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Classes of Substance Abuse Relapse Situations: A Comparison of Adolescents and Adults

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Summary

Below please provide a brief summary of this resource. If an abstract is available, feel free to copy and paste it here.

Research in the process of relapse has uncovered important developmental differences in the situations that make adolescents and adults most vulnerable to relapse after substance abuse treatment. This study takes a developmental, person-centered approach to relapse by examining the latent class structure of relapse precursors in adolescents and adults. Adults (N = 160) and adolescents (N = 188) in substance abuse and psychiatric treatment were followed up to 18 months after discharge to gather detailed information about their first relapse after treatment. Both adolescents and adults exhibited a 2-class structure of relapse precursors. Adult classes were labeled *social and urges* situations (primary precursors: social pressure and urges; 67%) and *negative and urges* situations (primary precursors: negative affect and urges; 33%), while teen classes were labeled *social and positive* situations (primary precursors: enhancing a positive emotional state and social pressure; 69%) and *complex* situations (primary precursors: negative affect, negative interpersonal situations, social pressure, and urges; 31%). Findings are discussed in relation to developmental and clinical considerations in treating clients with substance use disorders and comorbid psychopathology.

Classes of Substance Abuse Relapse Situations: A Comparison of Adolescents and Adults

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Research in the process of relapse has uncovered important developmental differences in the situations that make adolescents and adults most vulnerable to relapse after substance abuse treatment. This study takes a developmental, person-centered approach to relapse by examining the latent class structure of relapse precursors in adolescents and adults. Adults ($N = 160$) and adolescents ($N = 188$) in substance abuse and psychiatric treatment were followed up to 18 months after discharge to gather detailed information about their first relapse after treatment. Both adolescents and adults exhibited a 2-class structure of relapse precursors. Adult classes were labeled *social and urges* situations (primary precursors: social pressure and urges; 67%) and *negative and urges* situations (primary precursors: negative affect and urges; 33%), while teen classes were labeled *social and positive* situations (primary precursors: enhancing a positive emotional state and social pressure; 69%) and *complex* situations (primary precursors: negative affect, negative interpersonal situations, social pressure, and urges; 31%). Findings are discussed in relation to developmental and clinical considerations in treating clients with substance use disorders and comorbid psychopathology.

Keywords: lapse characteristics, latent class analysis, developmental psychopathology

Substance abuse is commonly thought of as a “chronically relapsing condition” (Witkiewitz & Marlatt, 2004), with both youth and adults returning to substance abuse at high rates after treatment. Studies estimate that between two thirds and four fifths of both adults and adolescents begin use again in the 6 months after an episode of community- or hospital-based drug or alcohol treatment (Brown, D’Amico, McCarthy, & Tapert, 2001; Brown, Vik, & Creamer, 1989; Cornelius et al., 2001; Hunt, Barnett, & Branch, 1971). A major focus in research examining the process of addiction relapse has been the characterization of relapse “determinants,” or contextual features of situations in which adults and adolescents tend to use after they have been in treatment for these problems.

Several research groups have identified situations that most frequently precede relapse to substance use and the frequency of their occurrence in adults (Longabaugh, Rubin, Stout, Zywiak, & Lowman, 1996; Marlatt, 1996; Marlatt & Gordon, 1985; Miller,

Westerberg, Harris, & Tonigan, 1996). In the original work conducted by Marlatt and Gordon (1985), a major distinction in this taxonomy was between intrapersonal, or environmentally determined (58% of Marlatt’s original sample), and interpersonal (42%) relapse situations. Intrapersonal situations included negative emotional states (37%), negative physiological states (4%), positive emotional states (6%), testing personal control (4%), and urges and temptations (7%), while interpersonal situations included interpersonal conflict (15%), social pressure (24%), and positive emotional states (3%).

Marlatt’s original taxonomy of relapse characteristics suggested that a single category was the primary determinant of a given relapse episode (i.e., the categories were mutually exclusive; Marlatt & Gordon, 1985). Thus, research examining cognitive and behavioral constructs related to the process of relapse has tended to use factor analytic approaches (or variable-centered approaches) rather than person-centered approaches (e.g., Sklar, Annis, & Turner, 1997; Turner, Annis, & Sklar, 1997) to understanding these constructs.

