

Effects of Onset and Persistence of Antisocial Behavior on Adulthood

Christopher Shu

University of Michigan

Abstract

There is little research that has examined the differential effects of onset (child versus adolescent) and persistence versus desistance of antisocial behavior from an early age to young adulthood on important life outcomes. A longitudinal, community-based sample of 340 children was used to examine the impact of onset and persistence of antisocial behavior on early adulthood functioning, such as mental health, criminal activity, and level of education. We created groups that matched the different possible trajectories of antisocial behavior and defined the groups as having an onset of antisocial behavior during childhood or adolescence and whether they persisted or desisted by age 18. The groups were then compared on level of antisocial behavior, education, and substance abuse. Only persistence was predictive of higher levels of antisocial behavior in adulthood. Moreover, only persistence was associated with problems with alcohol use, illicit drug use, missing school or work and getting in trouble with the police. Our results emphasize the importance and impact of the persistence of antisocial behavior on mental health and crime and suggest that future research should examine the importance of persistence relative to onset, as persistence is predictive of antisocial behavior and alcohol and drug abuse in adulthood over and above onset. Further research should examine how protective factors can prevent antisocial behavior from arising and/or desisting antisocial behavior in adolescents before they reach adulthood.

Keywords Antisocial behavior, Child-onset, Adolescent-onset, Persistence, Desistance, Risk Factors, Adult Outcomes

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Approximately three percent of men and one percent of women in the United States meet the criteria for Antisocial Personality Disorder (ASPD) as defined by the DSM IV-TR (Moran, 1999). However, they account for a disproportionate amount of crime, and the prevalence of ASPD among male prisoners can be as high as 60% (Moran, 1999). People with ASPD are twice as likely to commit certain crimes, such as theft, and 2.44 times more likely to commit multiple crimes in the past year than people without the disorder (Fridell, Hesse, Jaeger & Kuhlhorn, 2008). These individuals display a pervasive pattern of disregard for and violation of the rights of others, and fail to conform to social norms such as respecting what constitutes lawful behavior, leading to incarceration, and scarce employment prospects, all of which contribute negatively to their quality of life.

Previous research by Moffitt (1993) tried to reconcile two incongruous aspects of antisocial behavior – its continuity over age (many individuals engage in antisocial period throughout their lives without stopping), and a 10-fold increase in the prevalence of antisocial behavior during adolescence. Moffitt (1993) theorized that individuals with ASPD can be categorized into two groups. Individuals who engage in antisocial behavior beginning in childhood and continue into adulthood are classified as life-course persistent (LCP) offenders whereas those who engage in antisocial behavior only during adolescence are classified as adolescence-limited (AL) offenders. This paradigm helps to explain why certain people continuously engage in antisocial behavior and the increase in antisocial behavior during adolescence. The AL group (age 15-18) is of particular interest in the study of antisocial behavior because the majority of individuals who engage in antisocial behavior do so during adolescence, and because antisocial behavior during adolescence is quite prevalent, with the

majority of individuals engaging in some form of antisocial behavior during this time point (Moffitt, 1993). Moreover, adolescents (age 15-18) accounted for 5% of all index arrests (homicide, forcible rape, robbery, aggravated assault, burglary, larceny, and auto theft), more than any other age group (Blumstein, Cohen & Farrington, 1988). According to Moffitt (1993), these individuals desist upon reaching adulthood. However, their crimes in adolescence still constitute a major problem for society and understanding how to prevent AL antisocial behavior is an important area of research.

Moffitt (1993) also argued that AL offenders mimic the antisocial behavior of their LCP peers. Due to modern technological advances, teenagers in industrialized countries such as the United States, suffer from a maturity gap, a schism between one's biological age (physical and sexual development) and social age (lawful ability for adult behavior such as drinking). Those who do not engage in antisocial behavior therefore, may not suffer from a maturity gap, perhaps due to later maturity or environmental and/or genetic factors that make antisocial behavior unattractive. During puberty, AL offenders struggle to cope with this maturity gap. They feel physical and sexually mature but laws prohibit them from engaging in activities they view they should be able to engage in (e.g. drinking, sex, drugs). In contrast, although LCP adolescents are not psychosocially mature yet, they do not suffer from the maturity gap because they have already been engaging in antisocial behavior, such as using fake IDs or older friends to purchase cigarettes/alcohol, using illicit drugs, stealing cars, etc., since childhood. Thus, LCP adolescents are seen as role models because they already have experience obtaining things prohibited from them in adolescence, such as alcohol or drugs and can help AL offenders obtain these verboten items (Moffitt, 1993).

