Hispanic youth, for which little is known because of the lack of requisite data (Morenoff, 2005). Third, we compare offending among Hispanic males and females reared in two separate cultural/social contexts (San Juan, Puerto Rico and Bronx, New York), which allows for an examination of how Hispanic youth navigate different cultural/social milieus, and an assessment of whether a broad theoretical framework equally applies to Hispanic youth reared in two distinct cultural/social contexts. We undertake this task using a methodological approach that identifies distinct trajectories and assesses these across several risk/protective factors, including acculturation, a unique Hispanic experience that has been linked to mental health and externalizing behavior

problems (Gonzalez, Knight, Morgan-Lopez, Saenz, & Sirolli, 2002). We next provide a brief overview of the research on the sex/crime relationship.

The Sex/Crime Relationship

The strong and consistent relationship between sex and crime has long been recognized: everywhere and at all times, males engage in (serious) crime at a disproportionately higher rate than females (Zahn et al., 2008). Due to this discrepancy, early theories were largely created by males to explain male delinquency. These explanations fell under heavy criticism largely because they ignored potential sex differences (Daly & Chesney-Lind, 1988; Leonard, 1982; Messerschmidt, 1993; Naffine, 1985). As a reaction, several studies were carried out in order to explore how extant theory could account for the large sex effect (Cernkovich & Giordano, 1979; Smith & Paternoster, 1987; Heimer & DeCoster, 1999; Mears, Ploeger, & Warr, 1998; Piquero, Gover, MacDonald, & Piquero, 2005). These studies evinced more similarities than differences in the causal process(es) underlying male/female delinquency and spurned theories highlighting similar causal structures but nuances in certain female-specific correlates and situational contexts (Steffensmeier & Allan, 1996; Broidy & Agnew, 1997; Piquero & Sealock, 2004).

Prior debates regarding the need for sex-specific theories have been muddled by attempts to reconcile incongruent findings that emerge across normative versus juvenile justice or clinical samples (Odgers & Moretti, 2002). That is, sex differences are observed in high-risk samples and claims are then made regarding etiology of antisocial behavior, often neglecting the powerful selection forces that are at work in determining how girls are pushed into the system. Yet, when sex differences are examined in large-scale epidemiological studies very few sex differences emerge (Moffitt et al., 2001).

The current debate is focused on two issues. First, researchers want to know whether there are differences in developmental pathways, etiology and underlying causal mechanisms that lead males versus females into crime. Second, practitioners and policy-makers need to know whether sex-specific responses are required for males versus females who end up in the system. Herein, we apply data from a large epidemiological study to address the first set of questions regarding etiology and sex differences in antisocial behavior. We acknowledge the importance of research designed to determine whether sex-specific programming and treatment options are required. Indeed, girls have emerged as an important population to study within juvenile justice contexts as: a greater number of adolescent girls are arrested and incarcerated in the US than ever before (e.g., the number of female offenders in custody has increased 52% between 1991 and 2003 (NMHA, 2003; Snyder & Sickmund, 2006); we know very little about 'what works' when responding to this population; and critics have charged that the juvenile justice system is failing to meet the needs of adolescent girls (Hipwell & Loeber, 2006). As a result, there have been increasing calls for the development of sex-specific programming options for girls in the system (Foley, 2008). However, due to the strong selection mechanisms at work in determining *which* young women end up in the system, it is unclear to what extent research from normative samples can help to resolve this issue. While we acknowledge that there is a need to evaluate sex-specific programming for such women, we concede that our study is not well positioned to address this specific issue (just as high-risk samples are not well situated to address questions regarding etiology and causal determinants of crime).

Using birth cohort data of over 1,000 males and females from the Dunedin Multidisciplinary Health and Human Development Study, Moffitt et al. (2001): (1) tested for sex differences in the neuro-developmental, familial and social origins of antisocial behavior across males versus females; and (2) raised the visibility of sex differences as a tool for the study of

problem behaviors that exhibit large sex differences. Three findings stood out. First, fewer females exhibited antisocial behavior, and when females did so, it was less frequent and less serious compared to males. Females did resemble males with respect to alcohol and drug use as well as within intimate relationships with males. Second, girls did not pass a higher threshold of risk to become as antisocial as boys; rather, there was a linear relationship between antisocial behavior symptoms and poor outcomes, with subclinical conduct problems predicting poor prognosis in adulthood among both males and females. Third, much of the sex difference in antisocial behavior was due to sex differences in the individual risk factors for early-onset and persistent antisocial behavior. Research has consistently shown that girls have lower rates than boys of symptoms of nervous system dysfunction, difficult temperament, hyperactivity, reading failure and learning disabilities (Gorman-Smith & Loeber, 2005; Lahey, Van Hulle, Waldman, Rodgers, D'Onofrio, Pedlow, Rathouz, & Keenan, 2006; Messer, Goodman, Rowe, Meltzer, & Maughan, 2006) all of which are precursors to the life-course persistent pathway. In contrast, the adolescence-limited pathway, which is driven more by contextual and social factors, is a more likely track for young women.ⁱ Thus, while females are seldom life-course persistent and often adolescent-limited, the childhood correlates of both types are similar across sex (Odgers, Moffitt, Broadbent, Dickson, Hancox, Harrington, Poulton, Sears, Thomson, & Caspi, 2008.), suggesting a similar causal process underlying female/male antisocial behavior.

Two other studies that also utilized the Dunedin Cohort found some interesting patterns regarding male and female trajectories. For example, Piquero, Brame, and Moffitt (2005) identified three male trajectories and two female trajectories. Subsequent analysis suggested that after conditioning on adolescent differences in the propensity to offend (using the trajectories), variations in adult offending through age 26 were consistent with a random process, implying that after conditioning on adolescent variation in offending, random variation in criminality during adulthood was sufficient to account for the adult offending frequency. Comparatively, Odgers et al.'s (2008) trajectory-based results using the Dunedin Cohort indicated that, similar to males, females on the life-course persistent pathway were (1) characterized by neuro-developmental deficits and familial risk in childhood, and (2) more likely to experience continuity in violent offending as well as suffer from poor mental health, physical health and economic outcomes at age 32. In contrast, females on the adolescence-limited pathway appeared to (1) have a relatively normative profile of childhood risk factors and (2) demonstrated very little continuity in their antisocial behavior into adulthood. The etiological origins, developmental pathways and adult outcomes for females following both pathways were consistent across sex.

In a companion set of studies, researchers examined distinct offending trajectories. D'Unger, Land & McCall (2002) examined offending for a random sample of males and females in the 1958 Philadelphia Birth Cohort Study, and identified five trajectories for males and three for females. Among males, two groups stood out: a high-rate adolescent-peaked group, whose offending dropped throughout late adolescence and early adulthood, a high-rate chronic group whose offending was stable between mid-adolescence and the mid 20s, declining thereafter. Among females, two offender groups were noted. The first, the low-rate adolescent-peaked group, offended over seven years, peaked in mid-adolescence, and desisted soon thereafter, while the second group, the high-rate adolescence-peaked group, had the highest rate of offending at every age, peaked in late adolescence, and then began to desist in the early 20s. Despite the similar shapes and trends, male offending rates were always higher than the rates among females.

ⁱImportantly, while the neuro-developmental origins of serious offending is the same and open to both sexes, there are fewer females among such offenders because they develop less of the risk factors compared to males. Females and males are equally apt to develop the more social form of offending because they are equally likely to develop the risk factors for it (Moffitt, 1994).

Finally, Broidy, Nagin, Tremblay, Bates, Brame, Dodge, Fergusson, Horwood, Loeber, Laird, Lynam, Moffitt, Pettit, and Vitaro (2003) used data from six longitudinal studies to examine the developmental course of physical aggression in childhood through early adolescence. Several findings emerged from their effort. First, a similar number (three to four) of trajectories were identified across sex across the studies. Second, in most studies, boys exhibited stronger continuity in problem behavior than girls, and while chronic physical aggression increased the risk for continued delinquency in adolescence among boys, there was no clear link between childhood physical aggression and adolescent offending among girls. Although there were a small number of females in the chronic physical aggression groups, they displayed lower levels of aggression, which tended to decrease as females entered adolescence. Therefore, the results from this series of trajectory-based studies that have examined sex similarities and differences seem to suggest that there are more similarities than differences, yet at times female chronic offenders and/or antisocial female trajectories are not identifiable and it is more typical to find greater levels of risk concentrated among the males compared to females.

