



Latent classes of substance use in late adolescent and young adult survivors of child maltreatment and adversity: a 20-year prospective investigation

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Introduction

- Experimentation with drugs is common during adolescence
- Continued substance use into adulthood is prevalent among survivors of childhood adversity (e.g., maltreatment)
- Substance use beyond adolescence increases risk for other negative outcomes (e.g., depression, anxiety, health concerns, mortality)^{1,2}
- Person-centered analytic techniques can identify groups of individuals who develop problematic substance use patterns^{3,4}
- Extant work that examines patterns of substance use among those exposed to significant childhood adversity is limited due to:
 1. Reliance on cross-sectional, retrospective reporting of adversity and maltreatment
 2. Failure to examine substance use patterns beyond early and middle adolescence

AIMS. The current study:

1. Identified discrete patterns of substance use in late adolescence-emerging adulthood using latent class analysis (LCA) in a cohort identified as at-risk for maltreatment during early childhood
2. Examined how individual- and family-level characteristics differed by class membership using longitudinal data, with a focus on the effects of adverse childhood experiences (ACEs) from ages 0- 18.

Methods

Participants:

- 483 participants from the Longitudinal Studies of Child Abuse and Neglect (LONGSCAN) young adult follow up (Mage = 23.78; SD = 1.95)
- Identified as at-risk for child maltreatment prior to age 4
- Interviewed in-person biannually from ages 4-18 years
- Followed up via online survey in late adolescence/emerging adulthood

Measures:

- **Substance use** was self-reported via an adapted version of the National Survey on Drug Use and Health,⁵
- **Current sociodemographic information** (e.g., race, employment) and **other recent life experiences** (e.g., incarceration) were self-reported
- **Eight ACEs** between 0- and 18-year-old, based on the original ACEs survey,⁶ were assessed prospectively via caregiver and youth reports and official Child Protective Services records from birth- age 18.

Data Analytic Plan:

- LCA was performed based on 9 indicators: alcohol and cannabis use disorder diagnoses, any past 30-day tobacco use, and any past 12-month use of cocaine, opioids, amphetamines, hallucinogens/ecstasy, *non-prescribed* stimulants, and *non-prescribed* sedatives/tranquilizers

Results

Figure 1. Latent Class Probabilities for Each Substance

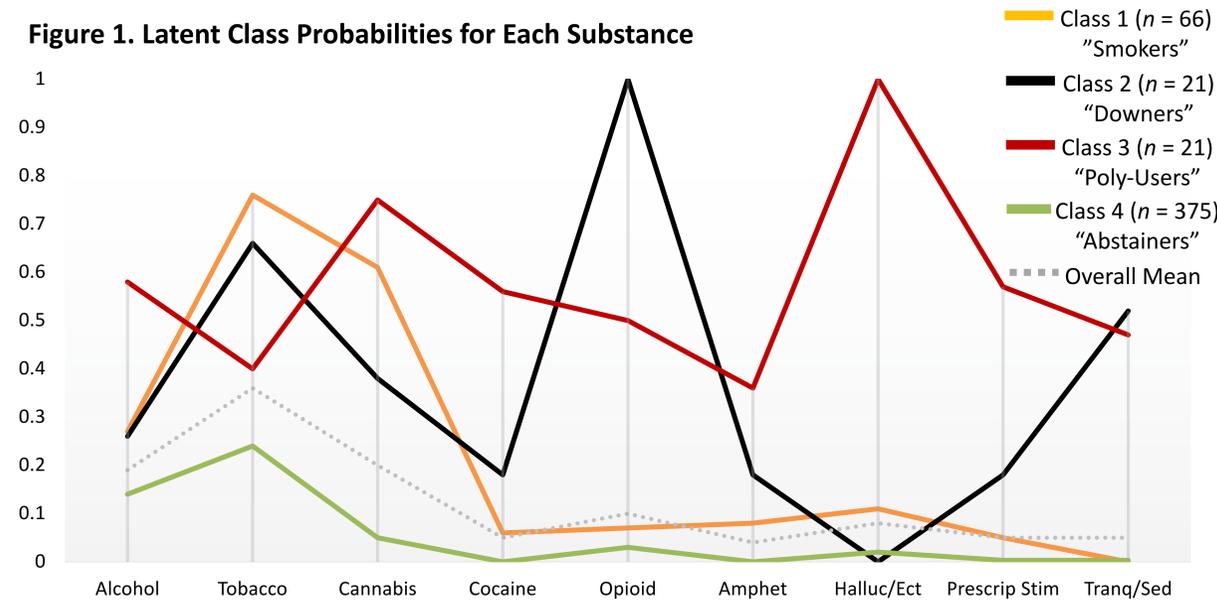


Table 1. Model Fit Indices for 1- through 5-Class Solutions

	AIC	BIC	SSA BIC	Entropy	LMR χ^2 p -value	Bootstrapped LRT p -value	Smallest Class n (% of sample)
1-Class Solution	2866.65	2904.27	2875.70	-	-	-	-
2-Class Solution	2563.39	2642.81	2582.50	0.88	<0.001	<0.001	59 (12.2%)
3-Class Solution	2551.13	2672.35	2580.31	0.64	0.55	<0.001	46 (9.5%)
4-Class Solution	2537.40	2700.42	2576.64	0.80	0.03	<0.001	21 (4.3%)
5-Class Solution	2527.03	2731.85	2576.33	0.77	0.29	0.03	6 (1.2%)

