THE INFLUENCE OF TREATMENT MOTIVATION, TREATMENT STATUS AND
SOCIAL NETWORKS ON PERCEIVED SOCIAL SUPPORT OF WOMEN WITH
SUBSTANCE USE OR CO-OCCURRING DISORDERS.

by

LAUREN DeMARCO STEVENSON

Submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

Dissertation Advisor: Dr. Elizabeth Tracy

Mandel School of Applied Social Sciences

CASE WESTERN RESERVE UNIVERSITY

May, 2009
We hereby approve the thesis/dissertation of Lauren DeMarco Stevenson
candidate for the PhD degree *.

(signed) Elizabeth M. Tracy (chair of the committee)
_____________ David E. Biegel

_____________ Kathryn Adams

_____________ Sonia Minnes

(date) February 24, 2009

*We also certify that written approval has been obtained for any proprietary material
 contained therein.
Dedication

To my brother, Matthew
# Table of Contents

List of Figures ................................................................................................................. 6

Acknowledgements ........................................................................................................... 7

Abstract ............................................................................................................................. 8

Chapter 1: Scope of the Problem ..................................................................................... 10

   Introduction ..................................................................................................................... 10

   Purpose of the Current Study ..................................................................................... 11

   The Social Welfare Problem ...................................................................................... 12

   The Rationale for Focus on Women .......................................................................... 15

   Less Severe Mental Disorders and Substance Use Disorders ................................... 20

   Social Networks ........................................................................................................... 23

   Substance Use, Social Support and Treatment Status ............................................. 25

   Social Support and Substance Use Initiation ......................................................... 26

   Treatment Motivation, Social Support, and Substance Abuse Treatment ............. 27

   Social Networks, Support, and Substance Abuse Treatment .................................. 29

   Social Support, Social Networks and Mental Disorders ....................................... 32

   Social Support, Social Networks, and Co-Occurring Substance Use and Mental Disorders ............................................................................................................. 34

   Gaps in Research ........................................................................................................ 36

   Statement of the Problem .......................................................................................... 38

   Research Questions .................................................................................................... 38

Chapter 2: Conceptual Framework and Literature Review ............................................ 40

   Historical Development of Social Support as a Concept ...................................... 40
<table>
<thead>
<tr>
<th>Models of Social Support</th>
<th>42</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring Social Support</td>
<td>44</td>
</tr>
<tr>
<td>Types of Social Support</td>
<td>46</td>
</tr>
<tr>
<td>Negative Social Support</td>
<td>47</td>
</tr>
<tr>
<td>Support for Recovery</td>
<td>48</td>
</tr>
<tr>
<td>Treatment Motivation and Social Networks</td>
<td>50</td>
</tr>
<tr>
<td>Treatment Status and Social Networks</td>
<td>52</td>
</tr>
<tr>
<td>Co-Occurring Mental Disorders and Social Networks</td>
<td>54</td>
</tr>
<tr>
<td>Social Networks and Social Support / Support for Recovery</td>
<td>55</td>
</tr>
<tr>
<td>Treatment Motivation and Social Support / Support for Recovery</td>
<td>59</td>
</tr>
<tr>
<td>Treatment Status and Social Support / Support for Recovery</td>
<td>60</td>
</tr>
<tr>
<td>Conceptual Model</td>
<td>62</td>
</tr>
<tr>
<td>Research Questions and Hypotheses</td>
<td>63</td>
</tr>
</tbody>
</table>

Chapter 3: Methodology .......................................................... 67

Parent Study Design ............................................................... 67

Sampling for Parent Study ...................................................... 67

Purpose of Parent Study ......................................................... 68

Eligibility for Parent Study .................................................... 68

Recruitment Sites ................................................................... 69

Study Measures ........................................................................ 71

Data Analysis .......................................................................... 79

Chapter 4: Findings ................................................................... 92

Sample Characteristics ......................................................... 92
List of Tables

