Motivations for Alcohol Use Among Adolescents: Development and Validation of a Four-Factor Model

M. Lynne Cooper

A 4-factor measure of drinking motives based on a conceptual model by Cox & Klinger (1988, 1990) is presented. Using data from a representative household sample of 1,243 Black and White adolescents, confirmatory factor analyses showed that the hypothesized model provided an excellent fit to the data and that the factor pattern was invariant across gender, race, and age. Each drinking motive was related to a distinct pattern of contextual antecedents and drinking-related outcomes, and these relationships did not generally vary across demographic subgroups. Results support both the conceptual validity of Cox and Klinger's model and the utility of this measure for clinical and research purposes across a diverse range of adolescent populations.

Alcohol use among adolescents is widespread, yet carries significant risk of adverse psychological, social, and physical health consequences. Successful efforts to limit these negative consequences must be based on not only knowledge of the patterns and prevalence of adolescent alcohol use but also on an adequate understanding of the antecedents of drinking behavior. In this regard, psychological motives for drinking may be critically important. Indeed several theorists regard motivations for alcohol use as the final common pathway to its use—in essence, the gateway through which more distal influences are mediated.

Broadly speaking, motivational models of alcohol use rest on two fundamental premises. First, all advance the intuitively appealing notion that people drink in order to attain certain valued outcomes (e.g., Cox & Klinger, 1988). Second, they share—either implicitly or explicitly—the assumption that drinking behavior motivated by different needs or serving different functions is characterized by unique patterns of antecedents and consequences (e.g., Cutter & O'Farrell, 1984). For example, individuals who rely on alcohol to cope with negative emotions presumably have learned to do so because they lack other more adaptive ways of coping with these emotions. Moreover, reliance on alcohol to cope leads over time to further deterioration in adaptive coping and to increased psychological dependence on alcohol to meet one's needs (Cooper, Russell, & George, 1988). In contrast, individuals who drink primarily for social reasons are engaging in customary or normative behavior. Thus, drink-

ing among such individuals should not be related to coping or social skill deficits, nor to drinking problems (for supporting data, see Cooper et al., 1988). In essence then, motivational models of alcohol use assume that drinking behavior motivated by different needs constitutes phenomenologically distinct behavior. Thus, understanding the motives that underlie an individual's drinking should provide insight into the circumstances in which an individual is likely to drink, how much he or she is likely to drink, what the probable consequences are, and how best to intervene should therapeutic intervention be warranted.

Not surprisingly, a number of treatment approaches (e.g., Relapse Prevention, Marlatt & Gordon, 1985) focus on the motivational underpinnings of drinking behavior. Identifying the specific needs alcohol serves and helping clients to develop more adaptive ways to meet these needs is a cornerstone of such approaches. Despite the central role motives play in these treatment modalities, motives tend to be assessed only indirectly, for example, by what has been called a functional analysis of drinking situations and behaviors (Miller & Rollnick, 1991). This void was recently recognized by Miller and Rollnick (1991), who advocated direct assessment of drinking motives. Perhaps reflecting the lack of a widely used motives measure, they went on to suggest using an alcohol expectancy measure such as the AEQ (Brown, Goldman, Inn, & Anderson, 1980) for this purpose. Both theory and research indicate, however, that motives and expectancies are not synonymous, and that motives are the more proximal and diagnostic factor. For example, Leigh (1990) found that an individual must hold a particular expectancy before alcohol will be consumed to achieve that effect, but that he or she will not necessarily drink to achieve an effect simply because the corresponding expectancy is endorsed. Given that self-reports offer an efficient, cost-effective adjunct to other more traditional methods of clinical assessment (Mash & Terdal, 1976) and provide the only access route to one's internal motivations, a brief, reliable, and valid self-report measure of drinking motives could be of considerable utility for both clinical assessment and research purposes.

Examination of the drinking motives literature indicates, however, several problems with current efforts to measure motives for alcohol use. First, little agreement exists regarding the

number and nature of specific motive dimensions. Whereas some authors have identified only a single higher order motive (Newcomb, Chou, Bentler, & Huba, 1988), others have assessed five or six different motives that only partially overlap (Cutter & O'Farrell, 1984; Johnston & O'Malley, 1986). Second, little comparability exists across studies in measures used to assess a given drinking motive. Not only has the same item been used to assess different motives in different studies, but face-valid indicators of the same construct have been used to assess different motives within a given study (for a review, see Cooper, Russell, Skinner, & Windle, 1992). Finally, whereas some studies find distinctive patterns associated with different drinking motives, others find only a simple linear relationship between consumption and the number and strength of motives endorsed (see Golding, Burnam, Benjamin, & Wells, 1992). Thus, the extent to which conceptually distinct drinking motives can be empirically distinguished remains unclear.

Recently, Cox and Klinger (1988, 1990) proposed a framework for categorizing motives that holds the potential to address a number of these issues. Briefly, they proposed that drinking motives can be meaningfully characterized along two underlying dimensions reflecting the valence (positive or negative) and source (internal or external) of the outcomes an individual hopes to achieve by drinking. Thus, individuals may drink to obtain a positive outcome (positive reinforcement) or to avoid a negative one (negative reinforcement). Moreover, drinking may be responsive to internal rewards, such as the manipulation or management of one's own internal emotional state, or to external rewards, such as social acceptance or approval. Crossing these two dimensions yields four classes of motives: (a) internally generated, positive reinforcement motives (drinking to enhance positive mood or well-being), (b) externally generated, positive reinforcement motives (drinking to obtain positive social rewards), (c) internally generated, negative reinforcement motives (drinking to reduce or regulate negative emotions), and (d) externally generated, negative reinforcement motives (drinking to avoid social censure or rejection). To date, however, empirical research on drinking motives has focused almost exclusively on only two of these motives: drinking to regulate negative affect and drinking to obtain positive social rewards (typically referred to as coping and social motives, respectively). As a consequence, less is known about drinking to enhance positive mood and drinking to avoid social costs (referred to hereinafter as *enhancement motives* and *conformity motives*). Indeed I am aware of no single study that has investigated all four motives; thus it remains unclear whether these theoretically distinct dimensions can in fact be empirically distinguished and will prove useful for either research or clinical assessment purposes.