However, friendships between AL offenders and LCP offenders are typically only sustained in adolescence. In childhood, LCP individuals are seen as unpredictable and aggressive. Only when individuals become adolescents and enter a maturity gap where antisocial behavior can become a mechanism to achieve certain rewards do LCP individuals move from the periphery into more influential positions such as role models or friends. Similarly, once AL offenders reach adulthood, they are legally granted access to things barred from them in adolescence (alcohol, sex) and thus, no longer have a need to obtain them illegally (e.g. fake ID, asking older friends to buy alcohol). This harmony between physical/sexual maturity and social maturity helps AL offenders move out of the maturity gap. Whereas antisocial behavior was rewarding during adolescence, it becomes a source of punishment (barred from employment, jail-time) in adulthood (Moffitt, 1993).

Although Moffitt's paradigm is helpful in understanding the progression of antisocial behavior in LP and AL offenders, it is incomplete and fails to consider other progressions of antisocial behavior, such as engaging in antisocial behavior during childhood but desisting in adulthood, or commencing in antisocial behavior in adolescence and continuing past the point where adult roles and identities are typically established. Moreover, research by Fairchild, van Goozen, Calder and Goodyer (2013) found that contrary to the developmental taxonomic theory, severe antisocial behavior that emerges in adolescence rarely desists. Additionally, AL offenders may encounter certain snares whilst engaging in antisocial behavior (drug abuse, incarceration) that make it difficult for them to disengage from antisocial behavior once in adulthood and as such, not all individuals from the AL group cannot be assumed to naturally desist (Moffitt, 1993; McGee et al., 2011).

Instead, we posit that some people with childhood-onset antisocial behavior will desist by adulthood while some people with adolescent-onset antisocial behavior will persist into adulthood. Research by Moffitt, Caspi, Harrington, and Milne (2002) demonstrated that although adolescent-onset persistent individuals were less severe than child-onset persistent individuals in many aspects, they were elevated in impulsive personality traits, mental-health problems, substance dependence, financial problems, and property offenses. Also, although only very few individuals who onset in childhood desist and “fully recover”, many eschewed delinquency for long periods of time before reengaging intermittently in antisocial behavior throughout adulthood (Moffitt et al., 2002). By describing solely LCP and AL individuals and not those that may desist within the LCP category and persist in the AL category fails to capture the full variety of individual differences in antisocial behavior trajectories. The lack of coverage of these areas may hinder efforts to fully understand mechanisms regarding desistance. Furthermore, despite the large amount of research into antisocial personality disorder, no longitudinal study has to date repeatedly measured antisocial behavior in a representative sample of the same individuals from preschool to midlife (Moffitt, 1993; Moran 1999).

Given that antisocial behavior exists in more than two groups, we separated a large community-based cohort into five different groups, four by their developmental course of antisocial behavior and one as a control group with no significant antisocial behavior. We wished to ascertain the effect of onset (child versus adolescent) and persistence vs. desistance on the outcomes of crime/incarceration, level of education and comorbidity with substance abuse in adulthood. We hypothesized that persistence in antisocial behavior would lead to greater number of arrests and/or crimes committed because they engage in antisocial behavior for longer periods of time and since the probability an individual is arrested increases with each crime. Our

rationale for investigating level of education and substance abuse is derived from the negative behaviors associated with antisocial behavior, such as skipping school or underage drinking. Skipping school for example, would possibly lead to lower grades and an inability to attend college or graduate high school in four years whereas underage drinking or illicit drug use could lead to substance abuse.

Method

Sample

The sample was drawn from the ongoing Michigan Longitudinal Study (MLS; Zucker et al., 2000), a prospective study that follows a population-based community sample in mid-Michigan. Families were identified through court-arrest records (drunk-driving charges with a high blood alcohol level) and community canvassing, and matched families with nonalcoholic parents were identified through community canvassing in the same neighborhoods as the alcoholic families (Zucker et al., 2000). To be included in the longitudinal study, fathers had to reside with a biological son (aged 3-5) and the child's biological mother. The son could not have any evidence of fetal alcohol syndrome. Although the alcohol status of mothers in alcoholic families was allowed to vary, mothers in non-alcoholic homes were all non-alcoholic.

