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Aggression as a Predictor of Early Substance Use Initiation among Youth with Family Histories of Substance Use Disorders

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Introduction

Early substance use initiation is a serious concern because it is associated with significantly increased risks for developing substance use disorders (Anthony & Petronis, 1995; Buchmann et al., 2009; Chen et al., 2009; Dawson et al., 2008; King & Chassin, 2007; Windle & Windle, 2012). For instance, early substance use initiation (operationalized as first use before age 14; King & Chassin, 2007) more than quadruples the odds of having a substance use disorder by young adulthood (OR = 4.21). Early substance use initiation may be an indicator of a broader vulnerability to substance misuse that includes family history of substance use disorder and behavioral disinhibition as risk factors (Iacono et al., 2008; Vanyukov et al., 2003). Although there is a broad literature on risk factors for developing substance use disorder, less is known about predictors of early substance use initiation (Fite et al., 2008).

Aggression is one key risk factor associated with problem substance use. Adults with substance use disorder have greater histories of aggressive behaviors (Allen et al., 1997; Moeller et al., 2002; Morie et al., 2014), and aggression is significantly related to their substance use disorder age of onset (Gustavson et al., 2007). Among youth, aggression is significantly related to early substance use initiation (i.e., by age 14; Block et al., 1988; Jester et al., 2008; Leff et al., 2003). One prospective study of adolescents examined the relative contribution of aggressive behaviors versus other measures of externalizing symptoms, internalizing symptoms, and social adjustment in predicting substance use

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initiation (Ernst et al., 2006). Among youth at high risk for substance use initiation (due to ADHD diagnosis) who had not initiated substance use at study entry (mean age 12.7), aggression, impulsiveness, attention problems and social problems were related to prospective substance use initiation (mean follow-up 3.8 years). Of these, aggressive behavior was the most consistent and largest magnitude of the predictors of early substance use initiation (Ernst et al., 2006). The relationship of aggression with early substance use initiation has been interpreted within the context of Common Liability (Iacono et al., 2008; Vanyukov et al., 2003) and Affect Regulation (Ernst et al., 2006) theories. Based on the effect observed by Ernst and colleagues, we sought to extend this line of research by testing individual components of aggressive behavior to ascertain which are most associated with early substance use initiation.

How aggression is assessed can impact how we understand its relationship with early substance use initiation (see meta-analysis, Miles & Carey, 1997). Various approaches to aggression assessment have appeared in the substance use initiation literature. Although these approaches are generally consistent in suggesting relatively greater aggression is related to early substance use initiation, questions remain about which aspects of aggression are responsible for this relationship. One measurement approach has been to examine aggressive personality traits rather than specific aggressive behavior(s). For example, nursery school teacher ratings of children's aggressive personalities predicted later onset of early substance use initiation (California Child Q-set method rating "hostility towards others" and "expression of hostility" Block et al., 1988). However, it is unclear if the teachers' ratings were based on specific aggressive acts observed in the classroom or more general impressions the teachers had on the emotional outlook or attitude of the children. This approach leaves questions about whether actual aggressive acts (i.e., intentionally harming another person) is related to early substance use initiation.

The assessment of aggressive acts is typically done with checklist methods; however, checklists often contain a heterogeneous set of items and the use of summary scores that may obscure specific relationships with substance use initiation. Although checklists have shown relationships with early substance use initiation, it is not clear which specific items are responsible for these relationships. For instance, ratings of aggressive behavior on the Child Behavior Checklist are associated with relatively earlier substance use initiation (e.g. Jester et al., 2008). However, these aggressive behavior scores are derived from summing items ranging from "gets in fights" to "demands attention" and "sulks" (Achenbach & Rescorla, 2001), and plausibly not all these dimensions are equally related to substance use initiation. Similarly, the Life History of Aggression scale (LHA) typically is scored to reflect the frequency of 11 distinct classes of behaviors across three domains of aggression (aggression toward others, aggression towards self, and consequences of aggression at school, work or legally; Coccaro et al., 1997). These different classes of behaviors are driven by distinct biological and environmental mechanisms (Yeh, Coccaro, & Jacobson, 2010) and are also not likely to be equally related to early substance use initiation. Not surprisingly, valuable information can be lost when combining heterogeneous aggressive behaviors into composite, unitary scores (e.g., Farrell et al., 2000; Smith et al., 2009). Thus, tests of individual types of aggressive behaviors, rather than summary scores, may provide more precise information about their relationship with early substance use initiation.