Despite the paucity of research on enhancement and conformity motives, existing data support the plausibility of Cox and Klinger's four-factor model. The predictive and discriminant validities of coping and social motives for alcohol use have been well-established in both adolescent (e.g., Carman, Fitzgerald, & Holmgren, 1983; Mann, Chassin, & Sher, 1987) and adult (e.g., Cooper et al., 1988, 1992; Cutter & O'Farrell, 1984) samples. These studies consistently indicate that social motives are more commonly endorsed than coping motives, and are associated with light, infrequent, nonproblematic alcohol use and with drinking in social settings, whereas coping motives have been

related to heavier, problem drinking and to drinking alone. Thus, coping and social motives appear to be associated with distinct antecedents and consequences despite moderate intercorrelations ($rs < .50$).

Although fewer studies have examined enhancement motives, existing evidence indicates that individuals do in fact drink to enhance positive affect and that doing so may be associated with a unique pattern of antecedents and consequences. For example, my colleagues and I (Cooper et al., 1992) found that enhancement, coping, and social motives formed discrete and reliable factors, and that each motive was associated with a unique profile of drinking-related antecedents and consequences despite moderate correlations among the motives. Specifically, enhancement motives positively predicted a pattern of heavy alcohol use and drinking in situations conducive to heavy drinking (e.g., with same-sex buddies). However, unlike coping motives that both directly and indirectly (through alcohol use) predicted drinking problems, enhancement motives only indirectly predicted drinking problems. Similar results have been reported in other studies using both adult (Cutter & O'Farrell, 1984) and college student (McCarty & Kaye, 1984) samples.

To date, only four studies have examined enhancement motives among adolescents (Brown & Finn, 1982; Johnston & O'Malley, 1986; Newcomb et al., 1988; Windle & Barnes, 1988). Although each of these showed that enhancement motives are commonly endorsed among adolescents, only two of the four studies presented evidence relevant to the issues of discriminant and predictive validity. Both Newcomb and colleagues and Windle and Barnes found that enhancement motives were independently and positively predictive of alcohol use. They differed, however, in the extent to which the motives were intercorrelated. Whereas the former reported substantial intercorrelations among enhancement, coping, and social cohesion motives, the latter found only modest intercorrelations among enhancement, coping, and conformity motives. Thus, the available evidence suggests that drinking to enhance may be an important motivational factor in accounting for alcohol use among adolescents, although its distinctiveness vis-à-vis other drinking motives is less well-established.

The belief that adolescents drink to avoid social costs (e.g., rejection by a valued group) is widely held in both lay and professional circles, and is strongly supported by a wealth of indirect evidence. For example, peer alcohol use and peer attitudes regarding alcohol use are among the strongest and most consistent predictors of drinking behavior among adolescents (White, Bates, & Johnson, 1990). However, to the extent that adolescents may choose their peer affiliations on the basis of personal drinking preferences, such findings do not provide direct evidence that adolescents drink to conform with peer expectations or to avoid social censure, although they are consistent with this notion.

Only four studies were identified that directly examined conformity motives for alcohol use among adolescents (Brown & Finn, 1982; Gliksman, 1983; Johnston & O'Malley, 1986; Windle & Barnes, 1988). These studies were consistent in indicating that, despite lore to the contrary, few adolescents endorse conformity reasons for drinking, and that conformity motives were generally unrelated to heavy or frequent alcohol use. There was some indication, however, that younger adolescents were more

likely to endorse conformity motives (Brown & Finn, 1982; Johnston & O'Malley, 1986) and that drinking to conform may be more predictive of alcohol use among younger adolescents (Gliksman, 1983).

Considered collectively, these data indicate that individuals may drink for each of the reasons cited by Cox and Klinger's model. Moreover, available evidence consistently indicates that coping and social motives form discrete factors, are only moderately correlated, and have unique antecedents and consequences. Existing evidence also strongly suggests that enhancement motives are important determinants of drinking among adolescents, whereas conformity motives appear to have limited predictive utility. However, owing to the psychometric and methodological problems previously described, as well as to the fact that no study has examined all four motives simultaneously, it remains unclear whether each of these motives can be empirically distinguished from the remaining three and is associated with a unique pattern of alcohol-related antecedents and consequences. Thus, no empirical test of the conceptual validity or pragmatic utility of Cox and Klinger's model has yet been conducted.

The Present Study

This study therefore will examine the extent to which these four motives constitute empirically distinct factors and are associated with unique drinking patterns and consequences. On the basis of the conceptualization proposed by Cox and Klinger and on the empirical findings cited above, the following hypotheses regarding the specific pattern of expected effects are offered.

Social motives will be positively related to alcohol use but will not directly predict drinking problems. In addition, social motives will be positively related to drinking in social settings (e.g., at parties, with friends) and should be more strongly endorsed on average than other motives. These hypotheses are consistent with the notion that drinking for positive social reasons is normative, socially acceptable, and socially cued.

Coping motives will be significantly positively related to alcohol use, and will predict drinking problems after controlling for usual alcohol use. Drinking to cope will also be positively related to drinking in solitary as opposed to social settings. These hypotheses are consistent with the view that drinking to cope reflects a deficit in other more adaptive ways of coping and hence is more likely to be associated with problem drinking, and is more responsive to internal than external cues.

Primarily on the basis of empirical findings, I expect that enhancement motives will be widely endorsed and positively associated with heavy alcohol use. Enhancement motives should also be positively associated with a style of drinking that condones or promotes heavier consumption (e.g., drinking with same-sex buddies).

Fourth, to the extent that drinking to conform is responsive to external social pressures, it should be positively associated with drinking in social settings and negatively associated with solitary drinking. However, its relationship to overall patterns of consumption is likely to be weak. These expectations are compatible with the notion that drinking to conform is primarily or exclusively responsive to external social pressures to

drink, and that internal motivations to drink are generally weak or absent.

In addition, the invariance of the hypothesized four-factor structure will be examined across race, gender, and age groups. Although frequently ignored in psychometric research, evidence of factor structure invariance suggests that each scale measures the same or similar underlying construct across groups and is, therefore, considered prerequisite to meaningful cross-group comparisons. Assuming adequate evidence of factor structure invariance, mean differences in drinking motives across race, gender, and age groups will be examined, and drinking motive-by-demographic interactions will be tested. Taken together, these data will help to establish the utility of this measure for use with diverse adolescent populations, provide data that may be taken as normative for each race, gender, and age subgroup, and establish the extent to which drinking motives are embedded within similar nomological networks across these subgroups.