Due to our interest in the progression and effects of antisocial behavior from childhood on adulthood, we focused on the children in the MLS. The children were assessed by parents, teachers, and examiners in 3-year waves as follows: 3–5 years (wave 1), 6–8 years (wave 2), 9–11 years (wave 3), 12–14 years (wave 4), 15–17 years (wave 5), 18-20 (wave 6), and 21-23 (wave 7). Using parent and teacher reports, as well as self-reports, we were able to examine indicators of child, parent, family, peer group, school, and other environmental influences on risk and protective factors over the children's life course.

Assessment

The Antisocial Behavior Checklist-Revised (ASB-R; Eiden, Chavez, and Leonard, 1999) is a revision of an earlier antisocial behavior inventory utilized in the Rutgers Community Study (Zucker & Fillmore, 1968; Zucker & Barron, 1973). Questions asked individuals if they ever engaged in delinquent/illegal behaviors (skipping school, shoplifted). A series of reliability and validity studies with populations has shown adequate test-retest reliability (.91 over 4 weeks) and internal consistency (alphas = .67 to .93).

Developed by Achenbach (1991), the Child Behavior Checklist (CBCL) was used to measure the children's emotional, behavioral, and social functioning at waves 1–5 for parents. Alternative assessment forms – the teacher rater form (TRF) and youth self-report form (YSR) – were used for diagnostics at waves 2-5 for teachers and waves 4-5 for the individual. Each measure yields two broadband scales of Internalizing and Externalizing problems. In particular, we used the measure of externalizing behavior to define our onset and persistence/desistence groups.

The measure of externalizing behavior and internalizing behavior provides an objective assessment of the target child's social and emotional functioning. The instrument has been normed on children 4 to 16 years of age and yields standardized scores on eight narrow band subscales, two broad band subscales concerning externalizing and internalizing behavior and a total behavior problems score. Test-retest reliability of item scores on the CBCL range from .84 at a three-month interval (Achenbach, 1991). Adequate construct validity was established by correlations between CBCL scores and scores on a wide range of other measures of child behavior problems.

Alcohol and drug problems were assessed using the Drinking and Drug History Questionnaire (DDH; Zucker, 1991). The DDH is an inventory that assesses alcohol problems (arrested for alcohol-related issues, number of illicit drugs used). Evidence indicates that the DDH has good internal consistency, test-retest reliability, and concurrent validity (Dyson et al., 1998).

Lastly, the Collateral Information From Peers, a collection of different scales created by Chassin, Pitts & De Lucia (1999) contained demographics questions about work, education and family income.

Antisocial Behavior Groups

We examined 340 children from childhood to adulthood through self-assessments and assessments from parents and teachers, and sorted them into five different groups: child-onset-persist, child-onset-desist, adolescent-onset-persist, adolescent-onset-desist and a control group. Child-onset antisocial behavior was defined as having at least one parent or teacher at either waves 1 (ages 3-5), 2 (ages 6-8), or 3 (ages 9-11) rate the child as one standard deviation above the mean (T-score > 60) on the externalizing scale for the normative sample of individuals (i.e. population), and not the mean for the MLS scores. Adolescent-onset antisocial behavior was defined as not demonstrating antisocial behavior during childhood as evidenced by scoring lower than one standard deviation above the mean for the normative sample on the externalizing scale rated by parents and teachers. The individual also had to have one parent or teacher assessment and a self-report with a score of at least one standard deviation above the mean (T-score > 60) on the externalizing scale at waves 4 (age 12-14) or 5 (age 15-17).

Persistence is defined as pervasive and chronic engagement in antisocial behavior measured as scoring at least one standard deviation above the mean on the externalizing score in

childhood, adolescence and early adulthood, wave 6 (ages 18-20). The child-onset-persistent group was defined as an individual who scored one standard deviation above the mean on the externalizing scale at waves 4 or 5 after also fitting criteria for child-onset and scored one standard deviation above the mean for the ASB-R during adulthood, at wave 6 (age 18-20).

Persistence for adolescent-onset was defined as an individual who met the criteria for adolescent onset and scored at least one standard deviation above the mean for the ASB-R at wave 6. Child-onset desistence was defined as scoring lower than one standard deviation above the mean in the externalizing behaviors assessment in waves 4 (age 12-14) and wave 5 (age 15-17). Adolescent-onset desistence was defined as scoring higher than one standard deviation above the mean during either wave 4 or 5, but lower than one standard deviation above the mean for the ASB-R at wave 6 (18-20).

