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Is General or Alcohol-Specific Perceived Social Support Associated with Depression among Adults in Substance Use Treatment?

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Abstract

Alcohol use disorders are among the most common mental health disorders in the world and incur considerable costs for individuals and society. Previous research has demonstrated that Perceived social support (PSS) may decrease rates of depression and relapse in individuals seeking treatment for alcohol use. The current study developed and investigated a self-report measure for perceived social support for sobriety from alcohol (PSSA) in a sample of men and women in residential treatment for substance use ($N = 231$), and examined the relationship between general or alcohol-specific perceived social support and depression. Analyses demonstrated sound factor structure, reliability, and validity for the PSSA. Additionally, the new measure of PSS for alcohol sobriety was negatively and uniquely associated with depression, even after controlling for general PSS, enacted social support, and negative social interactions. Overall, findings demonstrated that the PSSA was associated with fewer depressive symptoms, even after accounting for other known correlates of depression. Future research should replicate and extend these findings and examine whether this new measure predicts abstinence from alcohol following treatment.

Keywords

social support; depression; factor analysis; alcohol

Alcohol remains the most widely used and misused substance in the United States. Recent estimates indicate that each year approximately 3.81% to 4.65% of the United States population meets the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV; American Psychiatric Association, 1994) criteria for alcohol dependence and abuse, respectively (Grant et al., 2006). The prevalence of an alcohol use disorder may be even higher when considering the criteria changes in the latest edition (i.e., 5th edition) of the DSM (Peer et al.,

2013). In fact, Alcohol Use Disorder (AUD) is one of the most common mental health disorders in the world and cause considerable negative consequences (World Health Organization, 2014). In 2006, the last year that this statistic was available, alcohol use was associated with approximately 223.5 billion dollars in economic costs each year (Bouchery, Harwood, Sacks, Simon, & Brewer, 2011). Among individuals who seek treatment for AUD, approximately 10–30% discontinue treatment early (McKellar, Kelly, Harris, & Rudolf, 2006; Rabinowitz & Marjefsky, 1998) and the rates of relapse to alcohol use are 40–60% at 3 months post-treatment, with 70–80% relapsing by 12 months after treatment (Bradizza, Stasiewicz, & Paas, 2006). The risk for alcohol relapse is increased among individuals with depression, a common comorbid mental health disorder among individuals in substance use treatment (Brewer, Bowen, Smith, Marlatt, & Potenza, 2010; Bradizza et al., 2006). Thus, targeting depression among individuals with an alcohol use disorder has been advocated (Brewer et al., 2010), with a specific focus on factors that may simultaneously influence depression and alcohol use disorders. One factor that has shown to have beneficial effects on a variety of mental health problems, including depression and alcohol use, is perceived social support (Lakey & Cronin, 2008; Uchino, 2009). However, research has yet to elucidate whether general perceived social support (i.e., support for general life stressors) or alcohol-specific perceived social support (i.e., support for sobriety) is a better predictor of depression among individuals with AUD. Thus, in the current study, we developed and investigated a new self-report measure for perceived social support for sobriety from alcohol in men and women in residential treatment for substance use. In addition, we examined the relationships between general or alcohol-specific perceived social support and depression.

Perceived Social Support

Perceived social support (PSS) has been theorized to be a protective factor for the development and maintenance of a number of psychological problems, including depression. PSS is defined as subjective judgments by support receivers that social network members (e.g., family and friends) are available to help during times of stress or discomfort (Barrera, 1986). PSS does not actually involve receiving any tangible support or assistance; it is a perception that support is available during times of stress (Lakey & Scoboria, 2005). PSS is different from enacted support, which refers to specific helping actions of social network members, such as giving advice and tangible support (e.g., money loan, a car ride; Barrera, 1986). Stated more simply, enacted support refers to actual supportive transactions between support providers and support receivers. Although related, current evidence suggests that PSS and enacted support are theoretically and empirically distinct types of social support and that enacted support, unlike PSS, is not consistently linked to positive health outcomes (see reviews by Haber et al., 2007; Uchino, 2009). Thus, for the current study, we focused on PSS exclusively.