The purpose of this study was to examine the predictive relationship of distinct aggressive behaviors and early substance use initiation. This approach builds on previous work examining prospective relationships of aggressive behavior and early substance use initiation (i.e., Ernst et al., 2006) in three important ways. First, it extends previous literature by examining distinct classes of aggressive behaviors, as measured by the Life History of Aggression interview (Coccaro et al., 1997). Second, it extends the examination of aggressive behaviors to a sample at increased risk for early substance use initiation, children with family histories of substance use disorders. Third, it replicates the approach of Ernst by testing the relationship of aggression and substance use initiation within the context of other measures of externalizing, internalizing, and social adjustment. Measures of aggressive behaviors and other risk factors were collected before substance use onset, and assessment of early substance use initiation was conducted prospectively at 6-month intervals. Based on earlier findings, we hypothesized that aggressive behavior and impulsiveness would be predictive of early substance use initiation. Of the specific types of aggressive behaviors, we also expected that aggression towards others would be most related to early substance use initiation because it represents a more severe form of aggressive acts.

Materials and Methods

Participants

Participants were 119 children with family history of substance use disorder recruited in a broader study of prospective development of substance use involvement. The current manuscript describes sub-analyses focused solely on symptoms and behaviors — particularly aggression — between children who had (User; $n = 41$) or had not (Non-User; $n = 78$) initiated substance use before age 14. Each child and a parent/guardian were first screened for eligibility; measures of various risk behaviors and drug use were then obtained prospectively at approximately 6-month intervals. This study examined relationships with risk factors collected at study entry with substance use initiation observed prospectively. Study procedures were approved by our Institutional Review Board and were performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. All children and their parents gave written informed consent prior to engaging in study procedures.

Screening

Inclusion criteria were: children ages 10-12 years, physically healthy (medical history and exam by a physician or physician's assistant), and having at least a father with a substance use disorder (Family History Assessment Module: Janca et al., 1991; Rice et al., 1995). Family history was also examined to determine the FH density score, by counting the number of biological parents and grandparents meeting criteria for substance use disorders; scores ranged from 1 to a possible 6 (e.g., both parents and all grandparents affected). Exclusionary criteria included: substance use before study entry (see Substance Use section below for procedure), low intelligence ($IQ < 70$; Wechsler Abbreviated Intelligence Scale; The Psychological Corporation, 1999), and psychiatric disorders other than Oppositional Defiant Disorder, Conduct Disorder, ADHD, Dysthymia, or Anxiety Disorders (Kiddie and Young Adult Schizophrenia and Affective Disorders Schedule, Present State and Lifetime:

Kaufman et al., 1997). These disorders were not exclusionary because previous research (e.g., Iacono et al., 2008) has demonstrated that they frequently co-occur with substance misuse. Although not an inclusion criterion, socioeconomic status was assessed for descriptive purposes using the Four Factor Index of Social Status (Hollingshead, 1975).

Measures

Substance Use Initiation—Children's substance use was assessed via interview of the child (Drug History Questionnaire; Dougherty et al., 2013). This interview assesses life history and current patterns of use of drugs of abuse. Additionally, a breath alcohol test (AlcoTest® 7110 MKIII C device; Draeger Safety Inc., Durango, CO) and urine-drug test (Panel/Dip Drugs of Abuse Testing Device; Redwood Biotech, Santa Rosa, CA) assessed recent use. This procedure was conducted at study entry and at each prospective visit.

