



## Sex as a moderator and perceived peer pressure as a mediator of the externalizing–delinquency relationship: A test of gendered pathways theory

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### ABSTRACT

*Purpose:* The current study sought to determine whether sex moderated peer mediation of the externalizing–delinquency relationship as part of a larger test of the gendered pathways theory of crime.

*Methods:* Data gathered from 4,144 (2,079 males and 2,065 females) members of the National Longitudinal Survey of Youth–Child sample were subjected to simple correlational and moderated mediation analysis.

*Results:* Externalizing behavior and delinquency correlated equally in boys and girls but in testing a full moderated mediation model it was discovered that sex moderated the mediating effect of perceived peer pressure on the externalizing–delinquency relationship. Whereas externalizing behavior predicted delinquency in both boys and girls, perceived peer pressure only mediated the externalizing–delinquency relationship in boys.

*Conclusions:* These results support the gendered pathways to delinquency model to the extent that the relationship between childhood externalizing behavior and delinquency was mediated by perceived peer pressure in males but not females. The implications of these results for theoretical refinement of the gendered pathways approach and crime prevention and intervention are discussed.

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### Introduction

Much of what we know about crime is based on male data. Although male offenders have traditionally outnumbered female offenders by a ratio of 9 or 10 to 1, the gap has narrowed in recent years (Lauritsen, Heimer, & Lynch, 2009). Unfortunately, our understanding of female offending has lagged behind their growing presence in the criminal justice system. As such, it is imperative that we evaluate the generalizability of research findings obtained on male juvenile and adult offenders to female juvenile and adult offenders. Efforts to clarify the well-documented difference in crime prevalence rates for men and women have contributed to the development of several different theoretical models, to include the gendered pathways theory of crime initiation, maintenance, and desistance. The pathways model attempts to explain the gender gap in offending by identifying sex-based similarities and differences in offending and then integrating these points of overlap and contrast into a coherent theoretical perspective (Belknap, 2007; Chesney-Lind & Palko, 2004). Whereas more female than male offenders present with a history of physical and sexual abuse (Harlow, 1999) and more male than female offenders commit stranger violence (ABS, 2013), male and female offenders are similarly responsive to age of crime onset (Moffitt et al., 2008; Urban & Walters, 2014) and developmental context (Odgers et al., 2008).

One variable that has frequently been used to explain the gender gap in crime is association with deviant peers. Research has fairly convincingly demonstrated that delinquent peer associations mediate the relationship between sex and future offending in that males are more likely to be negatively affected by these associations than females (Augustyn & McGloin, 2013; Fagan, Van Horn, Hawkins, & Arthur, 2007; Jensen, 2003; Piquero, Gover, MacDonald, & Piquero, 2005). According to the results of a study by Mears, Ploeger, and Warr (1998) this is probably the result of both differential vulnerability and differential exposure in the sense that boys tend to have more delinquent peer associations than girls (differential exposure) and are also more likely to be negatively affected by these associations (differential vulnerability). Whereas the majority of studies on gender and crime have employed sex as the independent variable in a simple mediation analysis, it may be more productive to conceptualize sex as a moderator variable. Negriff, Ji, and Trickett (2011) discovered that exposure to delinquent peers fully mediated the relationship between earlier pubertal maturation and later delinquent behavior and that sex had no moderating effect on this relationship. Weerman and Hoeve (2012) also found that sex had little bearing on the ability of peers to influence subsequent delinquency. Early externalizing behavior may form a direct link to subsequent delinquent and criminal behavior or it may follow an indirect path through deviant peer associations. Early adolescents in one study who displayed externalizing behavior were at increased risk for associating with deviant peers in mid-adolescence and engaging in

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crime and violence in late adolescence and early adulthood (Brook, Brook, Rubenstone, Zhang, & Saar, 2011). Research denotes that while boys typically report higher levels of externalizing behavior than girls, early externalizing behavior is an effective predictor of subsequent delinquency in both sexes (Green, Gesten, Greenwald, & Salcedo, 2008; Leadbeater, Kuperminc, Blatt, & Hertzog, 1999; Simonoff et al., 2004). As was noted earlier, the gendered pathways model of crime holds that there are both similarities and differences in the mechanisms leading to male and female criminality. It would appear that one of these points of similarity may be continuity in antisocial behavior over the life-course in the form of a strong connection between early externalizing behavior and subsequent delinquency and crime.

Peers have been found to mediate the relationship between early risk factors and subsequent delinquency. However, this effect may be stronger in males than in females. In fact, the results of several studies indicate that while peers have a significant impact on delinquency in boys and men, they have no appreciable effect on delinquency in girls and women (Jensen, 2003; Piquero et al., 2005). Moreover, parental monitoring may moderate or mediate the peer-delinquency relationship. Tilton-Weaver, Burk, Kerr, and Stattin (2013), for instance, determined that parental monitoring of peer relationships formed a complex relationship with future delinquency in offspring. Under some circumstances parental monitoring inhibited the delinquency-promoting effects of deviant peer associations but under other circumstances parental monitoring actually accelerated the delinquency-promoting effects of deviant peer associations. In an earlier study, Bowman, Prelow, and Weaver (2007) had found that maternal monitoring of peer relationships suppressed the mediating effect of deviant peers on delinquent behavior in girls but not in boys. These results suggest that parental monitoring may explain sex moderation of peer mediated relationships. Whether parental monitoring inhibits or promotes deviant peer associations, findings from both the Tilton-Weaver et al. (2013) and Bowman et al. (2007) studies indicate that parental monitoring of peer relationships impacts on peer mediation of the externalizing-delinquency relationship and should probably be controlled in any studies on this relationship.