In using this methodology to select our groups, we were able to have groups larger than 20 for child-onset persist (n=24), child-onset desist (n=42), adolescent-onset persist (n=37), and adolescent-onset desist (n=23). The control group (n=214) did not score one standard deviation above the mean on the externalizing scale at any of the assessments.

Outcome Variables

We examined whether the groups differed at wave 7 (age 21-23) in three categories: antisocial behavior, substance abuse, and education. We used the ASB-R to measure antisocial behavior in adulthood. We also examined the relationship between antisocial behaviors and substance abuse through the DDH (DDH; Zucker, 1991).

Statistical Analysis

Thee 4 groups were compared on each measure using a 2 x 2 ANOVA with main effects for onset (child vs. adolescent), persistence (vs. desistence) course, and the onset x persistence

course interaction. Each antisocial behavior group was also separately compared to the control group. Only effects with p-values < 0.01 are described as statistically significant. Five of the outcomes were categorical variables and thus, the Pearson chi-square test was used to examine differences across groups and between the groups and the control.

Results

Table 1 shows the means, standard deviations, and effect sizes for externalizing scale scores from wave 1 (age 3-5) to wave 5 (age 15-17). A Cohen's $d = .8$, $.6$, and $.2$ demonstrate a large, medium and small effect size respectively. The child-onset persist group showed large effect sizes (Cohen's $d = .8$) throughout the five assessment waves, with all but one teacher assessment having a Cohen's $d > .8$. This was expected as the child-onset persistent group engages in antisocial behavior throughout the entirety of their lives, and as such, would score higher than the control group at all waves. The child-onset desist follows a predictable pattern as well, having large effect sizes (Cohen's $d > .8$) up until wave 4 and 5, where effect sizes diminish. Adolescent-onset-persist and adolescent-onset-desist groups also follow a predictable pattern for effect sizes in externalizing scale scores. Throughout childhood, the magnitude of difference between the adolescent-onset-persist and adolescent-onset-desist, and the control group is small and only becomes large (Cohen's $d > .8$) starting at adolescence or wave 4 (12-14).

Similarly, the groups follow the pattern for effect sizes in internalizing scale scores. The child-onset-persist group continually shows effect sizes of medium to large (Cohen's $d > .6$) throughout all 5 waves. The child-onset-desist group however, shows medium to large effect sizes until wave 4, where effect sizes become small (Cohen's $d < .2$). Furthermore, both adolescent-onset-persist and adolescent-onset desist groups show small effect sizes for internalizing scale scores (Cohen's $d < .1$) until wave 4, where effect sizes become large

(Cohen's $d > .8$). The similarity in pattern for effect sizes between the groups and the control for both externalizing and internalizing scale scores demonstrates convergent validity of our groups as research as continually shown both types of behaviors are linked to negative social and educational functioning (Guttmanova, Szanyi & Cali, 2007).

Antisocial Behavior, Alcohol-Related Problems and Drug Use

Table 3 presents the means, standard deviations, F-statistics and effect sizes of the four groups compared to the control for the main effects of onset and persistence for the 2 x 2 ANOVAs for the ASB-R total score, number of problems due to alcohol use and number of illicit drugs used garnered from the DDH. Both child-onset and adolescent-onset persistent antisocial behavior were associated with high-levels of antisocial behavior, problems from alcohol use, and the number of illicit drugs used ($F(1, 499.3)=25.2, p < .001$ for antisocial behavior and problems from alcohol use $F(1, 632.2)=15.9, p < .001$ and $F(1,88.3)=15.0, p = .002$ for number of illicit drugs used). Both child-onset and adolescent-onset also displayed large effect sizes (Cohen's $d > .8$) for antisocial behavior, problems from alcohol use and number of illicit drugs used whereas both child-onset and adolescent-onset displayed small effect sizes (Cohen's $d < .2$). No difference however, was found between the child-onset and adolescent-onset persistent groups.

Onset did not predict ASB-R total scores, problems with alcohol use, or the number of illicit drugs used. ASB-R total scores for onset did not significantly differ from the control group. Independent sample t-tests for child-onset desist and adolescent-onset desist compared to the control yielded $t(41) = -.28$ and $t(22)=-.14$ respectively and $p > .4$. Similarly, problems from alcohol use showed no difference between the child-onset or adolescent-onset groups, and the control group. However, though onset was not predictive of number of illicit drugs used, the

onset group differed significantly from the control group in the number of illicit drugs used. Independent t-test for child-onset and adolescent-onset showed $t(65) = -1.9$ and $t(59) = -2.4$ and $p = .04$ and $.01$ respectively. As expected, effect sizes for persistence were large (Cohen's $d > .8$), for ASB-R total score, problems from alcohol use and number of illicit drugs used and small (Cohen's $d < .2$) for onset.