However, when internal and external states preceding relapse are examined, both adults (Tate, Brown, Unrod, & Ramo, 2004) and adolescents (Ramo, Anderson, Tate, & Brown, 2005) tend to have a combination of internal and external precursors to relapse rather than just one prominent situation that precipitates their relapse. Thus, it is important to design research questions to consider the heterogeneity of situations and individuals who relapse after treatment for alcohol and drug abuse. The examination of “typologies” of substance involvement (e.g., Bucholz et al., 1996), comorbidities of substance use disorders (SUD; Jackson, Sher, & Wood, 2000), and multiple outcome trajectories (Brown, Chung, Martin, & Winters, 2006) are examples of the growing person-centered approaches in the field of substance abuse. De-

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veloping typologies to characterize individual patterns of relapse can be a useful tool in understanding which mechanisms are most strongly involved in relapse.

There is reason to believe that patterns of relapse precipitants might differ for adolescents as compared with adults. The situations that most commonly precipitate relapse in adults are associated with anger or frustration, social pressure to drink, or interpersonal conflict (Litman, Eiser, Rawson, & Oppenheim, 1977; Marlatt & Gordon, 1985). Studies with youth in treatment indicate that adolescents tend to relapse more often in situations in which there is direct or indirect social pressure to use (66%) compared with adults (20%; Marlatt & Gordon, 1985; Myers & Brown, 1990). Among youth diagnosed with an independent psychiatric disorder, negative affect and interpersonal conflict tend to precede relapse as frequently as they do in adults. However, situations involving social pressure and using substances to enhance a positive emotional state are more common in youth than in adults (Anderson, Frissell, & Brown, 2007; Tate et al., 2004).

The co-occurrence of SUDs and other Axis I psychiatric disorders has been well documented in adults (e.g., Regier et al., 1990) and also in youth (e.g., Abrantes, Brown, & Tomlinson, 2004). Mood, anxiety, and externalizing disorders (e.g., conduct disorder), which can be characterized by negative affective states, put adults and youth at increased risk for relapse. The cognitive-behavioral model of relapse (Witkiewitz & Marlatt, 2004) and the youth relapse model (Brown, 2004; Brown & Ramo, 2006) suggest that affective disturbance would influence the situations in which youth and adults find themselves and thus their likelihood of using substances in those situations. Negative emotional states increase the likelihood and severity of relapse for SUD individuals at all developmental stages (Cooper, Russell, Skinner, Frone, & Mudar, 1992; Cornelius et al., 2004; Miller et al., 1996).

The current study uses a person-centered approach to examine the characteristics of relapse to substance abuse in adolescents and adults after a treatment episode. It uses latent class analysis to examine the patterns of interpersonal and intrapersonal situations that pose a high risk for relapse. The general a priori hypothesis was that the patterns of relapse situations (latent class structure) would differ between youth and adults. More specifically, we expected that social pressure situations would play a strong role as a precipitant in adolescent relapse situations, accompanied by negative precipitants such as interpersonal conflict and negative emotional states for some youth and accompanied by more positive emotional states for other youth. Further, we hypothesized that since adolescents tend not to endorse relapsing in negative physiological states or to think about them as high risk situations in the same way that adults do (Ramo, Myers, & Brown, in press), negative physiological states would not appear in any of the adolescent latent classes. On the basis of literature demonstrating that adults are more likely than youth to relapse when alone (e.g., Tate et al., 2004), we suggested that adult latent classes would be more dominated by negative affective states, with social pressure accompanying negative affect for only some adults.

Method

Participants

Participants were taken from 229 adults and 244 adolescents participating in three longitudinal projects (two adult studies, one

adolescent study) designed to evaluate the clinical course for individuals who have received treatment for SUDs (Abrantes et al., 2004; Brown, Glasner, et al., 2006; Tate et al., 2004). The current study focused on those adults (70%) and youth (77%) who used any substances (alcohol or drugs) within the first 18 months after the initial treatment episode and were available to provide a detailed account of the situation during a follow-up interview (e.g., were not lost or passed away). Demographic and diagnostic characteristics of the youth ($N = 188$) and adult ($N = 160$) relapse samples are presented in Table 1.