Hispanic Youth and Delinquency

Although substance use among Hispanics has been studied (Miller, Miller, Zapata, & Yin, 2008), only a limited amount of research has examined other forms of delinquency among Hispanic youth. Early research noted the significant overrepresentation of Hispanics in juvenile arrest statistics, and reported that the disproportionate minority contact rate for Hispanics was not far behind that of African Americans (Dreyfoos, 1990). Flowers (1988) also found that Hispanic youth are incarcerated at nearly two times their representation in the general population. Ethnographic studies also identified socio-cultural influences such as family bonding as having an effect on the delinquency of Hispanic youth (Sommers, Fagan, & Baskin, 1992; Rodriguez & Weisburd, 1991), and further suggested that these influences may be more salient for delinquency among Hispanics than more mainstream American youth (Rodriguez & Weisburd, 1991). Others have also found high prevalence and frequency of violence among Hispanics (Chavez, Oetting, & Swain, 1994; Watts & Wright, 1990).

Recently, Pabron (1998) examined delinquency in a large sample of Puerto Rican males and found that time spent with family was a significant predictor of delinquency, leading him to suggest that strong family cohesion between Puerto Rican youth and their parents is likely to insulate them from delinquency. Samaniego and Gonzales (1999) have also identified family conflict and maternal monitoring as key predictors of delinquency for Hispanic youth. Yin, Katims, and Zapata's (1999) analysis of data from Mexican American adolescents yielded an association between unsupervised socializing with peers and delinquency, with sex differences in offending also detected.

Two recent studies have also uncovered salient risk/protective factors for delinquency among Hispanic youth. Relying on data from a school-based sample of Hispanics, Pérez, Jennings, and Gover (2008) found that sex, experiences of abuse, academic problems, and prior criminal history were significant predictors of (violent) delinquency. Two ethnic-specific risk factors were significant predictors of delinquency, being born in the U.S. and perceived discrimination. The results appeared to be relatively consistent across community context, indicating that these factors mattered for Hispanic youth residing in communities with either a low or a high concentration of Hispanics. Maldonado-Molina, Piquero, Jennings, Bird, and Canino's (2009) analysis of Puerto Rican adolescents suggested that several risk/protective factors (thrill-seeking, definitions favorable toward law violations, delinquent peers, poor school environment, and exposure to violence) distinguished delinquents from non-delinquents.

The Current Study

Along with qualitative research on sex and crime (Miller, 2001), the above-referenced studies have generated an important source of data on female delinquency. Yet, data and sample design issues have limited generalizability as most efforts are based on virtually all-white samples from the US resulting in a lack of cross-national and cross-cultural comparisons in delinquency generally (Weitekamp & Kerner, 1994; Tonry & Farrington, 2005), and across sex in particular. This is particularly salient in criminology which has not given sufficient attention to cultural differences in delinquency nor has it focused on the offending of minorities. This neglect is apparent even with recognition that there are a limited number of studies identifying delinquency as an issue among Hispanic youth. The current study begins to fill some of these research gaps by studying self-reported delinquency among Hispanic males and females in two distinct cultural/social contexts across three time periods, and also by expanding the range of theoretical predictors used to understand delinquency.

Method

Data and Sample

Data come from two samples of youth participating in the Boricua Youth Study (BYS; Bird, Canino, Davies, Duarte, Febo, Ramirez, Hoven, Wick, Musa, & Lober, 2006a; Bird, Davies, Canino, Duarte, Shen, & Loeber, 2006b). The BYS is a matched epidemiological and longitudinal study of Puerto Rican children between the ages of 5 and 13 from two different cultural contexts: (1) standard metropolitan areas of San Juan and Caguas in Puerto Rico and (2) the Bronx in New York. Bird, Shrout, Davies, Canino, Duarte, Shen and Loeber (2007) collected three annual waves of data from the youth between summer 2000 and fall 2004. All of the three interviews were conducted in the youth's home by trained interviewers, and the children and parents were interviewed separately and in private by different interviewers. The survey questionnaires were programmed into a laptop computer and electronic versions were made available for the subjects' use in both Spanish and English. All of the subject's information for each wave of data was collected at each of the three corresponding interviews. The sampling process yielded 1,414 eligible participants in the Bronx of which 1,138 were interviewed (completion rate of 80.5%) and 1,353 of the 1,526 eligible participants in San Juan agreed to participate (completion rate of 88.7%) (for more information regarding the data collection procedures see Bird et al. 2006a,b). Sample retention in the two annual follow-ups was above 85%, and the study retention rates were not significantly different across sites (Bronx vs. San Juan) at either wave 2 ($p = .221$) or wave 3 ($p = .233$). Missing data was less than 3–4% in both sites.

Descriptive statistics indicated that there were roughly equivalent percentages of boys and girls across both sites (51.8% of the Bronx sample were boys, while 51.4% of the San Juan sample were boys), and the average age of the Bronx sample at wave 1 was 9.51 years old while the average age of the San Juan sample at wave 1 was 9.77 years old.ⁱⁱ Preliminary analyses of the aggregate prevalence and frequency of delinquency suggested that the boys exhibited significantly more delinquency across all three waves in both sites. The mean delinquency rates across the three waves for the Bronx boys was 1.03, 0.77, and 0.70

ⁱⁱBecause the ages of the youth varied within the trajectory groups, we conducted a sensitivity analysis to determine whether the trajectory solutions were influenced by age group effects. We separated the youth by sex and site into two respective age groups, ages 5–9 and ages 10 and older at Wave 1. There was some evidence that the decline in delinquency for G3 among Puerto Rico males/females was greater for the younger age group and that the increase in delinquency for G4 among Bronx males/females was greater for the older age group. Still, the results were considerably similar to the aggregate trajectory solutions that were estimated without separating the sex-/site-specific samples by age group in regards to the number of trajectory groups, and provide an additional degree of confidence in the trajectory solutions that were ultimately arrived at and used herein.

respectively, which was significantly greater than the Bronx girls' rates of 0.63 ($t = 4.25$; $p < .001$), 0.46 ($t = 3.46$; $p < .001$), and 0.41 ($t = 2.75$; $p < .01$). Similarly, the San Juan boys' delinquency rate was significantly greater than the San Juan girls' rate at wave 1 (0.84 vs. 0.47; $t = 3.70$; $p < .001$), wave 2 (0.41 vs. 0.26; $t = 2.99$; $p < .001$), and wave 3 (0.36 vs. 0.22; $t = 2.90$; $p < .001$).

Variables

Dependent Variable—The items comprising the delinquency scale used to estimate the trajectories were based on a common self-report delinquency measure (Elliott, Huizinga, & Ageton, 1985). Each question asked the youth to respond as to whether they committed the particular act in the prior year (no/yes). Example items include: “On purpose broken or damaged or destroyed something that did not belong to you?”; “Taken something from a store without paying for it?”; “Carried a hidden weapon?”; “Hit, slapped, or shoved other kids or gotten into a physical fight with them?”; “Skip school without an excuse?”; “Drunk any beer, wine, or any other liquor?”; “Smoked marijuana, weed, pot, or phillies (or blunts)?”; and “Attacked someone with a weapon or to seriously hurt or kill them?” The “yes” responses were summed to create a ‘variety’ scale (Hindelang, Hirschi, & Weis, 1981), with higher scores indicating greater involvement in delinquency.ⁱⁱⁱ

Independent Variables—Following prior research, a series of key risk factors commonly used in US-based delinquency studies with non-Hispanic samples (Chung, Hill, Hawkins, Gilchrist, & Nagin, 2002; Loeber & Farrington, 1998; Piquero, Farrington, & Blumstein, 2003) were included from the first interview in order to determine if they were associated with group membership. Covariates listed below were also used to examine the possible sex and site differences in how these factors distinguish the trajectories.

