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Formal and Informal Concrete Support and Discharge Disposition among Women in Substance Abuse Treatment in the U.S.*

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Abstract

The purpose of this study is to examine the relative contribution and the relationships between formal (treatment related members) • informal (family members) concrete support and discharge disposition. A total of 172 women interviewed upon intake in one of 3 counties funded substance abuse treatment programs in Cleveland, Ohio. Hierarchical logistic regression was performed to assess the impact of formal concrete support and informal concrete support on the likelihood of a discharge disposition of completed treatment. Formal concrete support showed a statistically significant contribution to discharge disposition, while informal concrete support did not. Findings of this study highlight the importance of formal concrete support. Future research should continue to expand our knowledge of how support from formal treatment services interacts with support from informal (family) networks.

Keywords

personal network; family support; professional support; substance dependence; women; discharge disposition

1. Introduction

1) Substance Use Disorder and Women

In 2014, Substance Abuse and Mental Health Services Administration (SAMHSA) reported that approximately 139.7 million people aged 12 and older (52.7% in US) were current (past month) drinkers and 27 million were current illicit drug users. SAMHSA (2010) also reported that 6.6% of women aged 12 and older have used illicit drugs in the past 30 days, with more than 30% of the substance use disorder (SUD) treatment population being female.

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Women with SUD had more psychosocial difficulties, mental health problems, and traumatic events as compared with male substance users (Brady and Ashley, 2005). Gender was also shown to be a factor in the initiation of substance use. Women were more likely to initiate drug use based on the behaviors of their spouses or partners, while men's drug use was more typically related to the relationships with their peer groups (Grella, 2008; Office of Applied Studies, 2006). Research also indicated that women and men with SUD had different treatment outcomes in terms of treatment completion and treatment retention (length of stay) (Greenfield et al., 2007; Grella, 2008).

Definitions of substance use disorder treatment outcomes often differ depending on the purpose and type of research study conducted. Treatment outcomes can be defined as post-treatment substance use, treatment retention (number of treatment days) as well as treatment completion status (such as discharge disposition in this study).

Particularly, women had lower substance abuse treatment completion rates than men in the United States (United Nations, 2004). According to SAMHSA (2009), only 58.5% of women completed treatment or transferred to further treatment, which was lower than men's completion rates (61.4%). This finding was consistent across different treatment settings. Also, women showed lower completion rates (30.9%) than men (69.1%) from outpatient treatment as well as intensive outpatient treatment (37.2% versus 62.8%). In 2004, the United Nations indicated that women's dropout rate was related to "mental health problems, severity of substance use problems, and employment problems" (p.11). Since female substance users are understudied and they have more substance related problems, negative substance treatment outcomes than men, this study is necessary to focus on substance using women in general.

2) Social Support and Personal Networks

Although the terms 'social support' and 'social/personal networks' are often used simultaneously and interchangeably in substance use disorder literature without clear distinctions, these two terms are in fact quite different. Social support refers to the types of help exchanged within a network, such as emotional (i.e. being there or listening), concrete (i.e. providing transportation or loaning money), and informational (i.e. giving advice) support (Schaefer, Coyne, and Gore, 1981). Other researchers have suggested that concrete support may be essential in studying substance use disorder treatment outcomes (Lewandowski and Hill, 2009; Savage and Russell, 2005). For example, Tracy et al. (2010) reported that concrete support was a positive influence in addiction recovery. Women who had help available for childcare were able to attend AA meetings. Providing a place to live was another important support in women's recovery process because women with stable housing had less contact with street peers who were using substances.

The term 'social network' refers to a set of people and the relationships among them (Scott, 2000; Wasserman and Faust, 1994). These relationships could be kinship, friendship, or employment (Cox, 2005). The study of personal networks focuses on an individual (ego) and their linkages with other people they know (referred to as alters) by collecting data on alters, the characteristics of alters and the ties among them. Even though studies may categorize relationship status differently, there is consensus that families, partners and treatment related

people (AA/12 step peers, or professional helpers) are among the most important network members in treatment and recovery among women with SUD (El-Bassel, Chen, and Cooper, 1998; Falkin and Strauss, 2003; Moore, Biegel, and McMahon, 2011).

Following previous research that has indicated the important role of personal networks, this study takes a personal network approach to the study of women's substance abuse treatment outcome. Copello et al. (2002) examined how the inclusion of informal network members, consisting of family members and relatives, in the treatment process might relate to a change of attitude and behavior in substance use by the focal clients (Copello et al., 2002). The study reported that informal network members' participation in the treatment process increased successful substance treatment results among the substance users.

The family constitutes one of the most important types of member in personal networks and often provides the most consistent support. Family members are important sources of tangible (concrete) support for women in treatment and recovery (Kim et al., 2015; Savage and Russell, 2005). Kin network members (families) provided more sobriety support than non-kin network members for women in recovery (El-Bassel et al., 1998). Family members of women who are in substance abuse treatment represent an understudied group (Moore, Biegel, and McMahon, 2011). Limited research, however, has indicated that substance use and relapse can be reduced when both clients and family network members receive interventions simultaneously (Fals-Steward, Birchler, and O'Farrell, 1996; Miller, Meyers, and Tonigan, 1999; Moore, Biegel, and McMahon, 2011).

Other research studies specifically included treatment related network members from Alcoholics Anonymous (AA), Narcotics Anonymous (NA) or other 12-step programs as formal network members. For instance, Krentzman and colleagues (2010) examined the role AA and NA in the recovery process. Kaskutas (2009) found that attending AA (versus no AA attendance) and higher frequency of attendance were effective in improving abstinence rates.

Bassuk and colleagues (2016) in a systematic review summarizes the evidence on the effectiveness of peer-delivered recovery support services for people in recovery from alcohol and drug addiction. Based on this literature, this study focused on these three aspects of personal networks among women with SUD in treatment: family members and treatment related professionals and peers.