Life History of Aggression—Children were interviewed using the Life History of Aggression (Coccaro et al., 1997), which assesses participation in 11 types of aggressive behavior across three dimensions: aggression directed at others, aggression directed at one's self, and antisocial behavioral consequences. Aggression directed at others consists of items classified as *Temper Tantrums* (behavioral manifestations in response to frustration, including screaming, ranting and raving, and throwing things), *Verbal Fighting* (verbal arguments in which an angry voice, profanity, insults, and threats were directed at others), *Property Destruction* (hitting, throwing, and/or breaking objects), *Physical Fighting* (physical altercation with another person, whether or not, the youth initiated the fight or specifically intent to harm another), and *Assaults People* (physical altercation with specific intent to harm, even if the other person had no chance to fight back). Self-directed aggression consists of items classified as *Self-Harm* (self-injurious behavior with no suicidal intent), and *Suicide Attempts* (self-harm with intent to cause death). Finally, antisocial behavioral consequences consists of items classified as *School Discipline* (school discipline, suspension or expulsion for aggressive behaviors), *Antisocial/no Police* involvement (lying, stealing, sexual promiscuity, involvement in illegal operations, violations of the rights of others, but with no Police contact), and *Antisocial/Police* (police warnings, arrests and/or convictions for misdemeanor or felony aggressive offenses). The 11th and final LHA item describes problems with supervisors. Because the sample so young, none were employed, therefore this item was not included in subsequent analyses.

Each LHA item is scored on a 6-point scale (*0 = no events, 1 = one event, 2 = a few events, 3 = several events, 4 = many events, and 5 = so many events they cannot be counted*). Although scores on individual items can be summed to a total score, given the current research question responses to each individual aggressive behavior were the focus of the analyses. Previous research has used a similar approach to individual item analysis (e.g., Mathias et al., 2011; Yeh et al., 2010). Because these individual items are rated on an ordinal scale, they were not appropriate for t-test comparisons. Instead, individual items were recoded dichotomously for the presence or absence of each behavior for the χ^2 analyses and as categorical independent predictors in the logistic regression models.

Barratt Impulsiveness Scale—The Barratt Impulsiveness Scale (BIS-11; Patton et al., 1995; Stanford et al., 2009) is a 30-item self-report measure of impulsive personality traits. The children rated the frequency of several common impulsive (e.g., “I do things without thinking”) or non-impulsive (“I am self-controlled”) behavioral traits on a scale from 1 = *rarely/never* to 4 = *almost always/always*. Scores range from 30 to 120, with higher scores indicating more impulsiveness. This BIS-11 is the most widely published personality measure focusing solely on impulsiveness and has good test-retest reliability (Spearman's $P = 0.83$) and internal consistency (Cronbach's $\alpha = .83$).

Conners3—The Conners 3rd Edition (Conners3™; Conners, 2008) measures symptoms of disruptive behavior disorders, such as Attention Deficit Hyperactivity Disorder, Oppositional Defiant Disorder, and Conduct Disorder. The child's self-report version consists of 99 items with questions about DSM-IV-TR symptoms and subscale scores of Inattention, Hyperactivity, Learning Problems/Executive Functioning, Family Relations, and Defiance/Aggression. The Conners3 is a new and longer version of the 48-item form used by Ernst et al (2006). Raw scores on all scales are converted to gender- and age-normed T-scores using the Conners3 Software Kit (Multi-Health Systems Inc.; North Tonawanda, NY). The Conners3 has very good test-retest reliability (correlations from .71 to .98), internal consistency (.77 to .97), and inter-rater reliability (.52 to .94). It has also shown good construct validity and predictive validity (Conners, 2008).

