Validation of the Substance Abuse Scale of the Personal and Relationships Profile

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There have been limited measurement studies of the substance abuse scale of the Personal and Relationship Profiles (PRP) and the impact of social desirability on alcohol and drug use reporting. This study aimed to (a) model the factor structure of the eight-item substance abuse scale of the PRP; and (b) examine the relationship of substance use factors with sociodemographic variables—race, income, age, marital status—and social desirability on substance use reporting among a sample of low-income fathers. The study included secondary data analysis of 665 fathers, who participated in a fatherhood program between 2011 and 2015. The two-factor model with the addition of two error covariances exhibited acceptable fit to the data. Sociodemographic characteristics were significantly associated with alcohol and drug use among the sample with social desirability being the strongest predictor of lower alcohol and drug use reporting. Findings suggest that alcohol and drugs are distinct constructs that should be assessed separately, despite being correlated. In social work practice and research, the influence of social desirability in reporting should be accounted for when assessing substance use.

**Key Words:** confirmatory factor analysis; Personal and Relationships Profile; social desirability; substance use; substance use disorders
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Substance use and substance use disorders (SUD) are a serious social and public health problem that affects individuals, families, and communities globally. In the United States, approximately 21.5 million people aged 12 years and older reported a past year SUD in 2014, of which 20 million (94%) were 18 years and older (Lipari & Van Horn, 2017a). The prevalence of SUD contributes to the overall burden of disease within the United States and has an estimated economic cost of $740 billion spent annually in costs related to loss of work productivity, crime, and healthcare (National Institute on Drug Abuse, 2017). Substance use is broad in its definition but is inclusive of alcohol and other drugs (prescribed or otherwise). However, SUD includes substance abuse or dependence, and often results in clinically significant impairment such as disability, physical- and mental health-related problems, and an inability to meet responsibilities at home, work, or school due to recurrent alcohol and/or drug use (Lipari & Van Horn, 2017a).

More specifically, parental SUD has negative psychological, biological, and social consequences on children (Lam, Fals-Stewart, & Kelley, 2009).

The prevalence and negative effects of SUD within families are evident in the United States. An estimated one in eight children is being raised in a home with at least one parent with a SUD (Lipari & Van Horn, 2017b). Between 2009 and 2014, an average of 8.7 million children aged 17 or younger resided in a household with at least one substance-using or substance-dependent parent (Lipari & Van Horn, 2017b). These children are six times more likely to develop some form of psychopathology, addictive behaviors (Fitzgerald & Bocknek, 2013), and/or experience various types of maltreatment (Rosenberg & Wilcox, 2006) than children not reared in such homes. For example, children whose parents misuse alcohol or other substances are three times more likely to be emotionally, physically, or sexually abused, and four times more likely to be either physically or emotionally neglected (Altshuler & Cleverly-Thomas,
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2011; Smith & Wilson, 2016). In addition, children reared in homes with substance use or alcohol-dependent parents are more likely to experience and witness domestic violence (U.S. Department of Health and Human Services, 2009).

Despite the deleterious effects of SUD on individuals and families, the majority of research that examines the association between parenting and substance use has focused on mother of infants or young children (Lam et al., 2009) with little focus on the effects of fathers’ substance use on their parenting. The limited research in this area could be due to a lack of family and child focused programs that target fathers (Greif et al., 2011) especially those residing in low-resource communities; the difficulty in recruiting and retaining men in substance use treatment and prevention services (Center for Substance Abuse Treatment, 2013); the methodological challenges associated with alcohol and drug use measures (e.g., Dawson, 2003); and the provision of socially desirable responses to mask one’s alcohol and drug use (Davis et al., 2010). This study specifically focused on men who are fathers because SUD may impact parenting and participation in father-focused programs. Men also usually have higher rates of alcohol and drug use compared with women (Substance Abuse and Mental Health Services Administration, 2017).

Given these challenges, this study has two specific aims. First, estimate the factor structure of the Personal Relationships Profile (PRP) substance abuse scale with an emphasis on comparing one and two factor models. It is important to examine both one-factor and two-factor models because alcohol and drug use disorders are highly correlated but may represent two distinct forms of psychopathology (McMahon et al., 2007). Therefore, a one factor model will be tested to determine if the alcohol and other drug factors of the substance abuse scale are superior to a single substance abuse latent construct. Some individuals may be substance users or
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dependent on either alcohol or other drug or may use both but provide socially desirable responses favoring the use of one substance over the other (National Institutes of Alcohol Abuse and Alcoholism [NIAAA], 2008). As such, it is important to examine a two-factor model with alcohol and other drugs as latent variables of the larger substance abuse latent construct. Second, examine the relationship of substance use factors with identified sociodemographic correlates of use and social desirability on reporting of substance use within this high-risk sample of men attending a fatherhood program. Drawing on the literature for directional hypotheses, we hypothesized that: (a) a two-factor structure will be a better fit for the data (e.g., Straus and Mouradian, 1999) and (b) all the demographic factors (i.e., age, marital status, income, race) will be significantly related to substance use (e.g., Grant et al., 2009; Huckle et al., 2010), with social desirability being associated with lower reported levels of use (e.g., Zemore, 2012).

