

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Journal of Adolescence

journal homepage: www.elsevier.com/locate/jado

Differential genetic and environmental influences on developmental trajectories of antisocial behavior from adolescence to young adulthood

Yao Zheng^{a, b, *}, H. Harrington Cleveland^c^a Department of Psychology, Simon Fraser University, Canada^b Child & Family Research Institute, Vancouver, Canada^c Human Development and Family Studies, The Pennsylvania State University, USA

ARTICLE INFO

Article history:

Available online xxx

Keywords:

Genetic influence
 Environmental influence
 Developmental taxonomic theory
 Antisocial behavior
 Adolescent
 Gender difference

ABSTRACT

Little research has investigated differential genetic and environmental influences on different developmental trajectories of antisocial behavior. This study examined genetic and environmental influences on liabilities of being in life-course-persistent (LCP) and adolescent-limited (AL) type delinquent groups from adolescence to young adulthood while considering nonviolent and violent delinquency subtypes and gender differences. A genetically informative sample ($n = 356$, 15–16 years) from the first three waves of In-Home Interview of the National Longitudinal Study of Adolescent to Adult Health was used, with 94 monozygotic and 84 dizygotic pairs of same-sex twins (50% male). Biometric liability threshold models were fit and found that the male-specific LCP type class, *chronic*, showed more genetic influences, while the AL type classes, *decliner* and *desister*, showed more environmental influences. Genetic liability and shared environment both influence the persistence of antisocial behavior. The development of female antisocial behavior appears to be influenced more by shared environment.

© 2015 The Foundation for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

Introduction

Developmental taxonomic theory posits that adolescence-limited (AL) delinquents manifest antisocial behavior mostly during adolescence and desist thereafter, whereas life-course persistent (LCP) delinquents continue to engage in moderate levels of antisocial behavior from early childhood into adulthood (Moffitt, 1993). AL delinquents primarily engage in nonviolent delinquency (e.g., shop lifting) and are mainly influenced by temporary environmental factors (e.g., deviant peer affiliation), whereas LCP delinquents engage more in violent delinquency (e.g., physical fights) and are more influenced by genetic liability, neuropsychological problems, and criminogenic environment (DiLalla & Gottesman, 1989; Moffitt, 1993, 2006, 2008). In addition to these two groups that have been widely supported empirically (e.g., Barnes & Beaver, 2010; Moffitt, 2006, 2008; Piquero & Brezina, 2001), a group of individuals who are never or rarely delinquent (i.e., abstainer)

* Corresponding author. Institute for the Reduction of Youth Violence, Department of Psychology, Simon Fraser University, RCB 5246, 8888 University Drive, Burnaby, BC V5A 1S6, Canada. Tel.: +1 778 782 9911.

E-mail address: yza296@sfu.ca (Y. Zheng).

has also been consistently identified (e.g., [Boutwell & Beaver, 2008](#); [Jennings & Reingle, 2012](#); [Piquero, 2008](#); [Piquero, Brezina, & Turner, 2005](#)).

Substantial research has examined genetic and environmental influences on the development of antisocial behavior. Meta analyses and reviews reveal moderate additive genetic influences, modest shared environmental influences, and substantial non-shared environmental influences ([Ferguson, 2010](#); [Miles & Carey, 1997](#); [Moffitt, 2005](#); [Rhee & Waldman, 2002](#)). Meta analyses also show decreasing familial influences (genetic and shared environmental influences) and increasing non-familial influences with increasing age ([Ferguson, 2010](#); [Rhee & Waldman, 2002](#)), but others show increasing genetic influences and decreasing shared environmental influences ([Miles & Carey, 1997](#)).

Large scale population-based longitudinal twin studies have typically found that a common set of genetic factors and shared environmental factors can explain the persistence of antisocial behavior. For example, [Tuvbald, Narusyte, Grann, Sarnecki, and Lichtenstein \(2011\)](#) found that a common genetic factor explained 67% of the variance of a latent persistent antisocial behavior factor, and 26% by a common shared environmental factor from childhood to young adulthood. [Bartels et al. \(2004\)](#) reported 60% genetic and 34% shared environmental influences on the stability of externalizing behavior from age 3–12 years. [Silberg, Rutter, Tracy, Maes, and Eaves \(2007\)](#) found a common genetic factor explaining antisocial behavior from age 10–21 years, and a common shared environmental factor from age 14–21 years. Similar results were reported from age 10–17 years by [Van Hulle et al. \(2009\)](#) and from 8 to 20 years by [Wichers et al. \(2013\)](#). Lastly, using retrospective reports, [Jacobson, Prescott, and Kendler \(2002\)](#) reported that a single set of genetic factors influenced antisocial behavior from childhood (prior to 15 years) to adulthood (18 years and older).