PSS and Alcohol

Although research suggests that non-abstinence-based treatments (e.g., harm reduction) for alcohol use are popular and effective (Marlatt, Larimer, & Witkiewitz, 2011), we focused on sobriety from alcohol use in the current study. We chose sobriety, defined as the treatment goal of not consuming any alcohol, since the majority of substance use treatment centers in

the United States follow an abstinence-based model, such as traditional 12-step treatment approaches (e.g., Alcoholics Anonymous [AA]).

PSS has been shown to be associated with reduced rates of alcohol use and alcohol-related problems in non-treatment seeking adolescents and adults (Ohannessian & Hesselbrock, 1993; Shorey, Rhatigan, Fite, & Stuart, 2011). The majority of studies on PSS and alcohol populations use measures of general PSS, and not alcohol-specific PSS measures. It has been speculated that alcohol-specific PSS measures may be more important in predicting health outcomes among individuals in treatment for alcohol use than general measures of PSS (Beattie & Longabaugh, 1999; Groh et al., 2008), as individuals can hold different perceptions of available support for each diverse stressor and life situation. A few studies have examined alcohol-specific PSS, although these studies have primarily used a single item to capture this complex construct (e.g., Beattie & Longabaugh, 1999; Groh, Jason, Davis, Olson, & Ferrari, 2007; Mohr, Avena, Kenny, & Del Boca, 2001). Single-item measures introduce substantial random measurement error (Nunnally & Bernstein, 1994), making these measures less than ideal. Some studies have used structured interviews to assess perceived social support for sobriety, with findings demonstrating less support for drinking is predictive of less drinking after treatment (e.g., Longabaugh et al., 2010). However, additional research showed support for abstinence did not predict treatment outcomes (Zywiak et al., 2009). Moreover, this interview only includes two questions that are closely related to perceived social support, and thus is not a comprehensive assessment tool for perceived social support for sobriety.

Because research suggests that PSS helps promote alcohol sobriety and is partially responsible for the beneficial outcomes often seen in abstinence-based treatments (Groh et al., 2008), researchers need tools to assess the complex construct of PSS for alcohol sobriety and also determine its relation to depression. Single-item measures and structured interviews that only include a few questions related to perceived social support do not adequately capture the complex nature of perceived social support.

PSS and Depression

Research demonstrates a significant negative relationship between PSS and depression (Lakey & Cronin, 2008). Individuals who perceive that they have less social support report greater depressive symptoms than individuals who perceive that they have higher levels of social support. Indeed, general PSS predicts depressive symptoms both cross-sectionally (e.g., Grav, Hellzen, Romild, & Stordal, 2012; Kane et al., 2014) and across 6 years among community samples of adults (i.e., Pierce, Frone, Russell, Cooper, & Mudar, 2000). Moreover, Pierce and colleagues (2000) demonstrated that depressive symptoms mediated the longitudinal relation between general PSS and alcohol use, such that lower PSS was associated with greater depression, which, in turn was associated with greater alcohol use. These findings provide further evidence that PSS specific to alcohol use may be an important variable to examine, as general PSS may only be associated with alcohol use through mediating mechanisms.

Depression is one of the most common comorbid mental health conditions among individuals in substance use treatment and depression predicts substance use relapse (Bradizza et al., 2006). Thus, it is important for research to examine factors that are associated with depression among individuals in substance use treatment. Given the relationship between general PSS and depression, it will be important to determine whether PSS specific to alcohol use is associated with depression among individuals in treatment for AUDs, as this may help to inform substance use treatment programs about factors that may help reduce relapse.

Current Study

The goals of the present study were three-fold. First, we developed a new measure of PSS specific to sobriety from alcohol following advocated steps of psychometrically-sound scale development (e.g., DeVellis, 2012). Second, we examined preliminary validity of the alcohol-specific PSS scale. Third, we examined the unique and overlapping contributions of alcohol-specific PSS and general PSS, after controlling for enacted support and negative social interactions, on depression symptoms. We controlled for enacted support and negative social interactions due to prior research demonstrating their relationship with PSS and depression (e.g., Lakey, Tardiff, & Drew, 1994).