Note. AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; SSA BIC = Sample size-adjusted Bayesian Information Criteria; LMR = Lo-Mendell-Rubin; LRT = likelihood ratio test.

Table 3. χ^2 Values for Equality of Means Test: Class Comparisons by ACEs

	Smokers vs. Poly-Users	Downers vs. Poly-Users	Poly-Users vs. Abstainers	Smokers vs. Downers	Smokers vs. Abstainers	Downers vs. Abstainers
ACEs 0-18 (Total Score)	0.00	0.08	5.16* (P)	0.11	6.16* (P)	5.67* (D)
- Physical Abuse	0.43	0.16	0.34	0.03	3.18	0.98
- Sexual Abuse	0.00	0.01	1.91	0.02	2.95	1.70
- Emotional Abuse	1.54	3.54	2.60	12.22*** (S)	0.00	27.87*** (D)
- Neglect	0.07	0.06	1.99	0.00	1.68	0.72
- CG Substance Use	0.54	0.25	7.86** (P)	0.01	4.52* (S)	2.46
- Family Violence	3.19	0.01	1.55	1.99	0.02	2.50
- Fam. Incarceration	3.19	0.01	4.42* (P)	1.99	0.02	2.50
- Fam. Mental Illness	0.23	0.08	1.80	0.51	6.00* (S)	0.55

* $p < .05$; ** $p < .01$; *** $p < .001$. Note. Letters in parentheses denote the class with the greater ACEs score/rate when a significant difference was present. ACEs 0-18 = adverse childhood experiences between 0- and 18-year-old; CG = caregiver; Fam. = family.

Table 2. Sociodemographics

	n (%)
Female	298 (61.7%)
Age (M [SD])	23.78 (1.95)
Race/Ethnicity	
Black	255 (52.8%)
White	136 (28.2%)
Hispanic	25 (5.2%)
Other	67 (13.9%)
Graduated HS	407 (84.3%)
Employed	251 (52.0%)
Student	173 (35.8%)
Parent	213 (44.2%)
Any incarceration since age 18	112 (23.3%)
Total ACEs Score	(M [SD])
"Smokers"	4.98 (2.27)
"Downers"	5.15 (1.83)
"Poly-Users"	5.00 (1.63)
"Abstainers"	4.15 (1.40)

Other Class Differences:

- "Poly-Users" more likely to be White than all other classes
- "Abstainers" more likely to be Black than all other classes
- "Abstainers" more likely to be employed than all other classes
- "Downers" more likely than "Abstainers" to have been incarcerated since age 18
- No class differences by age, gender, high school graduation, or current status as student or parent

Summary and Discussion

- Findings revealed four unique, well-defined classes
- Classes broadly mirror those in general population and community samples, showing a single, large low-use class and several smaller high-use classes
- Class defined by high rates of opioid, tobacco, and tranquilizer/sedative use (i.e., "Downers") has not been identified in prior high-risk samples
- Individuals in high-use classes experienced more cumulative ACEs than "Abstainers"
- Classes also differed by certain individual ACEs, (e.g., high rate of emotional abuse in "Smoker" class)
- Large proportion of "Abstainers" (78% of sample) suggests significant substance-related resilience in the high-risk LONGSCAN sample

Clinical Implications

- Small, clearly-defined "Downer" class underscores need to assess for and address risk for opioid use among individuals with significant childhood adversity
- Given high rates of ecstasy/hallucinogen use among "Poly-Users," clinicians and patients may benefit from engaging in conversations about these less frequently addressed – but potentially impairing – substances
 - Abuse of ecstasy and hallucinogens can result in long-term neurobiological changes⁷

Future Directions

- Future research should replicate this work in different high-adversity samples to confirm the external validity of classes identified here (e.g., "Downer" class)
- Additional studies should explore processes/mechanisms through which childhood adversity leads to substance use patterns
 - E.g., via self medication of traumatic stress, enhanced sensitivity to rewards, involvement in deviant peer groups

Conclusions and Highlights

- This study identified four discrete classes based on unique patterns of substance use among emerging adults with significant childhood adversity exposure
- Classes were interpreted as: "Smokers," "Downers," "Poly-Users," and "Abstainers"
- ACEs, assessed prospectively from 0-18, were associated with membership in high-use classes

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