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A typology of substance use among pregnant teens in the United States

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Abstract

Objectives—Previous research suggests that, in general, youth who become pregnant during their teenage years tend to report elevated levels of substance use prior to conception and substantial reductions in use during pregnancy. While such studies provide insight into aggregate patterns of adolescent substance use in relation to pregnancy, they may have the unintended effect of masking the behavioral heterogeneity of pregnant teens.

Method—The present study employs data from a large, population-based study of adolescents in the United States. We employ latent class analysis to identify subgroups of pregnant adolescents (ages 12-17; $n = 810$) on the basis of variables measuring the past 12-month and past 30-day use of an extensive array of substances.

Results—Results revealed a four class solution. Classes were identified as Class 1: *Abstainers* ($n = 344$, 42.47%), Class 2: *Drinkers* ($n = 303$, 37.41%), Class 3: *Alcohol and Cannabis Users* ($n = 77$, 9.51%), and Class 4: *Polydrug Users* ($n = 86$, 10.62%). The *Abstainers* class had the highest proportion of Hispanic youth (34.3%) as well as the highest proportion of youth residing in households earning less than \$20,000 per year (44.2%). The *Polydrug Users* class had the highest proportion of youth who were in late adolescence (75.58%), non-Hispanic white (54.65%), high-income (13.95%), and in their first trimester of pregnancy (58.33%).

Conclusions—Findings point to an important degree of heterogeneity among pregnant teens and may have implications for the development of interventions designed for youth exhibiting disconcerting patterns of substance use prior to pregnancy.

Keywords

alcohol; pregnancy; adolescents; substance use disorders; neonatal health

Extensive research has been conducted on the links between substance use and sexual behaviors that place youth at risk for early or unplanned pregnancy (Blinn Pike, Berger, Hewett, & Oleson, 2004; Guo et al., 2005; Salas-Wright, Olate, & Vaughn, 2014; Thompson, Kao, & Thomas, 2005). Research in this area has highlighted the overlapping

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etiologicals of substance use and sexual risk behavior (Hawkins, Catalano, & Arthur, 2002; Resnick et al., 1997) as well as the instrumental role of substance use in increasing risk for involvement in sexual behaviors that can place youth at risk for early or unplanned pregnancy (Odgers et al., 2008; Stueve & O'Donnell, 2005). For instance, studies have found that substance use can precipitate decreased or infrequent condom use, particularly in circumstances in which the sexual encounter is spontaneous or unplanned (Poulin, & Graham, 2001). Research also suggests that adolescent substance use may facilitate involvement in risky sexual behavior by means of the transformation of peer and social networks (Fergus & Zimmerman, 2005; Huock et al., 2006). Simply, it is evident that substance use and sexual risk behavior are often interrelated in the lives of youth.

Despite the abundance of research on adolescent substance use and sexual risk behavior, research on substance use and teen pregnancy is surprisingly sparse. Indeed, only a smattering of studies has focused on adolescent substance use prior to and during pregnancy (Amaro, Zuckerman, & Cabral, 1989; Barnett, Duggan, Wilson, & Joffe, 1995; De Genna, Cornelius, & Donovan, 2009; Gilchrist, Hussey, Gillmore, Lohr, & Morrison, 1996; Kaiser & Hays, 2005; Spears, Stein, & Koniak-Griffin, 2010; Morrison, Spencer, & Gilmore, 1998; Salas-Wright, Vaughn, Ugalde, & Todici, 2015). Nevertheless, evidence from the current body of research points rather coherently to a pattern of results in which youth tend to report relatively elevated levels of substance use prior to conception and substantial reductions in use during pregnancy (Chapman & Wu, 2013). Studies pointing to a precipitous decline in substance use during pregnancy suggest that many young people change their substance use behaviors during pregnancy, perhaps due to concerns related to neonatal health and development (Huizink & Mulder, 2006; Smith et al., 2008).

