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Risk and Protective Factors Associated with Patterns of Antisocial Behavior among Nonmetropolitan Adolescents

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Abstract

The current study used latent class analysis (LCA) to identify patterns of antisocial behavior (ASB) in a sample of 1,820 adolescents in a nonmetropolitan region of the Northeast. Self-reported antisocial behaviors including stealing, fighting, damaging property, and police contact were assessed. Latent class analysis identified four classes of ASB including a non-ASB class, a mild, a moderate, and a serious ASB class. Multinomial logistic regression indicated that parent-child relationships served as a protective factor against engaging in ASB and peer, school, and community risk and protective factors differentiated mild patterns of ASB from more intense patterns of involvement. These findings suggest utility in using a latent class analysis to better understand predictors of adolescent ASB to inform more effective prevention and intervention efforts targeting youth who exhibit different patterns of behavior.

Keywords

problem behavior; aggression; adolescence; risk and protective factors; latent class analysis

Antisocial behavior patterns (e.g., involvement in aggressive or delinquent behavior) often begin to emerge during adolescence and may contribute to adjustment problems during adolescence and into adulthood (e.g., decreased educational attainment, increased mental health problems; French & Conrad, 2005; Hair, Park, Ling, & Moore, 2009). Treatment of these behaviors and resulting consequences represents an enormous cost to society (e.g., crime, incarceration, reduced job productivity, prevention, and treatment efforts; Cohen, 1998). Despite evidence that rates of adolescent problem behaviors have increased across urban and non-urban environments, the majority of research studies on adolescent risk behaviors (including ASB) focus on urban populations (Fahs et al., 1999; Osgood & Chambers, 2003). Relatively few studies have examined rates and predictors of ASB specifically among rural and nonmetropolitan adolescent populations. Such research may provide insight into the prevention needs for youth in such communities. Given the potential negative outcomes associated with ASB in adolescence and the cost to society, it is critical that more effective programs aimed at preventing or reducing involvement in delinquent activities be developed. These efforts would be strengthened if research identified particular

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subgroups of problem behavior associated with specific contextual risk and protective characteristics in a given population (Harris & Jones, 1999).

Research and theory suggest that ASB among adolescents may be better represented by a person-centered perspective that identifies distinct subgroups of youth based upon specific patterns of behavior, rather than treating ASB as a single continuum within the adolescent population (Wiesner & Windle, 2004). Research using a person-centered approach has generally followed one of two forms: (1) identification of subgroups based upon growth in the level of involvement over time, or (2) identification of subgroups based upon types of ASB behavior (e.g., aggression, property offense, etc.). More research has focused on identification of different groups of youth based upon growth of involvement over time. Moffitt and colleagues (2006, 2008) and others (e.g., Fergusson, Horwood, & Nagin, 2000; Windle, 2000) have identified four patterns of ASB using this approach – life-course persistent, adolescent-onset, childhood limited, and low-to-no antisocial behavior.

Fewer studies have examined differential patterns of ASB using the second approach in which groups are defined based on the types of behaviors in which individuals engage. Of those that have, the majority used official court records or clinical symptom-type behaviors for classification. Studies using juvenile offense data and those relying on clinical samples generally identified a group of adolescents engaging primarily in status and property offenses, and an aggressive/violent and delinquent behavior group (Frick et al., 1993; Odgers et al., 2007; Soothill, Francis, Ackerley, & Humphreys, 2008). Extension of this research to school-based samples of adolescents would increase understanding of influences on divergent patterns of ASB among normative groups of youth.

Understanding contextual influences on ASB is an important step in developing more targeted prevention efforts for community samples. The social development model (Catalano & Hawkins, 1996) provides a useful framework for organizing contextual influences on problem behavior. The model draws upon social learning, social control, and differential association theories to identify risk and protective factors across family, peer, school, and community contexts that are associated with adolescent problem behavior. Important influences within the model include attachment to prosocial or antisocial influences (e.g., parents, peers), bonding with normative institutions (e.g., school), and opportunities to engage in positive or negative behavior. Within this framework parent-child relationships, affiliation with deviant peers, attachment to school, and neighborhood disorder are important risk and protective factors that have been associated with adolescent ASB (Ardelt & Day, 2002; Fergusson & Horwood, 2002; Najaka, Gottfredson, & Wilson, 2001; Windle, 2000).

