THE DEVELOPMENT AND VALIDATION OF A BRIEF DEFINITIONAL MEASURE OF MOTIVES FOR ALCOHOL USE

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Abstract: Heavy alcohol use continues to be a prominent national issue. This style of use has been associated with short-term memory issues, impaired social and emotional functioning, death and disability, and diagnosable impairment. Heavy alcohol use also continues to be a significant issue for college students and college-aged peers, and contributes to increased risk of unsafe or unplanned sex, problems with campus police, physical injury, and damage to property in collegiate settings. Efforts to understand heavy alcohol consumption often focus on motives for use. Motives for alcohol use were found to predict alcohol use behaviors, heavy alcohol use and consequences, diagnosable impairment, and consequences experienced in the future. Recent efforts have focused on the development of comprehensive multidimensional questionnaires, with the majority evaluating or comprising three motivational factors, namely coping, social, and enhancement motives. The Desired Effects of Drinking (DEOD) scale is a multidimensional questionnaire of motives based upon such a conceptual model, though the number of items making up the DEOD is substantially larger than other established measures also based upon a three-factor motivational model. This potentially limits the DEOD's utility in both clinical and research settings. However, there is a precedent found in the literature of brief assessment measures being comparable to full-length iterations. The present study aimed to develop and validate a brief definitional measure of drinking motives, based on the theoretical framework utilized by the DEOD. The present study evaluated the construct and concurrent validity of a brief definitional measure of motives for alcohol use.

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CHAPTER I

INTRODUCTION

Background

Heavy alcohol use continues to be a prominent national issue (CDC, 2013). In 2012, close to 10 percent of adults in the United States (US) reported engaging in heavy alcohol use (NIAAA, 2014). This style of use has been associated with short-term memory issues (Browning, Hoffer, & Dunwiddie, 1992), impaired social and emotional functioning (Hasin, Stinson, Ogburn, & Grant, 2007), death and disability (Mokdad, Marks, Stroup, & Gerberding, 2004; Ott, 2010; Agewall, 2012), and diagnosable impairment (Grant, 1996). Heavy alcohol use also continues to be a significant issue for college students and college-aged peers (Dawson, 2004). In addition to incidences of alcohol abuse and dependence (Clements, 1999), heavy alcohol use contributes to increased risk of unsafe or unplanned sex, problems with campus police, physical injury, and damage to property in collegiate settings (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994).

Motives for Alcohol Use

Efforts to understand heavy alcohol consumption often focus on motives for use. The motivational model of alcohol use, a frequently cited theoretical model in the literature, argues that motives are the key factor for decisions to use or abstain from use (Cox & Klinger, 1988). This model has found significant support in the literature. Motives for alcohol use were found to directly predict alcohol use behaviors such as the frequency and quantity of alcohol consumption (Cooper, Russell, Skinner, & Windle, 1992). Motives were also found to predict both heavy alcohol use and subsequently experienced consequences (Merrill & Read, 2010), the experiencing of diagnosable impairment such as alcohol abuse or dependence (Carpenter & Hasin, 1998a), and consequences experienced in the future (Merrill, Wardell, & Read, 2014).

Measurement of Motives

Building upon early work conceptualizing and measuring motives for alcohol use (Riley, Marden, & Lifshitz, 1948), recent efforts have focused on the development of comprehensive multidimensional questionnaires (Kuntsche, Knibbe, Gmel, & Engels, 2005). Despite limited uniformity between various published multidimensional measures, both regarding the number of items incorporated and specific motives assessed, the majority of them often evaluate or are comprised primarily of three specific motivational factors, namely coping (i.e., ameliorating negative emotions), social (i.e., increasing comfort in social situations), and enhancement (i.e., experiencing of positive emotions)

motives (Kuntsche et al., 2005). Substantial support has been found for conceptual models made up of coping, social, and enhancement motives (Celentano & McQueen, 1978; Glynn, LoCastro, Hermos, & Bossé, 1983).

The Desired Effects of Drinking

The Desired Effects of Drinking (DEOD) scale, a multidimensional questionnaire of motives based upon such a conceptual model, has been evaluated in both undergraduate (Simpson, Little, & Arroyo, 1996) and clinical populations (Doyle, Donovan, & Simpson, 2011). The DEOD, a 36-item measure, is made up of nine subscales that comprise the three overarching factors of coping, social, and enhancement motives and has been found to be both reliable and valid (Simpson et al., 1996; Doyle et al., 2011). Despite having sound psychometric properties, the number of items making up the DEOD is substantially larger than other established measures found in the literature based upon a three-factor motivational model (Cooper, Russell, Skinner, & Windle, 1992). This potentially limits the DEOD's utility in both clinical and research settings.

Brief Definitional Measures

While multi-item measures are often the standard in psychological research, they create a burden on respondents and therefore may limit usefulness in both research and clinical settings. There are several instances found in the literature wherein brief or truncated assessment measures were found to be comparable to their full-length iterations. An evaluation of short versus long measures of depression, for example, found

the former to be equally as valid as the latter (Burisch, 1984). Similarly, brief versions of a mental health screening instrument (The WHOQOL Group, 1998) and an instrument assessing quality of life (Berwick et al., 1991) were found to be valid and reliable alternatives to their full-length counterparts. Considering the time and patience constraints often present in both clinical and research settings, brief measures may be preferable.

Purpose

The present study aimed to develop and validate a brief definitional measure of drinking motives, based on the theoretical framework utilized by the DEOD (Simpson et al., 1996; Doyle et al., 2011). The present study evaluated the construct and concurrent validity of the proposed brief definitional measure. This extended the current literature by building upon the theoretical structure of an established multidimensional instrument of motives for alcohol use to develop a brief definitional instrument. It was expected that all items comprising the brief definitional measure would be significantly and positively correlated with the corresponding subscales of the DEOD, and that the individual items comprising the brief definitional measure would load onto the appropriate factors making up the established framework of the DEOD. It was expected that the total score of the brief definitional measure would predict reported consequences experienced and alcohol use, and would be comparable to the total score of the DEOD. It was expected that the three motives (i.e., social, coping, and enhancement) factors would predict reported consequences experienced and alcohol use, and would be comparable to the motives

factors of the DEOD. Finally, it was expected that the coping motive factor of the brief definitional measure would be most highly correlated with reported consequences experienced, as compared to the social and enhancement motive factors.

CHAPTER II

METHODOLOGY

Participants

Participants were recruited from undergraduate psychology courses at a University in the South Central US through an online participant enrollment system. Eligible participants were identified by their responses to an item included in a universal screening questionnaire, which was completed by all participants of the online participant enrollment system. Participants were considered eligible if they were 18 years of age or older and responded "yes" to an item assessing for alcohol consumption within the past 30 days.

Initially 1,920 participants completed the universal screening questionnaire, with 1,122 endorsing alcohol consumption within the past 30 days. From these participants, 330 elected to participate in the study. Of these, a total of 79 participants were excluded from analytic procedures. Fifty participants were excluded due to concerns of invalid responding, and the remaining 29 participants were excluded due to subsequently denying alcohol use. The remaining 251 participants were included in all analytic procedures.

Measures

Demographics. Participants in the proposed study were asked to provide demographic information regarding age, gender, race, and year in school. Participants were also asked to provide contact information separately from their responses for the sole purpose of administering credit for participation.

Frequency-Quantity Questionnaire (FQQ). Participants were asked to complete the FQQ in order to evaluate the frequency and amount of alcohol consumed over the course of the previous 14 days (Dimeff, Ber, Kivlahan, & Marlatt, 1999). The FQQ is a 4-item self-report measure often used in research evaluating collegiate alcohol use. The 4 items are comprised of 1) Think of the occasion you drank most the past 14 days. How much did you drink? 2) On an average weekend evening, how much alcohol do you typically drink? Estimate for typical weekends during the past 14 days. 3) How often in the past 14 days did you drink alcohol? 4) On how many occasions did you drink to get drunk in the past 14 days?

Daily Drinking Questionnaire (DDQ). In order to evaluate daily alcohol consumption, participants were also instructed to complete the DDQ (Collins, Parks, & Marlatt, 1985). The DDQ is a self-report questionnaire measuring number of alcoholic drinks consumed and number of hours spent drinking daily for the past week. The DDQ was based upon the Drinking Practices Questionnaire (Cahalan, Cisin, & Crossley, 1969).

Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ). Participants completed the BYAACQ (Kahler, Strong, & Read, 2005), a 24-item self-report questionnaire assessing alcohol-related consequences experienced over the past year.

Participants responded with either a "Yes" or "No" to each of the dichotomous items in the measure. The BYAACQ has been shown to be a valid and reliable measure of alcohol-related consequences, with high internal consistency evidenced by a Cronbach's alpha of .83. (Kahler et al., 2005).

Desired effects of drinking (DEOD). Participants completed the DEOD (Simpson et al., 1996), a 36-item self-report questionnaire assessing motives for alcohol use. The DEOD asks participants to report how often they consumed alcohol within the past three months with the intention of experiencing 36 different outcomes or effects. The questionnaire uses a three-factor conceptualization (i.e., coping, social, enhancement) and is made up of nine unique subscales or lower-order factors (i.e., negative feelings, positive feelings, mental effects, sexual enhancement, drug effects, assertion, social facilitation, self-esteem, and relief). Each subscale is comprised of four items, with participant responses on each item ranging between never (0) and always (3). The DEOD has been shown to be a valid and reliable measure of motives for alcohol use with high internal consistency (cronbach's α= .94) (Doyle et al., 2011; Feldstein Ewing, Hendrickson, & Payne, 2008).

Brief definitional measure of drinking motives. Participants also completed a brief definitional measure of drinking motives, based on the conceptual framework of the DEOD (Simpson et al., 1996; Doyle et al., 2011). The brief definitional measure of drinking motives asks participants to report how often they consumed alcohol within the past three months with the intention of experiencing ten different outcomes or effects. The items comprising the brief definitional measure were rationally derived and worded

to comprehensively reflect the respective subscales of the DEOD and their individual items. For the negative feelings subscale, two items were included in an effort to better represent the spectrum of negative feelings included in the original subscale. Consistent with the DEOD, this measure was hypothesized to have a three-factor conceptualization comprising coping (i.e., negative feelings, anxiety, self-esteem, relief, drug effects), social (i.e., social facilitation, sexual enhancement), and enhancement (i.e., positive feelings, assertion, mental) motives, with participant responses on each of the ten items ranging on a seven-point scale between never (1) and always (7).

Validity Items. Participants were instructed to respond to four items utilizing a true or false format regarding the honesty and accuracy of their responses. The four items included: (1) I read the instructions carefully prior to completing relevant items. (2) I answered all items honestly and accurately. (3) I answered items randomly without reading the items. (4) My responses are an accurate reflection of my views.

Procedure

Eligible participants were recruited to participate in a study evaluating motives for alcohol use through the online participant system. After providing informed consent for participation, all participants were instructed to complete the previously described measures. Following completion of the measures, participants were thanked for their participation and received class credit for their participation in the study.