Prior research examining substance use and teen pregnancy has provided an important contribution in terms of our understanding of the links between these phenomena in the aggregate. However, a burgeoning body of person-centered research—which makes use of mixture modeling approaches such as latent class and profile analysis—highlights the fact that aggregate analyses of behavior frequently mask substantial heterogeneity (e.g., Salas-Wright, Hernandez, Maynard, Saltzman, & Vaughn, 2014; Vaughn, Salas-Wright, DeLisi, & Maynard, 2014). Indeed, it is likely that a degree of heterogeneity can be observed with respect to the patterns of adolescent substance use prior to and during pregnancy and thus, it is reasonable to surmise that various subtypes of pregnant teens can be identified on the basis of substance use prior to and during pregnancy.

The Present Study

The present study employs data from a large, population-based study (National Survey on Drug Use and Health [NSDUH]) of adolescents in the United States between 2002 and 2012. Specifically, we use latent class analysis (LCA) to identify latent subgroups of pregnant adolescents (ages 12-17) on the basis of variables measuring the past 12-month and past 30-day use of an extensive array of substances. Although operationally imperfect, we utilized past 12-month and past 30-day measures as relative approximations for substance use prior to and during pregnancy, respectively. However, for purposes of clarity we exclusively refer to these measures using their temporal labels (i.e., 12-month, 30-day) and

exercise caution in our interpretation of the relevance of study findings to our understanding of substance use prior to and during pregnancy.

Method

Sample and Procedures

The NSDUH provides population estimates of substance use and health-related behaviors in the U.S. general population. It utilizes multistage area probability sampling methods to select a representative sample of the U.S. civilian, non-institutionalized population aged 12 years or older. A more detailed description of the NSDUH design and procedures is available elsewhere (SAMHSA, 2012). In order to increase the analytic sample size, we pooled respondents ages 12-17 reporting they were pregnant at the time of interview between 2002 and 2012 ($n = 810$). Supplementary trend analyses revealed that the proportion of youth reporting teen pregnancy decreased significantly between 2002 (0.79, 95% CI = 0.60-1.05) and 2012 (0.62%, 95% CI = 0.44-0.85).

Measures

Teen Pregnancy—Respondents were classified as pregnant on the basis of the following question: “Are you currently pregnant?” Respondents endorsing pregnancy were categorized as being in their first, second, or third trimesters of pregnancy based on self-report.

Substance Use—Dichotomous (0 = no, 1 = yes) substance use measures included past 12-month and past 30-day use of alcohol, cannabis, cocaine, hallucinogens, inhalants, methamphetamine, stimulants, tranquilizers, and ecstasy. Respondents reporting lifetime use of a particular drug were queried: “How long has it been since you last used X drug?” Response options included: “within the past 30 days”, “more than 30 days ago but within the past 12 months”, or “more than 12 months ago”. We also examined measures of alcohol, cannabis, and “other” drug (e.g., cocaine, hallucinogens, etc.) use frequency and disorders based on criteria from the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) criteria (American Psychiatric Association, 2000).

Psychosocial Factors—We examined several psychosocial protective factors in the domains of risk aversion, parental warmth and control, religious belief, and school engagement. These items span a wide array of intrapersonal and ecodevelopmental constructs that have been identified as important psychosocial protective factors for substance use and health-risk behavior among the general population of adolescents in recent NSDUH-based studies, including studies conducted with pregnant teens (DeLisi, Vaughn, & Salas-Wright, 2015; Salas-Wright, Vaughn, Hodge, & Perron, 2012; Salas-Wright et al., 2015). Notably, the NSDUH does not include any information on romantic partners or sexual risk behavior. Information as to the phrasing of the individual items is provided in Table 3.

Indicator Covariates—Several key sociodemographic and pregnancy-related variables were also included as covariates to refine the validation of the latent classes, including: age, race/ethnicity, total annual family income, and trimester of pregnancy.

Statistical Analyses

Latent class analysis (LCA) and multinomial regression analyses were executed in successive steps to identify and, in turn, validate latent subgroups of adolescents in the sample. LCA is a statistical procedure designed to assign individual cases to their most likely latent subgroups on the basis of observed data. LCA was carried out in order to identify latent subgroups on the basis of substance use and multinomial regression was utilized in order to validate the modeling of the subgroups on the basis of psychosocial protective factors.