Method

Participants

A total of 231 men and women who were in residential ($n = 190$) or outpatient ($n = 41$) treatment for substance use at a private facility in the Southeastern United States participated. The majority of the sample was male (71%). The mean age was 39.4 ($SD = 11.59$) and the mean number of years of education was 14.3 ($SD = 2.69$). Most participants were non-Hispanic Caucasian (86.9%), followed by African American (7.4%), and “other” (5.7%; e.g., Indian; multi-racial). At the time of the study, 38.8% of participants were married, 24.5% were not involved in an intimate relationship, 11.8% were dating, 19.2% were separated or divorced, 3.5% had a partner, and 3.1% were engaged. Most of the participants were heterosexual (93.3%) and employed full-time (71.3%) when they entered treatment. The mean number of days in treatment at the time of the study was 19.5 ($SD = 12.41$).

Procedures

Patients were recruited for participation in groups, where a doctoral-level student gave a general overview of the purpose of the study, risks, and benefits. Participants first completed the informed consent process and then completed a packet of questionnaires. Approximately 10–20 patients completed the packet of questionnaires during each data collection session. Participants were continually recruited for the study for one year. Participants were not compensated for their time. All study procedures received IRB approval from the University of Tennessee prior to data collection.

Measures

Perceived Social Support for Sobriety—According to the first and arguably most important step of scale development (Following DeVellis (2012) and Worthington and Whittaker (2006), the first and last authors developed a definition of the construct of alcohol-specific perceived social support defined through a literature review (e.g., Beattie & Longabaugh, 1999; Groh, Jason, Davis, Olson, & Ferrari, 2007; Mohr, Avena, Kenny, & Del Boca, 2001). Second, these authors generated a pool of items that reflected the defined construct, written to clearly communicate one idea to the desired population, with consideration of a sufficient number of items to reliably assess PSS specific to alcohol sobriety. The authors generated 25 potential items thought to best capture the construct. Third, the authors designed the format of the scale based on existing PSS measures (e.g., Cohen & Hoberman, 1983; Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Cutrona & Russell, 1987; Zimet, Dahlem, Zimet, & Farley, 1988), which contained questions focused on different aspects of perceived social support (e.g., emotional closeness, reassurance of worth, guidance), and modeled the Likert scaling after the most widely used in scales measuring opinions, beliefs, and attitudes (DeVellis, 2012).

Once all items were generated, participants were provided with the following instructions when completing the measure: “These questions concern how you think that your family and friends view you remaining sober. *Sober refers to you not drinking any alcohol.*” Participants were asked to rate each item using a 5-point scale (1 = *strongly disagree*; 5 = *strongly agree*). All items were recoded so that higher scores for every item corresponded to greater PSS for sobriety. We termed this measure the Perceived Social Support for Alcohol scale (PSSA). All items are displayed in Table 1.

Perceived Social Support—The 12-item version of the Social Provisions Scale (SPS; Cutrona & Russell, 1987) was employed to measure general perceived social support. Participants indicated the extent to which each of the items on the SPS was true of their current social network using a 4- point scale (1=*strongly disagree*; 4=*strongly agree*). An example item is “There are people I can depend on to help me if I really need it.” Higher scores on the SPS are reflective of greater perceived social support. The SPS has demonstrated good psychometric properties in previous studies (Cutrona, Russell, & Rose, 1986). For the current study, the internal consistency was .85.

Enacted Social Support—Enacted support was measured using the Inventory of Socially Supportive Behaviors (ISSB; Barrera, Sandler, & Ramsey, 1981). The ISSB contains 40 items that assess participants’ exposure to enacted support in the previous month. The ISSB contains four subscales that each measures a distinct form of enacted support, including tangible assistance, directive guidance, non-directive support, and positive social exchanges (Barrera & Ainlay, 1983). However, because ISSB subscales are highly correlated with each other (.61 to .82 for the current sample), only a total ISSB score was used in the present study. Respondents indicate the frequency with which they received each type of support using a 5- point scale (1=*not at all*; 5=*about every day*). For the current study, internal consistency of the total ISSB was .96.

Negative Social Interactions—The Inventory of Negative Social Interactions (INSI; Lakey, Tardiff, & Drew, 1994) is a 40-item self-report measure designed to examine stressful social interactions. Example items include “talked down to you” and “didn’t take your problems seriously.” Participants indicated their response to each question using a 5-point scale (1 = *not at all*; 5 = *about every day*) to specify how frequently they experienced negative social interactions in the past month. Higher scores correspond to more negative social interactions. For the current study, the internal consistency of the INSI was .97.