Education, Income, Work, Incarceration

Table 4 reports the percentage of individuals in each group that have gone beyond high school education, gotten in trouble with police, been arrested for a drinking offense, missed school or work, and whose familial income is below \$30,000. Familial income and education level were garnered by demographics questions contained in the Collateral Information from Peers assessment. Data on getting in trouble with police, arrests from drinking offense and missed school or work came from the DDH. Only persistence was associated with missing school or work ($p = .002$) and getting in trouble with the police ($p = .01$). The onset group approached significance in arrests from a drinking offense ($p = .05$). No other variable was associated with onset or persistence. However, all four groups differed significantly from the control group in number of people who missed school or work ($p < .001$). Also, the adolescent-onset desist group was the only group to differ from the control in number of individuals with more than high school level education, ($\chi^2(1) < .001$).

Discussion

This is the one of the few studies to examine a cohort of individuals periodically from childhood to adulthood in their engagement of antisocial behavior. In doing so, this study attempted to better understand the effects of onset and persistence versus desistence on adult antisocial behavior, crime, and substance abuse. Our results for these outcomes at wave & (ages

21-23) indicate the need to focus on persistence rather than onset to decrease antisocial behavior in adulthood. The findings show, as predicted, that individuals categorized into the child-onset and adolescent-onset persist group display the most aversive outcomes in adulthood in the realms of antisocial behavior and drug and alcohol-related problems.

Consistent with past findings by Moffitt (1993), those who begin exhibiting antisocial behavior in adolescence may be more likely to be arrested for alcohol-related offenses due to their inexperience; individuals who onset in childhood have already had experience with alcohol. Education, however, was not associated with either onset or persistence. This may be in part because the assessment takes place in wave 6 (ages 18-20) and not during wave 7 (21-23). During this time, adolescents decide whether or not to attend college and a percentage drop out of college as well.

Limitations

Although our research adds to the existing literature on antisocial behavior, there are limitations in our study. In particular, though our study involves a longitudinal study of children into adulthood, the participants have only reached early adulthood (ages 21-23) and thus, are unable to provide data on certain aspects of adulthood, such as marriage, chronic adulthood incarceration, job satisfaction, or salary until later on in their lives. Furthermore, many individuals lacked data for critical time points (wave 4 and 5), reducing the size of our groups. Also, assessments for mental health (depression and anxiety) and education data were missing at wave 7 (21-23). Moreover, our study is purely associative and correlational and does not demonstrate any causal relationships between antisocial behavior and any other variable.

Future Research

Future studies may wish to examine genetic (e.g. twin studies) and environmental factors (e.g. siblings) that contribute to antisocial behavior and whether certain societies have a higher prevalence of individuals who engage in antisocial behavior. Our research also undermines Moffitt's developmental taxonomic theory as the majority of adolescent-onset individuals in our study persisted in antisocial behavior into adulthood. Thus, future research may also wish to examine possible mechanisms that help individuals desist from antisocial behavior. Other avenues for research include a deeper investigation of the control group and why certain individuals never engage in antisocial behavior. Possible research might also include interventions for people who fall into snares (drug use, incarceration) in adolescence (McGee et al., 2011). Other intervention methods may include helping individuals who onset in childhood, both as curative for them and preventative from those who mimic them in adolescence.

Although previous research on antisocial behavior has built a foundation, more longitudinal data is needed to create interventions and tackle the most obvious result of antisocial behavior – crime. Furthermore, more studies that can demonstrate causal links between antisocial behavior and the environment and/or genetics (e.g. twin studies) are necessary and will help understand the etiological nature behind antisociality in our society.