Attitudes toward Delinquency ($\alpha = 0.93$): Consistent with Akers' (1985) social learning theory and prior research utilizing a similar scale (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998), this was a 39-item scale that reflected the level of a youth's permissive attitudes or *personal definitions* toward antisocial behavior. All items were based on Likert-type response options that ranged from ‘always wrong’, to ‘sometimes right’, to ‘almost always right.’ Higher scores signaled the possession of a greater amount of positive attitudes favorable toward antisocial behavior.

Sensation-Seeking ($\alpha = 0.72$): In line with Gottfredson and Hirschi's (1990) general theory of crime and its risk-taking element in particular, a 10-item scale derived from previous research (Russo, Lahey, Christ, Frick, McBurnett, Walker, Loeber, Stouthamer-Loeber, & Green, 1991; Russo, Stokes, Lahey, Christ, McBurnett, Loeber, Stouthamer-Loeber, & Green, 1993) was included to gauge a youth's preference for thrill- and adventure-seeking. Items were coded such that higher scores indicated a greater proclivity for participating in risky behaviors.

Coercive Discipline ($\alpha = 0.67$): Also consistent with Gottfredson and Hirschi, a 6-item measure of the youth's perception of the quality of their parent(s)' disciplining behaviors was incorporated as a risk factor. The items were based on those provided in Goodman,

ⁱⁱⁱWe acknowledge that inclusion of a few items in one wave but not in subsequent waves may be exerting some effect on our analysis; however, there were only a handful of cases (<1%) where some of the items changed over time and the youth also reported delinquency endorsements. This rare change occurred in a few cases because several different delinquency items were included for the youth ages 5–9 and the youth ages 10 and older. As such, in the handful of cases where the youth “aged” out of the 5–9 year old cohort and into the 10 and older cohort, a few of the delinquency items changed. Supplementary analyses were performed without these few cases and the results were substantively similar to those presented in the text. We believe that our trajectory solutions are useful and important considering the scarcity of research on Hispanic offending.

Hoven, Narrow, Cohen, Fielding, Alegria, Leaf, Kandel, McCue-Horwitz, Bravo, Moore, & Dulcan (1998) reflecting the extent of the parent's use of coercive disciplining techniques such as ignoring or acting cold toward the child or adolescent when they did something wrong or yelling or swearing at the child or adolescent when they did something wrong. Higher scores reflect a greater endorsement of the coerciveness of their parent(s)' disciplining practices.

Exposure to Violence: Based on instruments used in previous research examining children and adolescent exposure to violence (Raia, 1995; Richters & Martinez, 1993), this variable represented a youth's degree and type of exposure to community violence insofar as being exposed to violence directly (i.e., the violence happened to them) or vicariously (i.e., they observed the violence targeted at another individual or they had heard of violence happening to another individual in their community). This measure was weighted such that if the violence happened directly to the youth the response was coded as 3, if the violence was witnessed by the youth the response was coded as a 2, and if the youth heard about the violence happening to someone they knew the response was coded as a 1. Each weighted response to a series of questions regarding exposure to a number of violent events was summed in order to create the weighted exposure to violence scale, where higher values represented greater exposure to violence.

Acculturation ($\alpha = 0.86$): Given the growing amount of research highlighting the importance of acculturation on Hispanic offending (Berry, 1998; Fridrich & Flannery, 1995; Maldonado-Molina et al., 2009; Perez et al., 2008; Smart & Smart, 1995; Vega, Gil, & Kolody, 2002), we included a 9-item scale modeled after the Cultural Life Style Inventory (Magafia, de la Rocha, Amsel, Magafia, Fernandez, & Rulnick, 1996; Mendoza, 1989). A sample question was: "In what language are the stories, comic books, or books that you read or are read to you? Are they..." with the response options ranging from two extremes on a bidirectional scale (i.e., 'only Spanish,' 'mostly Spanish,' both English and Spanish,' 'about equal,' 'mostly English,' and 'only English'). Higher scores indicated a greater preference for English and Americanized ethnic characteristics.

Analytic Strategy

Analyses proceeded in three stages. First, we used a series of mean difference tests to examine possible sex differences in offending and mean covariate levels of the risk factors across sex. Second, we used semi-parametric group-based mixture procedures to model the heterogeneity in offending (Nagin, 1999; Nagin & Land, 1993). Previous research indicates a substantial degree of heterogeneity in offending over the life-course generally (Nagin, 2005), as well as across sex (Broidy et al., 2003; D'Unger et al., 2002; Piquero et al., 2005). We used PROC TRAJ to estimate the group-based trajectories (Jones, Nagin & Roeder, 2001). In the final stage, we estimated multinomial regression models (with group membership as the dependent variable)^{iv} to examine if any of the covariates significantly distinguished whether a youth's delinquency could be classified in one particular trajectory versus another and if the risk factors were the same for boys or girls or varied across site.^v

^{iv}In order to clarify, the dependent variable in the multinomial logistic regression models is the specific trajectory group that an individual is assigned to. For instance, the dependent variable in the Bronx boys' multinomial logistic regression analysis is a categorical variable with four categories (1-trajectory group 1; 2-trajectory group 2; 3-trajectory group 3, and 4-trajectory group 4). For all of the multinomial logistic regressions, trajectory group 1 is omitted in order to serve as the reference category.

Results

Means-Difference Tests

The first set of results indicates that virtually all of the risk factors significantly varied across sex and that this variation was observed within the two sites (Table 1). The Bronx and San Juan boys reported more favorable attitudes toward delinquency, a greater proclivity for risk-taking behaviors, and greater parent(s)' use of coercive discipline than the Bronx and San Juan girls, respectively. In addition, the Bronx boys reported being more acculturated compared with the Bronx girls, and the San Juan boys demonstrated greater exposure to violence compared to the San Juan girls. It was also the case that the boys at both sites evinced more delinquency across all three waves compared to the girls.

Trajectory Estimations

In the second stage of the analysis, linear models were used to estimate the trajectories. A four group model provided the best fit for the Bronx sample (for both boys and girls), while a three group was best for the San Juan sample (for both boys and girls). Table 2 provides a description of the mean frequency of offending for each trajectory by sex, by site, and by wave, while Table 3 presents the maximum posterior membership probabilities for the Bronx and San Juan trajectories by sex. Overall, based on the posterior probabilities of group membership, the mean/median assignment probabilities for all groups were relatively high and all were above the 0.70 cutoff, indicating that individuals were assigned to one particular trajectory with little ambiguity.

Self-Reported Offending Trajectories

Boys—The Bronx boys' trajectories are shown in Figure 1, where a four-group solution provided the best fit. Group 1, representing 71.8% of the sample includes the non-offenders across the three time periods. Group 2 (16.5%) represents an initially low offending group who increase their offending—albeit slightly—in waves 2 and 3, but remain at a rate of less than 3 different offenses per year. The third group (9.7%) has a non-zero offending rate at wave 1, but then drops considerably by wave 2 and continues to decline to virtually no offending at wave 3. The fourth group (2.0%) begins at an initially high-rate of offending (6 different offenses per year) and increases to greater than 8 offenses by wave 3.

The San Juan boys' trajectories are shown in Figure 2, and point to an important distinction—a three group solution emerged for San Juan boys. Group 1 (74.5%) represents a non-offending group, as they exhibit less than one offense at each of the three time periods. The second group (23.7%) is somewhat similar, except that they have a slightly higher average offending score at each wave, although their general levels are one of very low offending. Group 3 (1.7%), an initially-high-delinquency group at wave 1 drops sharply at wave 2 and exhibits almost no offending at wave 3.