3) Other factors influencing discharge disposition

Other factors, which could impact treatment outcomes including dual disorder status, trauma, abstinence self-efficacy and substance using partners, are discussed. Dual disorder status has an influence on women's overall health and response to treatment. Studies indicated that dual disorders are associated with shorter treatment stays, higher treatment drop outs, more frequent relapse to substance use and overall less positive treatment outcomes than those with a single disorder (Tracy and Biegel, 2007). In addition, Research demonstrates that women's exposure to violence and early childhood trauma (i.e. childhood sexual abuse experience) negatively influences the ability to form personal network relationships (Tracy and Johnson, 2007). Also, abstinence self efficacy has been related to

treatment outcomes, in both positive and negative directions (Burling, Reilly, Moltzen, and Ziff, 1989). Specifically, high self-efficacy during treatment was related to positive outcomes such as changes in smoking behaviors and reduced probability of relapse (DiClemente, Prochaska, and Gibertini, 1985). Moreover, several other studies have focused on the presence of substance using partners in women's networks. Because women's substance use is strongly related to their partners' use, using/non-using partners are one of the most important predictors of treatment outcome (Gearon et al., 2003; Laudet, Magura, Furst, and Kumar, 1999).

4) Aims of this study

The purpose of this current study was to explore the relationships between women's personal networks and the treatment outcome of discharge disposition. This study examined the relative contribution and the relationships between formal (treatment related members)/informal (family members) concrete support and discharge disposition. This study fills a gap in the literature as most of the existing personal network research has focused on individual variables such as, number of relatives (Dodge and Potocky, 2000); network composition (Ellis et al., 2004; Moos and King, 1997; Weisner et al., 2003); frequency of contact (Bond et al., 2003; Zywiak et al., 2002; Zywiak et al., 2009); substance using members (Davey-Rothwell et al., 2011; Manuel et al., 2007; McDonald et al., 2010; Walton et al., 2003) or social support availability, e.g. presence of emotional, sobriety, informational, and/or concrete support (El-Bassel et al., 1998; Falkin and Strauss, 2003; Lewandowski and Hill, 2009; Savage and Russell, 2005; Soye et al., 2006) separately. This study makes a unique contribution because the role of combined network variables is examined, that is support provided by family members and support provided by treatment related alters in the network. In addition, the study focuses on the relative contribution of support from formal (treatment related) as well as informal (family) sources of support. The research question for this study was: "In what ways are women's personal networks source of support and type of support related to substance abuse treatment discharge disposition?"

2. Methods

1) Participants and procedure

The sample for the parent study was women enrolled in one of three participating county funded substance abuse treatment programs (one residential and two intensive outpatient). Data for the parent study were collected at four time-points from October 2009 through May 2012 in Cleveland, Ohio. To be eligible for the study, women had to be enrolled in treatment for one week, at least 18 years old and have been assessed as having a current substance use dependence disorder (alcohol, drug, or both) as defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000). All three treatment programs provided information about the research study to prospective participants who met the eligibility requirements. If the woman was interested in the study, the staff from the agencies made an appointment for the prospective participant to meet with a research project interviewer who described the study and conducted the informed consent process. Participants completed interviews at four time points: Time 1, within one week after

treatment intake; Time 2, one month after treatment intake; Time 3, six months after treatment intake; and Time 4, twelve months after treatment intake.

Research interviews were conducted by master and doctoral level students who were trained in research interviewing and the informed consent process. A Computerized Assisted Personal Interview (CAPI) was used to complete interviews, which took 2–3 hours on average to complete. Participating women received a \$35 gift card to a local store and bus card/transportation reimbursements as needed. Both the parent study and this sub sample analysis study was approved by the Institutional Review Board (IRB) of Case Western Reserve University for the protection of human subjects (CWRU IRB Protocol Number: IRB-2013-454). A Certificate of Confidentiality was secured from the National Institute of Health.

The initial sample size included 377 women based on the parent study. This present analysis was limited to 172 women who had substance use information at Time 3 and/or Time 4, who had complete data on all of the study variables, and who had information on discharge disposition (treatment completion) provided to and retrieved from the county drug board administrative billing database (ADAMHS: Alcohol, Drug Addiction and Mental Health Services). The attrition analysis was conducted between the original sample and 172 women. Most of the demographics and clinical characteristics were similar between these two groups, with the exception of age, education, and treatment modality. The sample of this present study (172 women) as compared with the total parent study were more likely to be younger, were less educated and had been in intensive outpatient treatment.

2) Measures

(1) Outcome measure: Discharge Disposition—Five codes were included in the county administrative billing data set to indicate reason for discharge: completed, referred, dropout, incarcerated, and Other. Since discharge disposition of completed treatment was the dependent variable, the discharge disposition variable was re-coded as a dichotomous variable. Completed treatment was re-coded to include both completed and referred discharge dispositions. Incomplete treatment was re-coded to include dropout, incarceration, and other categories.

(2) Independent variables—All personal network variables used in this study were collected using the personal network software program, EgoNet (Source Forge, 2011). Participants were asked to list 25 people (referred to as alters in this study) with whom they had had any contact in the last 6 months. Information such as source of support and types of supports about these 25 alters was used to determine social network composition, social support availability, and network structure.

Personal network composition at time 1 was assessed by how respondents knew the alters within 8 response options: partner/spouse, family member/relative, my child or child I am raising, from work or school, from religious group or organization, professional helper (such as social workers, psychiatrists, psychologists, and etc.), from treatment program or AA/NA (Alcoholics Anonymous/Narcotics Anonymous), or other friend or associate. For each alter, in this study, the women were also asked to indicate whether or not that alter used alcohol

and/or drugs. Social support availability was measured as each alter's availability to provide concrete (e.g., giving a ride or loaning money) support. The response options for support availability were almost always, sometimes, or hardly ever. Based on information collected via EgoNet, the following variables were used in this study as key predictors: informal concrete support and formal concrete support.