Child Behavior Checklist (CBCL) and Youth Self-Report (YSR)—The Child Behavior Checklist (CBCL; parent report form) and Youth Self-Report (YSR; child report form) (Achenbach & Rescorla, 2001) assess a range of emotional and behavior problems in children and adolescents. Following the approach of Ernst and colleagues (2006), analyses included comparisons of the parent and child report of Internalizing Problems and Externalizing Problems, along with child reports of Attention (e.g., inattentive, impulsive), Social (e.g., not liked, prefers younger peers), and Somatic Complaints (e.g., headaches, stomach problems). Raw scores on all scales were converted to gender- and age-normed T-scores using the ASEBA Assessment Data Manager (ASEBA; Burlington, VT). The CBCL and the YSR are among the most well-validated measures of child and adolescent behavior functioning (Achenbach and Rescorla, 2001), with good internal consistency (Cronbach's alpha range from .71 to .89) and concurrent validity (e.g., Ebesutani et al., 2010).

Data Analyses

We first compared User and Non-User groups and then tested predictive relationships with regression analyses. Following the approach of Ernst and colleagues (2006), we analyzed measures of externalizing symptoms, internalizing symptoms, and social adjustment, and added tests of specific aggressive behaviors. Factors that significantly differentiated groups were included in binary logistic regression to predict group membership (Model 1). Because previous research has not tested the individual LHA items to guide a hierarchical regression approach, stepwise conditional (.05 entry and .10 removal stepwise probability) binary logistic regression analyses were conducted. For these analyses, Group was entered as the dependent variable. Independent variables included: Conners3 Hyperactivity, LHA School Discipline, LHA Assault, and LHA Property Destruction. LHA Property Destruction did not

meet the stepwise probability and was not retained in the final regression model. Also, because there was high inter-correlation of LHA Physical Fighting and LHA Assault scores, only LHA Assault was entered into the regression (it had a larger magnitude group difference in individual comparisons). After the regression predicting Group, parallel analyses were conducted with Tobacco, Alcohol, and Marijuana Use as separate dependent variables (Models 2, 3, and 4, respectively). Finally, linear regression analyses were conducted for the number of drug classes used (range 0-3; none, tobacco, alcohol, and marijuana). All analyses were conducted using IBM SPSS Statistics version 21.

Results

Demographic Characteristics

Demographic data for adolescents with family histories of substance use disorder who either have (User; $n = 41$) or have not (Non-User; $n = 78$) early substance use initiation are shown in Table 1. Children were predominantly of Hispanic ethnicity and White race, and about half the sample was boys. Users and Non-Users did not significantly differ in gender, race, ethnicity, age, intelligence, or socioeconomic status. The Non-User group was followed for an average of 3.6 months longer than the User group.

Both groups were similar in their clinical characteristics and in the number of parents and grandparents with substance use diagnoses (FH density median = 3). The presence of psychiatric diagnoses among the children also was similar: (46% Users, 42% Non-Users; $\chi^2 = 0.178$, $p = 0.673$). The most common psychiatric disorders were ADHD (34% Users, 29% Non-Users; $\chi^2 = 0.272$, $p = 0.602$) and anxiety disorder (12% Users and 18% Non-Users; $\chi^2 = 0.663$, $p = 0.415$).

Drug Use Characteristics

Rates of use varied by drug class: 34% of Users initiated Tobacco use during the study, 54% initiated Alcohol, and 51% initiated Marijuana. Most children used only one drug class, 27% used two, and only 2.5% used all three. The most common combination was Alcohol and Marijuana Use (20% of Users). Tobacco users had a slightly earlier age of initiation ($M = 12.9$ years, $SD = 0.8$) than alcohol ($M = 13.3$ years, $SD = 1.1$) and marijuana ($M = 13.4$ years, $SD = 0.9$) users. There was no reported use of cocaine, prescription opiates, stimulants, barbiturates, benzodiazepines, hallucinogens, PCP, inhalants, or other psychotropic medications.

Behavioral Predictors of Early Substance Use Initiation

The User and Non-User groups were compared across the behavioral predictors of substance use tested by Ernst and colleagues (2006). Children in the User group reported more Aggression, Externalizing, Hyperactivity, and Defiance/Aggression than the Non-Users (Table 2).