Girls—The Bronx girls' trajectories are shown in Figure 3, where a four-group solution provided the best fit. Group 1, representing 68.7% of the sample includes the non-offenders across the three time periods. Group 2 (25.1%) represents an initially low offending group

^yBecause we were dealing with count data with more zeros than would be expected under the Poisson assumption, we utilized the Zero-Inflated version of the Poisson mixture model (ZIP). Model selection is based on an examination of the Bayesian Information Criterion (BIC), which is the log-likelihood evaluated at the maximum likelihood estimate less one-half the number of parameters in the model times the log of the sample size (Schwartz, 1978). For a given model, BIC is calculated as: $BIC = \log(L) - 0.5k\log(N)$, where L is the value of the model's maximized likelihood, N is the sample size, and k is the number of parameters in the model, which is determined by the order of the polynomial used to model each trajectory and the number of groups (Nagin, 2005). More parsimonious models are favored as a 'penalty' when a decision is made to complicate the model by adding another group. Model precision is gauged by posterior probabilities of group membership.

who remain at the roughly the same rate of offending across waves 2 and 3, but do show a decline. The third group (2.2%) begins with a rather high rate of offending at wave 1, but then drops to almost no offending by wave 3. The fourth group (4.0%) begins at an initially high rate of offending (3 different offenses per year), and slightly increases to about 5 offenses at waves 2 and 3.

The San Juan girls' trajectories (Figure 4) point to some interesting distinctions as well, notably that a three group solution emerged for San Juan girls. Group 1 (80.5%) represents a non-offending group, as they exhibit less than one offense at each of the three time periods. The second group (18.4%) is somewhat similar to the first group and exhibits a fairly low but stable offending rate across the three time periods. Group 3 (1.1%), an initially-high-delinquency group, includes individuals with a very high offending rate at wave 1, dropping sharply at wave 2, and almost no offending at wave 3.^{vi}

Risk/Protective Factors Associated with Group Membership

Next, we examined the risk factors that were associated with the trajectories. We also included risk factors that account for the unique socio-cultural experiences that Hispanics may encounter such as acculturation, and investigated how these risk factors varied by site/sex (Table 4). Among the Bronx boys and girls, the results indicate that, aside from the delinquency differences, four of the five risk/protective factors (attitudes toward delinquency, sensation seeking, exposure to violence, and coercive discipline) were significantly different across the four trajectories, while all five risk factors were significantly different across the three San Juan boys' and girls' trajectories. Tukey's *b* post-hoc tests indicate that attitudes toward delinquency, preference for sensation-seeking, and exposure to violence significantly distinguish the trajectories for the Bronx boys and girls, whereas these same factors with the addition of acculturation significantly distinguish the offender trajectories for the San Juan boys and girls. Further, the group-based mean offending frequency was significantly different for both the Bronx and San Juan boys and girls across the majority of the waves.

Multivariate Analysis

Finally, we explore how these factors simultaneously differentiate the groups for the two sites across sex. Multivariate results estimated from a series of multinomial logistic regression models are provided in Tables 5 and 6. Across all four estimations, the non-offender group serves as the reference group to which we compare each of the non-non-offender trajectories.^{vii} These results are presented separately for the Bronx and San Juan samples and by sex. The results for the Bronx boys demonstrate that sensation-seeking and exposure to violence are significant discriminators for all of the offender groups compared to the non-offender (group 1) trajectories. There is also some evidence that the youth's attitudes toward delinquency and their perception of their parent(s)' use of coercive discipline increase their likelihood of being assigned to a non-offender trajectory. Similarly, the Bronx girls' results also reveal that their attitudes toward delinquency, sensation-seeking, exposure to violence, and their perception of their parent(s)' use of coercive discipline ($p < .10$) significantly distinguish the trajectories, and are in the expected direction.

^{vi}It is important to note that the significant G3 offending rates in wave 1 and the subsequent drop in the G3 trajectories obtained for San Juan boys and girls after wave 1 is not the result of an outlier in wave 1. The range in delinquency for San Juan boys in G3 is from 7 to 20 at wave 1 (with 10 of the 12 boys reporting scores higher than 10 in wave 1), and 7 of the 12 boys reporting scores of 0 or 1 at wave 2 and 10 of the 12 boys reporting scores of 0 or 1 at wave 3. The range in delinquency for San Juan girls in G3 for wave 1 is 6 to 19 (with 4 of the 7 girls reporting scores higher than 8 in wave 1). Further, 6 of the 7 girls reported scores of 0 or 1 at wave 2 and 0 counts were reported for all of the girls by wave 3.

^{vii}Multicollinearity was not a problem as nearly all of the correlations among the risk factors were small and none of the correlations were larger than 0.26 for the Bronx sex-specific analyses or 0.27 for the San Juan sex-specific analyses.

Findings for the San Juan youth were substantively similar to those from the Bronx analyses. Compared to the non-offending group, all of the offending trajectories report more exposure to violence and with a few exceptions the youth's attitudes toward delinquency, sensation-seeking, and the youth's perception of their parent(s)' use of coercive discipline are significant predictors of trajectory membership. Despite the site-specific similarities in how the risk factors discriminated between the trajectories, there was an interesting difference across the two sites, with acculturation increasing delinquency among San Juan girls (G2 and G3) but not San Juan boys.

Discussion

This study examined sex similarities/differences in offending trajectories among Hispanic male and female youth and also explored how several risk/protective factors and ethnic-specific measures significantly distinguished trajectories across both sex and site (Bronx, New York vs. San Juan, Puerto Rico). The trajectory solutions in the Bronx revealed stark similarities in the number of groups (four) and the patterns of the group-based trajectories across sex. There was a group that began with an initially high rate of delinquency at wave 1, but then dropped noticeably by wave 2 and 3 (Group 3) and there was chronic group that increased across all three waves (Group 4). Also, the mean offending rate for the remaining offender group (Group 2) was also similar for the Bronx boys and girls, yet the only difference was that group 2 for the boys still evidenced increasing delinquency in wave 3 whereas group 2 for the girls declined delinquency slightly from wave 2 to wave 3.

Further, the Bronx-based analyses indicated that perhaps there were more similarities than differences in the risk factors distinguishing the trajectories for the boys and girls. The same risk factors significantly distinguished group membership for the boys and girls, and it was also true that the high-rate offending groups (Groups 3 and 4) exhibited the highest levels across the risk factors. Results further indicated that sensation-seeking and exposure to violence were particularly salient for distinguishing group membership for the Bronx boys and girls. In comparison, the San Juan trajectories also revealed a considerable degree of similarities in the number of groups (three) and the overall patterns of offending for the San Juan boys and girls. The trajectory results identified three distinct groups among the San Juan boys and girls, where one group (Group 1) could be characterized as non-offenders, a second group (Group 2) exhibited fairly low and stable (but slightly declining) rates of delinquency, and a third group (Group 3) began with an initially high offending rate and declined over time. Results for the San Juan boys and girls provided evidence of sex similarities insofar as the same risk factors significantly distinguished group membership across sex (with the exception of acculturation for the San Juan girls). Similar to the Bronx results, exposure to violence was a risk factor for distinguishing groups for the San Juan boys and girls, along with attitudes favoring delinquency.

These results must be considered in light of several limitations. First, while we were able to assess the relative influence of variables on the likelihood of being assigned to one particular trajectory as opposed to another, our use of static correlates precluded an examination of possible changes over time in these same factors, which some studies have shown to be related to changes in delinquency (Horney, Osgood, & Marshall, 1995; Piquero, Brame Mazzerole, & Haapanen, 2002). Second, as one of the few studies to examine sex differences among Hispanic youth utilizing the trajectory methodology, the analysis was based on three observation points (see also Nagin & Tremblay, 2005). Future studies employing long-term follow-up are in order. Third, because the trajectories were estimated with self-report data, future studies should also examine official data. Finally, our measures were based on individual-level risk/protective factors and other neighborhood-level factors should be considered in subsequent studies.