Family, peer, school, and neighborhood risk and protective factors may be differentially associated with divergent patterns of ASB. The social development model hypothesizes that increases in severity and continued offending throughout adolescence are a result of exposure to influences outside the family that reinforce ASB (Catalano & Hawkins, 1996). Thus, during adolescence peer, school, and neighborhood factors might have a stronger relationship with more severe patterns of ASB (i.e., number of behaviors and/or severity of the type of behavior) than parenting. Few studies have examined the relationship between risk and protective factors and patterns of ASB using person-centered approaches and those that have focused on the effect of risk and protective factors on various trajectories of ASB (Odgers et al., 2008; Wiesner & Silbereisen, 2003). Furthermore, studies using a latent class approach generally have ignored the effects of school and neighborhood on various types of ASB. However, research relying on a variable-centered approach has found that after taking into account parenting, problems at school and in the neighborhood are associated with an increase in ASB (Ayers, Williams, Hawkins, Peterson, & Abbott, 1999; Beyers, Bates,

Pettit, & Dodge, 2003). Using LCA to extend previous research can inform if prevention efforts should target specific factors that are salient to different patterns of ASB.

The purpose of the current study was to address these gaps in the existing research and examine patterns of ASB and predictors of those patterns in a school-based sample of adolescents living in a nonmetropolitan area. We hypothesized that adolescents would cluster into a minimum of three distinct classes of ASB including a group engaged in minimal levels of problem behavior and additional groups differentiated both by degree and type of problem behaviors. Further, based upon previous research, we hypothesized that proximal social influences (e.g., family and peer relationships) would play a critical role in differentiating risk for both initiation and degree of involvement in ASB, while more distal social influences (e.g., bonding with school, exposure to neighborhood disorder) would likely play a more central role in risk for escalated patterns of ASB.

Method

Site

Northeast Communities Against Substance Abuse (NECASA) is a community-based coalition representing the 21 towns and municipalities in northeast Connecticut. The region comprises approximately 171,000 people and covers an area of approximately 740 square miles. With an average population density of approximately 231 individuals per square mile, the region is among the least populated areas of the state, though it includes both small town and rural locales. Many towns in the region have fewer than 5,000 inhabitants. The median household income in the region is \$58,199, with 6.4% of the population below the poverty line.

Participants

Participants were 1,820 students from 5 area public/non-vocational high schools and 9 middle schools serving the region (a total of 14 schools). Approximately 42% of respondents were in the 8th grade, 32% were in the 9th grade, and 26% were in the 10th grade, and the average age of respondents was 14.1 years ($SD = 1.0$ years). Fifty-four percent of respondents were female, and the racial and ethnic composition was as follows: 83% Caucasian, 9% Hispanic/Latino, 2.5% African American, 1% Asian/Pacific Islander, 1% Native American, and 2.5% Other.

Measures

The survey instrument in the present study was based on a self-report survey developed for statewide epidemiological assessment of adolescent substance use patterns (Ungemack, Cook, & Damon, 2001) and draws on methods employed in a number of national surveys (e.g., Monitoring the Future). The survey assesses a range of adolescent risk behaviors (e.g., substance use, antisocial behavior) as well as a wide range of risk and protective factors associated with these behaviors. In addition to the specific subscales used in the present analyses (described below), youth provided basic demographic information including age, gender, and race/ethnicity.

Antisocial behavior—Past year involvement in antisocial behaviors was assessed using an 11-item scale in which youth indicated the frequency of involvement in a range of behaviors in the following domains: aggression-related, property-related, and drug-related behaviors and consequences related to problem behavior. Items were rated on the following scale: 0 (*no history*), 1 (*one to two times*), and 2 (*three or more times*). Because prevalence of frequent involvement in behaviors was relatively low, these items were dichotomized to represent: 0 (*no history of the specified behavior*) and 1 (*one or more times engaged in the*

specified behavior). A total score also was created by summing affirmative responses ($\alpha = 0.82$). This score was used to compare identified classes on overall rates of antisocial behavior.