Group Differences in Individual Aggressive Behaviors—The User group was significantly more likely than the Non-User group to have participated in physical fights, specific assaults on people, fights, personal assaults, and aggressive behaviors resulting in

school discipline and property destruction (Figure 1). There was a trend ($p = .087$) toward more antisocial behaviors resulting in police contact for the User group.

Predicting Early Substance Use Initiation—Binary logistic regression analyses revealed significant relationships of early substance use initiation with Assaults People and School Discipline (Table 3). The Assaults People had the strongest relationship with early substance use initiation ($OR = 3.65$) and had significantly greater specificity than School Discipline (87.2% vs. 71.8% specificity, respectively; McNemar test $p = .005$). Early initiation of tobacco use was significantly associated with Assaults People and School Discipline (Table 4, Model 2), whereas both early initiation of alcohol and marijuana use was only significantly associated with Assaults People (Table 4, Models 3 & 4, respectively). Hyperactivity was not a significant predictor in any model.

Predicting Number of Substances Used—Following the approach of Ernst and colleagues, a final regression model was tested predicting the number of drug classes used (tobacco, alcohol, and/or marijuana). The number of drug classes used was significantly related to scores for Assaults People and aggression-related School Discipline (see Table 5; $F_{2,115} = 8.427, p < .001; R^2 = .128$).

Discussion

This study identified prospective relationships between specific aggressive behaviors and subsequent substance use initiation in youth before age 14. Of the individual aggressive behaviors examined, intentionally initiating physical fights to cause harm, school discipline problems due to aggressive behavior were predictive of early substance use initiation and number of substances used. This study extends the previous literature by examining specific components of aggressive behaviors among at-risk youth with and without early substance user initiation.

The association of specific aggressive behaviors and future substance use initiation is consistent with prior research assessing more broadly defined aggression (Block et al., 1988; Ernst et al., 2006; Jester et al., 2008; Leff et al., 2003). The current study tested individual types of aggressive behaviors, rather than personality assessments or a summary of a variety of behaviors on a checklist, and provides new information about which aggressive behaviors are most informative in the prediction of early substance use initiation. Because checklist methods sum ratings of different forms of aggression representing different etiologies (Yeh et al., 2010), they may underestimate the magnitude of the relationships with substance use initiation. For instance, Ernst and colleagues (2006) found that summary scores on the Life History of Aggression (LHA) significantly increased the probability of tobacco ($OR = 1.09$) and alcohol ($OR = 1.11$) use initiation and we found similar magnitude odds ratio for predicting early substance use ($OR = 1.05$). However, the accuracy of classifying users was greater for the Assaults People variable than the LHA summary score (42% versus 12%, respectively). By testing individual behaviors, it becomes evident which distinct aggressive acts are and which are not related to substance use initiation.

To put rates of participation in aggressive behaviors in context, we include some preliminary evidence from a group of children without a family or personal history of substance use (FH-, $n = 27$). This smaller FH- group did not differ from the User or Non-Users on gender, race, ethnicity, although none had DSM-IV diagnoses. This FH- group did not differ from the Non-Users in any aggressive behaviors. They were significantly less likely than the User group to have experienced Physical Fighting (26% of FH- cases; $p = .038$), Assaults People (7% of FH- cases; $p = .002$), and aggression-related School Discipline issues (15% of FH- cases; $p = .001$). However, because this study focused on substance use within the family history group, and because the group was small, the FH- group was not included in subsequent analyses.