① Informal concrete support: Informal concrete support was a variable combining the area of life reported with the type of support provided. The combined variable represented the proportion within the network of family members who were reported as "almost always" available for concrete support. This variable was calculated by 1) counting the number of alters identified as family member/relatives; 2) identifying only the family members/relatives who "almost always" provided concrete support; and 3) dividing the number of family members/relatives who "almost always" provided concrete support by 25, the total number of alters collected in EgoNet. Quartile scores were used due to the non-linearity of this variable. Four quartile dummy coding variables were created as follows: first quartile informal concrete support, second quartile informal concrete support, third quartile informal concrete support and the fourth quartile informal concrete support.

② Formal concrete support: Formal concrete support represented the proportion within the network of treatment related alters who were reported as "almost always" available for concrete support. Using the same calculation method used for informal concrete support, this variable was calculated by dividing the number of peers from treatment programs or AA/NA and professional helpers who "almost always" provided concrete support by 25, the total number of alters collected in EgoNet. Since preliminary data analysis indicated this continuous variable was highly skewed (skewness > 2), with 153 women (53.5%) reporting no formal concrete support, it was re-coded as a dichotomous variable based on its mean scores ($M = 8.08$, $SD = 13.0$) (0 = Lower than average percentage of formal concrete support, 1 = at or above the average percentage of formal concrete support). These two combined variables were created based on social network/social support questionnaires. It is similar to 'Important People and Activities Instrument (IPA)' which already completed reliability (test-retest) and validity (Criterion and Construct) studies (Beattie and Longabaugh, 1999; Holder et al., 2000; Longabaugh et al, 2001).

(3) Covariates

① Demographics: The CDIS-IV (Helzer et al., 1985) and a Computerized Assisted Personal Interview (CAPI) used in the parent study collected the following demographic information.

Age: Age of each participant was directly asked and measured as a continuous variable.

Education: The Computerized Diagnostic Interview Schedule for DSM-IV-CDIS-IV (Helzer et al., 1985) included a question asking the highest level of education and was measured as a categorical variable. Answers were re-coded into two categories: less than high school education and completed high school or more than high school.

Marital status: Marital status at T1 was a categorical variable. Answers were dummy coded into three categories: married, never married, widowed/separated/divorced.

Race: Women were asked to identify their ethnic/racial identify among one of 12 possible categories, which included Alaska Native, American Indians, Asian, Caucasian, and etc. For this current study, the variable was dummy coded into two categories: Black and Non-black because almost 60% of the sample was African American.

Income source: The following question was asked: “What is your primary source of income?” Response options were re-coded into two categories: from jobs/other and welfare/government assistance.

Legal involvement: The following question “What is your current legal status?” asked women. This variable was dummy coded into no involvement with legal systems all other response options.

② Clinical characteristics

Abstinent Self-Efficacy: Abstinent Self-Efficacy was assessed at T1 as how confident women would be that they would not use substances in a variety of different situations. Abstinent Self-Efficacy was a 20 item self-report instrument using a five point Likert scale (DiClemente, Carbonari, Montgomery, and Hughes, 1994). Higher scores indicated higher levels of confidence to remain abstinent. Cronbach’s alpha was .97 for the total scale in this study sample.

Dual Disorder Status: The presence of co-occurring mental disorders was assessed at T1 in the parent study using the Computerized Diagnostic Interview Schedule for DSM-IV (DIS-IV) (CDIS-IV; Helzer et al., 1985; Robins, Helzer, Croughan, and Ratcliff, 1981). In this study, the following diagnostic categories were assessed: Post Traumatic Stress Disorder, Major Depressive Episode, Dysthymia, Manic episode, and generalized anxiety disorder (Robins et al., 1981). The validity and reliability of the CDIS-IV has been demonstrated in prior research (Robins, Pattison, and Wasserman, 1999). Based on results from the CDIS-IV, respondents were placed into one of two categories: “Dual Disorder” (yes coded 1) if they had a current (within past 12 months) diagnosis of any of the mental disorders listed above or “Non Dual Disordered” (no coded 0) if they did not.

Trauma Symptom Checklist: The Trauma Symptom Checklist-40 (TSC-40; Briere and Runtz, 1989; Elliott and Briere, 1992; Zlotnick et al., 1996) was used at T1 to assess for trauma related symptomatology from childhood or adult traumatic experiences. This was a 40 item self-report instrument. Frequency of occurrence of each symptom over the past two months was assessed, using a four point Likert scale ranging from 0 = never to 3 = often. Higher total scores indicated greater self-reported trauma symptoms. Cronbach’s alpha was .93 for the total scale in this study sample.

Treatment Modality: Because study participants came from residential treatment and intensive outpatient treatment, treatment modality was controlled in the data analysis. This

was a dichotomous variable [Residential treatment (RT) versus intensive outpatient treatment (IOP)].

Duration of Substance Use Disorder (SUD): Duration of SUD was used as a proxy for addiction severity in this study. Participants were asked their current age and the age of their first substance use disorder treatment. To calculate duration of SUD in years, the women's current ages were deducted from the first age of treatment for a substance use disorder.

Partner Sobriety Support: Partner sobriety support was a variable combining the area of life reported with the type of support provided. The combined variable represented the network of partners who were reported as "almost always" available for sobriety support. This was a dichotomous variable (Yes "almost always" Partner sobriety support or No partner sobriety support).

Substance Using Partner: Substance using partner was a variable combining the area of life reported with the use of alcohol or drug (AOD). This was a dichotomous variable (Yes substance using partner or No substance using partner).