Risk and protective factors—Risk and protective factors associated with problem behavior classes were selected to represent individual, family, peer, school, and community domains.

Individual-level characteristics included in the model as covariates were age and gender. Age was centered on the mean and gender was dummy coded 0 (*female*) and 1 (*male*).

Family-level risk was measured by a 10-item scale that assessed youth ratings of parental supervision and parent-adolescent relationship quality. Sample items include, “when I am away from home, my parent/guardian(s) knows where I am and who I am with,” and “my parent/guardian(s) give me help and support when I need it.” Items were rated on a 4-point Likert scale from 1 (*definitely not true*) to 4 (*definitely true*). Responses were averaged and higher scores indicated more positive parent-adolescent relationships ($\alpha = 0.84$).

Peer-level risk was assessed by youth ratings of substance use among their close friends. This scale was created by taking the mean for five items in which respondents indicated the number of close friends that used alcohol, tobacco, and other drugs. Items were scored on a four-point scale (*none* to *most*) and had good internal consistency ($\alpha = 0.84$).

School-level risk was assessed by a 4-item scale reflecting their attitudes towards school and education. Sample items on this scale included, “it is important for me to get good grades,” and “I try hard to do good work at school.” Items were rated on a 4-point scale 1 (*definitely not true*) to 4 (*definitely true*) and had good internal consistency ($\alpha = 0.78$).

Finally, neighborhood-level risk was assessed by a 13-item scale reflecting perceived neighborhood safety and collective efficacy. Sample items included “you’ve got to be tough to get along in my neighborhood,” and “people in my neighborhood are trying to keep kids off drugs.” Items were rated on a 4-point scale from ‘definitely not true’ to ‘definitely true.’ The thirteen items were averaged and higher scores indicated more neighborhood disorder ($\alpha = 0.81$).

Procedure

Surveys were conducted at 14 area middle and high schools from the spring of 2006 to the winter of 2008. Passive consent procedures were approved by school administrations, with a letter sent home to parents describing the survey and providing parents and youth with the opportunity to opt-out of participation. Surveys were administered in a group format, with youth completing surveys on their own and marking responses on forms that included no identifying information to ensure confidentiality and anonymity of responses. Surveys were checked for consistency of responding, and a small number of surveys (fewer than 3%) were discarded because of failure to complete the survey, evidence of over-reporting of problem behavior (e.g., indicating use of a fictitious drug included in the survey), or inconsistent response patterns (e.g., lack of consistency among use variables within substances).

Data Analysis

Latent class analysis (LCA; Lubke & Muthén, 2005; McCutcheon, 1987) with Mplus 5.1 (Muthén & Muthén, 2006) was used to identify sub-groups (i.e., classes) based upon similarity of responses to measured variables, and also to assess the effect of covariates on class membership (Nylund, Asparouhov, & Muthén, 2007). LCA has advantages over alternative approaches to classification (e.g., cluster analysis, a priori assignment based upon

observed data) including use of model-based methods for estimating population characteristics derived from sample data and formal statistical procedures for determining the number of classes, (Magidson & Vermunt, 2002; Muthén & Muthén, 2006; Nylund et al., 2007). LCA provides estimates of class membership probabilities (e.g., problem behavior classes), and behavioral probability estimates within class (Lanza, Flaherty, & Collins, 2003). Covariates are incorporated into models with more than one latent class using multinomial logistic regression models based upon posterior-probability estimates of latent class membership. Missing data are addressed via full information maximum likelihood methods.

We conducted a series of models, beginning with a one class model and subsequently incorporating additional classes, and compared fit indices to determine the optimal solution. For models with more than one class, we compared fit for unrestricted models, in which class problem behavior probabilities were freely estimated, as well as fit for restricted models that imposed a zero-behavior class (i.e., a “non-ASB” class). Latent class structure was chosen based upon existing research recommendations of statistical model fit, as well as interpretability of the classes. Optimal fit was indicated by a low BIC and significant LMR-LRT (Muthén & Muthén, 2006; Nylund et al., 2007).