In sum, results show that the number of offender groups, the patterns of offending, and the risk/protective factors for distinguishing groups are more similar than different for boys and girls, with the only difference that males have higher *levels* of both offending and risk factors. These findings resonate with those from Moffitt et al. (2001), and thus give cross-national, cross-cultural, cross-historical, and cross-site replication to the implication that sex-specific models may not be worth the complexity associated with them (Smith & Paternoster, 1987). Results are also similar to those reached by Moffitt, Arseneault, Jaffee, Kim-Cohen, Koenen, Odgers, Slutske, and Viding (2008) in their consideration of whether sex-specific diagnostic protocols for conduct disorder were required in the next edition of the DSM-V, where they concluded that there is no compelling evidence that sex-specific models would add to the predictive validity/accuracy of current models of antisocial behavior. This does not mean that while the overall framework and process may be the same, that there are not specific differences across the sexes within specific pathways in and out of crime. Yet, the results suggest that a more parsimonious model would be one which forgoes sex-specific pathways, instead placing greater emphasis on the contextual backdrop against which offending occurs. Finally, results are also consistent with studies identifying delinquency as an important issue among Hispanics and with recent findings regarding the importance of socio-cultural and familial constructs in predicting offending. It will be important to track Hispanic delinquency over time in order to assess whether the longitudinal pattern of – and correlates associated with – crime among Hispanics is similar to—or different from—the pattern and correlates observed for Whites and African-Americans.

These results also have important policy implications. First, the results reveal that Hispanic youth from both contexts (San Juan, Puerto Rico and Bronx, New York) are reporting initiating in a variety of delinquent behaviors early on in the life-course, and this finding holds across sex. As such, preventative interventions targeting youth in general and Hispanic youth in particular are likely to be more beneficial in curtailing early and continued involvement in problem behaviors rather than interventions that address delinquency in mid-to-late adolescence after the problem behaviors are already identifiable and pronounced. Furthermore, considering the fact that the number and shape of the trajectories for males and females were more similar than different early interventions that target the risk and protective factors identified in this study are likely to be effective for both male and female youth. Finally, the risk and protective factors that were shown to significantly distinguish trajectory group membership for these Hispanic youth (for the most part) appear to be similar to those that have been identified as being salient for non-Hispanic populations (see Chung et al., 2002). Therefore, perhaps the application of preventative interventions that have already been proven successful for reducing problem behaviors for non-Hispanic youth are likely to be effective with Hispanic youth as well (Piquero, Farrington, Welsh, Tremblay, & Jennings, 2009; Piquero, Jennings, & Farrington, 2010).

Taken together, the findings from this study suggest that future research examining sex similarities and differences among behavioral trajectories may benefit from adopting a view that there is likely to be more of a similar rather than different pattern in the number of behavioral trajectories and in the shape of male and female offending patterns. However, this similarity is not to be understood without an acknowledgement of the fact that male trajectories are more likely to evince higher mean levels of problem behavior over time compared to female trajectories. Furthermore, the evidence appears to be accumulating on the types of risk and protective factors that can significantly distinguish various offender trajectories from non-offender trajectories. Yet, what is less known in the literature is what risk and protective factors significantly distinguish certain offender trajectories from one another (e.g., increasing versus decreasing; low rate versus high rate; stable versus declining, etc.). Ultimately, future researchers should make a concerted effort to further

discriminate distinct offender trajectory types from one another all the while incorporating minority populations (particularly Hispanics) into their research.

Acknowledgments

The study was supported by the National Institute of Mental Health through grants R01 MH56401 (Dr. Bird, principal investigator), P20 MD000537-01 (Dr. Canino, principal investigator) from the National Center for Minority Health Disparities, and the Institute for Child Health Policy at the University of Florida. The authors acknowledge the important contributions of Vivian Febo, Ph.D., Iris Irizarry, M.A., Linan Ma, MSPH, and of all of the dedicated staff who participated in this complex study.

References

- Akers, RL. Deviant behavior: A social learning approach. Third Edition. Belmont, CA: Wadsworth; 1985.
- Berry, JW. Acculturative stress. In: Organista, PB.; Chun, KM.; Marin, G., editors. Readings in ethnic psychology. New York: Routledge; 1998. p. 39-57.
- Bird HR, Canino GJ, Davies M, Duarte CS, Febo V, Ramirez R, Hoven C, Wicks J, Musa G, Loeber R. A study of disruptive behavior disorders in Puerto Rican youth: I. Background, design, and survey methods. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006a; 45:1032–1040. [PubMed: 16926610]
- Bird HR, Davies M, Duarte C, Shen S, Loeber R, Canino GJ. A study of disruptive behavior disorders in Puerto Rican youth: II. Baseline prevalence, comorbidity, and correlates in two sites. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006b; 45:1042–1053. [PubMed: 16926611]
- Bird HR, Shrout PE, Davies M, Canino GJ, Duarte CS, Shen S, Loeber R. Longitudinal development of antisocial behaviors in young and early adolescent Puerto Rican children at two sites. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2007; 46:5–14. [PubMed: 17195724]
- Braithwaite, J. Crime, shame, and reintegration. Cambridge, UK: Cambridge University Press; 1989.
- Broidy L, Agnew R. Sex and crime: A general strain theory perspective. *Journal of Research in Crime and Delinquency*. 1997; 34:275–306.
- Broidy LM, Nagin DS, Tremblay RE, Bates JE, Brame B, Dodge KA, Fergusson D, Horwood JL, Loeber R, Laird R, Lynam DR, Moffitt TE, Pettit GS, Vitaro F. Developmental trajectories of childhood disruptive behaviors and adolescent delinquency: A six-site, cross-national study. *Developmental Psychology*. 2003; 39:222–245. [PubMed: 12661883]
- Cernkovich S, Giordano P. A comparative analysis of male and female delinquency. *The Sociological Quarterly*. 1979; 20:131–145.
- Cernkovich SA, Lanctôt N, Giordano PC. Predicting adolescent and adult antisocial behavior among adjudicated delinquent females. *Crime and Delinquency*. 2008; 54:3–33.
- Chavez EL, Oetting ER, Swaim RC. Dropout and delinquency: Mexican American and Caucasian non-Hispanic youth. *Journal of Clinical Child Psychology*. 1994; 23:47–55.
- Chung I, Hill KG, Hawkins JD, Gilchrist LD, Nagin DS. Childhood predictors of offense trajectories. *Journal of Research in Crime and Delinquency*. 2002; 39:60–92.
- Daly K, Chesney-Lind M. Feminism and criminology. *Justice Quarterly*. 1988; 5:497–535.
- Dreyfoos, JG. Adolescents at risk. New York: Oxford University Press; 1990.
- D'Unger AV, Land KC, McCall P. Sex differences in age patterns of delinquent/criminal careers: Results from Poisson latent class analyses of the Philadelphia Cohort Study. *Journal of Quantitative Criminology*. 2002; 18:349–375.
- Elliott, DS.; Huizinga, D.; Ageton, S. Explaining delinquency and drug use. Beverly Hills: Sage Publications; 1985.
- Farrington, DP.; Tonry, M., editors. Crime and punishment in western countries, 1980–1999, Crime and Justice. Vol. 33. Chicago: University of Chicago Press; 2005.
- Flowers, RB. Minorities and criminality. New York: Greenwood; 1988.