Beginning with the LCA, a sequence of latent class models were identified between 1 and 5 classes using Latent GOLD® 4.5 software. Five statistical criteria were used to identify the best fitting model: Log Likelihood, Bayesian Information Criterion (BIC), Akaike's Information Criterion (AIC), Consistent Akaike's Information Criterion (CAIC), and entropy. Lower BIC, AIC, and CAIC values and higher log likelihood values reflect better model fit. Importantly, in addition to these quantitative criteria, the parsimony and substantive interpretability of the latent class solutions also function as key criteria for the selection of the final model (Jung & Wickrama, 2008). After identifying latent subgroups, multinomial regression was used to predict class membership. Using multinomial regression, relative risk ratios and corresponding 95% confidence intervals were estimated. Statistical procedures involving multinomial regression models were conducted using Stata 13.1SE survey data functions.

Results

Identification of Latent Classes

The analysis of the latent class models suggested that the four class solution was the best fitting model. As revealed in Table 1, the log likelihood and AIC values for the five class solution were slightly lower than the corresponding values for the four class solution. However, these differences were quite minor and point to an accelerated flattening between the four and five class solutions. The BIC, CAIC, and entropy values for the four class solution also suggest that the four class solution is optimal. Moreover, the clear conceptual makeup of the four class solution suggests that this solution effectively identified a substantively meaningful modeling of the heterogeneity of the sample.

The substantive interpretability and conceptual fit of the latent class model was assessed by means of plotting the mean values of the 18 dichotomous measures of past 12-month and past 30-day substance use across each of the latent classes. As seen in Figure 1, the four class solution is comprised of Class 1: *Abstainers* (n = 344, 42.5%), Class 2: *Drinkers* (n = 303, 37.4%), Class 3: *Alcohol and Cannabis Users* (n = 77, 9.5%), and Class 4: *Polydrug Users* (n = 86, 10.6%) classes. Class 1 (*Abstainers*) class is characterized, with the exception of past 12-month cannabis use (6.7%), by exceedingly low levels of past 12-month and past 30-day substance use. Class 2 (*Drinkers*) is characterized by universal past 12-month alcohol use (100.0%), elevated levels of past 12-months cannabis use (37.9%), and moderate levels of past 30-day alcohol use (20.5%). Notably, besides alcohol use, members of Class 2 (*Drinkers*) were essentially abstinent respect to past 30-day substance use. Class 3 (*Alcohol*

and Cannabis Users) is characterized by very high levels of past 12-month alcohol (81.8%) and cannabis (100.0%) use in combination with elevated levels of past 30-day alcohol (39.0%) and cannabis (100.0%) use. Apart from alcohol and cannabis use, members of Class 3 (Alcohol and Cannabis Users) reported very low levels of use of past 30-day “other drug” use. Class 4 (Polydrug Users) is characterized by universally elevated levels of past 12-month substance use in combination with elevated past 30-day alcohol (50.0%) and cannabis (57.0%) use. Members of Class 4 (Polydrug Users) also report disconcertingly elevated levels of past 30-day cocaine (10.46%), hallucinogen (18.6%), inhalant (16.3%), methamphetamine (3.5%), stimulant (13.9%), tranquilizer (16.3%), and ecstasy (8.1%) use. Although comprising only roughly one in ten (10.6%) pregnant adolescents, members of this class accounted for a total of 81.2% of past 30-day use of drugs other than cannabis.

Supplementary Analysis

We were concerned, due to the self-report nature of the data, about the potential for either recall or social desirability bias in reporting substance use behavior. With respect to recall bias, our concern was that teens in the latter stages of pregnancy (i.e., third trimester) may have changed their substance use behaviors upon becoming pregnant and therefore have difficulty in accurately recalling their use over the past year. In terms of social desirability bias, we were also concerned that teens in their third trimester may be more likely to underreport substance use due to the fact that their pregnancy status would likely be visibly evident. In an attempt to address these concerns, we conducted an additional LCA exclusively with pregnant teens who reported being in either the first or second trimester of pregnancy ($n = 574$). Notably, this sensitivity analysis revealed a four class solution with a highly consistent class structure and a similar proportional makeup (Abstainers = 41.8%, Drinkers = 33.1%, Alcohol and Cannabis Users = 13.3%, Polydrug Users = 11.9%). While not definitive, these results seem to suggest that recall and social desirability biases among late-term teens did not greatly influence the classification of pregnant teens on the basis of substance use.