References

- Achenbach, T. (1991a). Manual for the Child Behavior Checklist / 4-18 and 1991 Profile. Burlington, VT: University of Vermont Department of Psychiatry.
- Blumstein, A., Cohen, J., & Farrington, D. P. (1988). Criminal career research: Its value for criminology. *Criminology*, 26, 1-35.
- Chassin, L., Pitts, S.C., & DeLucia, C. (1999). The relation of adolescent substance use to young adult autonomy, positive activity involvement, and perceived competence. *Development and Psychopathology*, 11, 915-932.
- Dyson, V., Appleby, L., Altman, E., Doot, M., Luchins, D. J., & Delehant, M. (1998). Efficiency and validity of commonly used substance abuse screening instruments in public psychiatric patients. *Journal of Addictive Diseases*, 17, 57-76.
- Eiden, R. D., Chavez, F., & Leonard, K. E. (1999). Parent—infant interactions among families with alcoholic fathers. *Development and Psychopathology*, 11, 745-762.
- Fairchild, G., van Goozen, S., Calder, A., & Goodyer, I. (2013). Research review: Evaluating and reformulating the developmental taxonomic theory of antisocial behaviour. *Journal of Child Psychology and Psychiatry*, 54(9), 924-940. doi: 10.1111/jcpp.12102
- Fridell, M., Hesse, M., Jaeger, M., & Kühlnhorn, E. (2008). Antisocial personality disorder as a predictor of criminal behaviour in a longitudinal study of a cohort of abusers of several classes of drugs: relation to type of substance and type of crime. *Addict Behav*, 33(6), 799-811. doi: 10.1016/j.addbeh.2008.01.001
- Guttmanova, K., Szanyi, J., & Cali, P. (2007). Internalizing and externalizing behavior problem scores: Cross-ethnic and longitudinal measurement invariance of the behavior problem

index. *Educational and Psychological Measurement*, 68(4), 676-694. doi:

10.1177/0013164407310127

- McGee, T. R., Hayatbakhsh, M., Bor, W., Cerruto, M., Dean, A., Alati, R., Mills, R., & Williams, G. (2011). Antisocial behaviour across the life course: An examination of the effects of early onset desistence and early onset persistent antisocial behaviour in adulthood. *Australian Journal of Psychology*, 63, 44-55. doi: 10.1111/j.1742-9536.2011.00006.x
- Moffitt, T. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100(4), 674-701. doi: 0033-295
- Moffitt, T., Caspi, A., Harrington, H., & Milne, B. (2002). Males on the life-course-persistent and adolescence-limited antisocial pathways: Follow-up at age 26 years. *Development and Psychopathology*, 14, 179-207.
- Moran, P. (1999). The epidemiology of antisocial personality disorder. *Soc Psychiatry Psychiatr Epidemiol*, 34, 231-242.
- Robins, L. N., Helzer, J. E., Croughan, J., & Ratcliff, K. S. (1981). National Institute of Mental Health Diagnostic Interview Schedule: Its history, characteristics, and validity. *Archives of General Psychiatry*, 38, 381-389.
- Zucker, R. A., & Fillmore, K. M. (1968). Motivational factors and problem drinking among adolescents.
- Zucker, R. A., & Barron, F. H. (1973). Parental behaviors associated with problem drinking and antisocial behavior among adolescent males. In M. E. Chafetz (Ed.), *Research on alcoholism: I. Clinical problems and special populations* (DHEW Publication No. 74-675, pp. 276-296).

Zucker, R. A. (1991). Scaling the developmental momentum of alcoholic process via the lifetime alcohol problems score. *Alcohol and Alcoholism*, 26(Suppl. 1), 505- 510.

Zucker, R. (2000). Michigan longitudinal study assessment protocol In R. Zucker (Ed.), *Michigan Longitudinal Study Assessment Protocol*

Appendix

Table 1					
<i>Externalizing T-Scores at Waves 1-5</i>					
	Never	Child-onset Persist	Child-onset Desist	Adolescent-onset Persist	Adolescent- onset Desist
	n=214	n=24	n=42	n=37	n=23
Father Wave 1	50.2 (7.9)	59 (7.9)	57.4 (8.2)	54 (10.3)	55.6 (9.3)
Cohen's d		1.11	0.89	0.41	0.63
Mother Wave 1	51.2 (7.4)	63.2 (6.1)	59.0 (6.5)	55.5 (9.2)	53.3 (7.8)
Cohen's d		1.77	1.12	0.52	0.28
Father Wave 2	47.4 (6.8)	58.7 (7.1)	56.5 (8.6)	48.9 (8.1)	49.8 (8.1)
Cohen's d		1.63	1.17	0.2	0.32
Mother Wave 2	48.3 (7.2)	61.8 (6.6)	60.3 (7.4)	49.2 (9.1)	48.4 (8.2)
Cohen's d		1.95	1.64	0.11	0.01
Teacher Wave 2	48.4 (7.7)	57.2 (10.8)	51.9 (9.9)	51.5 (9.6)	52.0 (11.8)
Cohen's d		0.94	0.39	0.36	0.36
Father Wave 3	44.9 (7.3)	58.9 (7.6)	55.2 (9.1)	50.8 (9.0)	45.3 (8.8)
Cohen's d		1.88	1.25	0.72	0.05
Mother Wave 3	46.6 (7.6)	60.3 (6.6)	57.3 (8.1)	49.3 (6.9)	48.4 (8.7)
Cohen's d		1.92	1.36	0.37	0.22
Teacher Wave 3	47.2 (7.3)	58.2 (10.5)	53.1 (11.0)	52.1 (8.4)	49.4 (6.4)
Cohen's d		1.22	0.63	0.62	0.32
Father Wave 4	46.0 (7.7)	59.2 (7.2)	50.5 (7.2)	53.9 (8.2)	54.4 (10.3)
Cohen's d		1.77	0.6	0.99	0.92