Method

Sample

A two-stage probability sample of 2,544 adolescents was drawn. For the first stage, a sample of 70,460 telephone numbers was selected by random-digit-dial techniques. Numbers were stratified by geographic area of the city, and those strata with higher proportions of Blacks were deliberately oversampled. Selected numbers were then screened to identify eligible households, defined as those located within the city of Buffalo, wherein at least one adolescent aged 13-19 resided. A total of 2,544 eligible households were identified. Approximately 6% of the initial sample (4,360 of 70,460 numbers) remained indeterminant after six callbacks. Of these, 70% were "no answers"; the remaining 30% were roughly evenly divided between hang-ups and answering machines. Second-stage sampling involved random selection of one adolescent within households containing more than one adolescent.

A total of 2,052 interviews was completed, yielding an 81% completion rate.[1] Racial composition of the sample was 44% Black, 48% White, and 8% other races, compared with 31% Black, 65% White, and 5% other in the general population of Buffalo (1990 U.S. Census). Completion rates did not differ by race, age, or parent occupation rank (using U.S. Census bureau categories) but were slightly higher among women (82.9% vs. 78.9%, $\chi^2 = 5.8$, $p < .05$) and among adolescents whose parents were more highly educated (13.1 vs. 12.8 years, $t = 2.2$, $p < .05$). Sixty-nine percent of noncompletions were due to refusals; remaining noncompletions were due to physical or mental incapacitations and loss to follow-up after screening (e.g., moved out of the area). Given that phone coverage is generally excellent in the city of Buffalo, these data suggest that the present sample comprises a broad and reasonably rep-

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[1] Lavrakas (1989) has suggested that this rate (completions/known eligibles) provides the "most reasonable" estimate of the actual completion rate. A more conservative rate can be calculated if we assume that the percent of eligibles among indeterminants was roughly equivalent to that among known outcomes, $2,544/(70,460 - 4,360) = 3.8\%$. The denominator of our completion rate can then be adjusted upward, $2,544 + (3.8\% \times 4,360) = 2,714$, and a more conservative estimate can be calculated, $2,052/2,714 = 75.6\%$. This figure likely underestimates the actual completion rate, however, because the percentage of eligibles among indeterminants is probably lower than the percentage among known outcomes (Lavrakas, 1989).

resentative cross-section of Black and White adolescents in the city of Buffalo.[2]

Data for the present study were obtained from the subset of respondents who had complete information on all measures and who had ever drunk alcohol (n = 1,243, or 61% of the full sample). Male and female respondents were evenly represented in this subgroup (49.6% and 50.4%, respectively), as they were in the full sample. Whites, however, were overrepresented (58%) relative to the full sample, as were older adolescents (M = 17.3 years vs. 16.7 years). About 7% of the adolescents 16 and over were high school dropouts (both in the full sample and in this subgroup), compared with about 6% reported by the Buffalo city schools.

Ninety-five percent of the adolescents included in this subgroup (or 1,182) had drunk alcohol within the past 6 months, drinking on average .78 drinks per day. Despite the relatively low daily average, 21% reported having drunk five or more drinks on a single occasion, and 16% had drunk to intoxication at least once a week during the past 6 months. Not surprisingly, 48% of those who had drunk in the past 6 months also reported experiencing at least one problem related to their use. These data are consistent with drinking patterns commonly reported by adolescents who tend to abstain during the week but drink heavily on weekends.

Procedure

Data were collected from November 1989 through December 1990. Face-to-face interviews lasting about 2 hours were conducted by 30 professionally trained interviewers using a structured interview schedule consisting of both interviewer-administered and self-administered portions. Respondents were always matched on sex and, approximately 75% of the time, on race as well. Ninety-five percent of the interviews were conducted in private interview rooms on the campus of the State University of New York at Buffalo, and free cab transportation was provided to those who requested it. Remaining respondents (n = 110) were interviewed in private in their homes. Written informed consent was obtained from respondents and from parents of underage respondents prior to the interview. Respondents were paid $25 for their participation.

Measures

Five items were used to measure each of the four drinking motives (see Table 2 for individual items). Coping, social, and enhancement motive items were taken from our earlier study (Cooper et al., 1992). Conformity items were gleaned from the existing literature and from focus group discussions with adolescents. Respondents were read the following instructional set: "Now I am going to read a list of reasons people sometimes give for drinking alcohol. Thinking of all the times you drink, how often would you say that you drink for each of the following reasons?" Relative frequency of drinking for each of the 20 reasons was then rated on a 1 to 5 scale (1 = *almost never/never*, 2 = *some of the time*, 3 = *half of the time*, 4 = *most of the time*, and 5 = *almost always/ always*).

A number of criterion measures were also included to assess alcohol use and abuse and typical drinking contexts. Use and abuse during the past 6 months were assessed by eight items taken from Jessor and colleagues (Jessor, Donovan, & Costa, 1989). Average number of drinks per occasion was assessed by a single open-ended question; to reduce skewness, quantities in excess of 13 drinks per day were assigned a value of 13 (about 1% of respondents reported quantities > 13 drinks per day). Quantities were reported in standard drinks (1 oz. of absolute alcohol), and beer, wine, and hard liquor equivalents were provided to facilitate standardization in reporting. Frequency of drinking any alcohol, frequency of drinking five or more drinks on a single occasion, and fre-

quency of drinking to intoxication were each assessed on a 9-point ordinal scale, with responses ranging from *less than once a month during the past six months* to *every day*. Frequency of drinking five or more and of drinking to intoxication were standardized and composited to form a single measure of heavy drinking (α = .87). Drinking problems were assessed by four items in which respondents rated the frequency (0 = *never* to 4 = *5 or more times* in the past 6 months) of experiencing problems related to their alcohol use in the following life domains: with parents, friends, dating partners, at school, or at work. An index was derived by computing the mean for all four items (α = .63).

Two questions assessed drinking contexts, including persons with whom and locations where one usually drinks. For the drinking context items, lists of possible drinking companions (e.g., family members, same-sex friends) and drinking locations (e.g., at home, at parties) were presented to respondents who were asked to indicate with whom and where they most frequently drink alcohol (more than one companion/ location could be selected). For drinking companion and location items that were endorsed by 10% or more of the respondents, a series of seven dichotomous variables was computed to indicate whether each had been selected by the respondent as one of his or her usual companions or locations. These items included drinking at home (endorsed by 19% of respondents), drinking at a friend's home (32%), drinking at parties (52%), drinking at bars (12%), drinking with one's family or relatives (21%), drinking with same-sex friends (38%), and drinking with mixed-sex friends (53%). Drinking context items were compiled from several sources (e.g., Christiansen & Goldman,1983; Mayer & Filstead, 1979).