3) Data analysis

All data analysis utilized SPSS software, 20.0 version. Univariate analyses were conducted to examine frequencies, distribution, and descriptive information, including mean, median, standard deviation, skewness and kurtosis. Pearson correlations tested the relationships and directions between continuous variables and/or dummy variables. When variables were correlated with dependent variables at $p < .2$, they were selected as covariates for inclusion in the final regression model (Mickey and Greenland, 1989).

Hierarchical logistic regression analyses were conducted to test the association between independent variables and the likelihood of a discharge disposition of completed treatment (completed or referred). Hierarchical entry was used to examine the relative contribution of formal (treatment related) and informal (family) concrete support on discharge disposition, after controlling for the effect of covariates. For the hierarchical logistic analysis, trauma symptom checklist score, legal involvement, education and duration of SUD were entered in the first model as covariates based on their correlations with dependent variables. Formal concrete support was entered in the second model with the previous variables in the first model. For the third model, only informal concrete support was entered with variables in the first model. Formal concrete support and informal concrete support were entered separately to test the different roles on treatment outcome. The final model included all variables together (control variables, informal concrete support, and formal concrete support) to find how women's personal network source of support and type of support are related to substance use discharge disposition.

3. Results

1) Sample characteristics

(1) Demographics—The sample for this analysis consisted of 172 women with substance use disorders. Table 1 reports all descriptive statistics. The mean age of this sample was 37.7

(SD = 10.2), ranging from 19 to 63 years old. More than half (54.7%) of the women identified themselves as African American. The majority of women had never married (61%), and 47% of the women had less than high school education. Almost half (47%) of the sample had current legal involvement such as being on probation, on parole, on work release, on bail awaiting trial, on bail awaiting sentencing, or released on own recognizance case pending. A majority of the women (70%) received welfare and/or government financial assistance.

(2) Clinical characteristics—Mean duration of substance use disorder was 7.15 (SD = 8.35) years and ranged from less than 1 year to 38 years. A majority of this sample (77.3%) was dually diagnosed with co-occurring mental disorders and substance dependence. More than half (56.4%) of the women were in outpatient treatment; the remainder (43.6%) received inpatient substance abuse treatment. Self-efficacy scale mean score was 73.2 (SD = 21.3) with a range from 20 to 100. Trauma symptom checklist total score's mean was 47.85 (SD = 21.97) and ranged from 0 to 101.54. Fifty three percent of the women completed treatment (completed or referred) and the mean number of days in treatment was 101 days (SD = 69.5, median = 90 days) with a range from 0 to 304 days.

2) Bivariate Relationships with Discharge Disposition

No statistically significant correlations were found between discharge disposition and the four family concrete support quartile variables (Table 2). However, discharge disposition was correlated with formal concrete support ($r = .25, p < .001$). Greater levels (above the mean) of formal concrete support were associated with completed treatment. Discharge disposition was also related with duration of SUD; longer duration of SUD was associated with completed treatment ($r = .16, p < .05$).

3) The effect of formal and informal concrete support on discharge disposition

Hierarchical logistic regression was performed to assess the impact of formal concrete support and informal concrete support on the likelihood of a discharge disposition of complete treatment. Table 3 displays odds ratio, its 95% confidence intervals, and p-value. Model 1 indicates that lower trauma symptoms, legal involvement, and longer duration of SUD were related to increased odds of treatment completion. However, when formal concrete support was added (Model 2), duration of SUD was no longer significant and women with formal concrete support were more likely to complete treatment. Informal concrete support was not related to treatment completion (Model 3). The final model (Model 4) assessing both formal and informal concrete support simultaneously showed that women who received greater levels (above the mean) of formal concrete support were 3.6 times more likely to complete treatment compared to those who received lower levels (below the mean) of formal concrete support (OR = 3.59, 95% CI = 1.56–8.26). Women with one unit increase in trauma symptom scores were 2% less likely to complete treatment, OR = .98 (95% CI = .96–.99). Model 4 explained 20% of the variance in to discharge disposition of treatment.

4. Discussion

1) Summary and Discussion

This study examined the relationship between personal networks and discharge disposition. Formal concrete support showed a statistically significant contribution to discharge disposition, while informal concrete support did not. Higher formal concrete support was related to a discharge disposition of completed treatment. These findings were consistent with existing literature reporting higher support and higher treatment completion (Dobkin et al., 2002), more support from treatment related alters and greater treatment completion (Moos and King, 1997), and positive personal network relationships and greater substance use treatment completion (Knight et al., 2001).

The results in this study related to partners were not consistent with existing research (Davey-Rothwell et al., 2011; Gearon et al., 2003; Laudet et al., 1999). Neither of the two partner variables (substance using partners and sobriety support from partners) was significantly associated with discharge disposition. These unexpected findings could be due to the different characteristics of the study participants. Of the 172 study participants, almost 30% of women reported no partners (N = 50). The other 70% of women who reported having partners, indicated that not all partners provided support.

Previous research also indicates the vital role of covariates such as self-efficacy, dual disorder status, trauma symptoms, treatment modality, and duration of SUD on treatment outcomes (DiClemente, Prochaska, and Gibertini, 1985; Compton et al., 2000; Tracy and Johnson, 2007; Jun et al., 2012). The findings from the analysis were inconsistent with existing literature. Only trauma symptomology was statistically significantly associated with discharge disposition: women with higher trauma symptoms were less likely to have a discharge disposition of completed treatment.

2) Strengths and Limitations

Strengths of this study included the sample with complete data and an understudied population of low income women with substance use disorders. This study was unique because of the combination of more than two personal network variables (personal network composition and social support availability) in the study of substance abuse treatment outcomes. This study created combined variables of source and type of support and so could examine in finer detail the impact of support from family as compared to treatment related alters.