Mother Wave 4	47.4 (7.6)	59.9 (6.9)	52.9 (8.6)	55.6 (9.1)	52.1 (10.0)
Cohen's d		1.72	0.68	0.98	0.53
Teacher Wave 4	47.2 (7.3)	53.2 (8.9)	46.7 (8.9)	54.4 (10.0)	54.2 (12.6)
Cohen's d		0.74	0.06	0.82	0.68
Self Wave 4	45.2 (8.6)	54.8 (9.0)	44.9 (8.9)	56.6 (11.2)	53.6 (10.6)
Cohen's d		1.09	0.03	1.14	0.87
Father Wave 5	43.1 (7.4)	60.1 (8.9)	47.7 (6.1)	55.3 (8.6)	51.3 (10.0)
Cohen's d		2.08	0.68	1.52	0.93
Mother Wave 5	44.2 (7.9)	60.5 (9.9)	46.4 (7.3)	55.6 (8.4)	53.2 (11.6)
Cohen's d		1.82	0.29	1.4	0.91
Teacher Wave 5	46.1 (7.1)	55.3 (6.9)	47.9 (8.0)	56.8 (9.3)	51.0 (8.3)
Cohen's d		1.31	0.24	1.29	0.63
Self Wave 5	45.2 (8.1)	60.4 (8.7)	47.2 (8.8)	59.2 (9.1)	57.4 (7.9)
Cohen's d		1.81	0.24	1.63	1.52

Note: Listed are means for each assessment and in parentheses are the standard deviations. The Cohen's d measures effect sizes of the groups compared to the never group. Cohen's d = .8 demonstrates large effects, = .6 demonstrates medium effects = .2 demonstrates small effects.

Table 2					
<i>Internalizing T-Scores at Waves 1-5</i>					
	Never	Child-onset Persist	Child-onset Desist	Adolescent- onset Persist	Adolescent- onset Desist
	n=214	n=24	n=42	n=37	n=23
Father Wave 1	47.9 (9.3)	52.1 (8.2)	51.6 (9.3)	50.1 (10.0)	51 (9.6)
Cohen's d		0.48	0.4	0.32	0.33
Mother Wave 1	48.3 (8.4)	53 (8.8)	52.7 (7.1)	53.3 (11.1)	52.6 (8.0)
Cohen's d		0.55	0.57	0.51	0.52
Father Wave 2	48.8 (9.0)	55.3 (9.2)	53.0 (9.6)	50.4 (8.6)	47.2 (7.8)
Cohen's d		0.71	0.45	0.18	0.19
Mother Wave 2	49.2 (9.6)	58.4 (8.5)	58.4 (9.8)	53 (9.5)	48.4 (7.0)
Cohen's d		1.01	0.95	0.4	0.1
Teacher Wave 2	49.8 (9.0)	53.4 (12.2)	53.6 (10.0)	51.7 (10.8)	51.9 (9.3)
Cohen's d		0.33	0.4	0.19	0.25
Father Wave 3	45.8 (9.0)	51.3 (11.0)	52.8 (9.5)	49.9 (7.4)	44.4 (7.4)
Cohen's d		0.55	0.76	0.5	0.17
Mother Wave 3	48.1 (8.8)	54.3 (9.5)	56.5 (9.3)	49.4 (10.7)	46.7 (10.7)
Cohen's d		0.68	0.93	0.13	0.14
Teacher Wave 3	49.4 (10.3)	51.9 (12.1)	53.6 (11.8)	47.9 (10.7)	50.6 (9.2)
Cohen's d		0.62	0.79	0.26	0.31
Father Wave 4	45.3 (9.0)	52.9 (9.2)	47.5 (10.1)	48.3 (6.4)	48.4 (10.7)
Cohen's d		0.84	0.23	0.38	0.31
Mother Wave 4	47.4 (9.5)	52.4 (8.5)	51.8 (11.3)	50.8 (9.5)	48.7 (9.9)