CHAPTER III

FINDINGS

Preliminary Analyses

The sample for the present study was comprised of 85 males (33.9%) and 166 females (66.1%). The mean age was 20.58, with a standard deviation of 3.61 and ages ranging from 18 to 53 years. The present study included 78 freshman (31.1%), 64 sophomores (25.5%), 63 juniors (25.1%), 42 seniors (16.7%), and 4 participants identifying as other (1.6%). The majority of participants self-identified as being Caucasian (78.1%), followed by Native American/Alaska Native (6.4%), Black/African-American (6.0%), Hispanic (4.0%), Other/Multi-Racial (3.6%), and Asian/Pacific Islander (1.2%). Two participants elected not to respond (1.0%) to the item concerning race.

Participants reported consuming 9.76 *(SD* = 8.51) drinks per week and consuming 4.18 *(SD* = 3.09) drinks per occasion. Participants also reported engaging in binging behavior 1.06 *(SD* = 1.13) times per week, and consuming alcohol with the intention of getting drunk on 1.49 *(SD* = 1.66) occasions during the past two weeks. Finally,

participants reported experiencing 4.09 *(SD* = 3.67) alcohol-related consequences within the past year

Primary Analyses: Construct Validity

Correlations of items and subscales. In order to evaluate the construct validity of the brief definitional measure of motives for alcohol use, a two-step analytic strategy was implemented. The first component of the analytic process was to examine the correlations between each item making up the brief definitional measure and its corresponding subscale included in the DEOD (Hypothesis one). As predicted, significant positive relationships were observed between the ten items and their respective subscales, with correlations ranging from $r(251) = .55$, $p < .001$ to $r(251) = .78$, $p < .001$ (see Table 1).

Confirmation of factor structure. The second component for assessing the construct validity of the brief definitional measure was to evaluate the goodness of fit with the established three-factor model of the DEOD (Hypothesis two). A confirmatory factor analysis was conducted through AMOS on the ten items comprising the brief definitional measure. The hypothesized model is presented in Figure 1, with rectangles representing the individual items and ovals representing the hypothesized factors. The three-factor model with items making up coping (i.e., negative feelings, anxiety, self-esteem, relief, drug effects), social (i.e., social facilitation, sexual enhancement), and enhancement (i.e., positive feelings, assertion, mental) motives was hypothesized, with the factors being allowed to covary.

Analyses were conducted using all 251 participants and had no missing data. The sample size for the current study exceeded the recommendation of having a minimum of 10 participants per item for conducting a confirmatory factor analysis (Nunnally, 1978). Maximum likelihood estimation was conducted to evaluate the three-factor model. First, the independence model was found to be significant χ^2 (45, N = 251) = 1102.85, p < .001, suggesting that the variables were significantly correlated rather than unrelated. The hypothesized three-factor model was subsequently tested but found to be a poor fit χ^2 (32, N = 251) = 217.52, p < .001, as indicated by the comparative fix index (CFI) = .83 and root mean square error of approximation (RMSEA) = .15 obtained. Findings are presented in Figure 2.

Primary Analyses: Concurrent Validity

Total scores and consequences experienced. The concurrent validity of the brief definitional measure was evaluated by means of the measure's total score. In order to evaluate the ability of the measure's total score to predict ralcohol-related consequences experienced as reported on the BYAACQ, and to compare this to the total score of the DEOD (Hypothesis three), two simple linear regressions were utilized. The results of the first regression analysis indicated the total score of the brief definitional measure significantly predicted reported consequences experienced, accounting for 20.2% of the variance in participants' BYAACQ scores (R^2 = .202, F(1,242) = 61.30, p < .001). Similarly, the total score of the DEOD also significantly predicted consequences

experienced, accounting for 30.0% of the variance in participants' BYAACQ scores (R^2 = .30, F(1,242) = 103.75, p < .001).

Total scores and alcohol use. In order to evaluate the ability of the brief definitional measure's total score to predict reported alcohol use and to compare this to the total score of the DEOD (Hypothesis four), three pairs of simple linear regressions were utilized to evaluate three specific alcohol use variables (i.e., total number of drinks consumed in a typical week; average number of drinks per drinking day; number of drinking days with the intention of getting drunk). The results of the first pair of regression analyses indicated both measures significantly predicted total number of drinks, with the total score of the brief definitional measure accounting for 2.2% of the variance in participants' reported total drinks (R^2 = .022, F(1,249) = 5.55, p < .05) and the total score of the DEOD accounting for 6.5% of the variance (R^2 = .065, F(1,249) = 17.21, p < .001).

The results of the second pair of regression analyses indicated both measures also significantly predicted average number of drinks per drinking day, with the total score of the brief definitional measure accounting for 2.2% of the variance (R^2 = .022, F(1,249) = 5.47, p < .05) and the total score of the DEOD accounting for 4.7% of the variance (R^2 = .047, F(1,249) = 12.30, p < .01). Finally, the results of the third pair of regression analyses indicated both measures significantly predicted number of drinking days with the intention of getting drunk, with the total score of the brief definitional measure accounting for 8.6% of the variance (R^2 = .086, F(1,249) = 23.44, p < .001) and the total

score of the DEOD accounting for 13.5% of the variance ($R^2 = .135$, $F(1,249) = 38.95$, $p < .001$).

Evaluation of motives. Due to the failure of the confirmatory factor analysis (Hypothesis two) to support the hypothesized three-factor structure of motives for the items comprising the brief definitional measure, hypotheses five, six, and seven were unable to be tested.

Ancillary Analyses:

Exploration of factor structure. In order to follow up on the finding that the hypothesized three-factor structure was a poor fit for the measure, an exploratory factor analysis with principal axis factoring and orthogonal rotation was utilized to explore the factor structure of the 10 items making up the brief definitional measure. An initial examination of the scree plot and eigenvalues suggested a three-factor solution that accounted for 69.89% of the variance, with no additional factor accounting for more than 6.5% of the total variance. Examination of the Kaiser-Meyer-Olkin statistic (KMO = .85) and Bartlett's test of sphericity [$\chi^2(45) = 1084.47$, $p < .001$] indicated both adequate sampling and reliability of relationships between the items, and parallel analysis (Horn, 1965) indicated that the three factors had obtained eigenvalues greater than those attributable to chance.

Four items loaded most highly on the first factor (i.e., To decrease negative feelings like anger, sadness, or shame; To feel less fear or anxiety; To feel better about

myself; To get relief from things that are bothering me) and appeared to represent a coping motive, with structure coefficients between .70 and .91. Three items loaded most highly on the second factor (i.e., To improve the quality or frequency of sexual or romantic experiences; To be better able to assert myself or act aggressively; To enhance my mental abilities like alertness, creativity, or concentration) and appeared to represent an enhancement or performance motive, with structure coefficients between .60 and .91. The final three items loaded most highly on the third factor (i.e., To feel the physical effects of drinking and intoxication; To feel more outgoing or comfortable in social situations; To increase positive feelings like happiness or joy) and appeared to represent a social or experiential motive, with structure coefficients between .65 and .81. Each factor demonstrated good internal reliability (Coping $\alpha = .86$; Enhancement/Performance $\alpha = .78$; Social/Experiential $\alpha = .71$). See Table 2 for coefficients, communalities, and reliabilities.

Evaluation of an alternate model. A second confirmatory factor analysis was conducted through AMOS on the ten items comprising the brief definitional measure, using the factor structure identified in the exploratory factor analysis. The model is presented in Figure 3, with rectangles representing the individual items and ovals representing the hypothesized factors. The three-factor model with items making up coping, enhancement/performance, and social/experiential motives was hypothesized, with the factors being allowed to covary.

Analyses were again conducted using all 251 participants and had no missing data. Maximum likelihood estimation was conducted to evaluate the three-factor model. First, the independence model was found to be significant χ^2 (45, N = 251) = 1102.85, p < .001, suggesting that the variables were significantly correlated rather than unrelated. The hypothesized three-factor model was subsequently tested and found to be a substantially better fit than the original hypothesized model χ^2 (32, N = 251) = 96.30, p < .001, though the comparative fit index (CFI) = .94 and root mean square error of approximation (RMSEA) = .09 indicate the model failed to meet the recommended standards. Findings are presented in Figure 4.

Modification of the alternate model. As a result of the alternate model falling short on several established standards for goodness of it indices, the brief definitional measure's structure coefficient matrix was examined. Though four items were identified as having relatively high loadings (≥ .45) on multiple factors, a single item obtained relatively high loadings on all three factors (i.e., To feel better about myself) with structure coefficients of .70, .51, and .51 on the respective factors. An additional exploratory factor analysis with principal axis factoring and orthogonal rotation was then utilized while omitting this item from the analysis. An initial examination of the scree plot and eigenvalues suggested a three-factor solution that accounted for 71.37% of the variance, with no additional factor accounting for more than 7.2% of the total variance. Examination of the Kaiser-Meyer-Olkin statistic (KMO = .82) and Bartlett's test of sphericity [χ^2(36) = 901.72, p < .001] indicated both adequate sampling and reliability of

relationships between the items, and parallel analysis (Horn, 1965) indicated that the three factors had obtained eigenvalues greater than those attributable to chance.

Three items loaded most highly on the first factor (i.e., To decrease negative feelings like anger, sadness, or shame; To feel less fear or anxiety; To get relief from things that are bothering me) and again appeared to represent a coping motive, with structure coefficients between .81 and .91. Three items loaded most highly on the second factor (i.e., To improve the quality or frequency of sexual or romantic experiences; To be better able to assert myself or act aggressively; To enhance my mental abilities like alertness, creativity, or concentration) and appeared to again represent an enhancement or performance motive, with structure coefficients between .76 and .87. The final three items loaded most highly on the third factor (i.e., To feel the physical effects of drinking and intoxication; To feel more outgoing or comfortable in social situations; To increase positive feelings like happiness or joy) and appeared to again represent a social or experiential motive, with structure coefficients between .82 and .83. Each of the factors demonstrated good internal reliability (Coping $\alpha = .84$; Enhancement/Performance $\alpha = .71$; Social/Experiential $\alpha = .78$). See Table 3 for coefficients, communalities, and reliabilities.

Evaluation of the modified alternate model. A third confirmatory factor analysis was conducted through AMOS on nine of the items of the brief definitional measure consistent with the factor structure identified in the final exploratory factor analysis. The model is presented in Figure 5, with rectangles representing the individual items and

ovals representing the hypothesized factors. Analyses were again conducted using all 251 participants and had no missing data. Maximum likelihood estimation was conducted to evaluate the three-factor model. First, the independence model was found to be significant χ^2 (36, N = 251) = 915.76, p < .001, suggesting that the variables were significantly correlated rather than unrelated. The hypothesized three-factor model was subsequently tested and found to be a substantially better fit than the original hypothesized model χ^2 (24, N = 251) = 61.13, p < .001, with the comparative fit index (CFI) = .96 and root mean square error of approximation (RMSEA) = .08 indicating the model successfully met recommended standards. Findings are presented in Figure 6.

Revised total score and consequences experienced. A simple linear regression analysis was utilized to evaluate the ability of the total score of the modified brief definitional measure to predict alcohol-related consequences experienced. The results of the regression analysis indicated the total score of the modified brief definitional measure significantly predicted consequences experienced, accounting for 21.2% of the variance in participants' BYAACQ scores (R^2 = .212, F(1,242) = 64.90, p < .001).