Risk and protective factors were incorporated into the final model using multinomial logistic regression based upon posterior-probability estimates of latent class membership. A similar procedure was used to compare total scores on the antisocial behavior scale across groups and assess the extent to which class structure was a function of differences in overall level of antisocial activity. Finally, because data were clustered within 14 schools we conducted an additional set of analyses in which school was treated as a fixed effect in the model. These analyses provided nearly identical results to the model without school effects, and none of the school-level identifier effects were statistically significant. Thus, the school-level fixed effects model was not included in the reported results.

Results

Prevalence rates for adolescents' report of each of the antisocial behaviors during the past year are presented in Table 1. On average youth indicated having been involved in 1.3 (s.d. = 2.0) behaviors during the past 12 months. Involvement in a physical fight was the most frequently endorsed item (24.4%), followed by threatening someone (24.2%) and stealing something worth less than \$50 (21.2%).

Latent class models were fit to the data reflecting self-reported ASB involvement. As indicated in Table 2, the BIC and LMR-LRT suggested a four-class model with a forced non-ASB class (i.e., a four-class, restricted model) provided a significantly better fit to the data than other models.

Conditional probabilities of reporting any history of ASB for the four-class, restricted LCA are depicted in Figure 1. Class 1 ('non-ASB', 37% of youth) was restricted to adolescents with no reported ASB involvement. Class 2 ('mild ASB', 45% of youth) reported a relatively low probability of aggressive behaviors (e.g., threatening, fighting) and stealing, with very low probability of engaging in any other behaviors. Class 3 ('moderate ASB', 12% of youth) reported higher probabilities of engaging in a range of aggressive behaviors (e.g., threatening, fighting, attacking someone with intent to harm) and property-related offenses (e.g., stealing, damaging property), but reported little-to-no involvement in drug-related activities or trouble resulting from antisocial behavior (e.g., suspension, police contact, arrest). Finally, Class 4 ('serious ASB', 6% of youth) reported comparable probabilities of engaging in aggressive behaviors to those of class three (as well as increased

probability of bringing a weapon on school grounds). Property-related offenses were also elevated among this group. This class also was more likely to indicate drug involvement (i.e., buying or selling drugs) and consequences of ASB (e.g., suspension, police contact, arrest).

Post-hoc comparisons of total antisocial behavior scores revealed significant differences in the number of affirmative responses across all groups in both overall and pairwise comparisons. The non-ASB class evidenced the lowest rate ($M = 0.04$, $s.d. = 0.26$), followed by the mild ASB class ($M = 1.04$, $s.d. = 1.16$), moderate ASB class ($M = 3.94$, $s.d. = 1.95$), and serious ASB class ($M = 7.39$, $s.d. = 2.51$).

Multinomial logistic regression analyses were conducted to estimate the association between hypothesized individual, family, peer, school, and community domains and class membership. The odds ratios resulting from these analyses are presented in Table 3.

Individual-level influences had a somewhat inconsistent relationship with ASB class membership. As anticipated, males were at greater risk than females of being classified in the mild, moderate, or serious ASB classes than the non-ASB class, and were also at greater risk of being classified in the serious ASB class than either the mild or moderate ASB classes. Child age was not significantly related to ASB class membership. The only significant finding for these indicators was that older youth were more likely to be classified in the serious ASB class relative to the mild and moderate ASB classes.

Family and peer influences also were significant predictors of ASB class membership. Youth reporting more positive parent-child relationships were significantly less likely to be classified in the mild, moderate, or serious ASB, although parent-child relationships did not differentiate among classes engaged in antisocial behavior. Peer substance use had a more consistent negative effect on youth problem behavior, differentiating non-problem involved youth from each problem behavior class and also differentiating among classes engaging in ASB.

Broader contextual influences also played a role in differentiating among ASB classes. Both school attachment and neighborhood disorder played a significant and substantial role in differentiating moderate and serious ASB classes from non- and mild ASB classes. Attachment to school served as a potential protective factor – reducing risk of identification in the moderate and serious ASB classes relative to the non- and mild ASB classes. Conversely, neighborhood disorder was associated with increased risk of membership in the moderate and serious problem behavior classes than both the non- and mild ASB classes.