There were two distinct but interconnected hypotheses tested in this study:

1. Childhood externalizing behavior is just as effective in predicting delinquency in females as it is in predicting delinquency in males.
2. Sex moderates the externalizing → perceived peer pressure → delinquency relationship such that a significant mediation effect should occur in males but not in females, after controlling for basic demographic variables and parental monitoring of time spent with friends.

## Method

### Participants

The National Longitudinal Survey of Youth-Child (NLSY-C: Center for Human Resource Research, 2009) study consists of 11,504 children born to mothers of the nationally representative 1979 National Longitudinal Survey of Youth. As such, the NLSY-C is not a probability sample and its representativeness is unknown. The pool of participants for the current study was restricted to 6,861 members born between 1982 and 1993 because items for the dependent measure (delinquency in the last two years) were not administered prior to 2000 and data collection ended in 2010. Hence, members born before 1982 were beyond the reporting age for delinquency (17 to 18 years) and members born after 1993 had not yet reached age 17 by the end of the follow-up.

Two selection criteria were used to form the sample for the current study. First, a participant had to have received a parental rating on the Behavior Problems Inventory (BPI), the independent variable for this study, when they were 9 or 10 years of age. Second, a participant had to have complete data on either the mediating variable (perceived

peer pressure at age 13–14) or the dependent variable (delinquency at age 17–18). Of the 6,861 NLSY-C members born between 1982 and 1993, 2,398 (35.0%) were missing a valid BPI evaluation at age 9–10 years and another 319 (4.6%) members were missing data on both the mediating and dependent variables, resulting in a final sample of 4,144 participants.<sup>1</sup>

The average participant in the current sample of 4,144 NLSY-C members was 9.5 years of age ( $SD = 0.50$ ) at the time the BPI was completed. The gender breakdown for this sample was evenly divided between 2,079 males (50.2%) and 2,065 females (49.8%) and ethnically, the sample was 49.2% white, 29.7% black, and 21.1% Hispanic.

### Measures

The Behavior Problems Index (BPI: Peterson & Zill, 1986) is a structured interview procedure completed by one of the participant's parents, usually the mother, as part of the NLSY-C protocol. Twenty of the 28 BPI items have been found to load onto an externalizing factor, with the heaviest contributions coming from the antisocial, headstrong, and hyperactive subscales (Parcel & Menaghan, 1988). Each BPI item is rated on a three-point scale—often true (2), sometimes true (1), not true (0). As such, the maximum score a child can receive on the externalizing dimension is 40. Research indicates that the BPI produces scores with adequate internal consistency, test-retest reliability, and concurrent validity (Baker, Keck, Mott, & Quinlan, 1993). In the current study the BPI displayed good test-retest reliability over a period of two years ( $r = .52$ ).

Participants answered a dichotomous question on perceived peer pressure when they were 13 or 14 years of age. The question read: “do you feel pressured by friends to commit crime?” Respondents simply answered “yes” or “no” to this question. A “yes” response received a score of 1 and a “no” response received a score of 0. The perceived peer pressure item displayed a modest degree of test-retest reliability over a two-year period ( $r = .23$ ).

Like peer pressure, delinquency was measured dichotomously. Participants were asked if they had been convicted of a crime other than a traffic violation, had been placed on probation, or had spent time in jail or prison in the past two years. An affirmative answer to any one of these questions was scored positive (1) for delinquency, whereas a non-affirmative answer to all three questions was scored negative (0) for delinquency. The two-year test-retest reliability estimate for this item fell into the low-moderate range ( $r = .29$ ).

Four control variables were also included in this study. The first two control variables were age at the time the BPI interview was conducted (either 9 or 10) and participant race (classified as either white [1] or nonwhite [0]). The third control variable used a four-point scale (0 = never, 1 = rarely, 2 = sometimes, 3 = often) to rate the degree to which the participant's parents limited the amount of time they spent with friends on school nights. The parental limits item was measured concurrent to the perceived peer pressure item (i.e., ages 13–14) and was included in all regressions that contained the perceived peer pressure question. The fourth control variable was sex (1 = male, 2 = female). Sex also served as a moderator variable in the moderated mediation analyses.

### Procedure

Moderated mediation involves both moderation and mediation. As such, it is imperative that these two processes be defined. Moderation is concerned with specification. The relationship between the independent and dependent variables is moderated when it varies as a function of different levels or values of a third variable (Baron & Kenny, 1986). Being a two-class mutually exclusive category, sex lends itself well to a moderating role. Mediation, on the other hand, is designed to identify the mechanism linking an independent variable to a dependent variable (Baron & Kenny, 1986). A variable that mediates the independent-

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