The teen sample was drawn from four inpatient psychiatric and substance abuse treatment facilities in the San Diego area. These programs are abstinence-focused, offer individual and group cognitive-behavioral therapy, and use a 12-Step model of sub-

Table 1
Demographics, Substance Use, and Diagnostic Characteristics for Adults and Teens Who Relapsed After Drug and Alcohol Treatment

Variable	Adults ($N = 160$)	Adolescents ($N = 188$)
Gender (% male)	90	45
Mean years of age (<i>SD</i>)	44.8 (8.0)	15.9 (1.2)
Ethnicity (%)		
Caucasian	64	74
Hispanic	11	18
African American	21	3
Other	5	5
Years of education (<i>SD</i>)	13.0 (2.0)	8.9 (1.3)
Marital status ^a (%)		
Married	18	41
Widowed	4	0
Separated	14	10
Divorced	40	44
Single (never married)	26	10
Employment status (%)		
Full time	5	7
Part time	7	28
Retired/disability	46	
Unemployed or never worked	41	75
Substance use disorder ^b (%)		
Alcohol	92.5	16.9
Cannabis	47.5	42.9
Cocaine	37.5	1.6
Amphetamine	41.3	27.2
Sedative	13.8	1.1
Opioid	15.6	.5
Other	4.4	9.8
Comorbid psychopathology (%)		
ASPD (adults)/conduct disorder (teens)	16.9	86.0
Panic disorder	3.8	4.6
Obsessive-compulsive disorder	5.0	23.7
Posttraumatic stress disorder	28.1	—
Generalized anxiety disorder	1.9	16.0
Schizophrenia	5.0	—
Major depression/dysthymia	18.1	62.6
Bipolar disorder	6.3	19.8
Attention-deficit/hyperactivity disorder		34.4

Note. ASPD = antisocial personality disorder. Dash = adolescents were not screened for either schizophrenia or posttraumatic stress disorder.

^aIn the case of adolescents, marital status refers to their parents' status.

^bAdults = current; adolescents = primary.

stance abuse treatment. Length of time in treatment generally varied from 5 days to 3 weeks (Abrantes et al., 2004). Youth were diagnosed with at least one SUD (alcohol or drug abuse/dependence) and at least one additional Axis I psychiatric disorder as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; *DSM-III-R*; American Psychiatric Association, 1987; internalizing, externalizing, or both). The gender, ethnic, and socioeconomic composition of this sample is representative of the treatment programs from which the adolescents were drawn (all $ps > .05$). Each participant in the study also had a resource person (RP) participate in the project with him/her. For adolescents, this RP was almost always a parent (96%); however, legal guardians (1%) and other family members (e.g., grandparents, aunts) with whom the adolescent lived and had ongoing (daily) contact were also included. Adolescents were excluded from the study if they met criteria for current opiate dependence through intravenous administration, lived more than 50 miles from the research facility, had no RP to corroborate information, were unable to read English, or had cognitive difficulties preventing accurate recall and neuropsychological evaluation (e.g., acute psychosis, severe cognitive impairment).

The similarly screened and recruited adults for this study were originally recruited from consecutive admissions to an abstinence-based drug and alcohol treatment program and mental health program at the Veterans Administration hospital in Southern California. All adults were diagnosed with at least one alcohol use disorder (AUD) or SUD, and a portion were also diagnosed with nonsubstance Axis I disorders. Given the prevalence of antisocial personality disorder (ASPD) among SUD populations (Regier et al., 1990), such individuals were not excluded from the study. Exclusion criteria were comparable to those for the adolescent sample. Adults were primarily male (90%), Caucasian (63%), and unemployed (88%), which is representative of veterans treated in these programs (e.g., Granholm, Anthenelli, Monteiro, Sevcik, & Stoler, 2003; see Table 1). Adults also had an RP, such as a partner or sibling who knew the participant well enough to corroborate background substance use and psychosocial information.

Procedure

In the adolescent study, parents/guardians were introduced to the study and asked to authorize chart screening for eligibility and teen screening as part of the admission process at each adolescent treatment facility. Research staff members then proceeded with preliminary chart review to determine teen eligibility for the study. If appropriate, youth and parents were separately invited to participate in this clinical research study and completed University of California, San Diego, and site-specific institutional review board-approved consent/assent. This procedure resulted in 95% agreement for adolescents and parents who became involved in the study. If either teen or parent failed to sign the consent forms, the teen was not entered into the study. Adolescents and parents were informed of the monetary incentive for follow-up participation and that no one would be paid during treatment.