Literature Review

PRP

The PRP consists of 22 scales (187 questions) used to measure both individual-level (17 scales) and relationship-level (eight scales) variables (see Straus et al., 1999). The instrument was developed based on previous research on the correlates of violence and theories regarding the causes of partner violence (Straus et al., 2010) and is used for conducting research on family violence (Straus et al. 1999). Scales from the PRP have been used in numerous studies to examined risk factors for violence (e.g., Hines & Straus, 2007); alcohol use (Hines & Douglas, 2013); child sexual abuse (Hines, 2007); violence approval/socialization (Douglas, 2006); father involvement (Hayward-Everson, Honneger, Glazebrook et al., 2018); criminal history (Payne et al., 2010); antisocial traits and personality (Gámez Guadix et al., 2010); depressive symptoms (Chan, 2011); and dominance (Straus, 2008).
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The eight-item Substance Abuse Scale was developed to measure the excessive use of alcohol or other mind-altering drugs (Straus et al., 2010). The factor structure of this scale was determined by an item analysis and factor structure using data from a sample of 200 to 400 college students (Straus et al., 1999). The scale has been found to have acceptable internal reliability (Cronbach’s α) of .81 among a student sample and .83 among a community sample (Straus et al., 2010). With respect to concurrent validity, research conducted in Europe identified moderate correlation (r = .50–.56) between the alcohol use scale and other alcohol consumption measures and alcohol problem and alcohol use (Eisner, 2002). Additionally, the alcohol abuse subscale was found to be significantly related to the physically assaulted partner scale in studies conducted by Hines and Straus (2007) and Lysova and Hines (2008).

Sociodemographic Covariates, Social Desirability, and Substance Use/SUD

Sociodemographic Covariates. Numerous demographic factors have been found to be associated substance use and SUD. These include but are not limited to age, race/ethnicity, marital status, and income. For example, Grant et al. (2009) found that being age 20 to 29 and 30 to 35 years were significantly associated with alcohol abuse and dependence, and any drug abuse; however, only the 20 to 29 age group was associated with any drug dependence. Findings related to the relationship of race/ethnicity and substance use/SUD have been inconsistent (e.g., Feldstein Ewing et al., 2011; Grant et al., 2009; Keyes et al., 2014; Wu et al., 2011). For example, Wu et al. (2011) found that Native Americans and multiracial individuals were more likely to have higher rates of any SUD; and that Native Americans had higher rates of SUD than all other racial/ethnic groups and non-Hispanic White individuals. Conversely, Keyes et al. (2014) found that non-Hispanic White individuals were more likely to have a SUD than any other racial/ethnic minority group.
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Marital status and income have also been examined as predictors of SUD. Grant and colleagues (2009) found that when compared to being married/cohabitating being separated/divorced/widowed or never married was associated with alcohol abuse and alcohol dependence, respectively. However, being separated/divorced/widowed, when compared to married or cohabitating, was only associated with any drug abuse and dependence, respectively. Regarding income, studies have not shown a clear connection to substance use/SUD (Huckle et al., 2010), with some studies indicating that family income was negatively associated with substance use (Lowry, Kann, Collins, & Kolbe, 1996; Grant et al., 2009) and others indicating an association (Goodman & Huang, 2002; Patrick et al., 2012). The differences in household income and substance use or dependence could be attributed to the following factors: (a) higher family income possibly associated with increased substance use and ultimately SUD because of financial resources that increases purchasing power and use of substances; and (b) lower income possibly associated with increased substance use/SUD as a means of coping with stressors and less access to resources (Patrick et al., 2012).