- Foley A. The current state of sex-specific delinquency programming. *Journal of Criminal Justice*. 2008; 36:262–269.
- Fridrich A, Flannery DJ. The effects of ethnicity and acculturation on early adolescent delinquency. *Journal of Child and Family Studies*. 1995; 4:69–87.
- Giordano, PC.; Cernkovich, SA.; Stoff, DM.; Breiling, J.; Maser, JD. Sex and antisocial behavior. In: Stoff, DM.; Breiling, J.; Maser, JD., editors. *Handbook of antisocial behavior*. New York, NY: John Wiley & Sons; 1997. p. 496-510.
- Gonzales, NA.; Knight, GP.; Morgan-Lopez, A.; Saenz, D.; Sirolli, A. Acculturation and the mental health of Latino youths: An integration and critique of the literature. In: Contreras, J.; Neal-Barnett, A.; Kerns, K., editors. *Latino children and families in the United States: Current research and future directions*. Westport, CT: Praeger Publishers; 2002. p. 45-76.
- Goodman SH, Hoven CW, Narrow WE, Cohen P, Fielding B, Alegria M, Leaf PJ, Kandel D, McCue-Horwitz S, Bravo M, Moore R, Dulcan M. Measurement of risk for mental disorders and competence in a psychiatric epidemiologic community survey: The National Institute of Mental Health Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) study. *Social Psychiatry and Psychiatric Epidemiology*. 1998; 33:162–173. [PubMed: 9567666]
- Gorman-Smith D, Loeber R. Are developmental pathways in disruptive behaviors the same for girls and boys? *Journal of Child and Family Studies*. 2005; 14:15–27.
- Heimer K, DeCoster S. The sexing of violent delinquency. *Criminology*. 1999; 37:277–318.
- Hill TD, Angel RJ. Neighborhood disorder, psychological distress, and heavy drinking. *Social Science and Medicine*. 2005; 61:965–975. [PubMed: 15955398]
- Hindelang, MJ.; Hirschi, T.; Weis, JG. *Measuring delinquency*. Beverly Hills, California: Sage; 1981.
- Hipwell A, Loeber R. Do we know what interventions are effective for disruptive and delinquent girls? *Clinical Child and Family Psychology Review*. 2006; 25:221–255. [PubMed: 17139554]
- Horney J, Osgood DW, Marshall IH. Criminal careers in the short-term: Intra-individual variability in crime and its relation to local life circumstances. *American Sociological Review*. 1995; 60:655–673.
- Jones BL, Nagin DS, Roeder K. A SAS procedure based on mixture models for estimating developmental trajectories. *Sociological Methods & Research*. 2001; 29:374–393.
- Lahey BB, Van Hulle CA, Waldman ID, Rodgers JL, D'Onofrio BM, Pedlow S, Rathouz P, Keenan K. Testing descriptive hypotheses regarding sex differences in the development of conduct problems and delinquency. *Journal of Abnormal Child Psychology*. 2006; 34:737–755. [PubMed: 17033935]
- Lancôt, N.; LeBlanc, M. Explaining deviance by adolescent females. In: Tonry, M., editor. *Crime and justice: A review of research*. Vol. vol. 29. Chicago: University of Chicago Press; 2002. p. 113-202.
- Leonard, E. *Women, crime, and society*. New York: Longman; 1982.
- Loeber, R.; Farrington, DP. *Serious and violent juvenile offenders: Risk factors and successful interventions*. Thousand Oaks, California: Sage; 1998.
- Loeber, R.; Farrington, DP.; Stouthamer-Loeber, M.; Van Kammen, WB. *Antisocial behavior and mental health problems: Explanatory factors in childhood and adolescence*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1998.
- MacDonald JM, Chesney-Lind M. Sex bias and juvenile justice revisited: A multiyear analysis. *Crime and Delinquency*. 2001; 47:173–195.
- Magafia J, de la Rocha O, Amsel J, Magafia HA, Fernandez M, Rulnick S. Revisiting the dimensions of acculturation: Cultural theory and psychometric practice. *Hispanic Journal of Behavioral Sciences*. 1996; 18:444–468.
- Maldonado-Molina M, Piquero AR, Jennings WG, Bird H, Canino G. Trajectories of delinquency among Puerto Rican children and adolescents at two sites. *Journal of Research in Crime and Delinquency*. 2009; 46:144–181.
- Mears D, Ploeger M, Warr M. Explaining the sex gap in delinquency: Peer influence and moral evaluations of behavior. *Journal of Research in Crime and Delinquency*. 1998; 35:251–266.
- Mendoza RH. An empirical scale to measure type and degree of acculturation in Mexican-American adolescents and adults. *Journal of Cross-Cultural Psychology*. 1989; 20:372–385.

- Messerschmidt, JW. Masculinities and crime: Critique and reconceptualization of theory. Rowan & Littlefield Publishers, Inc.; 1993.
- Messer J, Goodman R, Rowe R, Meltzer H, Maughan B. Preadolescent conduct problems in girls and boys. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2006; 45:184–191. [PubMed: 16429089]
- Miller, J. One of the guys: Girls, gangs and sex. New York: Oxford University Press; 2001.
- Miller JM, Miller HV, Zapata JT, Yin Z. Mexican-American youth drug use and acculturation: A note on the mitigating effects of contextual dynamics. *Journal of Drug Issues*. 2008; 38:199–214.
- Moffitt, TE. Natural histories of delinquency. In: Weitekamp, EGM.; Kerner, Hans-Jurgen, editors. Cross-national longitudinal research on human development and criminal behavior. Dordrecht, the Netherlands: Kluwer Academic; 1994.
- Moffitt, TE.; Caspi, A.; Rutter, M.; Silva, PA. Sex differences in antisocial behaviour: Conduct disorder, delinquency, and violence in the Dunedin Longitudinal Study. Cambridge: Cambridge University Press; 2001.
- Moffitt TE, Arseneault L, Jaffee SR, Kim-Cohen J, Koenen KC, Odgers CL, Slutske WS, Viding E. Research review: DSM-V conduct disorder: Research needs for an evidence base. *Journal of Child Psychology and Psychiatry*. 2008; 49:3–33. [PubMed: 18181878]
- Morenoff, JD. Racial and ethnic disparities in crime and delinquency in the United States. In: Tienda, M.; Rutter, M., editors. Ethnicity and causal mechanisms. New York: Cambridge University Press; 2005. p. 139-173.
- Moretti, MM.; Odgers, CL.; Jackson, MA. Girls and aggression: Contributing factors and intervention principles. New York: Kluwer Academic/Plenum Publishers; 2004.
- Naffine N. The masculinity-femininity hypothesis. *British Journal of Criminology*. 1985; 25:365–381.
- Nagin, DS. Group-based modeling of development. Cambridge, MA: Harvard University Press; 2005.
- Nagin DS, Land KC. Age, criminal careers, and population heterogeneity: Specification and estimation of a nonparametric, mixed poisson model. *Criminology*. 1993; 31:327–362.
- Nagin DS, Tremblay RE. What has been learned from group-based trajectory modeling? Examples from physical aggression and other problem behaviors. *The ANNALS of the American Academy of Political and Social Science*. 2005; 602:82–117.
- NMHA. Factsheet: Mental health and adolescent girls in the justice system. Alexandria, VA: National Mental Health Association; 2003.
- Odgers CL, Moffitt TE, Broadbent JM, Dickson N, Hancox RJ, Harrington H, Poulton R, Sears MR, Thomson WM, Caspi A. Female and male antisocial trajectories: From childhood origins to adult outcomes. *Development and Psychopathology*. 2008; 20:673–716. [PubMed: 18423100]
- Odgers CL, Moretti MM. Aggressive and antisocial girls: Research update and challenges. *International Journal of Forensic Mental Health*. 2002; 1:103–119.
- Pabron E. Hispanic adolescent delinquency and the family: A discussion of sociocultural influences. *Adolescence*. 1998; 33:941–955. [PubMed: 9886020]
- Padilla, AM. The role of cultural awareness and ethnic loyalty in acculturation. In: Padilla, AM., editor. Acculturation, theory, models, and some new findings. Boulder, CO: Westview Press; 1980. p. 47-84.
- Pepler, DJ.; Madsen, KC.; Webster, C.; Levene, KS. The development and treatment of girlhood aggression. Mahwah: Lawrence Erlbaum Associates; 2005.
- Pérez DM, Jennings WG, Gover AR. Specifying general strain theory: An ethnically relevant approach. *Deviant Behavior*. 2008; 29:544–578.
- Piquero AR, Brame R, Mazerolle P, Haapanen R. Crime in emerging adulthood. *Criminology*. 2002; 40:137–169.
- Piquero, AR.; Farrington, DP.; Blumstein, A. The criminal career paradigm. In: Tonry, M., editor. Crime and justice: A review of research. Vol. vol. 30. Chicago, IL: University of Chicago Press; 2003. p. 359-506.
- Piquero N, Sealock M. Sex and general strain theory: A preliminary test of Broidy and Agnew's sex/GST hypotheses. *Justice Quarterly*. 2004; 21:125–158.