Adolescents and their parents were separately interviewed by research staff during treatment (intake) and assessed at 1, 2, 4, and 5 months by phone and at 3, 6, 9, and 12 months in person. Youth were not compensated while in treatment but were paid between \$10 and \$40 for each monthly interview. A random sample of 10%

of youth were administered a urine toxicology screen immediately following assessment. No discrepancies were obtained between self-report and toxicology results (i.e., all positive toxicology screens were substantiated by adolescents' verbal reports of use).

The adult sample was generated from two studies that recruited in a similar fashion to that for the youth sample. In both studies, adults were veterans receiving treatment from the Alcohol and Drug Treatment Program and Substance Abuse Mental Illness Program in the Veterans Affairs San Diego Healthcare System. Most of those in the consecutive admission sample were treated in the 28-day residential treatment program (75%). Other patients were drawn from mental health inpatient settings (13%), with variable time frames based on psychiatric need ($M = 24.4$ days, $SD = 15.2$), or were recruited from Veterans Affairs outpatient settings after inpatient treatment (12%). All inpatients were assigned to aftercare groups following treatment. All programs were 12-Step- or cognitive-behavioral therapy-based and had abstinence as a treatment goal. Interventions included psychoeducation/therapy groups and family support groups. Approximately 50% of participants in the original sample of adults were prescribed a psychotropic medication in the follow-up year, mostly for depression or sleep difficulties.

In the first adult study ($N = 141$), eligible and consenting adults completed structured and diagnostic interviews with research staff and self-report questionnaires following admission to treatment (1–2 weeks after last alcohol or drug use). As with youth, participants were contacted by phone at 1, 2, 4, and 5 months posttreatment. In-person follow-up interviews were conducted at 3, 6, 9, and 12 months posttreatment to assess alcohol and drug use, the date and context of initial posttreatment use episode, and ongoing participation in outpatient sessions and 12-Step meetings. In the second adult study ($N = 19$), adults diagnosed with major depressive disorder and an SUD were recruited from the same Veterans Affairs programs into a randomized efficacy trial of integrated cognitive-behavioral therapy and 12-Step facilitation therapy. Both conditions comprised two consecutive 12-week phases of intervention. Phase I consisted of twice-weekly 1-hr group sessions plus monthly medication management, and subsequently, Phase II consisted of once-weekly 1-hr group sessions plus monthly medication management. Follow-up assessments were conducted at 3 and 6 months posttreatment. Participants were included in analyses for the present study if they reported a relapse in the 3- or 6-month follow-up interviews.

In both adult studies, participants received \$30 for each quarterly follow-up interview, and 20% were randomly selected for urine toxicology screens at each follow-up interview. A separate interviewer independently conducted collateral assessments within 1 week of the participants' interviews and collected data regarding participants' use of alcohol and other substances. Participant, collateral, and toxicology data were combined such that if any source indicated substance use, this was coded for analyses. No participants were excluded due to conflicting self-report and toxicology data; in 5 cases (3% of the total sample from both studies), the collateral reported use that the participant denied. Adults in the long-term follow-up study ($n = 141$) were compared with those in the efficacy study ($n = 19$), and there were no systematic differences in those veterans who participated in the two studies on age, gender, ethnicity, socioeconomic status, substance of choice, or depression symptomatology, that is, Beck Depression Inventory

score at treatment discharge, with all $ps > .05$ (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

Measures

Demographic characteristics. Adolescent participants were administered a Structured Clinical Interview (Brown et al., 1989) that assesses demographics, living arrangements, medical history, family history of SUDs, medication review, school and work functioning, social functioning, and motivation for abstinence toward alcohol and drugs. Adult participants in the treatment outcome study were administered the Semistructured Assessment for the Genetics of Alcoholism (SSAGA; Bucholz et al., 1994), a comprehensive standardized structured psychiatric interview that was developed by the Collaborative Study on the Genetics of Alcoholism. The 19 participants in the depression treatment outcome study were administered the Composite International Diagnostic Interview (CIDI; Robins et al., 1988), a structured diagnostic interview developed for international cross-cultural use. Demographic and background variables used in the present study for both adolescents and adults include gender, ethnicity, age, socioeconomic status, and family history of drug and alcohol use disorders.