Sociodemographic Profile of Latent Classes

Table 2 presents the sociodemographic and pregnancy-related characteristics of each of the latent classes. Class 1 (*Abstainers*) has the highest proportion of Hispanic youth (34.3%) as well as the highest proportion of youth residing in households earning less than \$20,000 per year (44.2%). Class 2 (*Drinkers*) has the second-highest proportion of non-Hispanic white youth (48.5%) as well as the second highest proportion of youth residing in households earning more than \$75,000 per year (13.9%). Class 3 (*Alcohol and Cannabis Users*) is disproportionately African-American (39.0%) and is comprised of the lowest proportion of respondents in their third trimester of pregnancy (10.8%). Class 4 (*Polydrug Users*) has the highest proportion of late adolescent (75.6%), non-Hispanic white (54.6%), and high-income (13.9%) youth of all of the latent classes. Class 4 (*Polydrug Users*) also contains the highest proportion of youth in their first trimester of pregnancy (58.3%).

Protective Factors Associated with Latent Class Membership

Table 3 displays the results of multinomial logistic regression analyses examining the association between psychosocial protective factors and membership in the identified latent classes with Class 1 (*Abstainers*) as the reference class. Controlling for sociodemographic and pregnancy related factors, membership in Classes 2-4 was significantly associated with lower levels of risk aversion and parental warmth compared to members of the reference class. With respect to parental control, membership in Class 4 (*Polydrug Users*) was significantly associated with lower frequency of parental assistance with homework (RR = 0.60, 95% CI = 0.44-0.84) and more infrequent parental limit setting (RR = 0.67, 95% CI = 0.49-0.92). Membership in Class 3 (*Alcohol and Cannabis Users*) was also associated more infrequent parental limit setting (RR = 0.70, 95% CI = 0.50-1.00). In terms of religious beliefs, membership in Classes 2-3 was not significantly associated with lower levels of religiosity; however, members of Class 4 (*Polydrug Users*) reported significantly lower levels of religious importance (RR = 0.69, 95% CI = 0.50-0.96) and religious influence (RR = 0.69, 95% CI = 0.49-0.99) compared to members of the reference class.

Substance Use Frequency and Disorders among Members of the Latent Classes

As illustrated in Figure 2, we also examined the prevalence of substance use disorders among the four latent classes. Across the board, the prevalence of alcohol (0.5%), cannabis (1.8%), and other drug use (1.9%) disorders was lowest among the members of Class 1 (*Abstainers*). Members of Class 2 (*Drinkers*) reported somewhat elevated levels of alcohol use disorder (14.7%), but relatively low levels of cannabis (6.2%) and other drug (3.3%) use disorders. Members of Class 3 (*Alcohol and Cannabis Users*) reported slightly higher levels of alcohol use disorder (21.3%) and substantially elevated levels of cannabis use disorder (41.1%) as well as disconcerting levels of other drug use disorders (excluding cannabis; 11.9%). The highest prevalence of alcohol (42.3%), cannabis (41.9%), and other drug (50.9%) use disorders was observed among members of Class 4 (*Polydrug Users*). Notably, Members of Class 4 (*Polydrug Users*) represented roughly one-tenth (10.6%) of all pregnant adolescents, but accounted for more than three-fifths (60.3%) of all other drug use disorder diagnoses (excluding cannabis).

Table 4 examines the number days of substance use in the previous month among members of the four latent subgroups. Members of Class 1 (*Abstainers*) reported no alcohol or cannabis use days in the previous 30-day period, but one respondent reported 1-2 days of use of a drug (inhalant). The majority (79.5%) of the members of Class 2 (*Drinkers*) reported no past 30-day alcohol use; moreover, among those reporting alcohol use, most reported 1-2 (10.6%) or 3-5 (6.3%) days of use. Nevertheless, a small minority (3.6%) reported six or more days of alcohol use in the previous 30-day period. Members of Class 2 (*Drinkers*) were abstinent from cannabis use while a very small minority reported 3-5 (0.3%) or six or more (0.3%) days of drug use. Members of Class 3 (*Alcohol and Cannabis Users*) reported frequent past 30-day alcohol and cannabis use. For instance, 14.3% and 50.6% of class members reported six or more days of alcohol or marijuana use in the past 30-day period, respectively. A substantial proportion of the members of Class 4 (*Polydrug Users*) reported frequent (i.e. six or more days in the previous 30-day period) alcohol (19.8%), cannabis (38.4%), and other drug (15.1%) use. We also examined past 30-day

cigarette use across the four latent classes and found a marked pattern of differences. Specifically, only one in ten youth *Abstainers* (9.7%) reported recent cigarette use in contrast with roughly one in four *Drinkers* (23.7%), more than half *Alcohol and Cannabis Users* (55.0%), and nearly two-thirds of *Polydrug Users* (64.1%).