Social Desirability. Despite the negative psychological, biological, and social consequences of parental alcohol and substance abuse on children (Lam et al., 2009), the use of self-reported alcohol and drug (i.e., legal and illicit) screening instruments are common. However, these reports are often cautiously used in research, based on the assumption that users may be unwilling to share information related to their substance use, have challenges recalling such information, or provide socially desirable responses in an effort to present themselves favorably (Davis et al., 2010). Social desirability refers to an individual’s goal to “obtain approval by responding in a culturally appropriate and acceptable manner” (Crowne & Marlowe, 1960, p. 350).
Despite the challenges associated with the provision of socially desirable responses in alcohol and drug research, there is a limited body of studies that have examined its role (Zemore, 2012). Such studies have found an association between the provision of socially desirable responses and lower alcohol and drug use reporting levels (Davis et al., 2010; Zemore, 2012). Additionally, a number of factors can contribute to the provision of socially desirable responses by individuals who use substances or are substance dependent. Such factors include, but are not limited to, the stigma associated with alcohol and drug use and the fear of legal consequences (NIAAA, 2008); the view that alcohol and drug use are deviant behaviors (Davis et al., 2010; Single, Kandel, & Johnson, 1975); and the pressure/coercion from drug and alcohol treatment providers for participants to change (Zemore, 2012).

In this study, the social desirability bias theory (Paulhus, 1984) provides an opportunity to understand the role of socially desirable responses in the reporting of alcohol and drug use among low-income fathers. This theory posits that individuals engage in either impression management or self-deception (unconsciously; Paulhus, 1984, 2002). Those who engage in impression management do not want to present as having a drug or alcohol use problem because to do so would result in feeling stigmatized (Davis et al., 2010); therefore, they present socially desirable responses. Contrariwise, alcohol and drug users who engage in self-deception are more likely to unconsciously deny the negative and harmful effects of their substance use because of their self-perceptions. Based on the tenets of this theory and the lack of studies that have examined the impact of socially desirable responses on lower substance use reporting (Zemore, 2012), it proves itself useful in explaining whether or not low-income fathers who provide more socially desirable responses may underreport their levels of alcohol and drug use.
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To the researchers’ knowledge, no studies to date have used and or reported on the reliability and validity of the “other drugs” subscale. Furthermore, there is a lack of studies that have (a) conducted a confirmatory factor analysis (CFA) on the substance abuse scale of the PRP; (b) examined the relationship of demographic correlates (e.g., age, race/ethnicity, marital status, income) of substance use/SUD using the alcohol and other drug factors of the substance abuse scale of the PRP, and especially with a sample of low-income fathers; or (c) used this scale to measure social desirability or substance use/abuse among low-income samples.

Method

Data Source

Data for this study were obtained from a fatherhood program conducted in a large suburban jurisdiction in the eastern United States between 2011 and 2015 (Hayward-Everson, Honegger, & Hammock, 2018). This community-based program promotes responsible fatherhood, economic stability, and healthy relationships through case management and group intervention services. Men in the program had prior experiences of incarceration, living in halfway houses, substance abuse treatment, and homelessness (see Hayward-Everson, Honegger, & Hammock, 2018) among other factors impeding their ability to parent effectively (see Hayward-Everson, Honegger, Glazebrook, et al., 2018). Participation in the program was based on an individual’s self-selection and all services were voluntary. Informed consent was acquired from each participant at the beginning of the interview, and participants received a $10 gift card for completing the baseline survey. Data used in this study were collected prior to the intervention with the use of questionnaires. Self-reported data regarding participants’ involvement with their biological and stepchildren, relationship history, economic status, and need for service were collected (see Hayward-Everson, Honegger, Glazebrook, et al., 2018).
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Demographic data (e.g., age, race, ethnicity), marital status, educational levels, employment status, father type, place of residence, and income) were collected from participants during the initial intake process. The institutional review board at the University of Maryland, Baltimore approved study procedures as a nonhuman subject research.