The above-mentioned longitudinal studies primarily focused on changes in genetic and environmental influences across time, rather than differences in genetic and environmental influences on different developmental trajectories of antisocial behavior. The latter would require person-centered analyses that examine group differences, such as latent class growth analysis (LCGA; [Nagin & Tremblay, 2005a,b](#)). Few studies have directly examined genetic and environmental influences on antisocial behavior between AL and LCP delinquents to test the developmental taxonomic theory ([Fairchild, van Goozen, Calder, & Goodyer, 2013](#); [Moffitt, 2006, 2008](#)). An earlier study using a small sample of same-sex male twins reported 0.54 genetic influences and 0.30 shared environmental influences among early starters showing antisocial behavior, while no significant genetic influences among late starters ([Taylor, Iacono, & McGue, 2000](#)). Using the first 3 waves of In-Home Interview data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), [Barnes, Beaver, and Boutwell \(2011\)](#) reported 0.70 genetic influences on LCP delinquent membership, in contrast to 0.35 on AL delinquent and 0.56 on abstainer membership. Shared environmental influences did not significantly contribute to membership in either group. Using all 4 waves of Add Health data, [Barnes \(2013\)](#) later reported 0.51 genetic influences and 0.49 non-shared environmental influences on LCP group membership.

Although demonstrating different genetic and environmental influences across different developmental trajectories, previous studies mostly classified different groups based on subjective cut-off criteria (e.g., top 10% or 20% for LCP in [Barnes et al., 2011](#); onset of antisocial behavior before or after 12 years in [Taylor et al., 2000](#)) rather than adopting person-centered group-based modeling like LCGA. Second, many studies (e.g., [Bartels et al., 2004](#); [Tuvbald et al., 2011](#)) did not consider different subtypes of antisocial behavior (e.g., violent vs. nonviolent delinquency), which have been found to influence trajectory identification ([Fontaine, Carbonneau, Vitaro, Barker, & Tremblay, 2009](#); [Jennings & Reingle, 2012](#); [Zheng & Cleveland, 2013](#)). Twin studies have also found violent/aggressive delinquency to be more heritable than nonviolent/nonaggressive delinquency ([Burt, 2009](#); [Burt & Neiderhiser, 2009](#)), as well as different genetic and environmental influences in the development of aggressive and nonaggressive delinquency ([Eley, Lichtenstein, & Moffitt, 2003](#)). Third, some previous analyses were based on samples drawn from a wide age range (e.g., grades 7–12 in wave 1 in [Barnes et al., 2011](#)). Given the well-grounded age-graded development of antisocial behavior ([Moffitt, 1993](#); [Rutter, Giller, & Hagell, 1998](#)), analyzing longitudinal patterns in a sample with such a broad range of ages potentially confounds the identification of developmental trajectories by allowing age-related differences and changes across waves to be incorrectly interpreted as between-individual differences. Estimates of genetic and environmental influences may also be inaccurate given their changes across ages ([Burt & Neiderhiser, 2009](#); [Ferguson, 2010](#); [Miles & Carey, 1997](#); [Rhee & Waldman, 2002](#)).

Fourth, many previous studies either used a male-only sample (e.g., [Taylor et al., 2000](#)), or did not examine gender differences (e.g., [Barnes et al., 2011](#)). Despite males generally committing more antisocial behaviors than females, and being more likely to engage in violent delinquency ([Moffitt, 2001](#); [Rutter et al., 1998](#)), little attention has been paid to gender differences in developmental trajectories of antisocial behavior. Studies have found that males and females differ in the prevalence of different trajectories, and some groups may be gender-specific ([Fontaine et al., 2009](#)). For example, [Moffitt and Caspi \(2001\)](#) reported that males are more likely to be in LCP group than females (10:1 ratio), but no major gender difference in the prevalence of AL group (1.5:1 ratio). Other studies have found the prevalence of the low/abstainer group to be higher in females than in males (e.g., [Odgers et al., 2008](#)). Particularly, [Silverthorn and Frick \(1999\)](#) reported a female-specific group, the adolescence-delayed-onset trajectory who shared similar risk factors to the male LCP group but did not demonstrate antisocial behavior until adolescence. These gender differences in developmental trajectories of antisocial behavior could be explained by two processes: socialization process that discourages females from antisocial behavior and higher levels of protective factors (e.g., parental supervision) in females ([Fontaine et al., 2009](#); [Silverthorn & Frick, 1999](#)). Therefore, the decrease of parental supervision in adolescence may be linked with the emergence of antisocial behavior, particularly in females.

Download English Version:

<https://daneshyari.com/en/article/7241410>

Download Persian Version:

<https://daneshyari.com/article/7241410>

[Daneshyari.com](https://daneshyari.com)