Discussion

Findings from the present study point to an important degree of heterogeneity among pregnant teens with respect to past 12-month and past 30-day substance use. Specifically, four distinct behavioral subgroups of pregnant teens were identified. The largest group identified, labeled as the *Abstainers* (Class 1), comprised roughly two-fifths (42%) of the total sample and was characterized by very low levels of past 12-month and past 30-day substance use. Notably, youth in the *Abstainers* class were disproportionately likely to be Hispanic and reside in low-income households. The second largest group, labeled as *Drinkers*, comprised more than one-third (37%) of the total sample. Members of this class reported very high levels of past 12-month alcohol and, to a lesser degree, cannabis use. However, only one-fifth (20%) reported past 30-day alcohol use and virtually all were abstinent from cannabis and other drug use over the previous 30-day period. The *Drinkers* class is disproportionately comprised of non-Hispanic whites and can be distinguished from the *Abstainer* class in terms of lower levels of risk aversion, parental warmth, and positive reinforcement from teachers.

Two substantially smaller subgroups were also identified: *Alcohol and Cannabis Users* (9%) and *Polydrug Users* (11%). Members of the *Alcohol and Cannabis Users* class were characterized by nearly universal past-12 month alcohol and cannabis use in combination with moderate levels of past-30 day alcohol use and universal past 30-day cannabis use. This group is disproportionately comprised of African-American teens and roughly two-fifths of class members were in either their second or third trimester of pregnancy. Members of the *Polydrug Users* class were characterized by experimentation with a wide variety of substances over the previous 12-months as well as past 30-day use of alcohol, cannabis, and—to a lesser extent—other drugs. The *Polydrug Users* were the youngest of all subgroups, disproportionately comprised of non-Hispanic whites, and more than half of youth in this subgroup met criteria for drug use disorder (excluding cannabis).

Public Health Implications

Findings from the present study may have a number of important implications for public health and clinical practice. First, although the use of a past 30-day measure of substance use does not provide an inscrutable approximation of use during pregnancy, the identification of the *Alcohol and Cannabis Users* and *Polydrug Users* classes seems to point to subgroups of pregnant teens that may be of particular relevance to neonatal health and prevention efforts. Perhaps of greatest concern is the clear pattern of continuity from past-12 month to current (i.e., past 30-day) use despite the fact that a sizable minority of class members are in the later stages of pregnancy. In fact, these data seem to suggest that past 12-month use of both alcohol and marijuana may be viewed as a “flag” for continued use of these and other substances during the early and, indeed, mid-to-later stages of pregnancy. In addition to

screening for substance use prior to pregnancy, assessing intrapersonal and ecodevelopmental factors such as risk aversion, parental warmth and control, religious beliefs, and school engagement may also help healthcare providers to identify teens at particularly high risk substance use during pregnancy. Prevention scientists might also consider targeting these constructs in efforts to reduce the likelihood of substance use among pregnant teens.

Study Limitations

Several limitations should be kept in mind in the interpretation of our study findings. First, self-report measures were used for pregnancy and substance use. As such, it is possible that some respondents may have failed to report or been unaware that they were pregnant. The self-report nature of the data also allows for the possible under-reporting of substance use among pregnant teens, particularly those in the later stages of pregnancy (Bessa, Mitsuhiro, Chalem, Barros, & Guinsburg, 2010). Although we cannot determine with precision the degree to which social desirability bias may be in play, it is reasonable to suspect that underreporting may have artificially inflated the relative size of the abstainer class and, potentially, decreased the relative size of the polydrug user class and other drugs user-classes. Second, the use of past 12-month and past-30 day measures of substance use does not provide a precise categorization of use prior to and during pregnancy. As such, it is possible that misclassification could take place if, for example, an adolescent were three weeks pregnant and used alcohol prior to conception but still within the previous 30-day period. It is also possible that the trimester of pregnancy of a given respondent may influence classification due to recall or social desirability bias. While our sensitivity analyses suggest that this is likely not an issue, we nevertheless exercise caution in our interpretation of the relevance of study findings to our understanding of substance use prior to or during pregnancy.