**Participants**

The analysis included 665 cases, after eliminating 23 cases missing on all substance abuse variables. Men in the sample had a mean age of 36.37 ($SD = 10.94$) years and identified as biological fathers (90%, $n = 588$), stepfathers (2%, $n = 16$), and other non-biological fathers (non-married partners or other family members [8%, $n = 53$]) to children under age 18. A majority of participants were White (51%, $n = 322$) or Black/African American (42%, $n = 267$), and nearly 20% ($n = 122$) identified as Hispanic (see Table 1). Two-thirds of the sample was unemployed (67%, $n = 444$), and one-third lived with a partner and children (35%, $n = 228$). Participants earned an average income of $444.82 within the last 30 days and $5,275.88 annually.
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Table 1: Participants’ Demographic Characteristics ($N = 665$)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>$n$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race ($n = 632$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black/African American</td>
<td>267</td>
<td>42.2</td>
</tr>
<tr>
<td>White</td>
<td>322</td>
<td>50.9</td>
</tr>
<tr>
<td>Other$^a$</td>
<td>43</td>
<td>6.8</td>
</tr>
<tr>
<td>Ethnicity ($n = 665$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>122</td>
<td>18.3</td>
</tr>
<tr>
<td>Non-Hispanic/Latino</td>
<td>543</td>
<td>81.7</td>
</tr>
<tr>
<td>Marital status ($n = 657$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single/never married</td>
<td>191</td>
<td>29.1</td>
</tr>
<tr>
<td>Committed relationship (not married)</td>
<td>186</td>
<td>28.3</td>
</tr>
<tr>
<td>Married</td>
<td>160</td>
<td>24.4</td>
</tr>
<tr>
<td>Separated</td>
<td>58</td>
<td>8.8</td>
</tr>
<tr>
<td>Divorced</td>
<td>53</td>
<td>8.1</td>
</tr>
<tr>
<td>Widowed</td>
<td>9</td>
<td>1.4</td>
</tr>
<tr>
<td>Education level ($n = 663$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No degree or diploma</td>
<td>190</td>
<td>28.7</td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>369</td>
<td>55.7</td>
</tr>
<tr>
<td>Vocational/technical certification</td>
<td>47</td>
<td>7.1</td>
</tr>
<tr>
<td>Associate degree</td>
<td>27</td>
<td>4.1</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>24</td>
<td>3.6</td>
</tr>
<tr>
<td>Master’s/advanced degree</td>
<td>6</td>
<td>0.9</td>
</tr>
<tr>
<td>Employment status ($n = 646$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>73</td>
<td>11.3</td>
</tr>
<tr>
<td>Part-time</td>
<td>54</td>
<td>8.4</td>
</tr>
<tr>
<td>Retired</td>
<td>9</td>
<td>1.4</td>
</tr>
<tr>
<td>Student</td>
<td>5</td>
<td>0.8</td>
</tr>
<tr>
<td>Disabled</td>
<td>61</td>
<td>9.2</td>
</tr>
<tr>
<td>Unemployed</td>
<td>444</td>
<td>66.8</td>
</tr>
<tr>
<td>Place of residence ($n = 661$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live alone</td>
<td>55</td>
<td>8.3</td>
</tr>
<tr>
<td>Alone with children</td>
<td>23</td>
<td>3.5</td>
</tr>
<tr>
<td>With partner/wife</td>
<td>51</td>
<td>7.7</td>
</tr>
<tr>
<td>With partner and children</td>
<td>228</td>
<td>34.5</td>
</tr>
<tr>
<td>With family members</td>
<td>93</td>
<td>14.1</td>
</tr>
<tr>
<td>Incarcerated/in jail or detention</td>
<td>60</td>
<td>9.1</td>
</tr>
<tr>
<td>Sober house/residential drug treatment program</td>
<td>102</td>
<td>15.4</td>
</tr>
<tr>
<td>Group home/community residence</td>
<td>18</td>
<td>2.7</td>
</tr>
<tr>
<td>Homeless</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>With friends</td>
<td>4</td>
<td>0.6</td>
</tr>
<tr>
<td>Other</td>
<td>24</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Note: The numbers for each categorical variable may not add up to total ($N = 665$) because of missing data; “Other” includes American Indian/Alaskan Native, Asian, Native Hawaiian/Pacific Islander, and individuals who identified as being of other races.
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Measures

Substance Abuse Scale. Consists of eight items comprising two subscales—alcohol and other drugs (Straus et al., 2010). The scale has eight short statements with Likert-type responses ranging from 1 = strongly disagree to 4 = strongly agree. Scores on all items are summed resulting in a possible score of 8 to 32, with higher scores indicative of higher levels of substance abuse. In the current study, this scale has acceptable reliability with Cronbach’s α of .90. The alcohol subscale includes the following four items: (1) “When I drink I usually have five or more drinks at a time.” (2) “Sometimes I can’t remember what happened the night before because of drinking.” (3) “I sometimes drink enough to feel really high or drunk.” and (4) “I sometimes drink five or more drinks at a time, but only on weekends.” The other drug subscale comprises of the following four items: (1) “I have been treated for a drug problem.” (2) “In the past, I used coke, crack, or harder drugs (like uppers, heroin, or opiates) more than once or twice.” (3) “I worry I have a drug problem.” and (4) “I have overdosed on drugs or had a severe health problem because of taking drugs to a high.”