The association of aggression with subsequent early substance use initiation appears driven by intentionally engaging in behaviors intended to harm others. Although relatively rare, engaging in childhood aggression (i.e., assault as assessed by LHA) is strongly predictive of continued aggression and more general delinquency (Broidy et al., 2003). As such, early substance use initiation may be one expression of externalizing psychopathology. In fact, the association between Assaults People with early substance use initiation may reflect severity of externalizing behavior. Early substance use initiation among a group at high risk of substance misuse may occur in more severe cases, since such youth are more likely to develop a substance use disorder (King & Chassin, 2007). Likewise, Assaults People is arguably the most severe of the aggressive acts measured, because it involves initiating physical fights with the intent to harm (even if the other person had no chance to fight back). This is more socially unacceptable and has potentially greater consequence than many other behaviors (Broidy et al., 2003). Temper Tantrums and Property Destruction are aggressive displays, but less likely to result in significant school or legal consequences than assaulting someone. Verbal Assault does not involve physical harm; although Physical Fighting does involve that harm, it lacks the initiation and intent for harm that is present with Assaults People. Antisocial consequences may reflect a range of externalizing behaviors, but not the intent to harm another individual. Finally, whereas Suicide Attempts and Self-Harm have a high likelihood of harm for the perpetrator, they occurred so infrequently in this sample that there was little relationship with early initiation of substance use. Aggression and substance use appear to be related, and the results of this research suggest that it is the more severe aggressive behaviors directed at another individual is most predictive of early substance use initiation.

Several hypotheses have been proposed as to why aggression and substance use initiation may be linked. First, aggression and substance use initiation may be specific manifestations of more general underlying disinhibitory control problems (Iacono et al., 2008; Vanyukov et al., 2003). Second, aggression can be conceptualized as an externalizing behavior with a strong affective component. Youth with affect regulation difficulties may be more likely to express aggressive behavior, which may similarly make them vulnerable to substance use initiation (Ernst et al., 2006). Third, just as substance use risk is transmitted from parent to child, expression of aggressive behaviors may also result from genetic and shared environmental learning processes (Atkinson et al., 2009). Fourth, children with aggressive behaviors who have aggression-related school problems may be more likely to have access

to substances of abuse via deviant peer affiliation (Rosenberg & Anthony, 2001). Even in the context of family history of substance use disorder, individual differences in childhood aggression confer increased risk for early substance use initiation. Having an early childhood history of initiating physical altercations, with specific intent to harm another person, may be cause for treatment services to mitigate risk developing a more life-course persistent trajectory of antisocial or externalizing behavior. Previous treatment trials have had success in reducing risk for initiation of tobacco use among youth receiving classroom based services to reducing early aggression (e.g. Storr et al., 2002).

Despite its new information, this study has limitations. The measurement of aggression, while novel, was not comprehensive. For instance, this study did not compare proactive versus reactive aggressive behavior, which have been related to substance use initiation (Fite et al., 2008). Also, because the individual item-scoring algorithm of the LHA is not on an ordinal scale, analyses were only conducted on the presence/absence of aggressive behaviors, not their frequency. However, frequency and types of aggressive acts are likely to be relatively low in youth compared to adults who have had more time and opportunity to engage in them. The sample size was modest, especially compared to the prospective aggression literature (e.g., Broidy et al., 2003), but is comparable to prospective tests of early substance use initiation ($N = 78$; Ernst et al., 2006). Finally, because of the limited time-frame sampled, it is not clear how early substance use initiation observed so far might relate to the progression of problem use and eventual substance use disorder. This cohort is currently being maintained as part of two funded projects; we anticipate learning more about these relationships with problem use in the next wave.

Conclusions

Aggression, particularly specific assaults on another person and school consequences related to aggression, were predictive of early substance use initiation. Further, these relationships remained significant even when accounting for other factors like aggressive property destruction. A variety of theories accounting for these relationships have been proposed, which offer insights into how to potentially prevent the progression to early substance use initiation. Whether treatment targets affect regulation, disinhibition, and the family environment, or some combination, delivery of treatment for children who initiate physical aggression and are expressing these problems at school is warranted.