- Piquero AR, Brame R, Moffitt TE. Extending the study of continuity and change: Sex differences in the linkage between adolescent and adult offending. *Journal of Quantitative Criminology*. 2005; 21:219–243.
- Piquero N, Gover A, MacDonald JM, Piquero AR. The influence of delinquent peers on delinquency. *Youth and Society*. 2005; 36:251–275.
- Piquero AR, Jennings WG, Farrington DP. On the malleability of self-control: theoretical and policy implications regarding a general theory of crime. *Justice Quarterly*. 2010 *forthcoming*.
- Piquero AR, Farrington DP, Welsh BC, Tremblay R, Jennings WG. Effects of early family/parent training programs on antisocial behavior and delinquency. *Journal of Experimental Criminology*. 2009; 5:83–120.
- Piquero, AR. Taking stock of developmental trajectories of criminal activity over the life course. In: Liberman, A., editor. *The long view of crime: A synthesis of longitudinal research*. New York: Springer; 2008. p. 23-78.
- Putallaz, M.; Bierman, KL. *Aggression, antisocial behavior, and violence among girls: A developmental perspective*. New York: Guilford Publications; 2004.
- Raia, JA. *Perceived social support and coping as moderators of children's exposure to community violence*. Unpublished doctoral dissertation. Los Angeles: University of California; 1995.
- Richters JE, Martinez P. The NIMH Community Violence Project: I. Children as victims of and witnesses to violence. *Psychiatry*. 1993; 56:7–21. [PubMed: 8488215]
- Rodriguez, O.; Zayas, LH. Hispanic adolescents and antisocial behavior: Sociocultural factors and treatment implications. In: Stiffman, AR.; Davis, LE., editors. *Ethnic issues in adolescent mental health*. Thousand Oaks, CA: Sage Publications; 1990. p. 147-171.
- Rodriguez O, Weisburd D. The integrated social control model and ethnicity. *Criminal Justice and Behavior*. 1991; 18:464–479.
- Russo MF, Lahey B, Christ M, Frick PJ, McBurnett K, Walker JL, Loeber R, Stouthamer-Loeber M, Green S. Preliminary development of a sensation-seeking scale for children. *Personality and Individual Differences*. 1991; 12:399–405.
- Russo MF, Stokes GS, Lahey B, Christ M, McBurnett K, Loeber R, Stouthamer-Loeber M, Green S. A sensation-seeking scale for children: Further refinement and psychometric development. *Journal of Psychopathology and Behavioral Assessment*. 1993; 15:69–86.
- Samaniego RY, Gonzales NA. Multiple mediators of the effects of acculturation status on delinquency for Mexican-American adolescents. *American Journal of Community Psychology*. 1999; 27:189–210. [PubMed: 10425699]
- Schwartz G. Estimating dimensions of a model. *Annals of Statistics*. 1978; 6:461–464.
- Smart JF, Smart DW. Acculturative stress of Hispanics: Loss and challenge. *Journal of Counseling and Development*. 1995; 73:390–396.
- Smith DA, Paternoster R. The sex gap in theories of deviance: Issues and evidence. *Journal of Research in Crime and Delinquency*. 1987; 24:140–172.
- Sommers I, Fagan J, Baskin D. Sociocultural influences on the explanation of delinquency for Puerto Rican youths. *Hispanic Journal of Behavioral Sciences*. 1992; 15:36–62.
- Synder, HN.; Sickmund, M. *Juvenile offenders and victims: 2006 National report*. Washington, D.C.: Office of Juvenile Justice and Delinquency Prevention; 2006.
- Steffensmeier DJ, Allan E. Sex and crime: Toward a sexed theory of female offending. *Annual Review of Sociology*. 1996; 22:459–487.
- Steffensmeier D, Schwartz J, Zhong H, Ackerman J. An assessment of recent trends in girls' violence using diverse longitudinal sources: Is the sex gap closing? *Criminology*. 2005; 43:355–406.
- Vega WA, Gil AG, Kolody B. What do we know about Latino drug use? Methodological evaluation of state databases. *Hispanic Journal of Behavioral Sciences*. 2002; 24:395–408.
- Watts, WD.; Wright, LS. The drug use-violent delinquency link among Mexican-Americans. In: De La Rosa, M.; Lambent, EY.; Gropper, B., editors. *Drugs and violence: Causes, correlates, and consequences (NIDA Research Monograph 103)*. Rockville, MD: National Institute on Drug Abuse; 1990.

- Weitekamp, E.; Kerner, H., editors. Cross-national longitudinal research on human development and criminal behaviour. Dordrecht: Kluwer Academic Publishers; 1994.
- Yin Z, Katims DS, Zapata JT. Participation in leisure activities and involvement in delinquency by Mexican American adolescents. *Hispanic Journal of Behavioral Sciences*. 1999; 21:170–185.
- Zahn M. The causes of girls' delinquency and their program implications. *Family Court Review*. 2007; 45:456–465.
- Zahn, MA.; Brumbaugh, S.; Steffensmeier, D.; Feld, BC.; Morash, M.; Chesney-Lind, M.; Miller, J.; Payne, A.; Gottfredson, DC.; Kruttschnitt, C. Violence by teenage girls: Trends and contexts. U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention; 2008.

Figure 1.
Bronx Sample: Boys' Delinquent Trajectories

Figure 2.
San Juan Sample: Boys' Delinquent Trajectories

Figure 3.
Bronx Sample: Girls' Delinquent Trajectories

Figure 4.
San Juan Sample: Girls' Delinquent Trajectories

Table 1

Bronx and San Juan Samples: Sex Differences

Variables	Boys			Girls				
	Mean	SD	Minimum	Maximum	Mean	SD	Minimum	Maximum
Bronx sample (n=1,138)								
Youth Attitudes *	3.50	5.23	0.00	47.00	2.92	4.32	0.00	40.00
Sensation-Seeking ***	4.19	2.57	0.00	10.00	3.03	2.35	0.00	10.00
Coercive Discipline ***	0.43	0.59	0.00	3.00	0.32	0.49	0.00	2.50
Exposure to Violence	2.66	3.56	0.00	33.00	2.36	3.40	0.00	18.00
Acculturation **	3.66	0.63	1.00	5.00	3.56	0.62	1.00	5.00
Delinquency (wave 1) ***	1.03	1.85	0.00	17.00	0.63	1.33	0.00	11.00
Delinquency (wave 2) **	0.77	1.66	0.00	14.00	0.46	1.14	0.00	8.00
Delinquency (wave 3) **	0.70	1.96	0.00	23.00	0.41	1.22	0.00	13.00
San Juan sample (n=1,353)								
Youth Attitudes **	3.73	6.95	0.00	53.00	2.80	5.97	0.00	54.00
Sensation-Seeking ***	3.33	2.29	0.00	10.00	2.44	2.25	0.00	10.00
Coercive Discipline ***	0.43	0.62	0.00	2.50	0.28	0.50	0.00	2.50
Exposure to Violence **	2.59	4.02	0.00	30.00	2.00	3.40	0.00	30.00
Acculturation	1.94	0.64	1.00	5.00	1.89	0.63	1.00	5.00
Delinquency (wave 1) ***	0.84	2.17	0.00	20.00	0.47	1.35	0.00	19.00
Delinquency (wave 2) **	0.41	1.06	0.00	9.00	0.26	0.70	0.00	6.00
Delinquency (wave 3) **	0.35	0.90	0.00	9.00	0.22	0.65	0.00	5.00

* p<.05

** p<.01

*** p<.001

Note. Asterisks denote significant sex differences.