Control Variables

Demographic Variables. Age and income were treated as continuous variables in this study. One question was used to categorized participants’ race. This variable was recoded into four categories (1 = American Indian/Alaskan Native; 2 = Black/African American; 3 = White; 4 = Other) by the original survey developers, with the other racial category inclusive of Asian and Native Hawaiian/Pacific Islander. Given the low response rates for American Indian/Alaskan Native, this racial group was included in the “other” racial category for this study. Participants’ ethnicity was categorized using two response options (1 = Hispanic/Latino; 2 = non-Hispanic/Latino). This variable was recoded for use in this study to be reflective of participants’
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ethnicity regardless of their race. More specifically, race and ethnicity were recoded into dummy variables with the White racial group being the reference category. Similarly, respondents’ marital status was ascertained with one question comprising six response options (1 = single; never married; 2 = committed relationship, not married; 3 = married; 4 = separated; 5 = divorced; 6 = widowed). This variable was dichotomized with not married (i.e., never married, separated, divorced, or widowed) being the reference category versus currently married/living as married.

**Social Desirability.** Thirteen items measured social desirability and were based on the short form of the Crowne-Marlow (1960) Social Desirability (SD) scale developed by Reynolds (1982). Questions for the short form of the SD scale were developed through a principal factor analysis and item analysis by the survey developer. All responses were rated on a four-point Likert-type scale. Eight reverse coded items were included, with responses ranging from 1 = strongly disagree to 4 = strongly agree, such as “I sometimes try to get even rather than forgive,” “There have been occasions when I took advantage of someone,” and “It is sometimes hard for me to go on with my work if I am not encouraged.” Other items on the scale include “I have never deliberately said something that hurt someone’s feeling,” “I’m always willing to admit it when I make a mistake,” and “No matter who I am talking to I am always a good listener.” Scores on all items are summed with higher scores indicative of higher socially desirable response. The SD scale showed acceptable reliability of .76 within a student sample (Reynolds, 1982), and .78 within the current study.

**Data Analytic Procedure**

Statistical Package for the Social Sciences (SPSS) version 24 was utilized for univariate and bivariate analyses (IBM Corp, 2016). Confirmatory factor analysis (CFA) was performed using Mplus, version 8 (Muthén & Muthén, 1998–2017). A one-factor (all substances) and two-
factor (alcohol and drug subscales) model was tested first. Next, sociodemographic, and social desirability variables were added as factor covariates following assessment of comparative model fit. This approach to CFA, often called multiple indicator-multiple cause (MIMIC) modeling involves the inclusion of regression paths going from exogenous variables (independent) to the factors (i.e., drug and alcohol use). These regression coefficients can then be interpreted as associations between these variables and the factors.

Two confirmatory factor analysis models were tested to determine how well the model fit the data. Because the substance abuse scale was designed to be used as a single factor, a one-factor model was analyzed with substance abuse as the latent variable and social desirability as a covariate. A two-factor model was also tested including alcohol and other drugs constructs and social desirability as a covariate. First, we compared overall model fit for the one and two factor models and then reviewed modification indices. For the structure examined, modification indices identified plausible modifications that would improve model fit.

Response options for the substance abuse scale were on a four-point Likert-type scale; therefore, data were treated as ordered-categorical (Byrne, 2012; Kline, 2016) and mean and variance adjusted weighted least squares estimation was used (Brown, 2015). Missing data in the sample were minimal and ranged from 0.4% to 8.7%; the model-based imputation utilized was constructed around MARX assumptions using Mplus (Asparouhov & Muthén, 2010). Cases with missing data on all endogenous variables (e.g., indicators) were excluded from the model as well as cases missing on any exogenous covariate using listwise deletion (Muthén & Muthén, 1998–2017). After the addition of exogenous covariates in the model, our overall sample size was 583.

Model fit indices were used in determining which model best fit the data as recommended by Byrne (2012) and Kline (2016). The Root Mean Square Error of
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Approximation (RMSEA), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI) and the $\chi^2$ were used to assess model fit, with RMSEA of 0.06 or smaller, CFI $\geq .95$, and TLI $\geq .95$ and a nonsignificant $\chi^2$ value (Brown, 2015) indicating good fit. Significant factor loadings of $\geq .70$ are considered good and were interpreted (Kline, 2016).

Results

Confirmatory Factor Models

Both models showed acceptable fit with respect to comparative fit indices (TLI and CFI; see Table 2), and the factor loadings for each model (see Table 3) were significant and above accepted cutoffs. The drug and alcohol factors were highly correlated ($r = .78$), but acceptable. The model $\chi^2$ was significant and the RMSEA was outside accepted values for both the one and two factor models. Because the two-factor model fit the data better, it was retained.