Results

Confirmation of Factor Structure

In the first phase of analyses, the adequacy of fit to the data for five plausible alternative models was compared: (1) a single factor model, (2a & 2b) two correlated two-factor models, (3) a correlated three-factor model, and (4) the hypothesized correlated four-factor model. The one-factor model tests the adequacy of a common factor to account for the underlying structure of the data, and provides a more reasonable baseline comparison than the null model, which assumes no covariation among individual motive items. The correlated two-factor models test the adequacy of models that collapse across the internal–external distinction to compare positive versus negative drinking motives (enhancement/social vs. coping/conformity) and collapse across the positive–negative distinction to compare internal versus external motives (coping/enhancement vs. social/conformity). A three-factor model in which coping, conformity, and positive reinforcement (enhancement/social) factors are specified will also be tested. The viability of this model is supported by our earlier research in which social and enhancement factors were found to be highly correlated (r = .68 in Cooper et al., 1992). Finally, the correlated four-factor model tested the adequacy of the proposed model to account for the data and whether this model fits the data significantly better than the

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[2] In a door-to-door survey conducted in the Buffalo area in 1976, 96% of homes had working telephones (Barnes & Russell, 1978). Recent studies of national trends in telephone coverage indicate that rates continued to rise during the 1970s but have since stabilized and that coverage is lower among Blacks and low-SES households (Thornberry & Massey, 1988). Collectively, these data suggest that telephone coverage was likely to have been excellent in the current study but that lower SES Black adolescents may have been underrepresented.

Table 1

Goodness-of-Model Fit Information for Alternative Factor Models

Model	χ^2	df	NFI	CFI	RMR
1-factor model	5,733.8	170	.57	.58	.09
2-factor model[a] (internal vs. external)	4,864.2	169	.64	.64	.09
2-factor model[b] (positive vs. negative)	4,138.0	169	.69	.70	.10
3-factor model[c]	1,865.6	167	.86	.87	.07
4-factor model	1,006.4	164	.93	.94	.05

Note. NFI = Bentler–Bonett normed fit index; CFI = comparative fit index; RMR = standardized root mean square residual. For all models specified, the chi-square likelihood ratio test statistic was significant ($p < .001$).
[a] Social and Conformity items were constrained to load on an external reinforcement factor; Coping and Enhancement items were constrained to load on an internal factor. [b] Social and Enhancement items were constrained to load on a positive reinforcement factor; Coping and Conformity items were constrained to load on a negative reinforcement factor. [c] Social and Enhancement items were constrained to load on a positive reinforcement factor; Coping and Conformity items were constrained to load on their respective factors.

alternative models. On the grounds of parsimony, the four-factor model would be rejected unless it provides a significantly better fit to the data than do each of the simpler models tested.

All confirmatory factor analyses were conducted with the EQS structural equation modeling program (Bentler, 1989). Variance-covariance matrices served as input, and scaling metrics for the latent variables were fixed by setting factor variances to 1.0. Three fit indices are reported for all analyses: the Normed Fit Index (NFI; Bentler & Bonett, 1980), the Comparative Fit Index (CFI; Bentler, 1989), and the standardized root mean square residual (RMR). Because each fit index has different limitations, consistency across indices is generally regarded as the most reliable indicator of goodness of fit (Cliff, 1983). Both the NFI and CFI range in value from 0 to 1, with values of .90 or higher indicating a good fit (Bentler & Bonett, 1980). The RMR is the standardized average absolute difference between the original and reproduced matrices; relatively small values (e.g., .05) indicate minimal discrepancies between the original and reproduced matrices (Marsh & Hocevar, 1985). Values reported here exclude diagonal elements and are therefore more conservative.

Goodness-of-fit information is summarized in Table 1 for all models. As indicated by the chi-square difference test, the correlated four-factor model fit the data significantly better than the one-factor model, $\chi^2(6) = 4,727.4$, $p < .001$; either of the two-factor models, $\chi^2(5) = 3,131.6$ for Model 2b and 3,857.8 for Model 2a, $ps < .001$; or the three-factor model, $\chi^2(3) = 859.2$, $p < .001$. Moreover, the four-factor model provided an acceptably good fit to the data as indicated by values above .90 for both the NFI and CFI and a relatively small RMR. Finally, the generally excellent fit of the four-factor model was obtained without the benefit of post hoc model modifications (e.g., allowing errors to correlate). Although such modifications can substantially improve model fit, they capitalize on chance associa-

tions in the data and thereby reduce replicability of findings (MacCallum, Roznowski, & Necowitz, 1992).

Table 2 presents the standardized and unstandardized solution together with standard errors for the initially specified four-factor model. All items loaded significantly on their hypothesized factors. (t values ranged from 15.2 to 24.3, $ps < .001$.) Descriptive statistics and factor intercorrelations are summarized in Table 3 for the resulting scales. Examination of these data suggests that the drinking motives scales are adequately reliable and, with the exception of social and enhancement motives, are not highly correlated. Also as expected, positive reinforcement motives (social, enhancement) were on average more strongly endorsed and showed greater variability than did either negative reinforcement motive (coping, conformity).

Invariance Across Gender, Race, and Age

To examine invariance across groups, a series of within-group models was specified and independently tested among male and female, Black and White, and younger (less than 17.5 years of age) and older (greater than or equal to 17.5 years of age) adolescent respondents.[3] Ninety-four respondents who were neither Black nor White were excluded from analyses involving cross-race comparisons. Goodness-of-model fit information for the within-group models is provided in lines 1 and 2 of each panel in Table 4. Analysis of the fit indices suggests that the correlated four-factor model fits well across all subgroups. Values for NFI and CFI ranged from .90 to .94 for all within-group models, and the RMRs were uniformly small (<.06). Moreover, all items loaded significantly on their intended factors within each of the subgroups.

In addition to the within-group models, a series of simultaneous, between-group models was specified to determine whether the factor pattern was invariant across groups. Goodness-of-fit information for these models is provided in the third line of each panel of Table 4. Values for the NFI and CFI > .91 and relatively small RMRs indicate that the specified four-factor structure was invariant across gender, race, and age groups. Further, all scales were found to be equally reliable within subgroups. These data strongly suggest that the four drinking motive scales form internally consistent and meaningful composites and assess similar underlying constructs across gender, race, and age groups.