A final set of models were conducted to examine whether gender differences might be found with respect to either the expression of ASB or the relation of risk factors to specific patterns of behavior. The first set of analyses treated gender as a grouping variable to see whether the class structure was consistent for males and females. Analyses revealed that a four-class model fit well for both girls and boys and that the item-response probabilities did not differ significantly by gender. A second set of analyses included gender-by-covariate interaction effects in the multinomial logistic models, but no significant interactions effects were found suggesting that the effects of parents, peers, school attachment, and neighborhood disorder did not differ as a function of adolescents' gender.

Discussion

The aim of this study was to examine heterogeneity in the expression of antisocial behavior patterns among adolescents in a nonmetropolitan region and investigate the influence of contextual risk and protective factors to identified patterns of behavior. Four patterns of

behavior were identified representing variation in the probability of engaging in a range of antisocial activities including aggressive-, property-, drug-, and consequence-related behavior. Individual, family, peer, school, and community risk and protective factors differentiated membership in identified classes. Results are discussed in terms of the implications for prevention research

Findings reveal a potential progression in terms of the range and type of ASB among adolescents. A minimal level of involvement in problem behavior is the overwhelming norm among this population of nonmetropolitan youth in the transition from middle to high school. These results are consistent with previous research conducted with state and national data. Our observed rate of involvement in a physical fight (24.4%), for example, is slightly lower than the state and national estimates (28.3% and 31.5%, respectively; CDC, 2010), though these estimates include older adolescents than our sample population. Of youth involved in higher rates of ASB, approximately 12% were identified in a moderate antisocial behavior class and 6% were classified in a serious antisocial behavior class. These groups were marked by significantly higher probabilities of involvement in aggressive behaviors, property-related offenses, and probability of consequence-related behaviors; though the serious ASB class evidenced significantly higher rates of both drug-related behavior and negative consequences including policy contact and arrest.

It is interesting to note that this pattern of findings is also reflected in the significant differences in total antisocial behavior scores across groups. Although this relationship may raise concern that the identified groups simply reflect differences in overall level of antisocial behavior, one would expect that if this were the case individual item response probabilities within classes would be more evenly distributed across behaviors (e.g., 0.1 for the mild ASB class, 0.4 for the moderate ASB class). Instead, the observed patterns suggest that as youth increase their level of antisocial activity they do so in a consistent manner, beginning with mild aggression or theft of non-valuable items, followed by escalation of other antisocial activities. These might include an expansion to a broader range of aggressive behaviors and property-related offenses, but eventually expand to a broader range of risky behaviors (e.g., drug buying or selling), and result in negative consequences from such activities. This pattern is consistent with research demonstrating that distinct types of problem behaviors follow different trajectories over the middle school years, with the early emergence of aggressive behaviors predicting growth in other delinquent behaviors or drug use (Farrell, Sullivan, Esposito, Meyer, & Valois, 2005). A stage-sequential pattern of escalation, such as the one suggested by these results, could guide development of prevention and intervention efforts with more universal strategies focused on general reduction of aggressive behavior to reduce escalation of antisocial behavior, and more indicated interventions focused on youth engaged in a broader range of serious patterns of ASB. Further research using Latent Transition Analysis, a longitudinal variant of LCA (Lanza et al., 2003), would provide a means of better understanding youths' progression through these identified stages of problem behavior.

In terms of particular risk and protective factors that may be targeted within an prevention and intervention framework, these results highlight the influence of social and contextual factors on risk of engaging in more serious patterns of ASB. Closer parent-child relations serve a protective function against engaging in ASB, differentiating members of the non-ASB class from those in the mild, moderate, and serious ASB classes. However, ratings of parent-child relations did not differentiate among ASB-involved classes. Peer behavior, on the other hand, was strongly associated with both initiation and intensity of ASB involvement. Furthermore, school and neighborhood influences differentiated normative patterns of ASB from more intense patterns of involvement. These findings are consistent with previous theory and research which suggest socialization influences outside the family

may have a stronger association with more intense patterns of ASB involvement during adolescence (Ayers et al., 1999; Catalano & Hawkins, 1996).

