



Effects of Excessive Alcohol Use on Antisocial Behavior Across Adolescence and Early Adulthood

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Objective: Antisocial behavior (ASB) decreases with age in most of the population; however, excessive alcohol use can inhibit the desistance process. This study investigated whether excessive early drinking might slow a young person's overall pattern of crime desistance compared with that of others ("between-person effects") and whether short-term increases in alcohol consumption might result in short-term increases in ASB ("within-person effects").

Method: Frequency of ASB and typical alcohol consumption were assessed repeatedly in young people 15 to 21 years old in a population-based birth cohort (Avon Longitudinal Study of Parents and Children). Longitudinal trajectories showed ASB decreasing and alcohol use increasing across adolescence, which stabilized in adulthood. The parallel growth model was re-parameterized to simultaneously estimate the person-specific (or "between-person") and time-specific (or "within-person") influences of alcohol on ASB.

Results: Typical alcohol consumption by young people 15 years old was positively associated with ASB

cross-sectionally and into young adulthood (i.e., there were between-person effects of initial levels of alcohol consumption on initial [b 1.64, standard error 0.21; $p < .001$] and final [b 0.53, standard error 0.14; $p < .001$] levels of ASB). Within-person effects also were identified in early adulthood (b 0.06, standard error 0.02; $p = .001$), showing that when a young person reported consuming more alcohol than normal across the past year, that person also reported engaging in higher than usual levels of ASB.

Conclusion: The results are consistent with between- and within-person effects of excessive alcohol use on ASB desistance. Future research should further investigate this relation by investigating pathways into excessive alcohol use and ASB in adolescence.

Key words: Avon Longitudinal Study of Parents and Children, alcohol consumption, antisocial behavior, within-person effect, between-person effect

J Am Acad Child Adolesc Psychiatry 2017;56(10):857–865.

Antisocial behavior (ASB) is a major public policy and health concern¹; it not only places a large financial burden on society^{1,2} but also is associated with increased risk of negative outcomes, including criminal behavior^{3,4} and mental health disorders.⁴ In addition to prevention strategies before ASB onset, key targets for intervention can arise later in development. For example, the age–crime curve consistently shows that ASB peaks in mid-adolescence and then decreases throughout late adolescence and early adulthood.^{3,4} However, there is evidence for individual differences in the course of ASB across this period,⁴ and identifying factors associated with desistance is important to guide post-onset interventions.⁵

There are ways in which an exposure such as excessive alcohol use might promote ASB, limiting the decrease typically seen through late adolescence.^{4,6} First, excessive alcohol use can slow a young person's overall pattern of crime

desistance compared with that of others (known as "between-person effects"). Between-person effects provide evidence for who is at risk and can be tested with covariates that are present before or when ASB begins to decrease. Support for this hypothesis has mainly come from studies examining between-person differences in the long-term course of ASB predicted by baseline levels of alcohol use.^{6–8} Results generally show that baseline alcohol use is associated with ASB cross-sectionally; however, findings regarding the effect of alcohol on ASB desistance have been more mixed.^{6–9} Second, alcohol use can affect desistance from ASB through a series of short-term, time-specific influences^{6–8,10,11} (known as "within-person effects"). In contrast to between-person effects, within-person effects focus on when a person is at risk.⁶

In the present study, we aim to contribute to the literature in 2 ways. First, few studies have examined these person-specific (or between-person) and time-specific (or within-person) influences in the same model. Recent work by Curran *et al.*^{12–14} has detailed advances in analytical approaches that allow the between- and within-person effects to be disaggregated. In addition, prior studies that have examined within-person effects have generally



Supplemental material cited in this article is available online.

treated alcohol use as a time-varying covariate, rather than modeling a longitudinal trajectory; therefore, the time-varying measurements of alcohol confound variance from adolescents' typical trajectory versus that from time-specific deflections in that trajectory. Modeling the characteristic (and differing) trajectories for ASB and alcohol use across adolescence is important not only to obtain reliable estimates for the within- and between-person effects¹² but also to allow the effect of drinking more alcohol than usual on short-term increases in ASB to be examined. Second, findings to date are mainly based on a selection of small, specific samples, such as male offenders,⁷ those in treatment for substance use,¹¹ and single-sex samples^{6,8,10,15} or focus on specific outcomes such as dating aggression¹⁶ and psychopathic features¹⁷ rather than ASB more generally.

The present investigation expands on the extant literature in its use of a large, prospective population cohort to examine whether excessive alcohol use acts as a snare and decreases the rate of decline in ASB across young adulthood. The specific aims are to examine changing patterns of typical alcohol consumption and ASB in tandem across adolescence and early adulthood, examine the between-person effects of typical alcohol consumption in mid-adolescence on the course of ASB into young adulthood, and investigate the within-person, time-specific effects of alcohol consumption on ASB. The hypothesis was there would be between- and within-person effects of alcohol consumption on the desistence of ASB.