Conclusion

Previous research suggests that, in general, youth tend to report elevated levels of substance use prior to conception and substantial reductions in use during pregnancy. While such studies certainly provide insight into aggregate patterns of adolescent substance use in relation to pregnancy, they may have the unintended effect of masking the behavioral heterogeneity of pregnant teens. Overall, our person-centered findings suggest that substantial heterogeneity exists with respect to the past 12-month and past 30-day substance use patterns of pregnant adolescents.

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Figure 1. Substance use among latent subgroups of pregnant teens

Figure 2. Prevalence of past 12-month substance use disorders by latent subgroup

Table 1

Fit indices for latent classes

Class Solution	Log Likelihood	BIC	AIC	CAIC	Entropy
1 Class	-3386.08	6892.70	6808.15	6910.70	n/a
2 Classes	-2753.67	5802.01	5595.34	5846.01	0.83
3 Classes	-2577.50	5623.80	5295.00	5693.80	0.79
4 Classes	-2502.52	5647.95	5197.04	5743.95	0.93
5 Classes	-2432.33	5681.71	5108.67	5803.71	0.93

Note: AIC = Akaike's Information Criterion, BIC = Bayesian Information Criterion, CAIC = Consistent Akaike's Information Criterion.

Table 2

Sociodemographic characteristics by latent class

	Class 1: Abstainers (<i>n</i> = 344; 42.5%)	Class 2: Drinkers (<i>n</i> = 303; 37.4%)	Class 3: Alcohol and Cannabis Users (<i>n</i> = 77; 9.5%)	Class 4: Polydrug Users (<i>n</i> = 86; 10.6%)	Full Sample (<i>n</i> = 810)	χ^2 Significance
	N (%)	N (%)	N (%)	N (%)	N (%)	
Sociodemographic Factors						
Age						
12-14 years	38 (11.0)	25 (8.2)	11 (14.3)	21 (24.4)	95 (11.7)	p < .01
15-17 years	306 (88.9)	278 (91.7)	66 (85.7)	65 (75.6)	715 (88.3)	
Race/Ethnicity						
Non-Hispanic white	101 (29.4)	147 (48.5)	24 (31.2)	47 (54.65)	319 (39.4)	p < .001
African-American	108 (31.4)	50 (16.5)	30 (38.96)	6 (7.0)	194 (23.9)	
Hispanic	118 (34.3)	72 (23.8)	11 (14.3)	23 (26.7)	224 (27.6)	
Other	17 (4.9)	34 (11.2)	12 (15.6)	10 (11.6)	73 (9.0)	
Household Income						
< \$20,000	152 (44.2)	112 (37.0)	29 (37.7)	22 (25.6)	315 (38.9)	ns
\$20,000-\$49,999	125 (36.3)	116 (38.3)	29 (37.7)	39 (45.3)	309 (38.1)	
\$50,000-\$74,999	36 (10.5)	33 (10.9)	13 (16.9)	13 (15.1)	95 (11.7)	
> \$75,000	31 (9.0)	42 (13.9)	6 (7.8)	12 (13.9)	91 (11.2)	
Trimester of Pregnancy						
First	106 (33.3)	114 (38.4)	43 (58.1)	49 (58.3)	312 (40.4)	p < .001
Second	114 (35.8)	100 (33.7)	23 (31.1)	25 (29.8)	262 (33.9)	
Third	98 (30.8)	83 (27.9)	8 (10.8)	10 (11.9)	199 (25.7)	

Note:

* p < .05,

** p < .01,

*** p < .001.

All percentages are reported as column percentages.