Revised total score and alcohol use. Three simple linear regression analyses were also implemented to evaluate the ability of the total score of the modified brief definitional measure to predict three specific alcohol use variables (i.e., total number of drinks consumed in a typical week; average number of drinks per drinking day; number of drinking days with the intention of getting drunk). The results of the first regression analysis indicated the total score significantly predicted total number of drinks, with the

total score of the brief definitional measure accounting for 2.8% of the variance in participants' reported total drinks ($R^2 = .028$, $F(1,249) = 7.29$, $p < .01$). The results of the second regression analysis indicated it also significantly predicted average number of drinks per drinking day, with the total accounting for 2.8% of the variance ($R^2 = .028$, $F(1,249) = 7.29$, $p < .01$). Finally, the third regression analysis indicated the measure significantly predicted number of drinking days with the intention of getting drunk, with the total score of the brief definitional measure accounting for 9.7% of the variance ($R^2 = .097$, $F(1,249) = 26.63$, $p < .001$).

Revised factors and consequences experienced. A standard multiple regression was performed to evaluate the relationship between consequences experienced and the three factors identified within the modified brief definitional measure. See Table 4 for unstandardized regression coefficients (B), standardized regression coefficients (β), R^2, and adjusted R^2 values. The multiple regression model was found to be significantly different from zero $F(3,240) = 26.48$, $p < .001$), and produced an R^2 value of .25. This suggests that a quarter of the variability in consequences experienced is predicted by the combination of the identified factors. The second (i.e., Social/Experiential) and third (i.e., Enhancement/Performance) factors were observed as having significant positive regression weights, whereas the first factor's (i.e., Coping) regression weight was not significant.

Revised factors and alcohol use. Three standard multiple regressions were performed to evaluate the relationship between to predict three specific alcohol use

variables (i.e., total number of drinks consumed in a typical week; average number of drinks per drinking day; number of drinking days with the intention of getting drunk) and the three factors identified within the modified brief definitional measure. See Tables 5, 6, and 7 for unstandardized regression coefficients (B), standardized regression coefficients (β), R^2, and adjusted R^2 values for the respective analyses. The first model was found to be significantly different from zero $F(3,247) = 10.67$, $p < .001$), and produced an R^2 value of .12. This suggests that a slightly higher than one tenth of the variability in total number of drinks consumed in a typical week is predicted by the combination of the identified factors. The first factor was observed as having a significant negative regression weight, whereas the second factor's regression weight was significant and positive. The third factor's regression weight was not significant. Similarly, the second model was found to be significantly different from zero $F(3,247) = 10.22$, $p < .001$), and produced an R^2 value of .11. This suggests that a slightly higher than one tenth of the variability the average number of drinks per drinking day is predicted by the combination of the identified factors. The first factor was observed as having a significant negative regression weight, whereas the second factor's regression weight was significant and positive. The third factor's regression weight, again, was not significant. The final model was found to be significantly different from zero $F(3,247) = 13.86$, $p < .001$) as well, and produced an R^2 value of .14. This suggests that nearly 15 percent of the variability in number of drinking days with the intention of getting drunk is predicted by the combination of the identified factors. The second and third factors were observed as

having significant positive regression weights, whereas the first factor's regression weight was not significant.

Factor structure of the DEOD. A final analysis was utilized to examine the factor structure of the DEOD within the current sample. An exploratory factor analysis with principal axis factoring and orthogonal rotation was implemented. An initial examination of the scree plot and eigenvalues suggested an eight-factor solution that accounted for 66.23% of the variance, with no additional factor accounting for more than 2.63% of the total variance. Examination of the Kaiser-Meyer-Olkin statistic (KMO = .89) and Bartlett's test of sphericity [$\chi^2(630) = 5140.56$, $p < .001$] indicated both adequate sampling and reliability of relationships between the items. The eight-factor or subscale solution was inconsistent with the nine previously established subscales (Simpson et al., 1996; Doyle et al., 2011), with only one subscale evidencing perfect item overlap (i.e., Sexual enhancement). See Table 8 for coefficients, communalities, and reliabilities.

CHAPTER IV

Conclusion

Discussion

The present study aimed to both develop and provide initial validation for a brief definitional measure of drinking motives built on the theoretical framework utilized by the DEOD (Simpson et al., 1996; Doyle et al., 2011). It extended the current literature by attempting to implement the theoretical structure of an established multidimensional instrument of motives for alcohol use in an effort to develop a validated brief definitional instrument. Overall, despite significant positive correlations being observed between the items making up the brief definitional measure and their respective subscales within the DEOD, the hypothesized three-factor structure made up of coping, social, and enhancement motives was found to be a poor fit for the brief definitional measure. Also, the hypotheses concerning the total score of the brief definitional measure in its original form were only partially supported. Though it was found to significantly predict both consequences experienced and alcohol use, it appeared to do so less effectively than the total score of the DEOD.

The finding that the hypothesized three-factor structure was found to be a poor fit for the items making up the brief definitional measure was surprising. The items were intentionally crafted to comprehensively reflect the respective subscales incorporated within the DEOD (Simpson et al., 1996; Doyle et al., 2011), and the consistently significant and positive correlations would suggest the efforts were successful. One possible explanation for the poor fit of the hypothesized three-factor structure would be the presence of inaccurate or flawed data obtained from the current study. However, the data utilized for the current study was screened for outliers, unusual, and impossible responses, minimizing the likelihood of this being the case. An alternative explanation would be the existence of an unstable structure within the DEOD, in particular when implemented across different populations. The implication of this being that the structural stability of the brief definitional measure would be significantly impacted. The exploratory factor analysis conducted on the DEOD item responses from the current study would support this explanation, as the majority of the items failed to load on the expected subscales. Additionally, an evaluation of the validity of the DEOD within a late adolescent sample found substantial discrepancies in factor structure between their sample and the established structure, which was most recently validated in a clinical adult sample (Feldstein Ewing et al., 2008; Doyle et al., 2011). Similar to the findings of the current research, the evaluation of the DEOD identified eight rather than nine factors (i.e., subscales) and identified only a single factor as having complete item overlap though substantial discrepancies were also observed when contrasted with the current

findings. These discrepancies provide support for the existence of instability within the structure of the DEOD when implemented across different populations.

Less susceptible to potential structural instability was the brief definitional measure's total score. The hypothesis stating the total score of the measure would significantly predict consequences experienced was supported, though the current findings suggest it may do so less effectively than the total score of the DEOD. Similarly, the hypothesis stating the total score of the measure would significantly predict alcohol use (i.e., total number of drinks consumed in a typical week; average number of drinks per drinking day; number of drinking days with the intention of getting drunk) was also supported, though again may do so less effectively than the total score of the DEOD. One possible explanation of these findings is the brief definitional measure's shortened nature. Though the brief definitional measure had a greater range of potential responses for each item as compared to the DEOD (i.e., seven versus four response options), the larger number of items in the DEOD resulted in a larger range of potential scores (i.e., 10 to 70 versus 36 to 144). Despite this, the ability of the brief definitional measure to significantly predict both reported consequences experienced and alcohol use.

Motivated by the failure of the originally hypothesized three-factor structure for the brief definitional measure, a closer examination of the measure was conducted through a progression of analyses and minor modifications. A discernible structure consisting of three factors was identified and confirmed by way of exploratory and confirmatory factor analyses, with the factors' respective themes appearing to represent

coping, social/experiential, and enhancement/performance motives. An evaluation of the modified brief definitional measure's total score found marginal improvements in the ability to predict both reported consequences experienced and alcohol use when compared to the original measure's total score. Similar findings were observed after conducting standard multiple regression analyses on the identified factors. This suggests that the modified measure, both its total score and the individual factors within may have utility in endeavors evaluating those alcohol related consequences and use, especially in contexts where brevity is required.

Limitations

There are several limitations that should be noted for the current study, the first of which being the lack of diversity included within the study's sample. Due to the majority of participants being female, Caucasian, and actively enrolled in college, it is possible that the present findings may not be generalizable to heterogeneous or broader populations. A second limitation to the current study was the collection of data at a single time point, with no follow-up data being collected. This made it impossible to evaluate or explore potential causal relationships. A third limitation of the current investigation is the data collection modality. The current study utilized self-report measures completed through an online survey system as the sole strategy for data collection, rather than implementing a variety of data collection strategies or methodologies. Another limitation of the current study is the rationally derived nature of the items comprising the brief definitional measure. Though the items were mindfully crafted to mirror the respective

subscales as fully as possible, an alternative, statistically based procedure may have been an appropriate alternative. Lastly, no corrections were made to account for the ancillary analyses and for the likely increased rates of Type I error. These findings should be interpreted with these limitations in mind.

Future Directions

Given the current study's limitations, future research should take steps to incorporate a more diverse or heterogeneous sample. This would permit the potential generalization of findings to additional and broader populations, and may mitigate concerns regarding the brief definitional measure's structural instability across different populations. Related to this, future research should take steps to gain a comprehensive understanding of both the brief definitional measure and its modified iteration, and evaluate them in both clinical and nonclinical populations. This would provide much-needed insight into the ability of the measure to capture or assess motives for use in a multitude of settings. In addition, the implementation of a longitudinal research design in order to collect data at multiple time points should be considered. The use of a longitudinal design would permit an examination of the chronological relationship between potential motives for alcohol use and various outcome measures, such as consequences experienced or specific alcohol use behaviors. This would provide significant support for the measure's predictive validity, and would permit evaluation of the measure's reliability across time. Future research should also consider implementing a variety of data collection strategies, rather than having all participants complete the

self-report measures through an online survey. This would permit a comparison between modalities to identify any potential biasing of the data. Taken together, these future directions would provide much needed insight into the brief definitional measure and its modified form, its validity and reliability, and would help clarify its role in future clinical and research settings.

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Table 1

Correlations between brief definitional measure items and DEOD subscales

Brief Definitional Items	M	SD	DEOD Subscales	M	SD	Pearson r
To decrease negative feelings like anger, sadness, or shame	1.98	1.43	Negative feelings	5.06	1.67	.66***
To feel less fear or anxiety.	2.23	1.62	Negative feelings	5.06	1.67	.55***
To feel better about myself.	1.89	1.38	Self-Esteem	4.91	1.81	.66***
To get relief from things that are bothering me.	2.48	1.69	Relief	6.31	2.47	.75***
To feel the physical effects of drinking and intoxication	3.58	1.97	Drug effects	5.59	1.33	.58***
To feel more outgoing or comfortable in social situations.	3.55	1.80	Social facilitation	9.42	2.89	.78***
To improve the quality or frequency of sexual or romantic experiences.	1.90	1.45	Sexual enhancement	5.58	2.38	.71***
To increase positive feelings like happiness or joy.	3.13	1.79	Positive feelings	9.20	2.29	.62***
To be better able to assert myself or act aggressively.	1.43	.94	Assertion	4.84	1.44	.60***
To enhance my mental abilities like alertness, creativity, or concentration.	1.37	.88	Mental	4.62	1.25	.63***
Total score	23.56	10.17	Total score	18.81	12.48	.82***

Note. Significant correlations ($p < .05$) depicted by *$p < .05$. **$p < .01$. ***$p < .001$.