Psychopathology. Adolescents were administered the Diagnostic Interview Schedule for Children—Computerized Version (DISC-2; Shafer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000), which diagnoses *DSM-III-R* Axis I disorders in youth. The DISC was separately administered to adolescents and their parents and subsequently composited using a standard protocol that has been shown to maximize reliability of diagnoses (Breton, Bergeron, Valla, Berthiaume, & St.-Georges, 1998). Adults were administered the SSAGA or the CIDI, both of which diagnose alcohol and drug abuse/dependence and other psychiatric disorders. Adult and teen participants were diagnosed with an independent psychiatric disorder only if they met criteria for that disorder outside the context of an SUD (i.e., during periods of abstinence or limited use).

Context of first substance use. Adults and youth were given the Relapse Review, a version of the Contextual Cue Assessment (Marlatt & Gordon, 1985) that has been modified based on validity research demonstrating multiple precursors to relapse (e.g., Heather, Stallard, & Tebbutt, 1991; Longabaugh et al., 1996). This interview allows participants to provide verbatim descriptions of initial posttreatment use with semistructured follow-up questions about substance use and interpersonal, intrapersonal, and contextual information concerning their first substance use after treatment. It has been widely used to measure adult and adolescent relapse processes (e.g., Anderson et al., 2007; Brown et al., 1989; Tate et al., 2004; Tomlinson, Tate, Anderson, McCarthy, & Brown, 2006). Participants provided a qualitative description of their first relapse episode, which was then coded into any of the following five dichotomous (presence or absence) prerelapse contexts: negative intrapersonal states (e.g., coping with fear, depression, anxiety); negative physiological states (e.g., coping with physical pain); other intrapersonal experiences (e.g., dealing with urges and temptations to use, positive emotional state, testing personal control); interpersonal conflict (e.g., dealing with a negative interaction with others, tense around the opposite sex); and social pressure (in either the presence or absence of a direct offer).

These five categories included each of the domains originally outlined by Marlatt and Gordon (1985), although they were collapsed slightly such that *other intrapersonal states* included any internal experience that was not negative (i.e., positive emotions, testing personal control, and coping with temptations in the presence or absence of cues). Interviewers were trained to ask specific, guided questions about relapse situations to elicit material about each of the domains that aided in making a dichotomous categorization. Interviewers were bachelor's- and master's-level research staff who were trained by both Sandra A. Brown and the project coordinator. High interrater reliability was ensured by training in a group format such that new interviewers were required to compare their ratings of mock relapses and then an actual relapse with those of well-established interviewers before they could assess on their own. Yearly trainings were also given for all research staff by the project coordinator.

Analyses

Dominant classes of relapse situations were identified based on latent class analysis (LCA). LCA is a statistical method used to describe the relationships among a set of categorical variables (Clogg, 1995). The assumption underlying LCA is that the frequencies with which different item endorsement profiles occur can be explained by a small number of mutually exclusive classes or subtypes, with each class having a distinctive "profile" of relapse characteristic endorsement probabilities that is constant for all members of that class (McCutcheon, 1987).

We have based our model selection on goodness of model fit, parsimony, and adequacy of the model with respect to the research questions being posed. The goodness of model fit is evaluated using a likelihood ratio chi-square test with degrees of freedom equal to $r + 1$, where r is the number of items used in the analysis. The second set of criteria are the Bayesian information criterion (BIC) and Akaike's information criterion (AIC) statistics that balance two components: maximizing the likelihood and keeping the model parsimonious. A low BIC value indicates a well-fitting model (B. O. Muthén & Muthén, 2000). A third consideration is the usefulness of the latent classes in practice. This is evaluated by the substantive interpretation of the classes in a given model, as well as the class membership probabilities (which may be thought of as the prevalence of participants in a given latent class). The entropy value, ranging from 0 to 1, is a measure of the clarity of classification, in that classification values that are close to 100% for individuals result in higher entropy and it can be a useful summary measure (B. O. Muthén & Muthén, 2000).

For a given model, parameter estimates include (a) class membership probabilities and (b) class-specific conditional response probabilities (CRPs). CRPs reflect the probability that an individual within a particular class has relapsed in a specific context (probability that the context was scored "present"). We characterized relapse classes by the CRPs for each relapse context, as well as by their estimated prevalence.