Table 3

Psychosocial associations with latent class membership

	Class 2: Drinkers (<i>n</i> = 303; 37.41%)		Class 3: Alcohol and Cannabis Users (<i>n</i> = 77; 9.51%)		Class 4: Polydrug Users (<i>n</i> = 86; 10.62%)	
	RR	(95% CI)	RR	(95% CI)	RR	(95% CI)
Psychosocial Factors						
<i>Risk Aversion</i>						
“Get a real kick out of doing things that are a little dangerous?” (reverse)	0.56	(0.43-0.72)	0.46	(0.29-0.71)	0.22	(0.15-0.35)
“Like to test yourself by doing something a little risky?” (reverse)	0.49	(0.37-0.64)	0.49	(0.33-0.74)	0.29	(0.19-0.42)
<i>Parental Warmth and Control</i>						
“How often did you parents let you know when you done a good job?”	0.76	(0.59-0.97)	0.63	(0.43-0.94)	0.61	(0.42-0.87)
“How often did your parents tell you they were proud of you?”	0.79	(0.63-0.99)	0.62	(0.44-0.88)	0.57	(0.41-0.81)
“How often did your parents provide help with your homework?”	0.90	(0.73-1.10)	0.81	(0.61-1.10)	0.60	(0.44-0.84)
“How often did your parents limit time out with friends on school nights?”	0.99	(0.80-1.22)	0.70	(0.50-1.00)	0.67	(0.49-0.92)
<i>Religious Belief</i>						
“My religious beliefs are a very important part of my life”	1.14	(0.92-1.42)	0.91	(0.64-1.30)	0.69	(0.50-0.96)
“My religious beliefs influence how I make decisions in my life”	1.09	(0.86-1.38)	0.89	(0.63-1.26)	0.69	(0.49-0.99)
<i>School Engagement</i>						
“How have you felt overall about going to school?”	0.77	(0.59-1.01)	0.57	(0.39-0.84)	0.46	(0.31-0.67)
“Do you feel that the assigned school work was meaningful and important?”	1.00	(0.76-1.30)	0.79	(0.52-1.19)	0.58	(0.38-0.90)
“How important are things learned in school going to be to you later in life?”	0.76	(0.57-1.02)	0.69	(0.46-1.05)	0.52	(0.35-0.76)
“How often did your teachers that you know when you were doing a good job?”	0.76	(0.59-0.78)	0.63	(0.43-0.94)	0.61	(0.42-0.87)

Note: Reference class is Class 1: “Abstainers” (*n* = 344; 42.47%). Risk Ratios (RR) adjusted for age, race/ethnicity, household income and trimester of pregnancy. RRs and 95% Confidence Intervals (CI) in bold are significant at $p < .05$.

Table 4
Substance use days in previous month by latent subgroup

Substance Use Days in Previous Month	Class 1: Abstainers (<i>n</i> = 344; 42.47%)	Class 2: Drinkers (<i>n</i> = 303; 37.41%)	Class 3: Alcohol and Cannabis Users (<i>n</i> = 77; 9.51%)	Class 4: Polydrug Users (<i>n</i> = 86; 10.62%)	χ^2 Significance
	N (%)	N (%)	N (%)	N (%)	
<i>Alcohol</i>					
No use	344 (100.00)	241 (79.54)	47 (61.04)	43 (50.00)	
1-2 days	0	32 (10.56)	11 (14.29)	11 (12.79)	188.61***
3-5 days	--	19 (6.27)	8 (10.39)	15 (17.44)	
6+ days	--	11 (3.63)	11 (14.29)	17 (19.77)	
<i>Cannabis</i>					
No use	344 (100.00)	303 (100.00)	--	37 (43.02)	
1-2 days	--	--	23 (29.87)	9 (10.47)	665.02***
3-5 days	--	--	15 (19.48)	7 (8.14)	
6+ days	--	--	39 (50.65)	33 (38.37)	
<i>Other Drugs</i>					
No use	343 (99.71)	301 (99.34)	74 (96.10)	57 (66.28)	
1-2 days	1 (0.29)	--	1 (1.30)	11 (12.79)	204.40***
3-5 days	--	1 (0.33)	--	5 (5.81)	
6+ days	--	1 (0.33)	2 (2.60)	13 (15.12)	

Note:

* $p < .05$,

** $p < .01$,

*** $p < .001$.

All percentages are reported as column percentages.