Table 2

Bronx and San Juan Samples: Mean Delinquency Scores by Trajectory Group Assignment by Sex

<i>Group Assignment</i>	<u>Boys</u>			<u>Girls</u>		
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
<i>Bronx sample</i>						
G1	0.34	0.21	0.13	0.11	0.05	0.03
G2	1.40	1.75	2.17	0.98	0.81	0.66
G3	3.97	0.96	0.23	4.85	0.72	0.11
G4	6.34	7.33	8.48	3.05	3.77	4.66
<i>San Juan sample</i>						
G1	0.19	0.11	0.06	0.13	0.08	0.05
G2	1.68	1.34	1.06	1.39	1.15	0.95
G3	13.71	2.14	0.33	9.43	0.85	0.08

Table 3
Bronx and San Juan Samples: Mean (Median) Posterior Probabilities for Group Assignments

Group Assignment	Prob	Prob	Prob	Prob	25 th Percentile	75 th Percentile
	G1	G2	G3	G4		
Bronx sample						
Boys						
G1 (n=423; 71.8%)	.93(.97)	.05(.01)	.02(.00)	.00(.00)	.91	.99
G2 (n=97; 16.5%)	.09(.01)	.82(.87)	.07(.02)	.02(.00)	.67	.98
G3 (n=57; 9.7%)	.10(.01)	.12(.07)	.76(.74)	.02(.00)	.56	.95
G4 (n=12; 2.0%)	.00(.00)	.01(.00)	.01(.00)	.98(.99)	.98	.99
Girls						
G1 (n=377; 68.7%)	.89(.96)	.11(.04)	.00(.00)	.00(.00)	.90	.96
G2 (n=138; 25.1%)	.12(.05)	.81(.86)	.04(.00)	.03(.00)	.68	.93
G3 (n=12; 2.2%)	.00(.00)	.10(.07)	.86(.93)	.04(.00)	.71	.99
G4 (n=22; 4.0%)	.00(.00)	.08(.00)	.03(.00)	.89(.99)	.80	.99
San Juan sample						
Boys						
G1 (n=518; 74.5%)	.94(.99)	.06(.00)	.00(.00)	--	.93	.99
G2 (n=165; 23.7%)	.11(.02)	.89(.95)	.00(.00)	--	.85	.99
G3 (n=12; 1.7%)	.00(.00)	.03(.00)	.97(.99)	--	.99	.99
Girls						
G1 (n=530; 80.5%)	.96(.99)	.04(.00)	.00(.00)	--	.97	.99
G2 (n=121; 18.4%)	.17(.06)	.82(.93)	.01(.00)	--	.66	.99
G3 (n=7; 1.1%)	.00(.00)	.05(.00)	.95(.99)	--	.83	.99

* Note: Minimum and Maximum values presented for the group/prob(group) combination.

Table 4

Bronx and San Juan Samples: ANOVA Results and Group Mean Covariate Levels by Sex

Variables	Boys				Girls				f-test	G1	G2	G3	G4	f-test	
	G1	G2	G3	G4	G1	G2	G3	G4							
Bronx sample															
Youth Attitudes	2.72	5.38	5.86	4.67	11.92***	2.39	3.21	8.00	7.27	16.30***					
Sensation-Seeking	3.87	4.85	4.96	6.91	10.70***	2.68	3.45	5.25	5.09	14.40***					
Coercive Discipline	0.37	0.50	0.73	0.32	7.05***	0.28	0.39	0.42	0.55	3.38*					
Exposure to Violence	2.18	3.42	4.39	5.08	10.92***	1.87	2.92	5.33	5.64	14.81***					
Acculturation	3.67	3.63	3.70	3.43	0.75	3.56	3.57	3.57	3.49	0.10					
Delinquency (wave 1)	0.35	1.36	4.43	6.45	279.65***	0.11	1.15	6.00	3.00	310.36***					
Delinquency (wave 2)	0.18	2.28	0.88	8.60	329.97***	0.05	0.85	0.82	4.27	260.72***					
Delinquency (wave 3)	0.15	2.25	0.21	8.64	186.63***	0.00	0.84	0.09	4.63	228.33***					
San Juan sample															
Youth Attitudes	2.94	4.96	21.00	--	48.99***	2.42	3.73	16.00	--	20.82***					
Sensation-Seeking	3.10	4.02	3.58	--	10.45***	2.22	3.18	6.86	--	24.26***					
Coercive Discipline	0.35	0.62	1.45	--	31.43***	0.23	0.40	1.57	--	31.25***					
Exposure to Violence	1.93	3.68	15.75	--	99.49***	1.50	3.33	17.57	--	120.93***					
Acculturation	1.90	2.01	2.52	--	6.94**	1.86	2.00	2.64	--	7.09***					
Delinquency (wave 1)	0.23	1.80	14.00	--	1022.99***	0.10	1.55	9.71	--	690.13***					
Delinquency (wave 2)	0.08	1.31	2.20	--	132.04***	0.05	1.09	1.00	--	175.55***					
Delinquency (wave 3)	0.05	1.25	0.30	--	150.10***	0.05	0.96	0.00	--	128.25***					

+ p<.10

* p<.05

** p<.01

*** p<.001

Table 5

Bronx Sample: Multinomial Regression Results by Sex

<i>Variables</i>	Boys				Girls			
	<i>G#</i>	<i>b</i>	<i>Se</i>	<i>exp (B)</i>	<i>G#</i>	<i>b</i>	<i>se</i>	<i>exp (B)</i>
Youth Attitudes	G1	---	---	---	G1	---	---	---
	G2	0.08***	0.02	1.09	G2	0.03	0.03	1.03
	G3	0.08**	0.03	1.08	G3	0.13***	0.04	1.14
	G4	0.04	0.05	1.04	G4	0.11**	0.04	1.12
Sensation-Seeking	G1	---	---	---	G1	---	---	---
	G2	0.11*	0.05	1.11	G2	0.11*	0.05	1.12
	G3	0.11+	0.06	1.12	G3	0.37***	0.13	1.45
	G4	0.49**	0.15	1.62	G4	0.31**	0.10	1.37
Coercive Discipline	G1	---	---	---	G1	---	---	---
	G2	0.14	0.20	1.15	G2	0.33+	0.20	1.40
	G3	0.65**	0.22	1.91	G3	0.24	0.59	1.27
	G4	-0.69	0.73	0.50	G4	0.62+	0.39	1.86
Exposure to Violence	G1	---	---	---	G1	---	---	---
	G2	0.07*	0.03	1.07	G2	0.08*	0.03	1.08
	G3	0.10*	0.04	1.11	G3	0.17**	0.07	1.19
	G4	0.15*	0.07	1.16	G4	0.18***	0.05	1.20
Acculturation	G1	---	---	---	G1	---	---	---
	G2	-0.25	0.19	0.97	G2	0.14	0.17	1.14
	G3	0.14	0.25	1.15	G3	0.62	0.59	1.84
	G4	-0.19	0.52	0.83	G4	0.34	0.42	1.41

+ p<.10

* p<.05

** p<.01

*** p<.001

Table 6

San Juan Sample: Multinomial Regression Results by Sex

<i>Variables</i>	Boys			Girls		
	<i>G#</i>	<i>b</i>	<i>Se</i>	<i>G#</i>	<i>b</i>	<i>se exp (B)</i>
Youth Attitudes	G1	---	---	G1	---	---
	G2	0.02 ⁺	0.01	G2	0.02	0.02 1.02
	G3	0.09**	0.03	G3	0.12*	0.06 1.13
Sensation-Seeking	G1	---	---	G1	---	---
	G2	0.15***	0.04	G2	0.14**	0.05 1.15
	G3	0.01	0.18	G3	0.58 ⁺	0.32 1.78
Coercive Discipline	G1	---	---	G1	---	---
	G2	0.56***	0.15	G2	0.38*	0.20 1.47
	G3	0.70 ⁺	0.49	G3	0.84	1.08 2.30
Exposure to Violence	G1	---	---	G1	---	---
	G2	0.10***	0.03	G2	0.15***	0.03 1.17
	G3	0.29***	0.06	G3	0.55***	0.17 1.74
Acculturation	G1	---	---	G1	---	---
	G2	-0.01	0.15	G2	0.27 ⁺	0.17 1.31
	G3	0.37	0.46	G3	1.63 ⁺	1.14 5.08

⁺ p<.10

* p<.05

** p<.01

*** p<.001