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Figure 1. Proportion of User and Non-User Groups who have Engaged in Distinct Types of Aggressive Behavior

Table 1**Demographic Characteristics**

	Non-User <i>n</i> = 78	User <i>n</i> = 41	
	%	%	<i>p</i>
Gender, boys	49	44	.617
Race, White	77	83	.532
Ethnicity, Hispanic	81	85	.445
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>p</i>
Age at study entry, years	11.3 (0.7)	11.1 (0.8)	.239
Follow-up, years	2.6 (0.6)	2.3 (0.9)	.026
Intelligence	93.7 (11.0)	91.9 (11.3)	.404
Socioeconomic Status	32.0 (10.3)	32.4 (10.6)	.859
FH density	3.0 (1.3)	2.9 (1.2)	.387

FH, family history of substance use disorder.

Table 2
Group Comparisons of Risk Behaviors

	Non-User <i>n</i> = 78	User <i>n</i> = 41	
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>p</i>
Life History of Aggression	5.52 (5.8)	8.34 (6.7)	.018
Barratt Impulsiveness Scale 11	64.87 (10.2)	67.02 (9.0)	.260
CBCL			
Internalizing	53.68 (11.3)	53.02 (9.4)	.751
Externalizing	51.58 (10.0)	53.27 (10.9)	.401
YSR			
Attention Problems	55.57 (6.9)	56.71 (7.2)	.406
Internalizing	49.38 (9.7)	51.10 (10.1)	.367
Externalizing	43.04 (9.6)	48.34 (10.9)	.007
Somatic Complaints	55.87 (7.4)	57.44 (8.6)	.303
Social Problems	54.58 (6.1)	55.00 (7.4)	.738
Conners3			
Inattention	55.37 (13.7)	60.29 (15.0)	.075
Hyperactivity	55.31 (13.1)	60.71 (13.0)	.034
Learning Problems	53.35 (11.8)	57.78 (13.5)	.067
Family Relations	48.58 (8.8)	51.27 (9.9)	.133
Defiance/Aggression	51.21 (11.3)	57.22 (15.0)	.016

CBCL, Child Behavior Checklist; YSR, Youth Self-Report of the ASEBA.

Table 3
Regression Model: Association of Risk Factors with Substance Use Initiation

Model 1: Early Initiation	Wald	<i>p</i>	OR (95% CI)
LHA Assaults People	7.10	.008	3.65 (1.41-9.44)
LHA School Discipline	3.96	.047	2.35 (1.01-5.46)
LHA Property Destruction	1.14	.287	1.72 (0.63-4.67)
Conners3 Hyperactivity	0.24	.623	1.01 (0.98-1.04)

LHA, Life History of Aggression.

Table 4
Regression Model: Association of Risk Factors with Tobacco, Alcohol, and Marijuana Initiation

	Model 2: Tobacco			Model 3: Alcohol			Model 4: Marijuana		
	Wald	p	OR (95% CI)	Wald	p	OR (95% CI)	Wald	p	OR (95% CI)
LHA Assaults People	4.36	.037	4.10 (1.09-15.44)	5.79	.016	3.83 (1.28-11.43)	11.22	.001	6.36 (2.16-18.79)
LHA School Discipline	7.65	.006	7.30 (1.79-29.87)	1.27	.260	1.84 (0.64-5.28)	0.40	.528	1.45 (0.46-4.60)
LHA Property Destruction	1.33	.249	2.36 (0.55-10.17)	1.04	.307	1.85 (0.57-6.04)	1.20	.274	1.96 (0.59-6.51)
Conners3 Hyperactivity	1.67	.196	1.03 (0.98-1.07)	0.12	.733	1.00 (0.97-1.05)	0.00	.983	1.00 (0.96-1.04)

LHA, Life History of Aggression.

Table 5
Regression Model: Association of Risk Factors with Number of Drug Classes Used

Number of Drug Classes Used	Standardized β	t	p
LHA Assaults People	0.452	2.69	.008
LHA School Discipline	0.302	2.08	.040

LHA, Life History of Aggression.