Table 2: Confirmatory Factor Analysis Model Fit Indices

<table>
<thead>
<tr>
<th>Model Specification</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>RMSEA [90% CI]</th>
<th>RMSEA $\geq .05$</th>
<th>CFI</th>
<th>TLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-factor model</td>
<td>585.78</td>
<td>20</td>
<td>&lt;.001</td>
<td>0.21 [0.19, 0.22]</td>
<td>&lt;.001</td>
<td>.95</td>
<td>.93</td>
</tr>
<tr>
<td>Two-factor model</td>
<td>146.78</td>
<td>19</td>
<td>&lt;.001</td>
<td>0.10 [0.09, 0.12]</td>
<td>&lt;.001</td>
<td>.99</td>
<td>.98</td>
</tr>
<tr>
<td>Two-factor with two residual covariances</td>
<td>113.75</td>
<td>17</td>
<td>&lt;.001</td>
<td>0.09 [0.08, 0.11]</td>
<td>&lt;.001</td>
<td>.99</td>
<td>.99</td>
</tr>
<tr>
<td>Two-factor with two residual covariances</td>
<td>197.48</td>
<td>59</td>
<td>&lt;.001</td>
<td>0.06 [0.05, 0.07]</td>
<td>.01</td>
<td>.98</td>
<td>.97</td>
</tr>
</tbody>
</table>

Notes: $df =$ degrees of freedom; RMSEA = root mean square error of approximation; CI = confidence interval; CFI = comparative fit index; TLI = Tucker–Lewis index.
Table 3: Standardized Loadings of Confirmatory Factor Analyses

<table>
<thead>
<tr>
<th>Item</th>
<th>Question</th>
<th>One Factor</th>
<th>Two Factor</th>
<th>Two Factor/Two Error Covariances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Alcohol</td>
<td>Drug</td>
<td>Alcohol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>( \lambda )</td>
<td>( SE )</td>
<td>( R^2 )</td>
</tr>
<tr>
<td>Alcohol 1</td>
<td>When I am drinking, I usually have five or more drinks at a time.</td>
<td>.83</td>
<td>.01</td>
<td>.70</td>
</tr>
<tr>
<td>(SU2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol 2</td>
<td>Sometimes I can’t remember what happened the night before because of drinking.</td>
<td>.89</td>
<td>.01</td>
<td>.79</td>
</tr>
<tr>
<td>(SU11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol 3</td>
<td>I sometimes drink enough to feel really high or drunk.</td>
<td>.93</td>
<td>.01</td>
<td>.86</td>
</tr>
<tr>
<td>(SU12)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol 4</td>
<td>I sometimes drink five or more drinks at a time, but only on weekends.</td>
<td>.75</td>
<td>.02</td>
<td>.56</td>
</tr>
<tr>
<td>(SU13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug 1</td>
<td>I have been treated for a drug problem.</td>
<td>.82</td>
<td>.02</td>
<td>.67</td>
</tr>
<tr>
<td>(SU03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug 2</td>
<td>In the past, I used coke, crack, or harder drugs (like uppers, heroin, or opiates) more than once or twice.</td>
<td>.85</td>
<td>.02</td>
<td>.73</td>
</tr>
<tr>
<td>(SU06)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug 3</td>
<td>I worry I have a drug problem.</td>
<td>.86</td>
<td>.02</td>
<td>.74</td>
</tr>
<tr>
<td>(SU07)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug 4</td>
<td>I have overdosed on drugs or had a severe health problem because of taking drugs to high.</td>
<td>.79</td>
<td>.02</td>
<td>.63</td>
</tr>
<tr>
<td>(SU09)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factor correlation</td>
<td></td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual correlation (alcohol #1 &amp; #4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual correlation (drug #1 &amp; #2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: All coefficients \( p < .001 \); \( \lambda = \) standardized factor loadings
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The modification indices for the two-factor model were then examined for possible sources of misfit that were both theoretically meaningful and plausible. Two alcohol items were allowed to covary because they both dealt with binge drinking (more than five drinks), and two drug items were allowed to correlate because drug type may be associated with treatment independent of overall severity. The two residual covariances were added to the two-factor model and the model was re-estimated. After adding the two error covariances to the one-factor model, there were improvements ($\chi^2 (17) = 113.75, p < .001; \text{TLI} = .99; \text{CFI} = .99; \text{RMSEA} = .09$) in global model fit, but RMSEA remained problematically high. Based on the overall impression of the model, covariates were then added covariates to the factor model.

Addition of Model Covariates

Using a Multiple Indicator-Multiple Cause (MIMIC) modeling approach, we added sociodemographic covariates (i.e., age, race/ethnicity, marital status, income) and a social desirability scale as exogenous independent variables (see Table 4 and Figure 1). Comparative fit indices (TLI and CFI) were excellent and RMSEA approached acceptable limits. The model $\chi^2$ remained significant but improved based on the complexity of the model.