Despite the strengths of this study, some limitations also exist. The difference in treatment modality (residential versus intensive outpatient) could lead to undetected results between predictors and outcomes. For example, it is not surprising that informal concrete support would be more important in residential treatment as family members may provide resources only available outside of treatment (e.g. cigarettes, money and etc). Measurement error might have occurred. For instance, existing personal network literature and theories did not provide consistent definitions of different types of support. When the interviewers asked questions of the study participants, they provided specific examples of the types of support. However, the self-reported nature of data from study participants might have resulted in

respondents having different interpretations of the types of social support. As an example, if alters provided transportation for attending AA groups, the respondent could have considered that as concrete support or sobriety support to stay in clean.

3) Implications and future research

According to Valente (2012), network interventions are useful in the field of substance use disorder treatments. Network intervention can be designed and implemented at different levels of the environment, such as individual, family (informal networks), and community levels. For example, promoting changes in personal network size and/or composition and developing more self-help groups are network interventions at the individual and family levels (Hogan, Linden, and Najarian, 2002; Richey, Lovell, and Reid, 1991). Interventions could also include helping women in distancing substance using family members from their non-using network members (Brown, Jun, Min, and Tracy, 2013; Brown, Tracy, Jun, Park, and Min, 2015).

Findings from this study suggest that network interventions based on formal concrete support might be promising, since formal concrete support was shown in this study to be predictive of discharge disposition. This may mean that resources could be made available to formal treatment providers to better meet the concrete support needs of women clients they serve. Formal network members providing concrete support for women clients is one option for network intervention.

Future research is needed to address the role of personal networks on substance use disorder treatment outcomes. In particular, a longitudinal design would allow for tracking specific changes in personal networks over time such as (a) whether substance using family members still exist among clients' personal networks and (b) how changes in network size, composition or functioning affect different treatment outcomes. Also, different combinations of personal network and social support variables could also be examined: for example, emotional support from religious groups.

References

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 4th. Washington, DC: American Psychiatric Association; 2000.
- Bassuk EL, Hanson J, Greene RN, Richard M, Laudet A. Peer-delivered recovery support services for addictions in the United States: A systematic review. *Journal of Substance Abuse Treatment*. 2016; 63:1–9. [PubMed: 26882891]
- Beattie MC, Longabaugh R. General and alcohol-specific social support following treatment. *Addictive Behaviors*. 1999; 24(5):593–606. [PubMed: 10574299]
- Bond J, Kaskutas LA, Weisner C. The persistent influence of social networks and alcoholics anonymous on abstinence. *Journal of Studies on Alcohol*. 2003; 64(4):579–588. [PubMed: 12921201]
- Brady, TM., Ashley, OS., editors. *Women in Substance Abuse Treatment: Results from the Alcohol and Drug Services Study (ADSS)*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2005. (DHHS Publication No. SMA 04-3968, Analytic Series A-26)
- Briere J, Runtz M. The Trauma Symptom Checklist (TSC-33): Early data on a new scale. *Journal of Interpersonal Violence*. 1989; 4(2):151–163.

- Brown S, Jun M, Min MO, Tracy EM. Impact of dual disorders, trauma, and social support on quality of life among women in treatment for substance dependence. *Journal of Dual Diagnosis*. 2013; 9(1): 61–71. [PubMed: 23543844]
- Brown S, Tracy EM, Jun M, Park H, Min MO. Personal network recovery enablers and relapse risks for women with substance dependence. *Qualitative Health Research*. 2015; 25(3):371–385. [PubMed: 25231945]
- Compton WM, Cottier LB, Ben-Abdallah A, Cunningham-Williams R, Spitznagel EL. The effects of psychiatric comorbidity on response to an HIV prevention intervention. *Drug and Alcohol Dependence*. 2000; 58(3):247–257. [PubMed: 10759035]
- Copelo A, Orford J, Hodgson R, Tober G, Barrett C. Social behavior and network therapy: Basic principles and early experiences. *Addictive Behaviors*. 2002; 27(3):345–66. [PubMed: 12118625]
- Cox KF. Examining the role of social network intervention as an integral component of community-based, family-focused practice. *Journal of Child and Family Studies*. 2005; 14(3):443–454.
- Davey-Rothwell MA, Chander G, Hester L, Latkin CA. Social network characteristics and heavy episodic drinking among women at risk for HIV/sexually transmitted infections. *Journal of Studies on Alcohol and Drugs*. 2011; 72(6):1041–1047. [PubMed: 22051219]
- DiClemente CC, Carbonari JP, Montgomery RPG, Hughes SO. The alcohol abstinence self-efficacy scale. *Journal of Studies on Alcohol*. 1994; 55:141–148. [PubMed: 8189734]
- DiClemente CC, Prochaska JO, Gibertini M. Self-efficacy and the stages of self-change of smoking. *Cognitive Therapy and Research*. 1985; 9(2):181–200.
- Dobkin PL, Civita MD, Paraherakis A, Gill K. The role of functional social support in treatment retention and outcomes among outpatient adult substance abusers. *Addiction*. 2002; 97(3):347–356. [PubMed: 11964111]
- Dodge K, Potocky M. Female substance abuse: Characteristics and correlates in a sample of inpatient clients. *Journal of Substance Abuse Treatment*. 2000; 18(1):59–64. [PubMed: 10636608]
- El-Bassel N, Chen D, Cooper D. Social support and social network profiles among women on Methadone. *Social Service Review*. 1998; 72(3):379–401.
- Elliott DM, Briere J. Sexual abuse trauma among professional women: Validating the Trauma Symptom Checklist-40 (TSC-40). *Child Abuse & Neglect*. 1992; 16(3):391–398. [PubMed: 1617473]
- Ellis B, Bernichon T, Yu P, Roberts T, Herrell JM. Effect of social support on substance abuse relapse in a residential treatment setting for women. *Evaluation and Program Planning*. 2004; 27:213–221.
- Falkin GP, Strauss SM. Social supporters and drug use enablers: A dilemma for women in recovery. *Addictive Behaviors*. 2003; 28(1):141–155. [PubMed: 12507533]
- Fals-Stewart W, Birchler GR, O'Farrell TJ. Behavioral couples therapy for male substance-abusing patients: Effects on relationship adjustment and drug-using behavior. *Journal of Consulting and Clinical Psychology*. 1996; 64(5):959–972. [PubMed: 8916625]
- Gearon JS, Nidecker M, Bellack A, Bennett M. Gender differences in drug use behavior in people with serious mental illnesses. *The American Journal on Addictions*. 2003; 12:229–241. [PubMed: 12851019]
- Greenfield SF, Brooks AJ, Gordon SM, Green CA, Kropp F, McHugh RK, Lincoln M, Hien D, Miele GM. Substance abuse treatment entry, retention, and outcome in women: A review of the literature. *Drug and Alcohol Dependence*. 2007; 86(1):1–21. [PubMed: 16759822]
- Grella CE. From generic to gender-responsive treatment: Changes in social policies, treatment services, and outcomes of women in substance abuse treatment. *Journal of Psychoactive Drugs*. 2008; 5:327–343. [PubMed: 19256044]
- Helzer JE, Robins LN, McEvoy LT, Spitznagel EL, Stoltzman RK, Farmer A, Brockington IF. A comparison of clinical and diagnostic interview schedule diagnoses: Physician reexamination of lay-interviewed cases in the general population. *Archives of General Psychiatry*. 1985; 42:657–666. [PubMed: 4015307]
- Hogan BE, Linden W, Najarian B. Social support interventions: Do they work? *Clinical Psychology Review*. 2002; 22(3):381–440.