More rigorous forms of invariance can also be examined (e.g., Byrne, Shavelson, & Muthen, 1989). There is disagreement, however, regarding whether such forms of invariance can be reasonably expected across nonrandomly constituted groups such as gender or race (for a review, see Horn, McArdle, & Mason, 1983), especially in large samples where the power to detect even small differences is great. I nonetheless examined factor-loading invariance (i.e., whether the magni-

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[3] Although splitting the sample into groups corresponding to junior high, senior high, and post-high-school aged adolescents would be preferable on substantive grounds, I was unable to do so because few of the adolescents in the youngest age group ($n = 163$) ever drank and, therefore, few completed the drinking motives scales. With such a small number of respondents, the subject-to-item ratio falls below the recommended 10-to-1 ratio for factor-analytic procedures.

Table 2
Standardized/Unstandardized Factor Loadings and Standard Errors for the Hypothesized Four-Factor Model

	Social		Coping		Enhancement		Conformity	
Item	SL/USL	SE	SL/USL	SE	SL/USL	SE	SL/USL	SE
3. Because it helps you enjoy a party	.78/.95	.030						
5. To be sociable	.53/.63	.033						
11. Because it makes social gatherings more fun	.86/1.09	.030						
14. Because it improves parties and celebrations	.87/1.08	.029						
16. To celebrate a special occasion with friends	.62/.76	.033						
1. To forget your worries			.78/.67	.021				
4. Because it helps you when you feel depressed or nervous			.81/.80	.024				
6. To cheer up when you are in a bad mood			.71/.77	.028				
15. Because you feel more self-confident and sure of yourself			.42/.41	.028				
17. To forget about your problems			.86/.82	.023				
7. Because you like the feeling					.84/1.12	.031		
9. Because it's exciting					.63/.68	.029		
10. To get high					.72/.88	.030		
13. Because it gives you a pleasant feeling					.86/1.05	.028		
18. Because it's fun					.82/1.05	.031		
2. Because your friends pressure you to drink							.61/.48	.020
8. So that others won't kid you about *not* drinking							.74/.55	.019
12. To fit in with a group you like							.73/.64	.023
19. To be liked							.79/.51	.016
20. So you won't feel left out							.78/.62	.020

Note. SL = standardized loading; USL = unstandardized loading. All factor loadings are significant at $p < .001$.

tude with which each item loads on its respective factor is the same) across groups. Results indicated that these more stringent assumptions were only partially met. Factor-loading equivalence was demonstrated across race groups for all scales, and across gender groups for social, enhancement, and conformity motives, but not for coping motives. Loadings for four of the five coping items differed across gender groups; the direction of these differences, however, was not consistent. The magnitude of factor loadings also significantly differed across age groups for 9 of the 20 items; 5 of these items were conformity items that loaded more strongly among younger than older adolescents (probably because of the greater variance among younger adolescents). Thus, although the most crucial form of invariance, configurational or pattern invariance, was demonstrated across all groups for all scales, the more stringent assumptions

Table 3
Means, Standard Deviations, Reliabilities, and Intercorrelations Among Drinking Motive Scales

				Factor correlations			
Scale	M	SD	α	1	2	3	4
1. Social	2.46	.98	.85	—	.46	.68	.31
2. Coping	1.60	.75	.84		—	.46	.22
3. Enhancement	2.15	1.01	.88			—	.16
4. Conformity	1.38	.61	.85				—

Note. All correlations are significant at $p < .001$.

associated with factor-loading invariance were only partially supported. It may be prudent, therefore, to exercise some caution in interpreting gender differences in coping motives and age differences in conformity motives due to the lack of complete measurement equivalence across these subgroups.[4]

Mean Differences in Drinking Motives Across Gender, Race, and Age Groups

Findings indicative of factor pattern invariance permit meaningful cross-group comparisons (Horn et al., 1983). Thus, a

[4] One reviewer wondered whether the obtained age differences might instead reflect differences in drinking experience. Although age and drinking experience were significantly positively related, $\chi^2 = 97.7, p < .001$, additional analyses failed to support a confounding interpretation. Estimation of within-group models among self-identified "regular" drinkers (defined as "drinking at least once a week for 6 months or more") and "nonregular" drinkers indicated that the four-factor model fit well among both groups (values for NFI and CFI were > .90, and RMRs were < .06). Moreover constraining the factor pattern to equivalence supported the overall invariance of the four-factor structure across drinking groups. Again, however, the more stringent assumptions of factor-loading invariance were only partially met across these groups. Factor loadings for a total of nine items significantly differed across drinking groups, five of which were on the coping motives scale. Of these nine items, however, only four overlapped with items that differed by age groups, and these differences were only sometimes in a direction consistent with a confounding interpretation. Thus age differences in conformity motives cannot be readily attributed to differences in drinking experience, but may instead reflect developmental differences.

Table 4
Four-Factor Model: Goodness-of-Model Fit Information for Between and Within Gender, Race, and Age Groups

Group	n	χ^2	df	NFI	CFI	RMR
Gender						
1. Female	627	612.9	164	.91	.94	.05
2. Male	616	598.6	164	.91	.93	.06
3. Factor pattern invariant model		1,228.6	328	.91	.93	.05 (female) .06 (male)
Race						
1. Black	427	451.4	164	.90	.93	.05
2. White	722	702.4	164	.91	.93	.06
3. Factor pattern invariant model		1,153.8	328	.91	.93	.05 (Black) .06 (White)
Age						
1. Younger adolescent	625	695.4	164	.91	.93	.06
2. Older adolescent	618	545.5	164	.91	.93	.05
3. Factor pattern invariant model		1,240.9	328	.91	.93	.06 (younger) .05 (older)

Note. NFI = Bentler–Bonett normed fit index; CFI = comparative fit index; RMR = standardized root mean square residual. RMRs for the between-groups models are reported separately for men and women. For all models specified, the chi-square likelihood ratio test statistic was significant ($p < .001$).

three-way Gender × Race × Age multivariate analysis of variance (MANOVA) was conducted, followed by three-way univariate analyses of variance (ANOVAs) to probe significant effects. To permit more sensitive age comparisons, respondents were divided into three age groups for these analyses: under 15 ($n = 163$), 15 to 17 ($n = 535$), and over 17 ($n = 545$)—groups that roughly correspond to junior high, high school, and high school graduates. Results revealed that the multivariate three-way interaction was not significant (MV $F < 1.0$, $p > .50$). Moreover, neither the Race × Age nor the Gender × Race interaction was significant (MV $Fs < 2.0$, $ps > .05$). However, significant multivariate main effects were obtained for gender, race, and age (all $Fs > 5.0$, $ps < .001$), and for the Gender × Age interaction (MV $F = 2.5$, $p < .05$). Means adjusted for other main effects are summarized for gender, race, and age groups and for the six Gender × Age subgroups in Table 5.