Table 2

Exploratory factor analysis of the brief definitional measure

Brief Definitional Items	Factor 1 Coping	Factor 2 Enhancement Performance	Factor 3 Social Experiential	h^2	*M*	*SD*
To decrease negative feelings like anger, sadness, or shame	**.79**	.45	.40	.63	1.98	1.43
To feel less fear or anxiety.	**.73**	.40	.50	.55	2.23	1.62
To feel better about myself.	**.70**	.51	.51	.54	1.89	1.38
To get relief from things that are bothering me.	**.91**	.36	.45	.83	2.48	1.69
To feel the physical effects of drinking and intoxication	.34	.28	**.65**	.42	3.58	1.97
To feel more outgoing or comfortable in social situations.	.41	.39	**.75**	.56	3.55	1.80
To improve the quality or frequency of sexual or romantic experiences.	.35	**.60**	.45	.40	1.90	1.45
To increase positive feelings like happiness or joy.	.55	.44	**.81**	.67	3.13	1.79
To be better able to assert myself or act aggressively.	.41	**.91**	.35	.84	1.43	.94
To enhance my mental abilities like alertness, creativity, or concentration.	.39	**.62**	.33	.39	1.37	.88
Cronbach's α	.86	.78	.71	.		

Note. Extraction method = Principle Axis Factoring; Rotation method = Oblimin with Kaiser Normalization; Bolded values indicate largest factor loading; h^2 = communalities

Table 3

Exploratory factor analysis of the modified brief definitional measure

Brief Definitional Items	Factor 1 Coping	Factor 2 Enhancement Performance	Factor 3 Social Experiential	h^2	*M*	*SD*
To decrease negative feelings like anger, sadness, or shame	**.88**	.44	.32	.79	1.98	1.43
To feel less fear or anxiety.	**.81**	.34	.46	.68	2.23	1.62
To get relief from things that are bothering me.	**.91**	.33	.38	.84	2.48	1.69
To feel the physical effects of drinking and intoxication	.31	.25	**.82**	.68	3.58	1.97
To feel more outgoing or comfortable in social situations.	.36	.35	**.83**	.70	3.55	1.80
To improve the quality or frequency of sexual or romantic experiences.	.29	**.76**	.45	.61	1.90	1.45
To increase positive feelings like happiness or joy.	.51	.41	**.82**	.71	3.13	1.79
To be better able to assert myself or act aggressively.	.37	**.87**	.28	.76	1.43	.94
To enhance my mental abilities like alertness, creativity, or concentration.	.36	**.80**	.24	.65	1.37	.88
Cronbach's α	.84	.71	.78	.		

Note. Extraction method = Principle Axis Factoring; Rotation method = Oblimin with Kaiser Normalization; Bolded values indicate largest factor loading; h^2 = communalities

Table 4
Consequences experienced and factors comprising the modified brief definitional measure

	B	β	R^2	ΔR^2
Overall model			.25***	.24***
Coping	.01	.01	.	.
Social/Experiential	.24***	.30***		
Enhancement/Performance	.40***	.28***	.	.

Note. Significant values depicted by ***$p < .001$

Table 5
Total drinks and factors comprising the modified brief definitional measure

	B	β	R^2	ΔR^2
Overall model			.12***	.10***
Coping	-.49**	-.24**	.	.
Social/Experiential	.63***	.34***		
Enhancement/Performance	.34	.11	.	.

Note. Significant values depicted by **$p < .01$. ***$p < .001$

Table 6
Drinks on drinking days and factors comprising the modified brief definitional measure

	B	β	R^2	ΔR^2
Overall model			.11***	.10***
Coping	-.17**	-.22**	.	.
Social/Experiential	.24***	.35***		
Enhancement/Performance	.09	.07	.	.

Note. Significant values depicted by **$p < .01$. ***$p < .001$

Table 7
Days drinking to get drunk and factors comprising the modified brief definitional measure

	B	β	R^2	ΔR^2
Overall model			.14***	.13***
Coping	-.04	-.10	.	.
Social/Experiential	.11***	.30***		
Enhancement/Performance	.12**	.20**	.	.

Note. Significant values depicted by **$p < .01$. ***$p < .001$

Table 8

Exploratory factor analysis of the Desired Effects of Drinking scale

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	h^2
To feel more creative.	.36	.16	.40	.39	.21	**.62**	.07	-.15	.47
To change my mood.	.31	.29	.43	.14	**.55**	.42	-.07	-.41	.51
To relieve pressure or tension.	.30	.32	.34	.05	**.58**	.45	-.05	-.55	.60
To be sociable.	.21	**.58**	.35	.14	.20	.26	-.25	-.55	.53
To get drunk or intoxicated.	.08	**.68**	.20	.08	.13	.09	.06	-.23	.48
To feel more powerful.	**.56**	.27	.50	.39	.36	.24	.14	-.17	.48
To feel more romantic.	.39	.32	**.70**	.23	.16	.37	-.01	-.22	.54
To feel less depressed.	.61	.24	.29	.09	**.76**	.37	.11	-.36	.70
To feel less disappointed in yourself.	**.76**	.17	.28	.10	.56	.35	.16	-.23	.66
To be more mentally alert.	.42	.12	.22	.44	.17	**.54**	.38	.09	.53
To feel good.	.28	**.66**	.38	.01	.37	.39	.11	-.46	.62
To be able to avoid thoughts or feelings associated with bad experiences.	.47	.20	.15	.15	**.82**	.29	.12	-.14	.71
To feel more comfortable in social situations.	.31	**.57**	.41	.20	.24	.30	-.30	-.56	.61
To get over a hangover.	.18	.23	.27	**.58**	.09	.23	.03	-.10	.37
To feel brave and capable of fighting.	.47	.23	.46	.51	.35	.26	**.51**	-.16	.60
To be a better lover.	.32	.22	**.85**	.30	.19	.32	.25	-.20	.75
To control my anger.	**.52**	.07	.39	.37	.44	.26	.33	.03	.48
To feel less angry with myself.	**.72**	.06	.34	.27	.47	.36	.30	-.22	.60
To be able to think better.	.48	.15	.26	**.53**	.16	.42	.05	-.03	.46
To celebrate.	.10	**.52**	.21	.22	.09	.18	-.08	-.09	.31
To control painful memories of a bad experience.	.48	.17	.25	.24	**.82**	.23	.30	-.08	.75
To be able to meet new people.	.31	.54	.34	.31	.14	.19	-.15	**-.58**	.57
To sleep.	.21	.03	.27	.39	.21	**.40**	.37	.08	.34
To be able to express anger	.29	.12	.40	.25	.26	.30	**.63**	-.12	.53
To feel more sexually excited.	.34	.30	**.91**	.25	.26	.34	.04	-.12	.87

To feel less shame.	**.76**	.16	.39	.21	.51	.40	.15	-.23	.63
To feel more satisfied with myself.	**.72**	.21	.42	.09	.41	.32	.07	-.46	.66
To be able to work or concentrate better.	.33	.07	.38	.38	.13	**.42**	.23	-.02	.33
To relax.	.22	.32	.26	-.03	.37	**.54**	.06	-.26	.42
To forget about problems.	**.46**	.26	.22	.02	.75	.28	.15	-.46	.67
To have a good time.	-.00	**.86**	.23	.05	.18	.13	-.16	-.39	.77
To stop the shakes or tremors.	.09	.04	.14	**.46**	.12	.13	.28	.00	.26
To be able to find the courage to do things that are risky.	.41	.39	.42	**.59**	.28	.36	.11	-.48	.64
To enjoy sex more.	.22	.29	**.83**	.20	.12	.23	.22	-.26	.73
To reduce fears.	.43	.34	.28	.21	.38	.24	.19	**-.63**	.56
To feel less guilty.	**.76**	.25	.38	.20	.57	.28	.10	-.28	.66
Cronbach's α	.88	.82	.89	.61	.85	.63	--	.61	

Note. Extraction method = Principle Axis Factoring; Rotation method = Oblimin with Kaiser Normalization; Bolded values indicate largest factor loading h^2 = communalities