- Holder HD, Cisler R, Longabaugh R, Stout RL, Treno AJ, Zweben A. Alcoholism treatment and medical care costs and benefits from Project MATCH. *Addiction*. 2000; 95(7):999–1013. [PubMed: 10962766]
- Jun, M., Tracy, EM., Min, MO., Park, H. Personal networks of women in residential and outpatient substance use disorder treatment. Poster presentation at Council on Social Work Education (CSWE); Washington, D. C.. 2012. p. 11
- Kaskutas LA. Alcoholics anonymous effectiveness: Faith meets science. *Journal of Addictive Diseases*. 2009; 28(2):145–157. [PubMed: 19340677]
- Kim H, Tracy EM, Brown S, Min J, Park H, Min MO, McCarty C. Personal networks of women in residential and outpatient substance abuse treatment. *Addiction Research and Theory*. 2015; 23(5): 404–412. [PubMed: 27011762]
- Knight DK, Logan SM, Simpson DD. Predictors of program completion for women in residential substance abuse treatment. *The American Journal of Drug and Alcohol Abuse*. 2001; 27(1):1–18. [PubMed: 11373028]
- Krentzman AR, Robinson EA, Moore BC, Kelly JF, Laudet AB, White WL, Zemore SE, Kurtz E, Strobbe S. How alcoholics anonymous (AA) and narcotics anonymous (NA) work: Cross-disciplinary Perspectives. *Alcoholism Treatment Quarterly*. 2010; 29(1):75–84. [PubMed: 21785524]
- Latkin C, Donnell D, Liu TY, Davey RM, Celentano D, Metzger D. The dynamic relationship between social norms and behaviors: The results of an HIV prevention network intervention for injection drug users. *Addiction*. 2013; 108(5):934–943. [PubMed: 23362861]
- Laudet AB, Magura S, Furst RT, Kumar N. Male partners of substance abusing women in treatment: An exploratory study. *The American Journal of Drug and Alcohol Abuse*. 1999; 25(4):607–627. [PubMed: 10548438]
- Lewandowski CA, Hill TJ. The impact of emotional and material social support on women's drug treatment completion. *Health and Social Work*. 2009; 34(3):213–221. [PubMed: 19728480]
- Longabaugh, R., Wirtz, PW., Zweben, A., Stout, R. Network support for drinking, 260–275. In: Longabaugh, R., Wirtz, PW., editors. *Project MATCH Hypotheses: Results and Causal Chain Analyses*. Vol. 8. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 2001. Project MATCH Monograph Series
- Manuel JK, McCrady BS, Epstein EE, Cook S, Tonigan JS. The pretreatment social networks of women with alcohol dependence. *Journal of Studies on Alcohol and Drugs*. 2007; 68(6):871–878. [PubMed: 17960305]
- McDonald LJ, Griffin ML, Kolodziej ME, Fitzmaurice GM, Weiss RD. The impact of drug use in social networks of patients with substance use and bipolar disorders. *The American Journal on Addictions/American Academy of Psychiatrists in Alcoholism and Addictions*. 2011; 20(2):100–105.
- Mickey RM, Greenland S. The impact of confounder selection criteria on effect estimation. *American Journal of Epidemiology*. 1989; 129:125–137. [PubMed: 2910056]
- Miller WR, Meyers RJ, Tonigan JS. Engaging the unmotivated in treatment for alcohol problems: A comparison of three strategies for intervention through family members. *Journal of Consulting and Clinical Psychology*. 1999; 67(5):688–697. [PubMed: 10535235]
- Moore BC, Biegel DE, McMahon TH. Maladaptive coping as a mediator of family stress. *Journal of Social Work Practice in the Addictions*. 2011; 11(1):17–39. [PubMed: 21499498]
- Moos RH, King MJ. Participation in community residential treatment and substance abuse patients' outcomes at discharge. *Journal of Substance Abuse Treatment*. 1997; 14(1):71–80. [PubMed: 9218240]
- Park, H., Tracy, EM., Min, MO., Jun, M. Using latent growth analysis to identify quality of life trajectories among women with substance use disorders. Poster presentation at The Society for Social Work and Research (SSWR); San Antonio, TX. 2014. p. 01
- Richey CA, Lovell ML, Reid K. Interpersonal skill training to enhance social support among women at risk for child maltreatment. *Children and Youth Services Review*. 1991; 13(1):41–59.
- Robins G, Pattison P, Wasserman S. Logit models and logistic regressions for social networks: III. Valued relations. *Psychometrika*. 1999; 64(3):371–394.