In the model, social desirability was the strongest correlate of both alcohol and drug use and was associated with reporting of lower levels of use. More specifically, men who had higher scores on the social desirability scale reported lower alcohol ($b = -.09, p < .001$) and drug use ($b = -.08, p < .001$). Controlling for the effects of social desirability, sociodemographic correlates were significantly associated with alcohol and drug use. Men identifying as African American, Latino, or other race/ethnicities all reported lower levels of alcohol and drug use in comparison to their White counterparts. Being currently married was also associated with lower levels of alcohol and drug use, which was consistent across the factors. Similarly, men with higher
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incomes displayed lower levels of both alcohol and drug use. One area of difference was age: older age was associated with higher levels of drug use, but not alcohol use.

Table 4: Model Covariates

<table>
<thead>
<tr>
<th></th>
<th>Alcohol</th>
<th>Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(b)</td>
<td>(\beta)</td>
</tr>
<tr>
<td>Age</td>
<td>0.003</td>
<td>0.04</td>
</tr>
<tr>
<td>Race/ethnicity(^a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latino</td>
<td>-0.37</td>
<td>-0.14</td>
</tr>
<tr>
<td>African American</td>
<td>-0.43</td>
<td>-0.26</td>
</tr>
<tr>
<td>Other race</td>
<td>-0.67</td>
<td>-0.15</td>
</tr>
<tr>
<td>Currently married(^b)</td>
<td>-0.35</td>
<td>-0.17</td>
</tr>
<tr>
<td>Income</td>
<td>-0.11</td>
<td>-0.08</td>
</tr>
<tr>
<td>Social desirability</td>
<td>-0.09</td>
<td>-0.49</td>
</tr>
</tbody>
</table>

\(^a\)Reference category = White.
\(^b\)Reference category = not married.
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Figure 1: Final Model of the Confirmatory Factor Analysis (CFA) with Covariates

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Discussion

This study aimed to estimate the factor structure of the PRP substance abuse scale with an emphasis on comparing one and two factor models; examine the relationship of substance use factors with identified demographic and social correlates of use; and evaluate the effects of social desirability on reporting of substance use in a sample of low-income fathers.

The Two-Factor Structure Is a Better Fit for the Data

Study results supported our hypothesis that a two-factor model would fit the data better than a one-factor structure. The model fit indices for the two-factor model improved by allowing two alcohol and two drug items to covary because they were theoretically supported. The addition of the error covariance improved the model fit despite still having a high RMSEA. The model fit of the two-factor model was further improved with the addition of sociodemographic and social desirability variables as exogenous independent variables. In comparison to the one-factor model tested, the two-factor model indicated that the alcohol and other drug factors were different—though strongly related—constructs of substance abuse among low-income fathers. This finding was further supported with a high correlation of 0.78 between the alcohol and other drug factors. Such a high correlation indicates discriminant validity where the two factors are positively correlated but are different latent variables (Brown, 2015).

There have been limited measurement studies of the substance abuse scale of the PRP, with this being the first known study to examine the factor structure of this scale. Support for the two-factor model in this study could be because not all fathers who use or abuse alcohol had a drug use/abuse problem (legal or illicit; NIAAA, 2008). Notwithstanding this, studies have shown that although alcohol and drug use go “hand in hand,” where individuals with a drug abuse disorder are more likely to have an alcohol use disorder, than people who have an alcohol
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disorder are to have a drug use disorder (McCabe et al., 2017; NIAAA, 2008, para. 3). Thus, the
two-factor model supports that alcohol and other drugs are related, but different factors in
measuring substance use/abuse.

Demographic Factors, Socially Desirable Responses, and Alcohol and Drug Use among Fathers

Demographic Factors. Regarding the addition of sociodemographic covariates, our
hypothesis was partially supported. More specifically, findings that being Latino, African
American, or of other racial/ethnic groups were statistically associated with lower reported
alcohol and drug use is consistent with the existing literature (Feldstein Ewing et al., 2011; Mulia
et al., 2009; Mulia et al., 2008). Within the sample, men from minority racial/ethnic groups
indicated lower levels of alcohol and drug use in comparison to White men. Although
racial/ethnic minority men consume lower levels of alcohol and drugs, they are at increased risk
of becoming substance abusers or dependent due to myriad stressors experienced (Mulia et al.,
2008; Mulia et al., 2009) which may negatively impact the parenting capabilities of low-income
fathers (Cabrera & Mitchell, 2009).