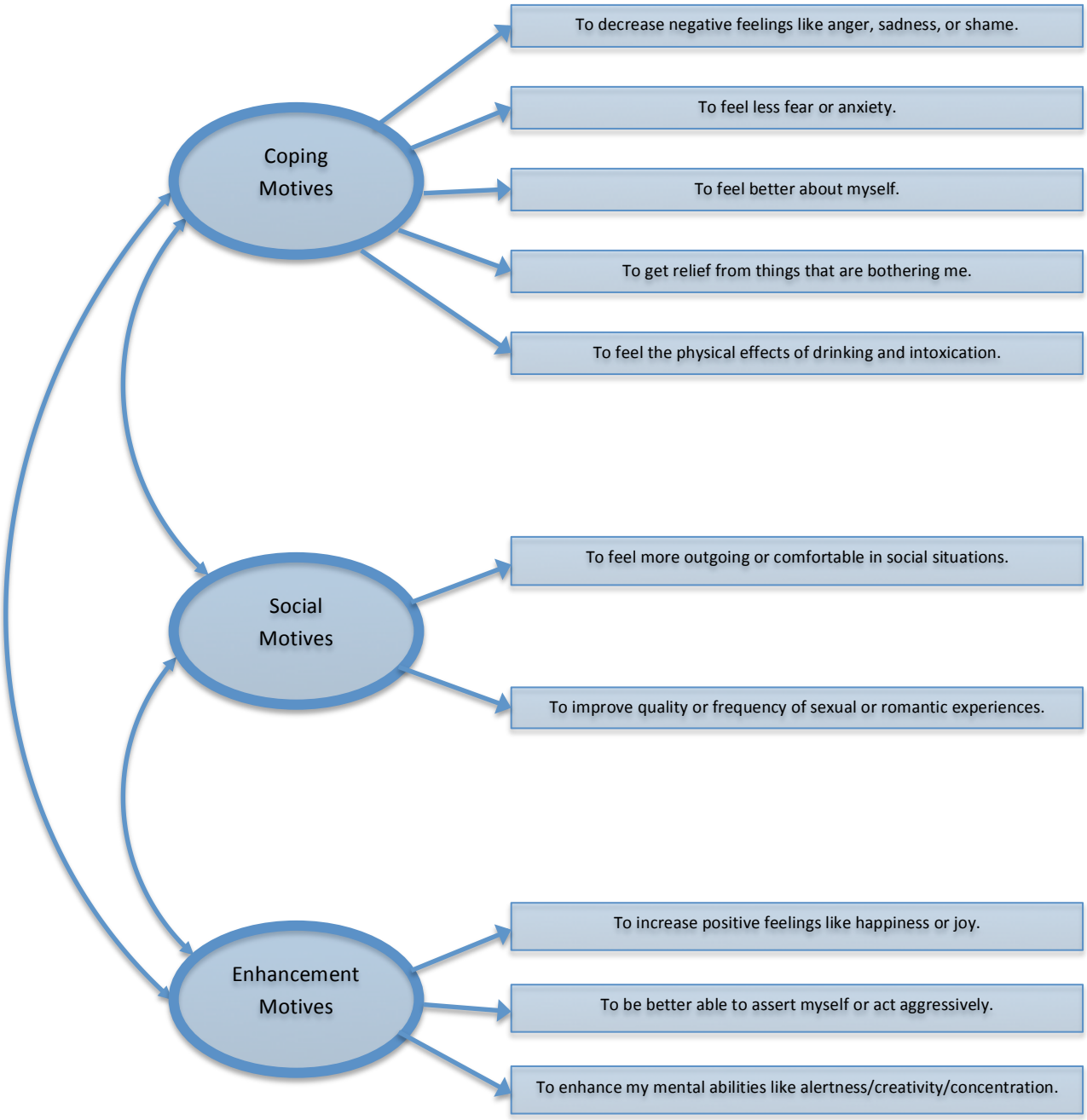

Figure 1. Hypothesized model of brief definitional measure

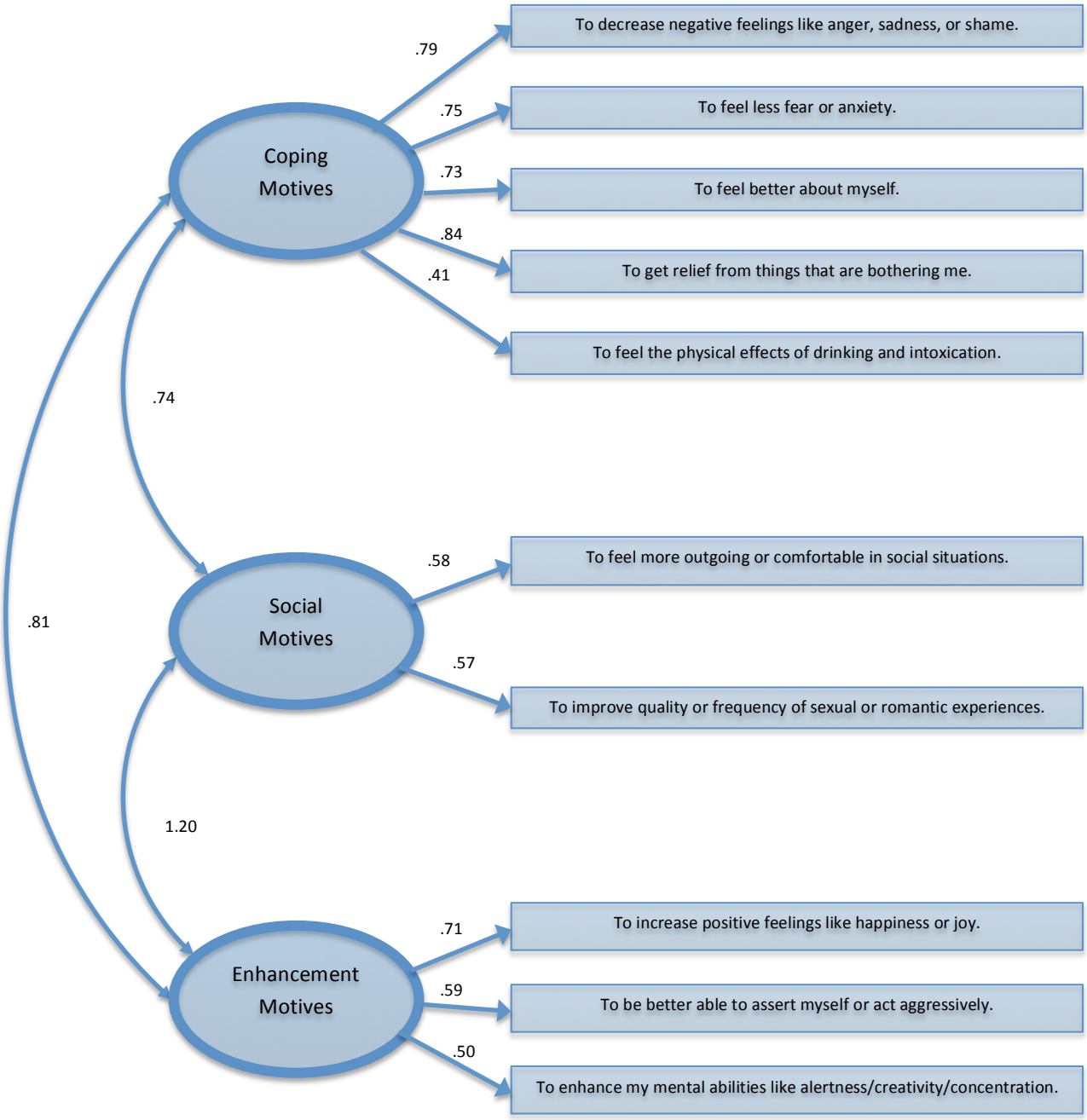

Figure 2. Results of confirmatory factor analysis for hypothesized model

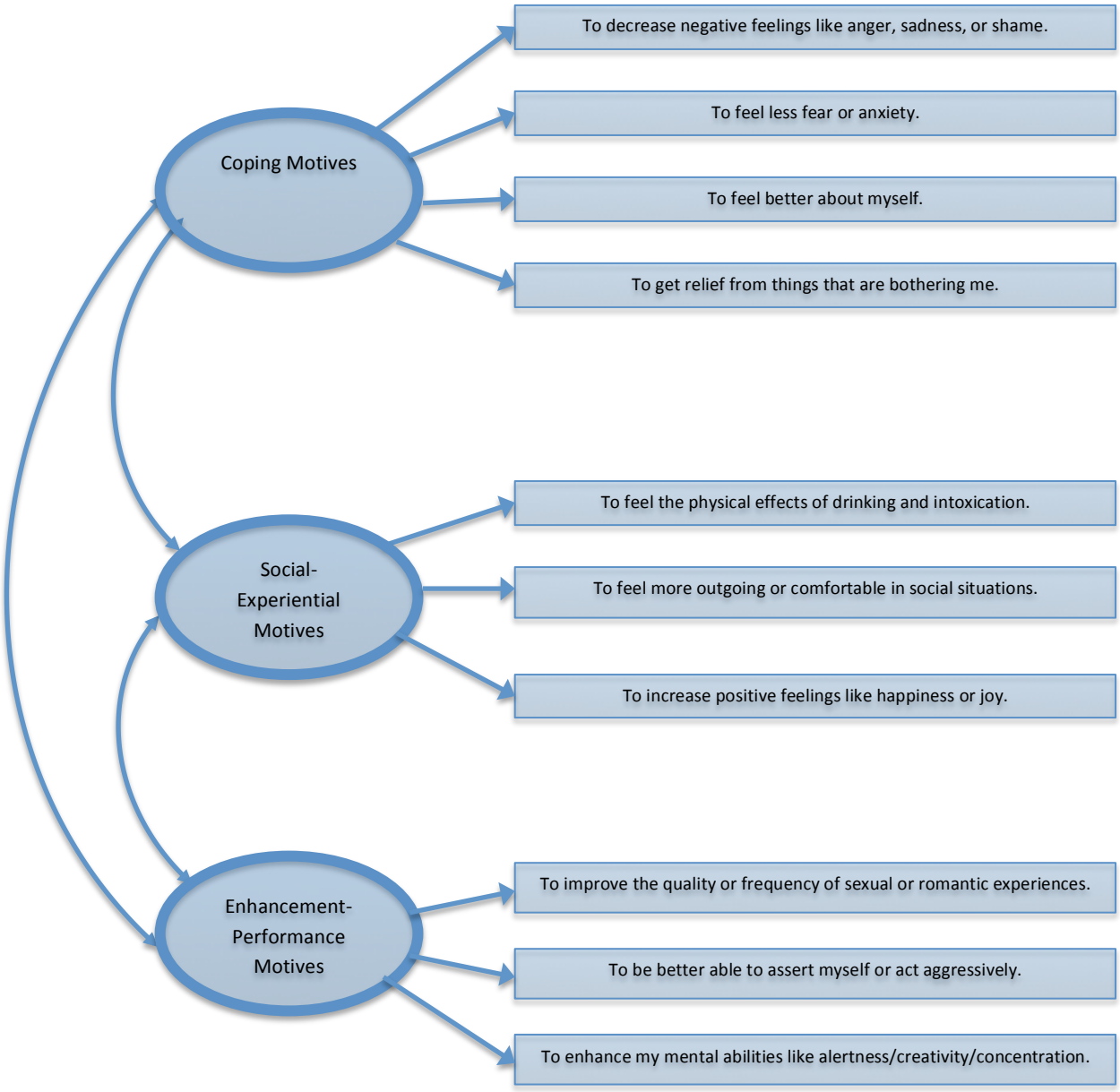

Figure 3. Alternative model of brief definitional measure

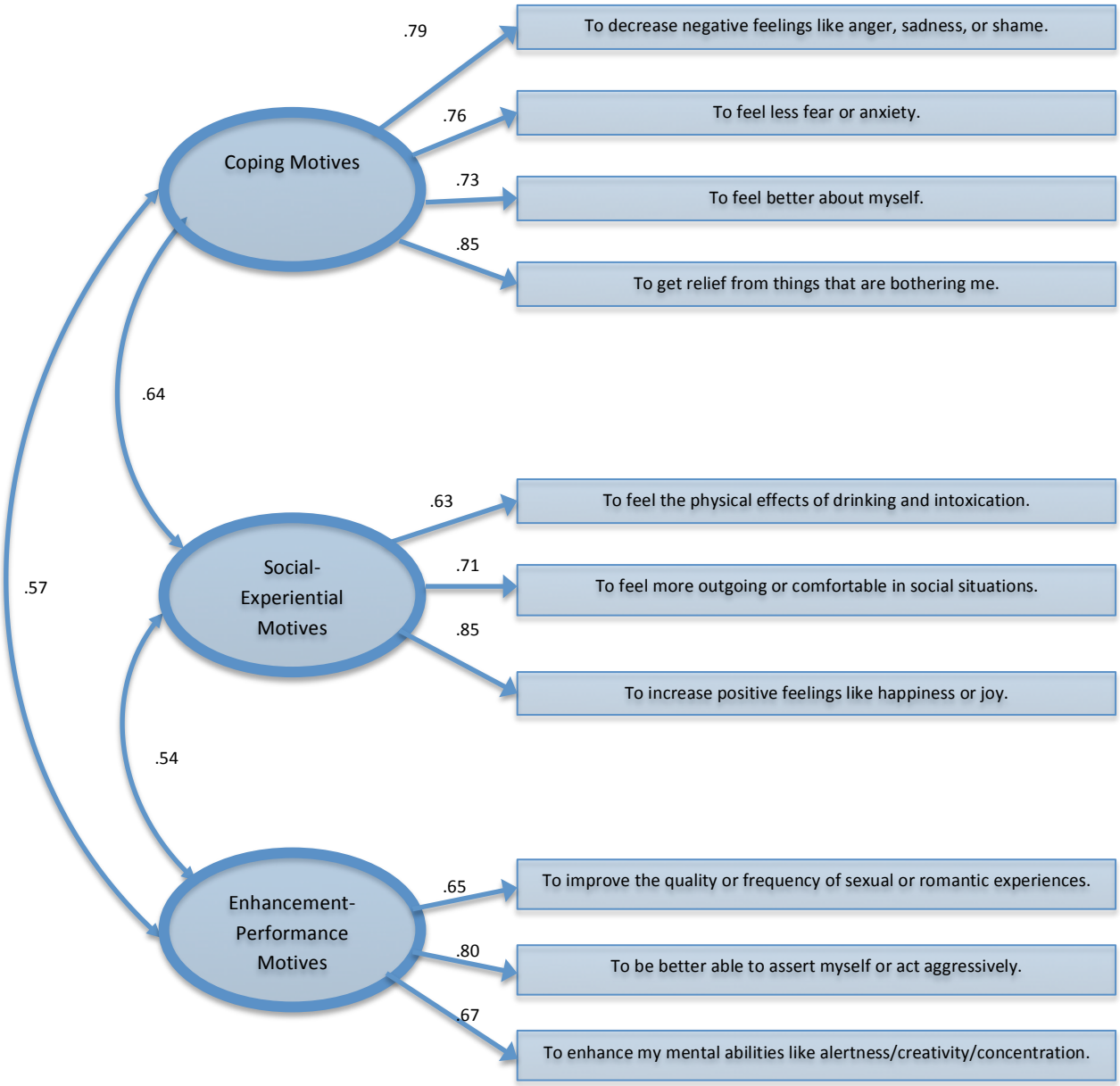

Figure 4. Results of confirmatory factor analysis for alternative model

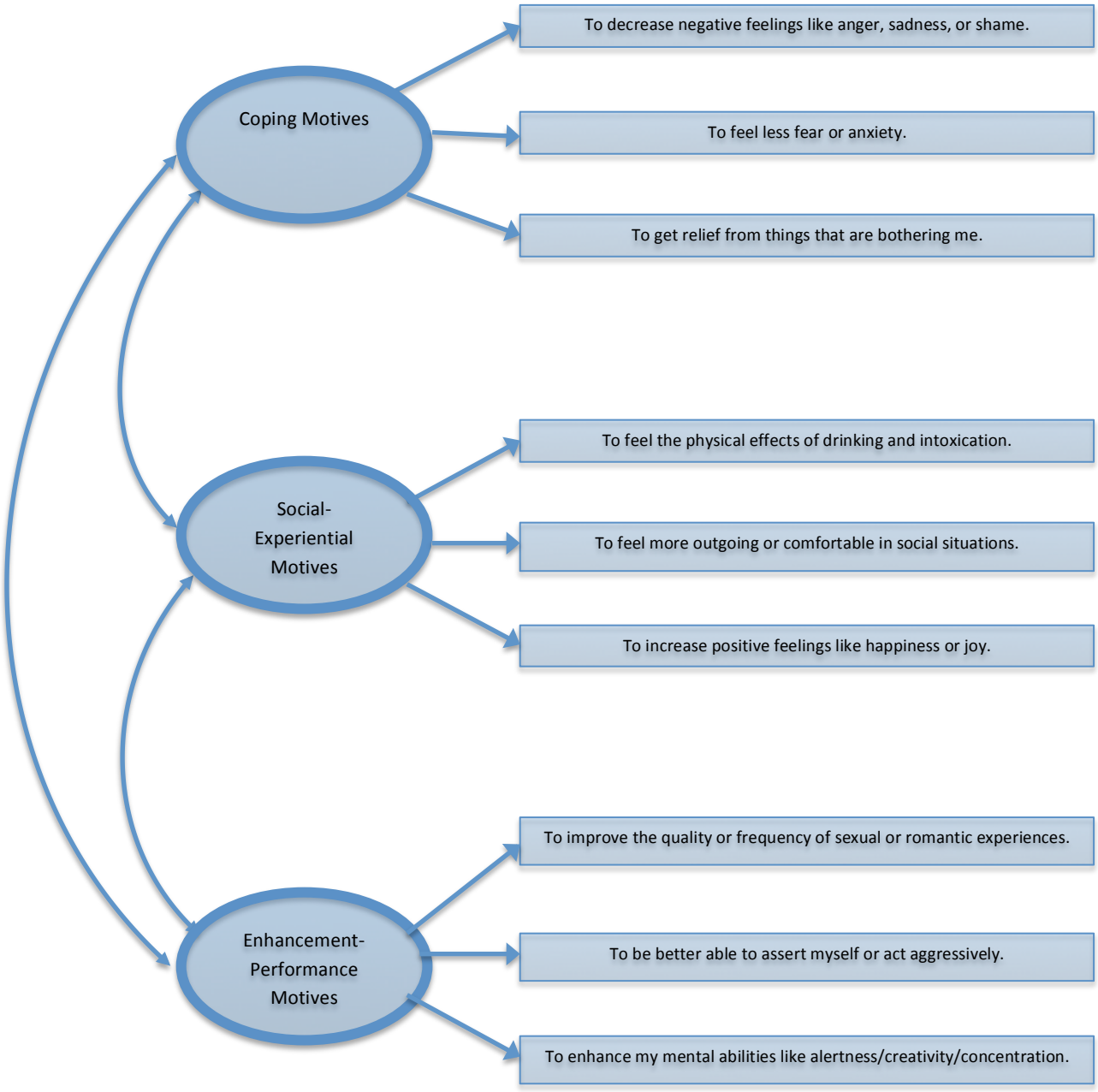

Figure 5. Modified alternative model of brief definitional measure

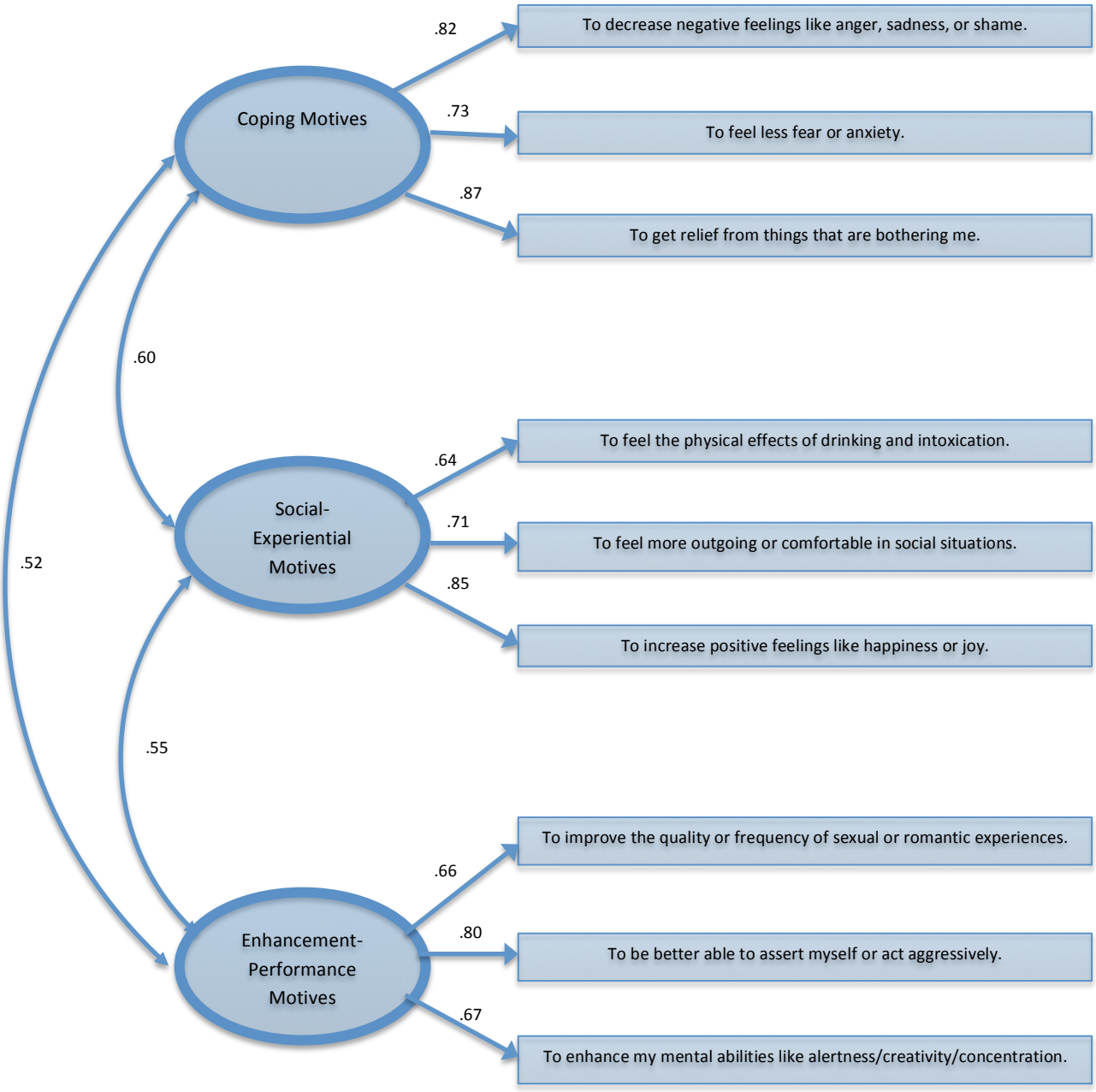

Figure 6. Confirmatory factor analysis of modified alternative model

APPENDICES

Demographics

2) Gender

( ) Male

( ) Female

3) Age

( ) Under 18
( ) 18-24
( ) 25-34
( ) 35-54
( ) 55+

4) Year in school

( ) Freshmen
( ) Sophomore
( ) Junior
( ) Senior

5) Race

( ) Asian/Pacific Islander
( ) Black/African American
( ) Caucasian
( ) Hispanic
( ) Native American/Alaska Native
( ) Other/Multi-Racial
( ) Decline to Respond

Frequency Quantity Questionnaire

Alcohol Use

For the following questions, one drink equals:

• 4 ounces of wine
• 1 wine cooler
• 12 ounces of "3-2" beer
• 8-10 ounces of "6-point" beer, malt liquor, ice beers, or "microbrew" beers
• A mixed drink with 1 ounce of liquor
• A single shot of liquor

6) Think of the occasion you drank most this past 14 days. How much did you drink?

Number of drinks= _____

7) On the average weekend evening, how much alcohol do you typically drink? Estimate for typical weekends during the past 14 days.

Number of drinks =_____

8) How often in the past 14 days did you drink alcohol?

Number of days =_____

9) On how many occasions did you drink to get drunk in the past 14 days?