- Robins LN, Helzer JE, Croughan J, Ratcliff KS. National institute of mental health diagnosis interview schedule: Its history, characteristics and validity. *Archives of General Psychiatry*. 1981; 38:381–389. [PubMed: 6260053]
- Savage A, Russell LA. Tangled in a web of affiliation: Social support networks of dually diagnosed women who are trauma survivors. *The Journal of Behavioral Health Services & Research*. 2005; 32(2):199–214. [PubMed: 15834268]
- Schaefer C, Coyne JC, Gore S. The health-related functions of social support. *Journal of Behavioral Medicine*. 1981; 4(4):381–406. [PubMed: 7338894]
- Scott, J. *Social Network Analysis: A Handbook*. 2nd. London: SAGE Publications; 2000.
- Source forge. 2011. <http://sourceforge.net/projects/egonet/>
- Soyez V, Broekaert E, Rosseel Y. Social network involvement during therapeutic community treatment: Is there an impact on success? *Therapeutic Communities*. 2006; 27(1):45–67.
- Substance Abuse and Mental Health Services Administration. Treatment Episode Data Set (TEDS): 2006 Discharges from Substance Abuse Treatment Services. Rockville, MD: SAMHSA, Office of Applied Studies; 2009. DASIS Series: S-46, DHHS Publication No. (SMA) 09-4378
- Substance Abuse and Mental Health Services Administration. 2009 National Survey on Drug Use and Health (NSDUH). 2010. Retrieved from <http://www.whitehouse.gov/ondcp/women-children-families>
- Substance Abuse and Mental Health Services Administration. Behavioral health trends in the United States: Results from the 2014 National Survey on Drug Use and Health. 2014. Retrieved from <http://www.samhsa.gov/data/sites/default/files/NSDUH-FRR1-2014/NSDUH-FRR1-2014.pdf>
- Tracy EM, Biegel DE. Personal social networks and dual disorders: A literature review and implications for practice and future research. *Journal of Dual Diagnosis*. 2007; 2(2):59–88.
- Tracy EM, Johnson P. Personal social networks of women with co-occurring substance use and mental disorders. *Social Work Practice in the Addictions*. 2007; 7(1/2):69–90.
- Tracy EM, Munson MR, Peterson LT, Floersch JE. Social support: A mixed blessing for women in substance abuse treatment. *Journal of Social Work Practice in the Addictions*. 2010; 10(3):257–282.
- United Nations. Substance Abuse Treatment and Care for Women: Case Studies and Lessons Learned. NY: Office on Drugs and Crime; 2004.
- Walton MA, Blow FC, Bingham CR, Chermack ST. Individual and social/environmental predictors of alcohol and drug use 2 years following substance abuse treatment. *Addictive Behaviors*. 2003; 28(4):627–642. [PubMed: 12726780]
- Wasserman, S., Faust, K. *Social Network Analysis: Methods and Applications*. New York: Cambridge University Press; 1994.
- Weisner C, Delucchi K, Matzger H, Schmidt L. The role of community services and informal support on five-year drinking trajectories of alcohol dependent and problem drinkers. *Journal of Studies on Alcohol*. 2003; 64(6):862–873. [PubMed: 14743951]
- Zlotnick C, Shea MT, Begin A, Pearlstein T, Simpson E, Costello E. The validation of the Trauma Symptom Checklist-40 (TSC-40) in a sample of inpatients. *Child Abuse Neglect*. 1996; 20:503–510. [PubMed: 8800525]
- Zywiak WH, Longabaugh R, Wirtz PW. Decomposing the relationships between pretreatment social network characteristics and alcohol treatment outcome. *Journal of Studies on Alcohol*. 2002; 63(1):114–121. [PubMed: 11925053]
- Zywiak WH, Neighbors CJ, Martin RA, Johnson JE, Eaton CA, Rohsenow DJ. The important people drug and alcohol interview: Psychometric properties, predictive validity, and implications for treatment. *Journal of Substance Abuse Treatment*. 2009; 36(3):321–330. [PubMed: 18835677]

Table 1**Descriptive Characteristics (N = 172)**

Demographics		
Race	Non Black (0)	78 (45.3%)
	Black (1)	94 (54.7%)
Education	Elementary Junior High (1)	81 (47.1%)
	Higher than GED/High (0)	91 (52.9%)
Marital Status	Married	16 (9.3%)
	Widowed/Separated/Divorced	52 (30.2%)
	Never married	104 (60.5%)
Age M (SD) [Range]		37.7 (10.2) [19–63]
Income Sources	On Jobs/Other (0)	53 (30.8%)
	Welfare/Gov. Assistance (1)	119 (69.2%)
Legal Involvement	Legal Involvement (Yes) (1)	80 (46.5%)
	Legal Involvement (No) (0)	92 (53.5%)
Clinical characteristics		
Abstinent Self-Efficacy M (SD) [Actual Range]		73.2 (21) [20–100]
Dual Disorder status	Dual Disorder (1)	133 (77.3%)
	Non Dual Disorder (0)	39 (22.7%)
Trauma Symptom Checklist M (SD) [Actual Range]		47.85 (22.0) [0–101.5]
Treatment modality	Residential treatment (0)	75 (43.6%)
	Intensive outpatient treatment (1)	97 (56.4%)
Duration of Substance Use Disorder (Year) M (SD) [Range]		7.1 (7.4) [0–38]
Dependent Variable:		
Discharge Disposition	Completed	91 (52.9%)
	Incomplete	81 (47.1%)
Independent Variables (Networks):		
Level of Informal concrete support		
1st quartile (25%)	(Informal Concrete Support 1)	52 (30.2%)
2nd quartile (26–50%)	(Informal Concrete Support 2)	39 (22.7%)
3rd quartile (51–75%)	(Informal Concrete Support 3)	44 (25.6%)
4th quartile 76%)	(Informal Concrete Support 4)	37 (21.5%)
Formal concrete support (higher than average percentage of treatment related alters concrete support)		48 (27.9%)
Partner sobriety support (“almost always” available for sobriety support)		77 (44.8%)
Partner Alcohol or Drug Use (at least one partner was rated as “alcohol” or “drug” use)		41 (23.8%)