Depression—The Center for Epidemiologic Studies on Depression Scale (CESD; Radloff, 1977) was used to measure depressive symptoms. This 20-item self-report measure assesses psychological distress common to depression, experienced within the previous week, using a 0 (*rarely or never*) to 3 (*most or all the time*) scale. Higher scores on the CESD correspond to more severe depressive symptoms. Research has supported the psychometric properties of the CESD (e.g., Martens et al., 2008). The internal consistency of the CESD in the current study was .94.

Data Analytic Strategy

All analyses were conducted using SPSS version 18.0. To evaluate the factor structure of the PSSA, Exploratory Factor Analysis (EFA) was used to assess the number and nature of latent variables that represent the items included in the scale. Principal axis factoring (PAF) with oblique rotations (i.e., oblimin) was used to maximize factor extraction (Gerbing & Hamilton, 1996; Gorsuch, 1997; Osborne, 2014; Osborne & Costello, 2009). Within EFA, all observed items are regressed on all factors and the resulting regression weights (factor loadings) are interpreted to determine what the latent factor represents (Tabachnick & Fidell, 2007; Worthington & Whittaker, 2006). To determine factor retention, it is recommended to examine “the elbow” in a Scree Plot based on factor eigenvalues (see Osborne & Costello, 2009) and then implement parallel analysis factor retention (Devellis, 2012; Hayton, Allen, & Scarpello, 2004; Osborne, 2014). Parallel analysis conducts an EFA on data that are randomly generated based on the same data parameters (i.e., sample size, variance, and number of variables) allowing researchers to compare the structure of their data to a structure that would occur by chance with the same parameters. Syntax supplied by Hayton and colleagues (2004) was adapted for use with this scale and sample.

Missing data were identified for 29 cases on the PSSA measure. Because all items applied to every individual, these missing fields were determined to be illegitimately missing (i.e., a result of participants skipping items; Osborne, 2014). As such, missing data were handled in a constructive manner by using regression to impute missing data (Osborne, 2014).

Accordingly, complete data, including imputed data, existed for 231 cases. Following the completion of EFA, internal consistency was assessed using Cronbach’s alpha coefficient to determine how well the desired construct was being measured, and if all items needed to be retained (Devellis, 2012; Osborne, 2014).

To examine the validity of our new measure, bivariate correlations were utilized to determine the relationship between the PSSA and various constructs, including general PSS, enacted social support, and negative social interactions. Lastly, to examine the unique contributions

of general and alcohol-specific PSS to depression, a hierarchical multiple regression analysis was conducted. This was done in three steps. In the first step enacted support and negative social interactions were included as predictors of depression. In the second step general PSS was added to the model as a predictor of depression. In the third model, alcohol-specific PSS was added to the model. This allowed us to determine the extent to which general and alcohol-specific PSS added unique variance to the prediction of depression by examining the change in R^2 from the first to the second, and second to third, models (Cohen, Cohen, West, & Aiken, 2003).

Results

Factor Analysis and Reliability for PSSA

Four potential factors were extracted with eigenvalues at or exceeding 1. However, there was a clear “elbow” in the scree plot indicating a 2 factor solution (accounting for 52.76% of the variance cumulatively). Parallel analysis was implemented to help determine the appropriate number of factors to be extracted. A random dataset based on the parameters of the actual dataset was created and assessed using factor analysis and repeated 50 times. The average eigenvalues and the eigenvalues in the 95th percentile across the 50 repetitions were then determined to obtain the most conservative estimate of eigenvalues likely to be produced by chance (Hayton et al., 2004). Using this method it was determined that extracting 2 factors from the data exceeded chance (see Figure 1). PAF was re-run with the original dataset to extract only 2 factors. One item appeared to cross-load (exceeded .32 loading on both factors; Tabachnick & Fidell, 2007), and 1 item appeared to not load on to either factor. As such, these items were deleted and PAF was re-run (Osborne & Costello, 2009; see Table 1). Notably, the second factor is comprised of the 5 items that were negatively phrased and reverse scored. Therefore, it is likely that participants in alcohol treatment perceived negatively phrased items in a meaningfully different way than positively phrased items.