Number of occasions =_____

Daily Drinking Questionnaire

10) Please enter the number of drinks you consumed and the number of hours spent drinking each day during the past 7 days.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Number of drinks consumed	___	___	___	___	___	___	___
Number of hours spent drinking	___	___	___	___	___	___	___

Brief Young Adult Alcohol Consequences Questionnaire

For the following questions, please indicate whether you have experienced the following during **the past year.**

1) While drinking, I have said or done embarrassing things. (Y/N)

2) I have had a hangover (headache, sick stomach) the morning after I had been drinking. (Y/N)

3) I have spent too much time drinking. (Y/N)

4) I have often found it difficult to limit how much I drink. (Y/N)

5) I have felt very sick to my stomach or thrown up after drinking. (Y/N)

6) I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking. (Y/N)

7) I have taken foolish risks when I have been drinking. (Y/N)

8) I have been overweight because of my drinking. (Y/N)

9) I have felt badly about myself because of my drinking. (Y/N)

10) I have driven a car when I knew I had too much to drink to drive safely. (Y/N)

11) I often have ended up drinking on nights when I had planned not to drink. (Y/N)

12) I have passed out from drinking. (Y/N)

13) My physical appearance has been harmed by my drinking. (Y/N)

14) I have woken up in an unexpected place after heavy drinking (Y/N)

15) I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk. (Y/N)

16) When drinking, I have done impulsive things I regretted later. (Y/N)

17) My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives. (Y/N)

18) I've not been able to remember large stretches of time while drinking heavily. (Y/N)

19) My drinking has gotten me into sexual situations I later regretted (Y/N)

20) I have become rude, obnoxious, or insulting after drinking (Y/N)

21) I have had less energy or felt tired because of my drinking (Y/N)

22) I have felt like I needed a drink after I'd gotten up. (that is, before breakfast) (Y/N)

23) The quality of my work or schoolwork has suffered because of my drinking. (Y/N)

24) I have neglected my obligations to family, work, or school because of drinking. (Y/N)

Desired Effects of Drinking

Drinking alcohol can have many different effects. What results or effects have you wanted from drinking alcohol ***during the past three months***? Read each effect/result of drinking on the left and indicate how much this was an effect of drinking you ***wanted*** during the past three months.

During the past 3 months, how often did you want this effect from drinking alcohol?

	Never	Sometimes	Frequently	Always
1) To feel more creative	0	1	2	3
2) To change my mood	0	1	2	3
3) To relieve pressure or tension	0	1	2	3
4) To be sociable	0	1	2	3
5) To get drunk or intoxicated	0	1	2	3
6) To feel more powerful	0	1	2	3
7) To feel more romantic	0	1	2	3
8) To feel less depressed	0	1	2	3
9) To feel less disappointed in yourself	0	1	2	3
10) To be more mentally alert	0	1	2	3
11) To feel good	0	1	2	3
12) To be able to avoid thoughts or feelings associated with bad experiences	0	1	2	3

13) To feel more comfortable in social situations	0	1	2	3
14) To get over a hangover	0	1	2	3
15) To feel brave and capable of fighting	0	1	2	3
16) To be a better lover	0	1	2	3
17) To control my anger	0	1	2	3
18) To feel less angry with myself	0	1	2	3
19) To be able to think better	0	1	2	3
20) To celebrate	0	1	2	3
21) To control painful memories of a bad experience	0	1	2	3
22) To be able to meet new people	0	1	2	3
23) To sleep	0	1	2	3
24) To be able to express anger	0	1	2	3
25) To feel more sexually excited	0	1	2	3
26) To feel less shame	0	1	2	3
27) To feel more satisfied with myself	0	1	2	3
28) To be able to work or concentrate better	0	1	2	3
29) To relax	0	1	2	3
30) To forget about problems	0	1	2	3
31) To have a good time	0	1	2	3

32) To stop the shakes or tremors	0	1	2	3
33) To be able to find the courage to do things that are risky	0	1	2	3
34) To enjoy sex more	0	1	2	3
35) To reduce fears	0	1	2	3
36) To feel less guilty	0	1	2	3

Brief definitional measure of Motives for Alcohol use

Alcohol consumption can result in a variety of experiences and effects. ***During the past three months***, what experiences and effects did you want as a result of consuming alcohol? Please read the items on the left and report how much you desired that experience or effect by placing a mark on the appropriate spot on the line.

How often did you want this experience or effect from consuming alcohol in the past three months?	Never (1)						Always (7)
1) To decrease negative feelings like anger, sadness, or shame	__	__	__	__	__	__	___
2) To feel less fear or anxiety	__	__	__	__	__	__	___
3) To feel better about myself	___	__	__	__	__	__	___
4) To get relief from things that are bothering me	__	__	__	__	__	__	___
5) To feel the physical effects of drinking and intoxication	__	__	__	__	__	__	___
6) To feel more outgoing or comfortable in social situations	__	__	__	__	__	__	___
7) To improve the quality or frequency of sexual or romantic experiences	__	__	__	__	__	__	___
8) To be increase positive feelings like happiness or joy	__	__	__	__	__	__	___

9) To be better able to assert myself __ __ __ __ __ __ ___

10) To enhance my mental abilities like alertness, creativity, or concentration __ __ __ __ __ __ ___

Review of the Literature

The Issue of Heavy Alcohol Use

Heavy alcohol use continues to be a pervasive issue in the United States (US) (CDC, 2013). In 2012, approximately 25 percent of adults in the US engaged in one or more binge drinking episodes (i.e., consuming a minimum of four drinks for women and five drinks for men within two hours) in the past month (NIAAA, 2014). Additionally, approximately seven percent engaged in heavy alcohol use in that same timeframe (NIAAA, 2014).

Heavy alcohol use has been associated with short-term memory difficulties (Browning, Hoffer, & Dunwiddie, 1992), as well as impaired social and emotional functioning (Hasin, Stinson, Ogburn, & Grant, 2007). It also contributes both directly and indirectly to death and disability (Mokdad, Marks, Stroup, & Gerberding, 2004; Ott, 2010; Agewall, 2012). Heavy alcohol use to the point of experiencing diagnosable impairment is prevalent in the US (Grant, 1996; Hasin, et al., 2007; American Psychiatric Association, 2013). A national survey examining rates of alcohol dependence estimated approximately 13 percent of adults met diagnostic criteria for an alcohol use disorder

within their lifetime, with just over 4 percent meeting criteria in the past twelve-months (Grant, 1996). Comparable estimates were reported more recently (Hasin et al., 2007), with nearly 13 percent meeting criteria for dependence in their lifetime and close to 4 percent within the past twelve months. More recently, the latest iteration of the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5) introduced a new diagnostic category concerning problematic alcohol use (i.e., alcohol use disorder). The DSM-5 estimated a one-year prevalence rate of 8.5 percent for adults in the US, indicating a substantial number of adults consume alcohol to the point of significant impairment in functioning and daily living (American Psychiatric Association, 2013).

Alcohol Use by College Students and College-Age Adults

Heavy alcohol use is particularly an issue within college student and college-age adult populations in the United States. (Dawson, Grant, Stinson, & Chou, 2004; Clements, 1999; Wechsler, Lee, Kuo, & Lee, 2000; Hingston, Zha, & Weitzman, 2009). An evaluation of adults between ages 18 and 29 found approximately 71 percent engaged in occasions of heavy alcohol use (Dawson et al., 2004). Of that substantial percentage, 40 percent engaged in heavy alcohol use less than monthly, 20 percent more often than once per month, and 11 percent more often than once per week (Dawson et al., 2004). Similarly, the administration of a structured diagnostic interview found close to 15 percent would binge drink when consuming alcohol, with approximately 12 percent doing so at least once per month (Clements, 1999).

Even higher estimates were reported in a survey of colleges across the US, with just over 40 percent of students reporting engaging in binge drinking (Wechsler et al., 2000). Of those, close to 22 percent reported engaging in occasional binge drinking, and 23 percent reported frequent binge drinking. Similarly, it was estimated that 45 percent of college students engaged in binge drinking within the past 30 days (Hingston et al., 2009). These estimates indicate a large portion of college students are engaging in heavy alcohol use behaviors, despite consequences often associated with those behaviors.

Alcohol misuse among college students contributes to a multitude of significant negative consequences (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Heavy alcohol use has been associated with increased risk of engaging in unsafe or unplanned sex, physical injury, damage to property, and problems with campus police (Wechsler et al., 1994). More generally, individuals engaging in frequent heavy alcohol use are 21 times more likely to experience a minimum of five alcohol-related problems, as well being more likely to cause secondhand problems (e.g., being awakened or kept from studying) for their peers (Wechsler et al., 2000).

As with the adult US population, diagnosable impairment resulting from heavy alcohol use is prevalent in college student and college-age adult populations (Dawson et al., 2004; Clements, 1999; Knight et al., 2002). Estimates indicate just over 16 percent of adults between ages 18 and 29 met criteria for either alcohol abuse or dependence within the past twelve months (Dawson et al., 2004). For college students, twelve-month prevalence estimates for alcohol abuse ranged from 13.1 percent to 31 percent, with

dependence estimates ranging from 6 percent to 11.4 percent (Clements, 1999; Knight et al., 2002). A higher percentage endorsed meeting diagnostic criteria in their lifetime. Just over 18 percent and 16 percent met criteria in their lifetime for alcohol abuse or dependence, respectively (Clements, 1999). Much like the adult US population, students are engaging in heavy alcohol use despite the potential for numerous severe consequences and diagnosable impairment.

The Role of Motives

Substantial efforts have been made to better understand the issue of heavy alcohol use, with significant emphasis being placed on the role of motives (Cox & Klinger, 1988). A theoretical model often cited in the literature is the motivational model of alcohol use, which states that a person's motivations are the key factor for decisions pertaining to use. The motivational model holds that a person becomes motivated to drink when desiring to achieve or experience a specific effect (Cox & Klinger, 1988). Specifically, the model asserts that the decision to consume alcohol is contingent upon the expectation of positive affective outcomes outweighing expected outcomes from abstaining.

The concept of motives is fundamentally distinct from expectancies (Kuntsche, Wiers, Janssen, & Gmel, 2010). Though both are concerned with subsequent effects following alcohol use, expectancies are limited to beliefs concerning the outcomes themselves. In contrast, motives are concerned with the value placed on those subsequent effects (Kuntsche et al., 2010). The motivational model of alcohol use argues for the

centrality of the latter in understanding an individual's alcohol use behaviors (Cox & Klinger, 1988). Though it acknowledges the relevance of additional factors (e.g., historical, current) in the valuation process, an individual's motives are viewed as the final, definitive component (Cox & Klinger, 1988).

The motivational model of alcohol use (Cox & Klinger, 1988) has been supported on multiple occasions in the literature (Cooper, Russell, Skinner, & Windle, 1992; Crutzen, Kuntsche, & Schelleman-Offermans, 2013; Foster, Neighbors, & Prokhorov, 2014). Cooper and colleagues (1992) observed that individual motives were able to directly predict a number of alcohol use behaviors. Motives pertaining to the enhancement of positive affect (i.e., enhancement), coping with negative affect (i.e., coping), and social motives were found to predict both frequency and quantity of alcohol consumption. Those motives were also found to predict alcohol use in specific situations or settings. Social motives were found to positively predict alcohol use in situations with same-sex friends, mixed-sex friends, and at parties, but negatively predicted alcohol use when alone. Enhancement motives were positively predictive of alcohol use when with same-sex friends, but negatively predictive when at a party. Conversely, coping motives were positively predictive when alone or with a partner (Cooper et al., 1992)

Similar findings were reported more recently (Crutzen et al., 2013; Foster et al., 2014). A longitudinal study spanning a period of three months evaluated the impact of motives on alcohol consumption behaviors over time and found they predicted several aspects of alcohol use. First, coping and social motives were positively associated with

amount of alcohol consumed on the occasion of heaviest drinking over the past seven days. Second, coping and enhancement motives were positively associated with the number of drinking occasions over that same period of time (Crutzen et al., 2013). Consistent with this, a study assessing the impact of social, coping, enhancement, and conformity motives found all were associated with alcohol use behaviors (Foster et al., 2014). Specifically, the motives were significantly associated with peak drinks, drinking frequency, and drinks per week. Consistent with the fundamental assertion of the motivational model of alcohol use, motives appear to have direct explanatory potential for understanding alcohol use behaviors.