Table 2

Correlation between discharge disposition (outcome) and other variables (N = 172)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Discharge Disposit	1.00	-.01	-.02	.10	-.07	.25**	-.05	-.02	.08	-.13	-.07	-.03	.06	.01	.13	.11	-.02	.02	.09	.16*
2. Informal Concrete Support 1	1.00		-.36**	.39**	-.35**	-.24**	-.01	-.19*	-.02	.07	.11	-.08	-.02	-.21**	.00	.04	.03	.01	.06	-.01
3. Informal Concrete Support 2	1.00			.32**	-.28**	.07	.15*	.04	-.07	.02	-.01	.06	-.16*	-.06	.11	-.02	.03	-.08	.01	.00
4. Informal Concrete Support 3	1.00				-.31**	.17*	-.05	.06	.03	-.01	-.03	.03	.03	.21**	.01	-.09	.04	-.14	-.04	.08
5. Informal Concrete Support 4	1.00						-.09	.10	.07	-.09	-.09	.00	.15	.08	-.12	.07	-.11	.22**	-.04	-.07
6. Formal Concrete Support	1.00						-.10	.01	.12	.18*	.15*	-.05	.20**	.02	.02	.07	.02	-.11	.24**	.24**
7. Partner AOD users	1.00							.29**	.04	.04	.11	.05	.03	-.01	.08	.12	-.04	.15	.05	.09
8. Partner Sob Support	1.00								.00	-.06	.07	.11	.13	.07	.03	-.04	.04	.15*	.09	.10
9. Self-Efficacy	1.00									-.03	-.03	.13	.01	.09	.11	.00	-.01	-.05	.15*	-.05
10. Trauma Sym	1.00										.34**	-.01	-.04	-.02	.05	-.03	.06	-.08	.18*	.08
11. Dual Disorder	1.00											.06	.13	-.16*	.12	.19*	.09	-.11	.24**	.20**
12. Trt Modality	1.00												1.00	-.01	.11	-.05	-.05	.08	-.03	-.06
13. Age	1.00													.26**	-.18*	.31**	.01	-.01	.36**	.40**
14. Race	1.00													1.00	-.11	-.16*	.15*	-.11	-.09	.16*
15. Legal Involvement	1.00														1.00	-.01	-.14	.02	-.03	-.06
16. Education	1.00															1.00	-.15*	.02	.14	.07
17. Income Source	1.00																1.00	-.05	-.08	.11
18. Married	1.00																	1.00	-.21**	-.08
19. Separated	1.00																		1.00	.22**
20. Duration SUD	1.00																			1.00

*
p < .05**
p < .001

Table 3

Hierarchical Logistic Regression for Discharge Disposition by Concrete Support (N = 172)

Model	1			2			3			4		
Variables	OR	(95% CI)	p	OR	(95% CI)	p	OR	(95% CI)	p	OR	(95% CI)	p
Trauma Symptom	.99*	(.91–.999)	.05	.98**	(.97–.996)	.01	.98*	(.97–.999)	.05	.98**	(.96–.99)	.01
Legal Involvement	1.99*	(1.05–3.77)	.03	1.98*	(1.03–3.83)	.04	1.95*	(1.02–3.73)	.04	1.94	(.99–3.75)	.052
Education	1.58	(.83–2.98)	.16	1.49	(.77–2.86)	.24	1.67	(.87–3.20)	.12	1.52	(.79–2.94)	.21
Duration of SUD	1.05**	(1.01–1.09)	.01	1.04	(1.00–1.08)	.08	1.05*	(1.01–1.09)	.02	1.04	(.99–1.08)	.10
Partner AOD users	.67	(.30–1.47)	.32	.82	(.36–1.88)	.64	.66	(.29–1.49)	.32	.81	(.35–1.90)	.63
Partner Sob Support	.91	(.47–1.77)	.78	.85	(.42–1.69)	.64	.92	(.46–1.82)	.81	.90	(.44–1.84)	.78
Formal Con Support				3.42**	(1.54–7.58)	< .001				3.59**	(1.56–8.26)	<.001
Informal Con Support2							.97	(.40–2.33)	.94	.71	(.28–1.81)	.48
Informal Con Support3							1.47	(.62–3.50)	.38	1.00	(.40–2.50)	1.00
Informal Con Support4							.78	(.31–1.95)	.59	.58	(.22–1.55)	.28
Model X ²	15.49*		0.02	25.33**		< .001	17.39*		.04	27.09**		<.001
						(M2–M1)			(M3–M1)			(M4–M2)
–2Log likelihood ratio	222.37			212.53			220.47			210.77		
df	6			7			9			10		
–2log likelihood ratio				9.84**		.002	1.9		.59	1.76		.62
Nagelkerk R ²	.12			.18			.13			.20		

Note. Discharge Disposition (1 = completed), Legal involvement (1 = yes), Education (1 = less than high), Partner AOD users (1 = yes partner AOD user), Partner Sob support (1 = yes provide sobriety support)

* p .05

** p .01

*** p < .001