As shown in the upper portion of Table 5, White adolescents relative to their Black counterparts were more likely to drink for social, coping, and enhancement motives. As indicated by values of eta-squared, however, these effects were generally small in magnitude. Main effects for gender and age indicated that male respondents were more likely to report drinking for social, enhancement, and conformity motives, and that older adolescents were more likely to drink for social, coping, and enhancement motives. In contrast, younger adolescents reported more drinking for conformity reasons. However, gender and age main effects were qualified. As shown in the lower portion of Table 5, endorsement of both positive reinforcement (social, enhancement) motives increased more with age among male than among female respondents. For both negative reinforcement (coping, conformity) motives, a crossover pattern was observed, with younger female respondents (under 15) reporting somewhat higher levels than did younger male respondents but older

male respondents (18–19) reporting higher levels than did older female respondents.

Drinking Motives as Predictors of Alcohol Use and Abuse

A series of 11 hierarchical multiple regression analyses was conducted in which gender, race (Black vs. non-Black), and age (in years) were entered on the first step, followed by the set of drinking motives on the second step. For dependent measures of a continuous nature, Ordinary Least Squares (OLS) estimation procedures were used. For dichotomous dependent variables (all drinking context items), analyses were conducted with both logistic and OLS regression procedures. Although use of dichotomous dependent variables violates assumptions underlying OLS estimation procedures (for details, see Neter, Wasserman, & Kutner, 1985), comparison of results from the two procedures revealed no substantively significant differences. Thus, to simplify reporting and maintain comparability across dependent measures, results are tabled for the OLS regression procedures only.

As shown in Table 6, the set of four drinking motives accounted for 14% to 20% of the variance in quantity and frequency of usual consumption over the past 6 months. Examination of the individual beta weights showed that all four motives contributed independently to the prediction of both outcomes. As expected, enhancement, coping, and social motives were significantly positively related to quantity and frequency of consumption; of these, enhancement motives was the strongest independent predictor of both outcomes. Conformity motives were, however, negatively related to both quantity and frequency.

Drinking motives also accounted for substantial variation

Table 5

Drinking Motives by Gender, Race, Age, and Gender × Age

Variable	Social	Coping	Enhancement	Conformity
Main effects				
Gender				
Female	2.29	1.61	1.99	1.34
Male	2.63	1.59	2.33	1.43
η^2	.030***	.000	.025***	.005*
Race				
Black	2.36	1.52	2.01	1.39
White	2.52	1.65	2.25	1.38
η^2	.007**	.008**	.013***	.000
Age				
<15	2.09	1.38	1.67	1.55
15–17	2.41	1.64	2.13	1.42
18–19	2.62	1.64	2.34	1.30
η^2	.033***	.013**	.046***	.020***
Gender × Age interaction				
Females				
<15	2.07	1.48	1.70	1.60
15–17	2.29	1.69	2.04	1.40
18–19	2.38	1.57	2.07	1.21
Males				
<15	2.11	1.28	1.65	1.50
15–17	2.54	1.58	2.22	1.45
18–19	2.87	1.70	2.61	1.39
η^2 for Gender × Age	.006*	.008*	.012**	.006*

$*p < .05.$ $**p < .01.$ $***p < .001.$

(from 20% to 26%) in both heavy use and drinking problems. As expected, both enhancement and coping motives were significant positive predictors of heavy drinking, with enhancement motives being the stronger of the two. Likewise, both coping and enhancement motives were significant positive predictors of drinking problems; however, coping motives were the stronger predictor. Finally, conformity motives were negatively related to heavy alcohol use, but they were significantly positively related to drinking problems.

To determine whether drinking motive effects on drinking problems were due entirely to their effects on alcohol use, a parallel equation was re-estimated in which drinking problems was

Table 6

Multiple Regression Analyses Predicting Alcohol and Drug Use From Four Drinking Motives

Variable	ΔR^2	Social	Coping	Enhancement	Conformity
Dependent variables					
6-month alcohol use					
EQ 1: Usual quantity	.140***	.08*	.15***	.25***	−.06*
EQ 2: Usual frequency	.196***	.10**	.17***	.29***	−.08**
Frequency of heavy/problem drinking					
EQ 3: Heavy drinking composite	.264***	.04	.20***	.39***	−.08*
EQ 4: Drinking problems	.201**	.03	.33***	.14***	.07*
Typical drinking contexts					
EQ 5: At home	.034***	−.17***	.08**	.00	−.08**
EQ 6: Friend's home	.007†	−.08*	.00	.12**	.02
EQ 7: At parties	.027***	.19***	−.06†	−.10*	.06*
EQ 8: At bars	.034***	.07	.03	.12**	−.09***
EQ 9: With family	.043*	−.12***	−.05†	−.06	−.05
EQ 10: Same-sex friends	.006	−.04	.01	.08*	.03
EQ 11: Mixed-sex friends	.035*	.18***	−.01	.01	.01

$†p < .10.$ $**p < .01.$ $*p < .05.$ $***p < .001.$

regressed on all four drinking motives after controlling for the demographic covariates plus average number of drinks consumed per day during the past 6 months. As expected, results indicated that the effect of enhancement motives on drinking problems was entirely due to its association with alcohol use ($\beta = .05$, $p > .10$), whereas coping motives both directly (after controlling for usual alcohol use; $\beta = .28$, $p < .001$) and indirectly (through alcohol use) predicted drinking problems. Though specific predictions were not offered for conformity motives, they also directly predicted drinking problems ($\beta = .08$, $p < .01$) after controlling for usual alcohol use.