The Relationship Between Motives and Heavy Alcohol Use

There is substantial support regarding the relationship between motives and heavy alcohol use. Early research identified particular motives (e.g., personal and escape motives) associated with problematic alcohol use (Riley, Marden, & Lifshitz, 1948; Mulford & Miller, 1960; Farber, Khavari, & Douglass, 1980). More recent efforts have substantiated the impact of motives for alcohol use on the experiencing of alcohol related consequences (Merrill & Read, 2010; Foster, Neighbors, & Prokhorov, 2014; Norberg, Olivier, Alperstein, Zvolensky, & Norton, 2011; Cooper et al., 1992;), the prediction of future consequences (Merrill, Wardell, & Read, 2014), and their relationship to diagnosable impairment (Carpenter & Hasin, 1998a; Carpenter & Hasin, 1998b; Carpenter & Hasin, 1999).

Motives for alcohol use were significantly correlated with the experiencing of alcohol related consequences (Merrill & Read, 2010; Foster et al., 2014; Cooper et al., 1992). Merrill & Read (2010) evaluated both direct and indirect relationships between motives for use and alcohol related consequences. Coping motives were directly related to engagement in risky behaviors, poor self-care, and both academic and occupational problems. Two other motives, enhancement and conformity, were also directly associated with alcohol related consequences. The former was associated with blackouts, and the latter with impaired control, poor self-care, and diminished self-perception. Indirect relationships were also found between motives (i.e., coping, enhancement) and alcohol related consequences (e.g., impaired control, physiological dependence, risky behaviors) (Merrill & Read, 2010).

In a study evaluating the relationship between motives, ambivalence on drinking, and consequences, motives were significantly correlated with both alcohol use and consequences experienced (Foster et al., 2014). Drinking motives were found to predict peak drinking and alcohol related problems, with social motives best predicting the former and coping motives predicting the latter. Cooper and colleagues (1992) reported similar findings. Coping, enhancement, and social motives were all identified as significant predictors of alcohol related consequences. Of these, coping motives predicted the highest number of problems, namely impairment, pathological consumption, tolerance, and withdrawal.

Motives for alcohol use have also been shown to hold predictive potential (Merrill, et al., 2014). A longitudinal study completed over the course of two years found that both coping and enhancement motives were able to predict multiple areas of alcohol related consequences. Specifically, coping was able to directly predict the experienced consequences concerning diminished self-perception, poor self-care, impaired control, physiological dependence, risky behaviors, and academic/occupational difficulties, whereas enhancement was able to indirectly predict those same areas in addition to interpersonal impairment and blackout drinking (Merrill et al., 2014).

Regarding diagnosable impairment, an evaluation of the relationship between motives for alcohol use and diagnoses of alcohol use disorders found a significant relationship between the motivation to reduce negative affect and the likelihood of being diagnosed with alcohol dependence (Carpenter & Hasin, 1998a). Similarly, a comparison of individuals with or without a diagnosis of alcohol dependence found the former group reported significantly higher motives pertaining to the reduction of negative affect (Carpenter & Hasin, 1998b). This was the case even when controlling for consequences experienced and depressive affect (Carpenter & Hasin, 1999).

Research has consistently supported the association between motives and alcohol-related difficulties. More importantly, it has also shown they are able to predict both experienced and future consequences, as well as diagnosable impairment. Understanding people's motives for alcohol use has clear implications for efforts to change heavy alcohol use. From the standpoint of prevention, insight into motives for alcohol use has

the potential to aid in the identification of individuals or groups at higher risk of consequences (Merrill et al., 2014). Additionally, the development of insight into motives for alcohol use was the potential to inform the focus and nature of intervention efforts (Merrill & Read, 2010). The case could even be made that insight into motives for alcohol use would open the motives themselves to potential intervention or modification (Foster et al., 2014).

Measuring Motives for Alcohol Use

Numerous efforts have been undertaken to conceptualize and measure motives for alcohol (Riley, Marden, & Lifshitz, 1948; Mulford & Miller, 1960; Cahalan & Cisin, 1968; Farber, Khavari, & Douglass, 1980). Riley and colleagues (1948) argued for the importance of motivation. They viewed it as being integral to the understanding of heavy drinking behavior. Attempts were made to identify motivational patterns of alcohol use by surveying 2,677 adults in the US. An analysis of participant responses resulted in the identification of two general motives, social (e.g., sociability) and individual (e.g., makes me feel good) motives. Further analysis revealed that items falling into the category of individual motives were associated with more frequent alcohol consumption (Riley et al., 1948).

Mulford and Miller (1960) identified similar motives when surveying 1,185 adults residing in Iowa. Motives concerning personal effects (e.g., liquor helps me feel more satisfied with myself) and social effects (e.g., Liquor helps me enjoy a party) were identified as being particularly prominent reasons for alcohol use. Personal effects were

also noted as being associated with heavier alcohol consumption (Mulford & Miller, 1960).

Consistent with these findings, a national survey of alcohol use behaviors identified both personal involvement and social motives as relevant to alcohol use (Cahalan & Cisin, 1968). A formal analysis of a two-factor model of motives for alcohol use, which incorporated escape and social motives, was completed on a 27-item measure (Farber et al., 1980). Utilizing a sample of 2,496 participants, results indicated support for the two-factor model comprised of escape (e.g., drinking makes me feel at peace with myself) and social (e.g., I drink to be sociable) motives. The former was again associated with problematic alcohol use (Farber et al., 1980).

Multidimensional Measures of Motives

Recent developments in the evaluation of motives have extended previous research (Farber et al., 1980) by way of the development of more comprehensive multidimensional questionnaires, though with limited uniformity or coherence to the efforts (Kuntsche, Knibbe, Gmel, & Engels, 2005). A review of the literature identified 54 studies utilizing multidimensional classification measures. Within those studies, 25 unique instruments were implemented. Within the 25 different instruments, the number of items arranged from 10 to 40, with the number of categories of motives ranging from two to ten. Despite this variability, measures frequently utilized, and in some cases were comprised solely of, three motivational factors, namely coping, social, and enhancement motives.

The first of these, coping, is assessed through items concerning the use of alcohol as a means of ameliorating negative emotions or relieving stress. The second factor, the social motive, is made up of items referencing alcohol use being prompted to facilitate social interactions (e.g., to increase comfort in social situations). The third motive, enhancement, is concerned with items focused on the experiencing of positive emotions being the motivating drive for use of alcohol (Kuntsche et al., 2005).

There is substantial support for a conceptual model comprised of coping, social, and enhancement motives (Celentano & McQueen, 1978; Glynn, LoCastro, Hermos, & Bossé, 1983). One component of a study aiming to estimate the prevalence of heavy alcohol use included a measure evaluating motives for alcohol consumption. The analysis identified three distinct motives: social (e.g., be with other drinkers), escape (e.g., cheer up), and enjoyment (e.g., improve appetite) motives (Celentano & McQueen, 1978). Additionally, a study assessing factors related to alcohol use identified social enhancement (i.e., social), reduction of negative affect (i.e., escape), and salutary (i.e., enhancement) as being significant and distinct factors (Glynn et al., 1983).

The Desired Effects of Drinking

The Desired Effects of Drinking (DEOD) scale, a comprehensive measure evaluating motives for alcohol use within a three-factor model (i.e., coping, social, enhancement) is the only motives measure developed and psychometrically evaluated with an undergraduate sample (Simpson, Little, & Arroyo, 1996) that has also been validated on a clinical population (Doyle, Donovan, & Simpson, 2011). The DEOD is a

36-item measure comprising nine subscales (i.e., positive feelings, negative feelings, assertion, drug effects, sexual enhancement, mental effects, relief, self-esteem, social facilitation), which make up the three overarching motives (i.e., coping, social, enhancement) (Simpson et al., 1996; Doyle et al., 2011).

Individual items instruct the respondent to indicate how often they consumed alcohol within a three-month period of time to experience a specific effect. Though it was found to be a reliable (Simpson et al., 1996) and valid (Doyle et al., 2011) instrument for assessing motives for alcohol use with individuals engaging in heavy alcohol use to the point of diagnosable impairment, the number of items comprising the DEOD is substantially higher than other established measures utilizing a three-factor motivational model (Cooper, Russell, Skinner, & Windle, 1992). This arguably decreases its utility.

Utility of Brief Definitional Measures

There are multiple examples in the greater psychological literature wherein brief or shortened measures provide valid and reliable information (Burisch, 1984; The WHOQOL Group, 1998; Berwick et al., 1991). In some cases this is done by means of brief definitional measures (Stone & Neale, 1984; Ptacek, Smith, & Zanas, 1992). Three studies comparing the performance of short and long measures of depression found the shortened iterations of the scales to be as valid as their full-length counterparts (Burisch, 1984). This is promising for research settings among others, where participants are often asked to complete a substantial number of measures covering any number of constructs.

Due to the significant amount of time and effort required, there are legitimate concerns of both insufficient time and respondent fatigue. A brief definitional measure would significantly reduce these risks and alleviate concerns.

In the arena of mental health screening, a five-item screening instrument was compared to an 18-item version of the same instrument, as well as to several other lengthier screening instruments (Berwick et al., 1991). Much like the findings published by Burisch (1984), the five-item screening instrument performed equally as good or better than the competing instruments (Berwick et al., 1991). Similarly, a brief version of an instrument assessing quality of life was found to be a valid and reliable alternative to the full 100-item instrument, despite being made up of only 26 items (The WHOQOL Group, 1998) This lends support for the usefulness of brief measures in therapeutic and clinical settings, where time limitations and constraints are frequently an issue.

Purpose of the Current Study

The purpose of the current study was to develop and evaluate a brief definitional measure of drinking motives built on the conceptual framework of the DEOD (Simpson et al., 1996; Doyle et al., 2011). The construct and concurrent validity of the proposed measure was evaluated. The study extended current research by being the first to build upon the theoretical structure of an established multidimensional instrument of motives for alcohol use to develop a brief definitional instrument.

Hypotheses

Hypothesis 1. All items comprising the brief definitional measure would be significantly and positively correlated with the corresponding subscales in the DEOD.

Hypothesis 2. A confirmatory factor analysis would find that individual items comprising the brief definitional measure will load onto the appropriate factors making up the established framework of the DEOD.

Hypothesis 3. The total score of the brief definitional measure would predict reported consequences experienced comparable to the total score of the DEOD.

Hypothesis 4. The total score of the brief definitional measure would predict reported alcohol use comparable to the total score of the DEOD.

Hypothesis 5. All three motives (i.e., social, coping, and enhancement) factors would predict reported consequences experienced comparable to the motives factors of the DEOD.

Hypothesis 6. All three motives (i.e., social, coping, and enhancement) factors would predict reported alcohol use comparable to the motives factors of the DEOD.

Hypothesis 7. Consistent with the DEOD, the coping motive factor of the brief definitional measure would be the most highly correlated with reported consequences experienced, as compared to the social and enhancement motive factors

VITA

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