Results

Relapse Characteristics

In the adult sample, there were 160 individuals who experienced a relapse in the 18 months after their initial treatment episode

(mean days to first use = 167.08, $SD = 118.9$). In the youth sample there were 188 relapsers ($M = 90.23$, $SD = 85.9$). Youth living situation after initial treatment episode was considered as a potential covariate in analyses by examining whether discharge to a structured environment (e.g., group home) influenced relapse precursors. There were no significant differences in frequency of relapse precursors between the youths who were placed in an unstructured environment ($n = 15$) and those who were not ($n = 145$). Thus, all analyses were conducted with the full youth subsample.

Frequencies of all five major relapse contexts and their more detailed subcontexts are presented in Table 2. Adults were most likely to relapse in negative intrapersonal states (66.9%; most often when coping with frustration/anger or depression) or in other intrapersonal states (95%). Within other intrapersonal states, adults were most likely to relapse when coping with urges and temptations to use in either the presence (55%) or the absence (26%) of cues.

Adolescents relapsed at similar rates as adults in negative intrapersonal (64.4%) and other intrapersonal (86.7%) states; however, within other intrapersonal states, adolescents were most likely to relapse when experiencing a positive emotional state (41%) and when giving in to temptations in the presence of cues

(37.2%). Adults were more likely than adolescents to relapse when experiencing a negative physiological state (25% vs. 9%), while adolescents were more likely to relapse when experiencing social pressure (either directly or indirectly; 70% vs. 46%).

Typological Approach to Relapse Contexts

LCAs were applied to the five dichotomous relapse contexts of the adult and adolescent samples separately using the Mplus program (L. K. Muthén & Muthén, 1998–2001). In the adult sample, models of two to five classes were evaluated. Model fit statistics for the two- to five-class solutions are presented in Table 3. While the AIC was slightly lower for the three-class solution compared with the two-class solution (760 vs. 776), the chi-square, entropy, and BIC all favored the two-class solution. When compared, the BIC has been favored over the AIC as a model selection criterion (Li & Nyholt, 2001; Raftery, 2004). Thus, a multiple component two-class solution fit the data best. The first class was labeled *social and urges* (67% of the sample) and had a high probability of relapsing in other intrapersonal states (most often giving in to temptation in the presence or absence of cues) and when experiencing social pressure. Those in the second class, *negative and urges* (33% of the sample), were characterized by high probability of relapsing in a negative intrapersonal state (most often frustration/anger or depression) and another intrapersonal state (again, most commonly coping with urges). Conditional response probabilities of the five contexts are presented for the two relapse classes in Table 4.

In the teen sample, two- to five-class solutions were again considered, and model fit statistics are shown in Table 3. As with the adult sample, all criteria other than the AIC favored a two-class solution over all others, and the difference between the AIC for the two-class and three-class solutions was negligible (949 for the two-class solution vs. 946 for the three-class solution). The first class consisted of individuals who had high probability of relapsing in other intrapersonal states (most often enhancing a positive emotional state) and social situations, and it was thus labeled *social and positive* (69%). The second class, which was less common (33%), consisted of those relapsing when in negative intrapersonal states, in other intrapersonal states, with interpersonal conflict, and in social situations, and it was thus labeled *complex*. In order to clarify the results for the adolescents, we used post hoc chi-square analyses to examine more specific contextual differences between the two relapse classes. Within the negative intrapersonal category, those in the complex class were more likely to relapse when experiencing all negative intrapersonal contexts (coping with frustration/anger, fear, depression, boredom, pressure) compared with those in the social and positive class, $\chi^2(8, N = 1) = 69.01, p < .0001$. Within the other intrapersonal category, those in the complex class were more likely to relapse when giving in to temptations in the presence or absence of cues (62% vs. 28%), whereas those in the social and positive class were more likely to use to enhance a positive emotional state or when testing personal control (52.3% vs. 36.0%), $\chi^2(7, N = 1) = 152.65, p < .0001$.