The use of person-centered approaches has direct implications for development of effective prevention/intervention programs. Our findings, for example, suggest that focusing on parent-child relationships and supervision may be an effective universal prevention strategy that reduces risk for initiating ASB, but is not likely to have a significant direct effect on reducing intensity of involvement once youth begin to engage in such behaviors. Prevention and intervention programs that target association with deviant peer groups likely are critical to reduce risk for escalation to more serious patterns of ASB. An approach targeting both parents and peers is also likely to be maximally effective, since there is evidence that parenting practices and parent-child relationships have an indirect effect on antisocial activity through effects on opportunities to socialize with deviant peer groups (Laird, Criss, Pettit, Dodge, & Bates, 2008). Programs that rely on such an approach (e.g., the Adolescent Transitions Program, Guiding Good Choices) have been shown to be particularly effective in this regard. Furthermore, providing youth with a sense of attachment to school, as well as intervening at the community level are important intervention strategies to prevent youth from escalating to higher levels of ASB.

This study contributes to our understanding of patterns and predictors of ASB in a nonmetropolitan sample of adolescents, however, some limitations should be noted. Most notably, the current study relied solely on adolescent report to assess both risk and protective factors and ASB. The validity of adolescent self-report of potentially sensitive information (e.g., ASB) has been criticized (Brown & Zimmerman, 2004). However, evidence indicates that adolescents generally provide accurate reports of antisocial behaviors (Harrison, Haaga, & Richards, 1993; Needle, Jou, & Su, 1989) and similar youth surveys have been used to provide valid estimates of ASB. Furthermore, relying on self-report for both independent and dependent variables may result in shared method variance that arbitrarily inflates the relationship among risk/protective factors and ASB (Bank, Dishion, Skinner, & Patterson, 1990). Future research should employ multiple methods when assessing key study constructs.

A second limitation is that data were cross-sectional. This may be a particular problem given our finding that peer substance use had the strongest association with probability of classification into the mild, moderate, and serious ASB groups. There is an extensive literature that indicates selection effects (i.e., ASB-involved youth selecting into relationships with ASB-involved peers) as well as socialization are important factors that explain why peer ASB and youths' own ASB are so strongly related (Dishion, Patterson, & Griesler, 1994; Monahan, Steinberg, & Cauffman, 2009). Thus, additional research utilizing longitudinal data is paramount to assess the causal relation of risk and protective processes to class membership.

Finally, the generalizability of the findings may be influenced by the characteristics of the sample. The extent to which these findings would generalize to youth in more urban settings is not clear. Studies have not explored whether patterns of ASB and correlates of those patterns vary as a function of geographic location and ethnic/racial group. Given that our findings are similar to research conducted with urban samples (Fergusson, Horwood, Nagin, 2000; Odgers et al., 2007), future research should utilize more representative samples to examine if patterns of ASB differ as a function of geographic locale and ethnic/racial group.

Despite limitations, this study contributes to our understanding of patterns of ASB and risk and protective factors associated with those patterns in an understudied sample of nonmetropolitan youth. Future research should build on this study and examine changes in

patterns of ASB in adolescence and early adulthood and individual and contextual risk and protective factors associated with those changes.