We next assessed the alpha coefficients to determine the acceptability of our scale and maximize the scale length (DeVellis, 2012). Factor 1 produced an alpha coefficient of .96 (the alpha could be increased by deleting item 23 [$\alpha=.96$] or item 1 [$\alpha=.96$; or $\alpha=.96$ following deletion of item 23])¹. Factor 2 produced an alpha coefficient of .73. The combined 23-item scale alpha coefficient is .94 (the alpha could be increased by deleting items 4, 7, 15, 21, [4-items on Factor 2] and item 23)². Both factors individually produced adequate reliability estimates (Nunnally & Bernstein, 1994); however, Factor 1 produced a superior alpha coefficient (representing approximately only 4% error variance in measurement versus 27% error variance in measurement in Factor 2). As such, perceived social support for alcohol sobriety might be most reliably measured as 1 factor, which also serves to minimize scale length and reduce participant burden, consistent with recommendations for developing self-report measures (Worthington & Whittaker, 2006). In addition, because participants may have perceived negatively phrased items in a

¹The EFA was re-run deleting item 1 and item 23 and the same 2-factor solution was produced (Factor 1: 16-items; Factor 2: 5-items), with a factor correlation of $r=.52$. This new 2-factor solution accounted for 57.44% of the variance.

²The alpha coefficient for the total scale retaining all 25 items (including items deleted after EFA: items 2 and 25) was .94. When deleting item 1 and 23 from the entire scale the alpha coefficient is .94.

meaningfully different way than positively phrased items, this also contributed to our decision to drop the second factor. Therefore, we only retained Factor 1 for the remaining analyses.

Relations with Depression

Having established the factor structure of the new PSS measure, we explored whether general or alcohol-specific perceived social support had unique or overlapping relations with depression, controlling for the effects of enacted social support and negative social interactions. First, bivariate correlations (Table 2) demonstrated that both general and alcohol-specific perceived social support were negatively and significantly associated with depression. Enacted support was not significantly associated with depression, and negative social interactions were positively and significantly associated with depression. Of note, we examined whether demographic variables were associated with depression, including age, education, and gender. None of the demographic variables were significantly associated with depression and, thus, they were not included in additional analyses. Moreover, the number of days in treatment was not related to any study variables, and patients in residential treatment did not differ on study variables from patients in outpatient treatment.

Finally, to examine the unique effects of general and alcohol-specific perceived social support on depression, hierarchical multiple regression analysis was employed (Table 3). The first model demonstrated that negative social interactions were positively associated with depression. When general and alcohol-specific perceived social support were added to the models, negative social interactions remained significantly associated with depression, and both general and alcohol-specific perceived social support were negatively and significantly associated with depression.³ The addition of alcohol-specific PSS to the final model resulted in a significant increase in the variance accounted for in depression.

Discussion

In the current study we developed a new measure of perceived social support (PSS) specific to alcohol use sobriety and examined whether this new measure was associated with depression above and beyond general PSS. Our results supported the psychometric properties of the newly developed measure of PSS for alcohol sobriety, specifically the factor structure, reliability, and validity of this new measures. The measure had strong internal consistency, indicating that the retained items for this scale assess the desired construct with a higher degree of precision. Additionally, we were able to reduce the scale length, while optimizing internal consistency to increase the utility of the measure. Construct validity evidence for the PSSA was demonstrated by its moderate association with a general measure of PSS and inverse relationship with negative social interactions. Thus, we believe that there is strong initial support for use of the PSSA.

Study findings also demonstrated that our new measure of PSS for alcohol sobriety was associated with fewer depressive symptoms, even after accounting for general PSS and

³These analyses were repeated controlling for gender and age, as prior research has demonstrated relations between gender and age and depression. Results did not change when controlling for gender and age, and both gender and age were unrelated to depression.

negative social interactions. This finding, pending replication, may be particularly important due to research demonstrating that individuals in treatment for alcohol are more likely to relapse when they have comorbid depression (Bradizza et al., 2006). It is possible that individuals who do not perceive adequate support for remaining sober during or following treatment may be at increased risk for depressive symptoms due to increased shame for their alcohol use problem and/or isolation due to low levels of social support. Additional research is needed to understand whether these factors, or others, mediate the relationship between PSS for alcohol sobriety and depressive symptoms.

Finally, our findings also showed that general PSS and negative social interactions were significantly associated with depressive symptoms. These results are consistent with the literature documenting PSS and various indicators of social support to be robustly associated with depression (Lakey & Cronin, 2008). Still, these findings speak to the importance of general PSS and negative social interactions among men and women in treatment for substance use.