Discussion

The present study compared characteristic relapse patterns of adults and adolescents after drug and alcohol treatment. We found

Table 2
Relapse Characteristics for Adults and Adolescents in the 18 Months After Alcohol/Drug Treatment (%)

Relapse category	Adults ($N = 160$)	Adolescents ($N = 188$)
Negative intrapersonal state	66.9	64.4
Coping with frustration/anger	30.0	16.0
Coping with fear	2.5	0.5
Coping with depression	14.4	14.9
Coping with boredom	3.1	16.0
Concern about doing something (pressure, anxiety)	3.1	4.8
Anxiety	11.3	10.1
Concern for feeling like a failure	1.9	1.6
Other	0.6	0.5
Negative physiological state	25.6	9.0
Other intrapersonal state	95.0	86.7
Enhancing a positive emotional state	8.8	41.0
Test personal control	3.1	6.4
Give in to temptations in the presence of cues	55.0	37.2
Give in to temptations in the absence of cues	26.3	1.6
Other	1.9	0
Interpersonal	30.0	36.2
Coping with frustration/anger	15.6	17.0
Feeling criticized	0.6	3.2
Feeling rejected	2.5	2.7
Disappointment in a person	4.4	1.1
Tense around others	5.6	6.4
Nervous/uptight around the opposite sex	0.6	3.7
Other	0.6	2.1
Social pressure	45.6	70.2
Direct (e.g., an offer)	28.8	44.7
Indirect (e.g., cues but no offer)	16.9	25.5

Note. Data for the five major relapse contexts are given in bold.

Table 3
Model Fit Statistics for Adult and Teen Latent Class Models

Model	χ^2 (df)	<i>p</i>	BIC	AIC	Entropy
Adult					
Two-class	14.2 (20)	.82	810	776	1.00
Three-class	4.09 (14)	.99	811	760	.92
Four-class	1.80 (8)	.99	839	769	.95
Five-class	0.26 (2)	.88	868	780	.77
Adolescent					
Two-class	24.35 (20)	.22	984	949	.76
Three-class	9.79 (14)	.78	1001	946	.75
Four-class	6.69 (8)	.57	1029	955	.66
Five-class	3.85 (2)	.15	1058	964	.76

Note. BIC = Bayesian information criterion; AIC = Aikake's information criterion.

two classes of relapse patterns in both adolescents and adults with important differences between the age groups. Two thirds of the adults relapsed in social situations in which they experienced urges and temptations to drink/use (social and urges class; 67%), and one third relapsed when they were coping with a negative emotion and also urges and temptations to drink/use (negative and urges class; 33%). In contrast, most adolescents relapsed in social situations when they were trying to enhance a positive emotional state (social and positive; 69%), while a smaller group of adolescents relapsed when dealing with a conflictual interpersonal situation accompanied by negative emotions and efforts to cope with urges and social pressures to drink/use (complex; 31%).

The results of this study provide insight into the complex nature of relapse in both adolescents and adults. Comparing the teen and adult latent class results is useful. Intrapersonal situations that were not negative (i.e., enhancing a positive emotional state, testing personal control, or giving in to temptation in the presence or absence of cues) did not differentiate any of the classes in either age group. However, relapsing while in a positive emotional state was five times more common among adolescents than adults (41.0% of the teen sample vs. 8.8% of the adult sample). Further, among the teen sample, a positive emotional state was more common for those in the social and positive relapse class compared with those in the complex relapse group. Thus, adults tended to be dealing with urges and/or temptations when they were in negative emotional states and also when they were in social situations when they may have been confronted with direct or indirect pressures to

use. By contrast, adolescents relapsed when they had urges or temptations most often when they were also experiencing negative emotions or a negative interpersonal situation and while in the presence of others. Youth were more often using to enhance a positive emotional state when they were in social situations. These patterns are consistent with the overall finding that the most common individual relapse precursor in adults is a negative emotional state (Marlatt & Gordon, 1985) and that in adolescents it is social situations (Brown et al., 1989; Myers & Brown, 1990).

Further, the adult relapse classes were less complex (two predominant precursors in each class) than youth relapse patterns. For example, the complex class of adolescents was made up of four of five possible relapse precursors (all except negative physiological states). This suggests that adolescents may have had limited experiences with alcohol and drug lapses or relapses compared with adults and thus exhibited less distinct patterns of relapse contexts. This is consistent with literature describing other important cognitive and behavioral constructs suggesting that adolescents have less distinctive patterns of thinking when they are young that become more specialized or crystallized throughout development. Constructs that have exhibited this refinement in the content of cognitions have been expectancies of the effects of alcohol (Christiansen, Goldman & Brown, 1985; Deas, Riggs, Langenbucher, Goldman, & Brown, 2000; Dunn & Goldman, 1998) and coping self-efficacy (Ramo et al., in press).