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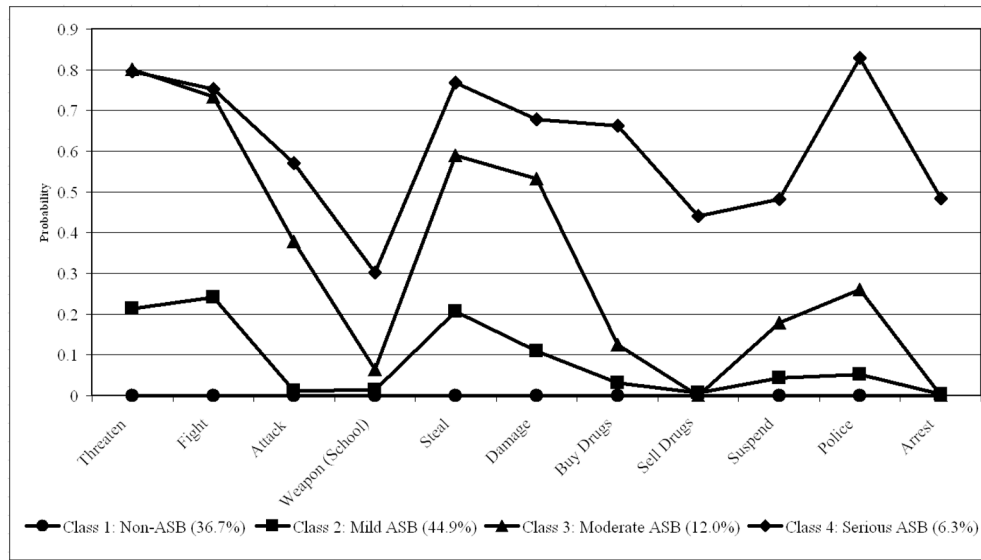


Figure 1. Conditional probabilities of reporting any history of ASB for a four class, restricted LCA model.

Table 1

Percentage of youth indicating affirmative engagement in ASB or related consequences in the past year (n = 1820).

Domain	In the past year, did you:	% Yes
Aggression-related Behavior	Pick a fight with someone (not including a family member)?	24.4%
	Threaten to hurt someone?	24.2%
	Attack someone with the idea of seriously hurting them?	8.7%
	Bring a knife, gun, or other weapon to school?	3.3%
Property-related Behavior	Steal something worth less than \$50?	21.2%
	Purposely damage or destroy property that did not belong to you?	15.6%
Drug-related Behavior	Buy illegal drugs?	7.0%
	Sell illegal drugs?	3.1%
Consequence-related Behavior	Get into trouble with the police?	10.7%
	Get suspended or expelled from school?	7.2%
	Get arrested?	3.2%

Table 2

Fit statistic comparisons of exploratory LCA models (n = 1820).

Model	Description	BIC	LMR LRT p-value
1	One-class	13717.29	—
2	Two-class, unrestricted	11294.06	<0.001
3	Two-class, restricted ^a	12033.80	<0.001
4	Three-class, unrestricted	11099.19	<0.001
5	Three-class, restricted ^a	11128.61	<0.001
6	Four-class, unrestricted	11100.65	0.55
7	Four-class, restricted ^a	11088.23	<0.001
8	Five-class, unrestricted	11127.92	0.001
9	Five-class, restricted ^a	11095.32	0.24

Notes: BIC – Bayesian Information Criterion. LMR LRT – Lo-Mendell-Rubin Likelihood Ratio Test p-value for (K-1)-classes.

^aThe responses to antisocial behavior involvement variables were set to 0 for one class.

Table 3

Odds ratio results from latent multinomial logistic regression models: Covariate effects on latent class membership with non-antisocial class as reference (n = 1,820).

	Mild ASB ^a	Moderate. ASB ^a	Serious ASB ^a	Moderate ASB ^b	Serious ASB ^b	Serious ASB ^c
Age	0.97	0.84	1.26	0.87	1.30	1.51 ^{**}
Gender (Male)	1.33 [*]	1.53 [*]	2.91 ^{**}	1.15	2.19 ^{**}	1.91 [*]
Parent-Child Relationship	0.68 [*]	0.51 ^{**}	0.46 ^{**}	0.76	0.69	0.90
Peer Substance Use	2.01 ^{**}	4.68 ^{**}	8.46 ^{**}	2.33 ^{**}	4.22 ^{**}	1.81 ^{**}
School Attachment	0.78	0.37 ^{**}	0.26 ^{**}	0.48 ^{**}	0.34 ^{**}	0.71
Neighborhood Disorder	1.18	2.04 ^{**}	2.88 ^{**}	1.74 ^{**}	2.45 ^{**}	1.41

* p < 0.05,

** p < 0.01

Note:

^aReferent Class is Non-ASB

^bReferent Class is Mild ASB

^cReferent Class is Moderate ASB