Examination of results for the drinking context variables indicates that the block of drinking motives significantly predicted preference for both drinking companions and drinking locations across five of seven analyses, accounting for roughly 2.5% to 4.5% of the variance. Examination of the individual results revealed that each drinking motive was associated with a unique pattern of context-dependent alcohol use. As predicted, social motives were significantly positively related to drinking in social, celebratory situations (at parties and with mixed-sex friends) and were negatively related to drinking at home, at a friend's home, or with one's family and relatives. Also as expected, enhancement motives were significantly positively related to drinking in settings where heavier drinking may be condoned (e.g., at bars and with same-sex friends). However, they were significantly negatively related to drinking at parties—a setting where heavier drinking might also be condoned. Also as predicted, coping motives were significantly positively related to drinking at home. This finding, when considered together with the marginally significant, negative relationship between coping motives and drinking with one's family, suggests that adolescents high in coping motives are prone to drink at home alone. This interpretation was supported by a supplementary analysis in which drinking to cope was found to be the only significant predictor ($\beta = .45$, $p < .001$) of drinking alone (endorsed by only 3% of adolescents as a primary drinking context) in a regression equation containing all four drinking motives. Finally, conformity motives were significantly negatively related to drinking at bars and at home but significantly positively related to drinking at parties, where pressures to conform to perceived norms may be strongest.

In sum, each motive appears to be independently predictive of multiple aspects of drinking behavior and to be associated with a unique pattern of drinking behavior. Moreover, these patterns largely conformed to prediction and, for social, coping, and enhancement motives, were remarkably similar to those found in our earlier study with adults.

Differential Effects of Drinking Motives Across Gender, Race, and Age Groups

To determine whether the effects of drinking motives significantly differed by gender, race, or age, three series of hierarchical multiple regression equations were estimated with the addition of Gender $\times$ Motive, Race $\times$ Motive, and Age $\times$ Motive interaction terms. Specifically, gender, race (Black vs. White), and age (in years) were entered on the first step followed by the block of drinking motives on the second step, as before. On the third step, a block of four two-way Demographic $\times$ Motive in-

teractions was entered. To reduce multicollinearity among the four interaction terms and their constituent variables, all variables were centered (deviated from their means) before computing and testing the interactions (Aiken & West, 1991). As before, analyses involving dichotomous outcomes were conducted using both logistic regression and ordinary least squares estimation procedures; results were comparable across the two procedures. To probe significant interactions, simple slopes were generated from the overall regression equation to describe the relationship between a given drinking motive and criterion variable among the relevant gender, race, or age subgroups (Aiken & West, 1991).

Eleven blocks of Gender $\times$ Motive interaction terms (corresponding to each of the 11 dependent measures) were tested. Of these, only one block of interactions was significant at $p < .05$, accounting for less than 1% of the variance (data not shown). Examination of the individual interaction betas, however, revealed two significant ($p < .05$) Gender $\times$ Conformity interactions. Plotting the interactions showed that conformity motives were more strongly related to usual quantity (bs = $-.49$ vs. $-.16$) and to frequency of heavy drinking (bs = $-.40$ vs. $-.13$) among male than female subjects.

Eleven blocks of Race $\times$ Motive interactions were tested. Across these analyses, two blocks of Race $\times$ Motive interactions were significant ($p < .05$; data not shown), accounting for 2% or less of the variance. However, examination of the individual interaction betas revealed only two significant effects that were opposite in form; one showed stronger effects and one weaker effects among Black adolescents.

A total of 10 blocks of Age $\times$ Motive interactions were tested. Too few adolescents under 18 drank in bars ($n = 19$) to permit a meaningful test of the Age $\times$ Motive interaction for this outcome. Of the 10 blocks tested, 6 were significant at $p < .05$ (data not shown), although all accounted for less than 2% of the variance. Examination of the individual beta weights revealed a total of six significant effects involving conformity, coping, and social motives. However, estimating regression slopes separately in each of the three age groups revealed a consistent pattern of effects only for coping motives; coping motives were more strongly related to drinking with mixed-sex friends (βs = .15, .00, $-.06$) and to drinking problems (βs = .46, .25, .16) among younger than among middle and older adolescents.

In sum, analysis of interaction effects suggests that drinking motive effects are largely invariant across gender, age, and race groups, with the possible exceptions that conformity motives may be more strongly predictive among males than among females and that coping motives may be more strongly predictive among younger than older adolescents. However, given the large number of interaction tests conducted, the general lack of consistency across multiple dependent measures, and the absence of a priori predictions regarding the nature of expected effects, these effects should be interpreted cautiously.

Discussion and Conclusions

The present study tested a four-factor model of drinking motives recently proposed by Cox and Klinger. Confirmatory factor analyses indicated that the correlated four-factor model fit the data significantly better than did any of several plausible

alternative models. The validity of the correlated four-factor model was further reinforced by the fact that each drinking motive was associated with a unique pattern of alcohol use and drinking-related outcomes, despite shared variance among the drinking motives. Furthermore, the overall pattern of findings for each drinking motive was generally consistent with expectation. For example, drinking to enhance positive affect was associated with heavy drinking and drinking in settings where heavy drinking would be tolerated or even encouraged (e.g., in bars or with same-sex friends); yet drinking to enhance was only indirectly (via consumption) related to drinking problems.[5] Similarly, social motives were significantly positively associated with quantity and frequency of consumption and with drinking in social–celebratory settings, especially at parties and with groups of mixed-sex friends. They were not, however, related to problem drinking. In contrast, drinking to regulate negative affect was positively associated with solitary drinking and predicted drinking problems both directly and indirectly through consumption. These findings suggest that, at a given level of consumption, individuals who drink to cope are at increased risk of experiencing drinking problems in comparison with those who drink primarily for social or enhancement reasons. Finally, conformity motives were negatively associated with quantity and frequency of usual consumption and with heavy drinking, yet were positively associated with drinking at parties where pressures to conform would presumably be most salient. Moreover, despite this pattern of light, infrequent drinking, conformity motives directly predicted drinking problems, again suggesting that among individuals who drink equal amounts, drinking to conform places one at increased risk of experiencing problems relative to those who drink primarily for social or enhancement motives.

Although the present data support the distinctiveness of each drinking motive, they also suggest the utility of considering commonalities and differences among these motives along the two underlying dimensions identified by Cox and Klinger. For example, negative reinforcement motives (coping and conformity) share several characteristics that distinguish them from their positive reinforcement counterparts. They were less strongly endorsed across all gender, race, and age subgroups than were either positive reinforcement motive and thus appear to be less normative. But more important, both negative reinforcement motives were significantly positively related to drinking problems after controlling for usual alcohol use, whereas neither positive reinforcement motive was. Considered collectively, these findings suggest that drinking as a way to avoid aversive experience reflects a more maladaptive, pathological type of drinking than does drinking to pursue a positive incentive or reward (for a plausible explanation of this pattern, see Cooper et al., 1992).