Similarly, study findings show that being married and having higher income were
associated with lower levels of alcohol and drug use reporting are in alignment with the literature
(Grant et al., 2009; Heinz et al., 2010; Patrick et al., 2012). Marriage has been found to be a
protective factor against substance use (e.g., Heinz et al., 2010) possibly due to the availability of
social support in such long term committed relationships. The protective nature of being married
may also account for lower levels of alcohol and drug use within this sample of low-income
fathers. Higher income was also found to be associated with lower levels of alcohol and drug use
reporting within the current study. This finding could derive from the fact that individuals with
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higher income have access to more resources enabling them to engage in other social activities thereby reducing their substance use.

One finding of this study that is inconsistent with the literature is that older age is associated with drug use but not alcohol use (e.g., Grant et al., 2009). This could be an artifact of the data because the sample consisted of mostly older men with a mean age of 36 years. In addition, many men from the sample were coming from criminal justice or substance abuse treatment programs where they may have received treatment but still reported substance use. Also, younger fathers who use substances may not yet be involved in these systems and may be less likely to seek fathering services.

Social Desirability. Findings revealed that social desirability was a statistically significant predictor of lower reported alcohol and drug use. This specifically highlights that substance use reporting may be affected by the provision of socially desirable responses. Furthermore, given that the objective of the fatherhood program from which these data were obtained was to improve fathering and familial relationships, men may have provided more socially desirable responses and subsequently reported lower levels of substance use. The association between social desirability and substance use reporting found in this study is in alignment with the social desirability bias theory (Paulhus, 1984) which posits that respondents or participants are more likely to report lower levels of substance use to present themselves in a pleasing manner or based on their motivation to maintain a positive self-image. This finding is also in alignment with the extant literature (Davis, et al., 2014; Latkin et al., 2017; Zemore, 2012). Notably, individuals who engage in heavy alcohol and drug use may be more likely to downplay or underestimate the frequency and quantity consumed because it is deemed to be socially deviant behavior (Davis et al., 2010; Single et al., 1975), in addition to the stigma
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associated with alcohol and drug use, and the fear of legal consequences (NIAAA, 2008). This is especially relevant to work with men and fathers in particular who may be reticent to acknowledge needed services for substance use and SUD especially in the context of a parenting program.

**Implications for Social Work Research and Practice**

As the number of programs aimed at increasing responsible fathering grows, it will be important to have brief, reliable measures to assess potential drug and alcohol use, both to understand clients’ challenges and needs and to develop our understanding of the impact of substance abuse on parenting. Future research could explore the dynamics of fathering and drug and alcohol use, including the relationship between substance use/SUD and parenting stress (Cabrera & Mitchell, 2009) and the impact of substance use/SUD and related treatment on both fathering and spousal relationships (Hayward-Everson, Honegger, Glazebrook, et al., 2018).

As we found that men may be under-reporting substance use due to social desirability, it is important to understand how feelings such as shame and guilt may impact how fathers report both their parenting, substance use, and potentially other problems that could warrant treatment or intervention. Men—fathers in particular—may need additional encouragement to be engaged in services especially around substance use and SUD. Also, given the effect of social desirability on reporting of substance use identified in the current study, we recommend that further study consider the magnitude of these effects and the practical implications for policy and programming. In clinical settings where practically possible and necessary to make placement decisions, objective measures (e.g., drug screening) should be used as a complement to self-report of drug and alcohol use.

**Limitations and Strengths**
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Study findings are limited to the use of self-reported measures, which may have increased recall and reporting biases. Future studies should include various sources of data verification (legal records, partner interviews etc.). The cross-sectional nature of this study does not allow for any causal conclusions to be drawn from our findings. Also, the sample composed of a group of men who self-selected into a local fatherhood program, which does not allow for generalizability of the findings. Despite these limitations, this study adds to an important area of research by being the first known study to assess the factor structure of the eight-item substance abuse scale of the PRP, in addition to examining the role of sociodemographic variables, and social desirability on reporting of alcohol and drug use among a sample of low-income fathers.

Conclusion

The current analysis lends support for the use of the PRP substance abuse scale among populations seeking help for family reunification and similar services. Alcohol and drug subscales should be assessed separately as these constructs are closely related but not synonymous. There is some evidence that lifetime alcohol use disorder comorbidity is highly prevalent among those with a lifetime drug use disorder, but among those with an alcohol use disorder, drug use disorder comorbidity is less common. Given the effect of social desirability on reporting of substance use identified in the current study, it is important to assess such implications for policy, programming, and practice.
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