METHOD

Sample

Data were used from a large UK birth cohort, the Avon Longitudinal Study of Parents and Children (ALSPAC), which was set up to examine genetic and environmental determinants of health and development.¹⁸ The "core" enrolled sample consisted of 14,541 pregnant women residing in the former county of Avon in the United Kingdom who had an expected date of delivery from April 1, 1991 to December 31, 1992. Of the 13,988 offspring alive at 1 year of age, a small number of participants withdrew consent ($n = 24$). The sample also was restricted to singletons or first-born twins, leaving a starting sample of 13,775. Parents and children have been followed up regularly since recruitment by questionnaire and clinic assessments. Further details on the sample characteristics and methodology have been described previously.^{18,19} Detailed information about the ALSPAC and a data dictionary can be found at the study website (<http://www.bristol.ac.uk/alspac>) and at <http://www.bris.ac.uk/alspac/researchers/data-access/data-dictionary>. Ethical approval for the study was obtained from the ALSPAC ethics and law committee and the local research ethics committees.

Measures

A timeline for data collection is shown in Figure S1 (available online).

Antisocial Behavior. A self-report questionnaire asking about antisocial acts committed in the past year²⁰ was completed by the young person at 4 time points from 15 to 21 years of age. At approximately 15 years (mean 15 years 6 months, standard deviation [SD] 4 months) and approximately 18 years of age (mean 17 years 10 months, SD 5 months), data were collected during a computer-based session at a focus clinic; at approximately 19 years

(mean 18 years 8 months, SD 6 months) and 21 years of age (mean 20 years 11 months, SD 6 months), data were collected by online or postal questionnaire. Eight ASB items were consistent across all time points (stole from shops, broke into a vehicle or building, stole from a person, damaged property, assault, carried a weapon, rowdy in a public place, hurt animals). For each item, respondents were asked, "How often in the last year have you ...," with responses classified into 3 categories: "not at all," "just once," and "2 or more times." Then, all items were combined to create a sum score representing the frequency of antisocial acts committed in the past year at each time point (range 0–16). External validity for this self-report questionnaire has been examined previously using cross-checks with agency records and teachers' questionnaires.²¹

Alcohol Consumption. At each time point (15, 18, 19, and 21 years) respondents were asked to report the number of units of alcohol they consumed daily when they had a drink during the past year, with responses classified into 5 categories: "none" (score 0), "1 or 2" (score 1), "3 or 4" (score 2), "5 or 6" (score 3), "7 to 9" (score 4), and "10 or more" (score 5). Sensitivity analyses were performed using a measure of alcohol frequency. Respondents were asked to report how often in the past year they had a drink containing alcohol, with responses classified into 4 categories: "never," "occasional," "weekly," and "daily or almost daily."

Covariates. Maternal questionnaires completed during pregnancy were used to assess housing tenure (owned or mortgaged; privately rented; subsidized housing rented from council or housing association), maternal level of education (no high school qualifications; high school only; beyond high school), parity (study child 1, 2, 3, or subsequent child born in family), and crowding (up to 1 person per room in house; >1 person per room). These sociodemographic variables were included in all analyses primarily to aid in addressing potential bias from missing data; however, they also could be confounders of the between-person effect of alcohol consumption on ASB.

Developmental trajectories of conduct problems at 4 to 13 years old, exposure to antisocial peers at approximately 11 years old, and parental crime and problematic alcohol use from the child's birth to 11 years also were included as potential confounders in secondary analyses. Details of the assessment of these confounders are provided in Supplement 1 (available online).

Data Analysis

Parallel Growth Model for Typical Alcohol Consumption and ASB. Longitudinal trajectories for typical alcohol consumption and ASB were derived using a parallel exponential growth model. These growth curves were specifically selected based on a combination of exploring the shape of the population mean change for the 2 constructs and selecting a theoretically justifiable functional form (Supplement 2, available online). In the traditional exponential growth model, 3 growth factors are estimated: intercept, rate, and asymptote. The intercept (when fixed at baseline) is the average predicted starting point or initial level, and the asymptote is a line that the curve approaches as it heads towards infinity, or the average predicted final level. The rate represents the manner in which the asymptote is approached. In the present study, the model was re-parameterized to estimate the "half-life" instead of the rate. The half-life, measured in years, is the time by which 50% of a person's total change has been observed. Therefore, it is not only more interpretable than the rate but also can be easily compared across measures with different scales. In addition, the half-life is of greater interest for examining desistance from ASB, because it provides an indication of the time taken for a person to desist. In an exponential growth model, the factor loadings are a function of the estimable parameters, and the loading for the final repeated

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