Comparing drinking motives along the second hypothesized dimension—internal vs. external source—indicates that internally generated motives relative to their external counterparts (i.e., coping vs. conformity/enhancement vs. social) are more strongly related to quantity and frequency of usual alcohol use and to heavy drinking. One plausible explanation for this pattern is that individuals who drink to achieve goals or meet needs that are primarily internally generated may exhibit more cross-situational consistency in their drinking behavior.

Hypothetically, their drinking is tied to internal affective states (e.g., negative affectivity or neuroticism; Costa & McCrae, 1980) or to preference for certain types of affective experience (e.g., sensation-seeking; Zuckerman, 1971), both of which are likely to be relatively stable across time and across situations. In contrast, drinking among those who drink primarily for social or conformity reasons is tied to external environmental cues that are more likely to vary across situations. Such differences in cross-situational stability could in turn account for differences in the magnitude of relationships between drinking motives and global assessments of drinking behavior—which probably reflect some type of aggregation across situations.

Analysis of gender, race, and age differences in factor structure indicated that the hypothesized factor pattern was invariant across all subgroups, and that drinking motive scales formed internally consistent, reliable composites within each subgroup. Moreover, drinking motives were related in a largely invariant manner to patterns of alcohol use and abuse across gender, race, and age subgroups. These findings suggest that the present measure can be meaningfully interpreted across gender, race, and age subgroups, and that specific drinking motives are embedded within similar nomological networks among male and female, Black and White, and older and younger adolescents.

Analyses of mean differences in drinking motives across major demographic subgroups revealed that White adolescents relative to their Black counterparts more strongly endorsed three out of four drinking motives. However, these effects were consistently small in magnitude ($\Delta R^2 < 1\%$). In contrast, more robust differences were observed across gender and age groups. For example, with the exception of conformity motives, strength of endorsement for all motives increased substantially across the 13 to 19 age range; with the exception of coping motives, strength of endorsement was consistently and, for positive reinforcement motives, substantially higher among male than female respondents. Moreover, a consistent pattern of Gender × Age interactions indicated that gender differences in strength of endorsement increased with age. For the three motives that were positive predictors of alcohol involvement (social, coping, and enhancement), the average increase observed across the 13 to 19 age range was .71 (on a 5-point scale) among male respondents compared with only .26 among female respondents. When considered in light of epidemiologic evidence indicating that male adolescents increase their use more than female adolescents throughout the high-school years (Barnes & Welte, 1986), these data suggest that changes in underlying drinking motives may provide one plausible explanation for emergent gender differences in consumption patterns. Obviously, however, future research using prospective designs would provide the most compelling test of this idea.

Considered collectively, the present data support several conclusions. First, findings from the present study support the con-

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[5] The sole exception to this pattern was a significant negative relationship between enhancement motives and drinking at parties, where I speculated that heavy drinking would also be condoned. Future research might clarify this unexpected result by including a direct assessment of drinking norms at parties to determine the extent to which heavy drinking is actually condoned in this context.

ceptual validity and pragmatic utility of Cox and Klinger's model of drinking motives. Not only were four factors reliably distinguished, but each motive was also associated with a distinctive pattern of contextual antecedents and drinking-related consequences. These data also suggest that further efforts aimed at developing the theoretical implications of the two dimensions hypothesized to underlie these four motives are likely to yield important insights into the psychologically distinctive nature of drinking that is responsive to different motivational processes.

Second, when considered in conjunction with findings from our earlier study with adults (Cooper et al., 1992), these data suggest substantial cross-time stability in the effects of coping, social, and enhancement motives. Remarkably similar patterns were found in the present sample of adolescents and in our adult sample. In light of the apparent cross-time stability, drinking motives among adolescents may prove to be powerful predictors of later-life drinking patterns and drinking problems. They may also prove useful in differentiating adolescents whose drinking problems are transient from those whose problems presage adult addiction. Obviously, however, future research using prospective designs in both clinical and nonclinical populations will be required to examine these issues more definitively.

Third, the present results also suggest that conformity motives for alcohol use provide unique information about adolescent drinking behavior. Conformity motives were associated with a pattern of findings that was both meaningful and provocative, though the absolute magnitude of these effects was generally small. However, it seems plausible that conformity motives may be more strongly associated with drinking behavior among adolescents who are just beginning to experiment with alcohol and have not yet internalized other motivations for drinking. In addition, they may prove to be an important predictor of drinking in specific social situations where adolescents experience real or perceived pressure to drink.

Finally, the present measure would appear to have considerable utility for both clinical assessment and research purposes. It is theoretically based, brief, reliable, and, within the limits examined here, appears to be construct valid. Moreover, its appropriateness for use with diverse adolescent populations was supported. Not only was the factor pattern invariant across gender, race, and age groups, but subscales also formed internally consistent, reliable composites and exhibited largely invariant relationships to contextual antecedents and drinking-related outcomes across these groups. Furthermore, given the large and representative nature of the sample in the present study, the mean level data for gender, race, and age subgroups may be taken as normative and should therefore provide a useful referent for clinical and nonclinical samples alike.

The contributions of the present study notwithstanding, several limitations must be acknowledged. First, despite data indicating that self-report measures of substance use are largely valid among adolescents (for a review, see Oetting & Beauvais, 1990), the possibility that response bias contributed to the pattern of observed results cannot be ruled out. The present findings would therefore be substantially strengthened if they were replicated using other more objective indicators of drinking behavior and drinking-related outcomes. Second, the use of cross-sectional data cannot adequately test the assumption underlying motivational models that drinking motives are causally an-

tecedent to drinking behavior and drinking outcomes. Indeed the results reported herein are equally compatible with reverse-causal, reciprocal-causal, and third variable interpretations of the motives–behavior relationship. Future correlational research using prospective designs or intervention studies using random assignment will be required to test more definitively the hypothesized causal sequence.

In sum, results of the present study support the notion that individuals drink for a variety of reasons and that an adequate understanding of drinking behavior and its consequences must take these motives into account. More generally, they lend credence to a motivational perspective on alcohol use and underscore the utility of this perspective for understanding the patterns and consequences of alcohol use among both adolescents and adults.

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