Directions for Future Research

There are a number of avenues for future research in this area. First, the factor structure and validity of the newly developed measure should be examined and confirmed in additional samples of men and women in substance use treatment. Given the complexity of a construct such as PSS, it is important that future research in this area utilizes empirically validated and reliable measures for examining this construct. It would also be fruitful for future research to examine PSS specific to drug use, as it is possible that PSS specific to other substances (e.g., cocaine, cannabis) may have similar effects as those identified in the current study.

Second, longitudinal research is needed that examines whether PSS specific to alcohol sobriety predicts depression and alcohol use across time, including whether it predicts relapse after substance use treatment. Prior research using less than adequate measures of PSS for alcohol use have demonstrated that social support is partially responsible for the beneficial effects of substance use treatment (e.g., Groh et al., 2008; Longabaugh et al., 2010). Thus, future investigations with this newly developed measure will advance the literature when examined as a longitudinal predictor of alcohol use and depression outcomes.

Finally, it is unclear whether interventions can be designed to increase PSS, both generally and specific to alcohol sobriety. Unfortunately, treatments that have been designed to increase general PSS have been only minimally effective (Hogan, Linden, & Najarian, 2002). Recent research, however, has demonstrated that PSS is primarily a relational construct, such that PSS reflects a unique match between a support recipient and support provider (e.g., Lakey & Scoboria, 2005). Therefore, it is possible that interventions for individuals in substance use treatment could focus their attention on matching patients with support providers with whom they personally connect, or by involving existing social network members in treatment programs (e.g., family or couples therapy). In turn, these interventions could employ cognitive-behavioral strategies that are intended to alter beliefs and cognitions related to PSS (e.g., Brand, Lakey, & Berman, 1995). Other treatments, such as 12-step facilitation therapy, which is primarily based on the AA model, are predicated, in

part, on increasing social support for sobriety (Kaskutas, Bond, & Humphreys, 2002). Thus, research should examine whether 12-step facilitation therapy, or traditional AA self-help and support groups, improves self-reported perceived social support for sobriety using the measure developed in this study. Research is needed to determine whether these strategies would result in increased perceptions of support generally and specifically for alcohol sobriety.

Limitations

The cross-sectional design does not permit causal interpretation. Longitudinal research is needed to examine these questions. Second, our sample was primarily non-Hispanic Caucasian, which limits the generalizability to more diverse samples. Third, the majority of the sample was male, and future research should attempt to increase the number of women who participate. Fourth, participants were at various stages of treatment at the time of the study, and future research should attempt to gather social support ratings from patients at the beginning of treatment in order to reduce confounding ratings with treatment length. Finally, we did not assess for substance use diagnoses, and although all participants had consumed alcohol in the previous 12 months, it is possible that results may differ if participants have co-morbid substance use diagnoses (e.g., alcohol use disorder and a drug use disorder). Future research should collect such information.

Finally, the present study had approximately 10 participants per item to evaluate the factor structure of the PSSA. Despite a lack of consensus in the field regarding the ideal sample size for factor analysis, our sample fell short of the sample size recommended for the largest reduction in error: at least 20 participants per item (Osborne, 2014; Osborne & Costello, 2009). We attended to this limitation by conducting parallel analysis to reduce the likelihood that our results were produced by chance and retaining items with high factor loadings. Regardless, replication and validation of this measure is necessary.

Conclusion

This study developed and investigated a self-report measure for perceived social support for sobriety from alcohol among men and women in residential treatment for substance use. In addition, we examined relations between general or alcohol-specific perceived social support and depression. Findings demonstrated support for the initial psychometric properties and factor structure of our new measure of perceived social support for alcohol sobriety, as well as its relation to depression after accounting for general perceived social support and negative social interactions. Additional research is needed to replicate and extend our findings, including research on whether this new measure predicts abstinence from alcohol following treatment.