Cohen's d		0.53	0.42	0.36	0.13
Teacher Wave 4	48.3 (8.5)	51.6 (11.6)	48.8 (9.4)	49.9 (9.2)	53.3 (11.0)
Cohen's d		0.32	0.06	0.18	0.51
Self Wave 4	43.4 (8.9)	47.8 (9.9)	43.9 (11.4)	48.7 (10.6)	56.5 (12.2)
Cohen's d		0.47	0.05	0.54	1.23
Father Wave 5	43.6 (8.4)	49.6 (11.1)	45.6 (8.8)	50.1 (9.1)	47.0 (11.4)
Cohen's d		0.61	0.23	0.74	0.04
Mother Wave 5	45.6 (9.1)	51.8 (11.7)	47.3 (8.6)	50.4 (10.6)	49.2 (10.7)
Cohen's d		0.59	0.19	0.49	0.36
Teacher Wave 5	47.0 (8.2)	52.6 (10.5)	49.8 (9.7)	50.8 (9.6)	50.8 (9.5)
Cohen's d		0.6	0.31	0.43	0.43
Self Wave 5	42.1 (9.4)	51.1 (9.8)	43.2 (11.4)	50.2 (12.7)	52.3 (10.4)
Cohen's d		0.93	0.11	0.72	1.03

Note: Listed are means for each assessment and in parentheses are the standard deviations. The Cohen's d measures effect sizes of the groups compared to the never group. Cohen's d = .8 demonstrates large effects, = .6 demonstrates medium effects = .2 demonstrates small effects.

Table 3
Outcomes at Wave 7 (Age 21-23)

	Never	Child-onset Persist	Child-onset Desist	Adolescent-onset Persist	Adolescent-onset Desist	Onset	Persistence	Partial η^2
	n=214	n=24	n=42	n=37	n=23	F-statistic	F-statistic	Partial η^2
Antisocial Behavior total score	4.6 (4.1)	11.2 (6.4)**	4.8 (3.7)	8.3 (4.4)**	4.9 (3.5)	F(38.7)=2.0	F(499.3)=25.2	0.24
Number of Problems Reported Due to Alcohol Use	4.9 (5.1)	11.1 (6.8)**	5.7 (6.1)	10.2 (6.6)**	6.3 (5.3)	F(0.41)=.01	F(632.2)=15.9	0.12
Number of Illicit Drugs Used	1.1 (1.3)	4.0 (3.2)**	2.1 (2.5)	3.4 (2.1)**	1.9 (2.0)	F(5.6)=1.0	F(88.3)=15.0	0.11

Note: The values in the columns denote the means and standard deviations for the groups respectively.
Example: ** p < .001, one-tailed.

Table 4

Categorical Outcomes at Wave 7 (21-23)

	Never	Child-onset Persist	Child-onset Desist	Adolescent-onset Persist	Adolescent-onset Desist	Onset	Persistence
	n=214	n=24	n=42	n=37	n=23	Pearson Chi-Square	Pearson Chi-Square
Education level above high school at wave 6 (18-20)	55%	30%	29%	44%	36%	$\chi^2(4)=6.3$	$\chi^2(4)=8.9$
Gotten in trouble with the police	0.60%	22%	0.30%	14.30%	12.50%	$\chi^2(4)=.4$	$\chi^2(4)=3.2^*$
Arrested for drinking offense	1%	13.00%	14.00%	21.00%	21.00%	$\chi^2(4)=1.1$	$\chi^2(4)=.03$
Family Income under \$30,000	13.00%	25.00%	23%	14%	21%	$\chi^2(4)=.78$	$\chi^2(4)=11.3$
Missed school or job	0.60%	39%	13.50%	38%	17%	$\chi^2(4)=6.2$	$\chi^2(4)=9.0^{**}$

Note: The values in the columns are the percentage of individuals in the group who have answered affirmatively to those questions.

Example: * $p < .01$ one-tailed.