There are multiple treatment implications for the findings presented here. It is clear that among both adults and adolescents, multiple personal and environmental factors influence each relapse (Brown & Ramo, 2006; Witkiewitz & Marlatt, 2004). Thus, these findings suggest that relapse prevention portions of substance abuse treatment programs should target multiple relapse antecedents rather than just one primary antecedent. Further, particular attention should be paid to urges as a precursor among adult users regardless of emotional state or social situation, whereas adolescents might need different relapse prevention foci depending on the emotional state that occurs most often (e.g., negative vs. positive).

This study benefits from a number of strengths, including making use of detailed clinician-rated information on relapse characteristics and the ability to examine relapse characteristics in both adolescents and adults using comparable methods. Further, our adult and teen samples offered ample power to detect relapse class structure. In addition, we applied a relatively novel technique

Table 4
Conditional Response Probabilities for the Adult and Adolescent Latent Class Analyses (% of Yes Responses)

Item	Adults (<i>N</i> = 160)		Adolescents (<i>N</i> = 188)	
	Social and urges (67%)	Negative and urges (33%)	Social and positive (69%)	Complex (31%)
Negative intrapersonal	0.0	100.0	50.1	97.8
Negative physiological	13.2	31.8	0.06	15.6
Other intrapersonal	100.0	92.5	81.2	99.7
Interpersonal	1.9	43.9	11.1	95.0
Social	86.8	25.2	61.3	91.0

(latent class analysis) to subtype patterns of relapses in adolescents and adults. Although previous studies have used analytic approaches to understand the way relapse situations cluster (Anderson et al., 2007; Tate et al., 2004), these have tended to be variable-centered approaches rather than person-centered approaches. Our method allows clinicians to target relapse prevention to the clusters of situations that most often occur in adolescents and also adults.

The teen and adult samples used in this study represented concomitant psychopathology common among those in treatment for substance dependence and comorbid Axis I disorders. Since psychiatric comorbidity places both youth and adults at risk for a unique and potentially dangerous course of substance use following treatment (e.g., Compton, Cottler, Jacobs, Ben-Abdallah, & Spitznagel, 2003; Greenfield et al., 1998; Grella, Hser, Joshi, & Rounds-Bryant, 2001), it will be important in the future to examine how psychiatric symptoms might influence the relapse class to which a person belongs. In addition, our findings need to be extended to those with fewer types of comorbidity and to large enough samples so that subgroup analyses can determine generalizability across other demographic groups. Finally, future research comparing youth and adults should incorporate important predictors of relapse for youth and adults that were not included in the present study (e.g., 12-Step attendance: Kelly & Myers, 2007; Thurstin, Alfano, & Nerviano, 1987; family and other relationship variables: McCrady, Epstein, & Hirsch, 1999; Rowe & Liddle, 2006).

Another important consideration is that our sample of adults was largely male, which is consistent with enrollment in substance abuse treatment programs in the Veterans Affairs Healthcare System. There were no specific hypotheses about gender differences in relapse patterns, as Marlatt's taxonomy of relapse precursors holds for both men and women in substance abuse treatment (Rubin, Stout, & Longabaugh, 1996). However, it would be useful to replicate these findings with a sample of adults that is more heterogeneous with respect to gender. Further, participants for this study took part in community- and hospital-based treatment programs that were largely practice-oriented. It would also be useful to know whether these latent classes hold for those individuals who have undergone clinical trials of substance-abuse interventions or have participated in programs that have adopted evidence-based practices, since these programs tend to have somewhat lower relapse rates than do community-based programs (e.g., Project MATCH Research Group, 1998). Finally, this study focused on only initial relapse circumstances, and future research should evaluate whether subsequent relapses follow similar patterns.

Findings from the current study underscore the utility of considering person-centered approaches in the study of alcohol and drug relapse patterns. This information can be applied to treatment settings in which relapse prevention is an active goal, including both substance abuse and psychiatric treatment. Clinicians can focus prevention efforts on the situations that are most common to a given client's developmental stage and vulnerabilities (e.g., situations in which they commonly used alcohol or drugs before treatment). Knowledge about contextual patterns further helps to target the situations in which adolescents and adults might be most vulnerable to relapse after treatment.

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