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Figure 1.
Factors extracted comparison using parallel analysis

Table 1

Factor loadings of the original and final items of the PSSA

Items	Factor Loading ^a	
	Factor 1	Factor 2
	<i>r</i> = .52 54.9% of Variance	
1. There are people I could depend on to talk to me if I feel the urge to drink alcohol. [×]	.46	
2. If I relapse (drink alcohol again), there are people who will support me in regaining my sobriety.		
3. There are people I can turn to who will help me remain sober. ^b	.57	
4. There is no one who will truly support my attempts to remain sober. [*]		.47
5. There are people who believe I have the skills and abilities to remain sober.	.69	
6. There are people who feel the same way I do about remaining sober.	.67	
7. If I relapse, there is no one who will support me at regaining sobriety. [*]		.54
8. There are people who I can be with who enjoy activities that do not involve alcohol.	.74	
9. There are people who support my attempt at getting or staying sober.	.87	
10. There are people who will provide me with any help that I need to remain sober.	.99	
11. There are people I can share my worries and concerns about sobriety with.	.89	
12. There are people who will provide me with the emotional support (e.g., love, respect) I need to remain sober.	.88	
13. I feel that I am part of a group of people who share the view that sobriety is a good thing for me.	.77	
14. There are people I could talk to about important decisions which involve/affect my sobriety.	.88	
15. No one understands how difficult it is, or will be, for me to remain sober. [*]		.53
16. There are people who will be proud of me if I remain sober.	.79	
17. There is nobody I could talk to if I need advice about how to cope with urges to drink alcohol. [*]		.67
18. If I need to leave a situation where I was tempted to drink alcohol (e.g., a party, restaurant), there are people who will support my decision to leave.	.73	
19. There are people who I really trust to give me good advice about remaining sober.	.79	
20. There are people I can speak with if I am having problems staying sober.	.80	
21. There is no one who will give me honest feedback about how I am doing with my sobriety. [*]		.72
22. There are people who would do something with me to take my mind off of alcohol, if I needed it.	.59	
23. I know that there are people who will refrain from drinking alcohol when they are around me. [×]	.49	
24. If I had the urge to drink, there is someone I could talk to about this regardless of the time of day.	.65	
25. Most people who know me do not think that I will be able to remain sober. ^{c*}		

^aFactor loadings based on the interpretation of the Pattern Matrix (Osborne & Costello, 2009)^bItem 3 was deleted from the final factor extraction as it cross-loaded on to both factors originally (.34, .34, respectively)^cItem 25 was deleted from the final factor extraction as it did not produce a satisfactory loading (i.e., .32) on either factor.[×]Items deleted from final Factor 1 to increase alpha coefficient.Note. Item scale: 1=*Strongly disagree*; 2=*Disagree*; 3=*Neither disagree or agree*; 4=*Agree*; 5 =*Strongly Agree*; Items that are followed by an asterisk (*) were reverse scored.

Table 2

Bivariate correlations among study variables.

	1.	2.	3.	4.	5.
1. PSSA	---	.41***	.12	-.13*	-.28***
2. SPS		---	.11	-.31***	-.37***
3. ISSB			---	.18**	.02
4. INSI				---	.40***
5. CESD					---
<i>M</i>	76.31	45.67	72.52	71.24	19.75
<i>SD</i>	11.25	6.53	29.84	30.39	13.71

Note: PSSA = Perceived Social Support for Alcohol; SPS = Social Provisions Scale; ISSB = Inventory of Socially Supportive Behaviors; INSI = Inventory of Negative Social Interactions; CESD = Center for Epidemiologic Studies on Depression Scale

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

Table 3

Hierarchical multiple regression analyses predicting depression.

	B	SE	β	<i>t</i>
Model 1	F = 22.23[*] $R^2 = .16$			
ISSB	-.03	.03	-.06	-.95
INSI	.18	.03	.41 ^{***}	6.66
Model 2	F = 22.38[*] (F = 19.12) $R^2 = .23$			
ISSB	-.01	.03	-.01	-.21
INSI	.14	.03	.32 ^{***}	5.01
SPS	-.57	.13	-.27 ^{***}	-4.37
Model 3	F = 18.68[*] (F = 6.06) $R^2 = .25$			
ISSB	.001	.03	.00	.03
INSI	.14	.03	.31 ^{***}	5.01
PSSA	-.19	.08	-.16 [*]	-2.46
SPS	-.44	.14	-.21 ^{**}	-3.17

Note: PSSA = Perceived Social Support for Alcohol; SPS = Social Provisions Scale; ISSB = Inventory of Socially Supportive Behaviors; INSI = Inventory of Negative Social Interactions; CESD = Center for Epidemiologic Studies on Depression Scale.

* $p < .05$,

** $p < .01$,

*** $p < .001$