Table 1: Descriptive Statistics ............................................................... 123
Table 2: Current Substance Use Diagnoses ............................................. 124
Table 3: Current and Lifetime Mental Disorder Diagnoses ...................... 125
Table 4: Number of Current and Lifetime Mental Disorders .................... 126
Table 5: Social Network Composition ..................................................... 127
Table 6: Study Scale Descriptives .......................................................... 128
Table 7: Correlation Matrix for Independent and Predictor Variables ........ 129
Table 8: Bivariate Correlation for Research Questions 1 & 2 .................... 130
Table 9: Correlations for Covariates ...................................................... 131
Table 10: Summary of OLS Regression Model for Variables Predicting Perceived Social Support (Research Question 1) ......................... 132
Table 11: Summary of OLS Regression Model for Variables Predicting Perceived Social Support (Research Question 2) .......................... 133
Table 12: Summary of OLS Model: Step 1. Relationship between Independent Variables and Dependent Variable, Perceived Social Support (Research Question 3) ........................................ 134
Table 13: Bivariate Correlations (Research Question 3) ............................ 135
Table 14: Summary of Hierarchical Regression Model – Percent of Family/Household Members as a Moderator between Predictors and Overall Perceived Social Support (Research Question 3: Hypothesis 19) ...... 136
Table 15: Summary of Hierarchical Regression Model – Percent of Members who Support Sobriety as a Moderator between Predictors and Overall Perceived Social Support (Research Question 3: Hypothesis 20) ...... 137
Table 16: Summary of Hierarchical Regression Model – Percent Provide Critical Support as a Moderator between Predictors and Overall Perceived Social Support (Research Question 3: Hypothesis 21) ............... 138
Table 17: Summary of Hierarchical Regression Model – Percent of Members who Use Substances as a Moderator between Predictors and Overall Perceived Social Support (Research Question 3: Hypothesis 22) ...... 139

Table 18: Summary of Hierarchical Regression Model – Percent Members who are Professionals as a Moderator between Predictors and Perceived Social Support (Research Question 3: Hypothesis 23) ...................... 140
List of Figures

Figure 1: Conceptual Model ..........................................................................................63

Figure 2: Mediation .......................................................................................................87

Figure 3: Moderation .....................................................................................................89

Figure 4: Revised Conceptual Model ......................................................................... 120

Figure 5: Interaction Between Treatment Motivation and Percent of Substance Users Within Women’s Social Networks (Research Question 3) ............... 141

Figure 6: Interaction Between Treatment Motivation and Percent of Professionals Within Women’s Social Networks (Research Question 3) ....................... 142

Figure 7: Interaction Between Treatment Status and Percent of Professionals Within Women’s Social Networks (Research Question 3)......................... 143
Acknowledgements

Without the guidance and support of many people this journey would not have been possible. I would like to thank my dissertation committee for their time and expertise: Drs. Elizabeth Tracy, David Biegel, Kathryn Adams and Sonia Minnes. A special thank you to Elizabeth Tracy for serving as my committee chair and providing not only the data for this study but guidance, support and encouragement along the way. To David Biegel for his commitment to my growth as a researcher.

To Dr. Pranab Chatterjee for his ongoing support and mentoring over the past several years and his continued belief in me. To Susan Smith for her friendship and for editing this paper. To Thomas Williams and the staff at the Alcohol and Drug Addictions Services Board who have provided me a new perspective and taught me a great deal about the research process.

To the members of my cohort (2005) who have been there every step of the way with laughter and friendship. Evelyn, Ken, Lance, Malikah, Mandy, Moon, Scott and SungHee, you have all played a special and important part in my life and throughout this journey. A special thanks to SungHee for her continued friendship, support and hours spent sitting next to me reading and writing.

To my mother, father, brother and grandmother for their continued support and for always encouraging me to pursue my dreams, because of you I have always believed I could do anything I wanted. To my husband John, and Bailey who have been supportive every minute of this journey and saw the finish line even when I could not.

Finally, to the women who participated in this study, for their courage to share their story and to seek recovery.
The Influence of Treatment Motivation, Treatment Status and Social Networks on Perceived Social Support of Women with Substance Use or Co-Occurring Disorders.

Abstract

by

LAUREN DeMARCO STEVENSON

This study examined predictors of perceived social support and support for recovery of women with substance use disorders or co-occurring substance use and mental disorders. The sample consisted of 136 adult women; 86 women were engaged in inpatient and outpatient substance abuse treatment programs, and 50 women were recruited from a study of mothers with cocaine exposed infants.

The women in the study were predominantly African American (82.4%) and of low income status with 80% of the women reporting an annual family income below $15,000. All of the women had a current substance use disorder and 77 (56.6%) of the women also had a co-occurring mental disorder including: Major Depression, Post Traumatic Stress Disorder, Mania, Generalized Anxiety Disorder, Hypomania, and Dysthymia. On average, women reported having a social network comprised of 10.73 members.

A significant relationship was found between critical members (those who provide negative support) within women’s social networks and perceived social support, with a higher percent of critical network members predicting lower perceived social support. Perceived social support scores were also significantly lower for women with a co-occurring mental disorder. Indirect relationships were found for women’s perceived social support. The percent of professionals within women’s social networks moderated
the relationships between women’s treatment motivation and treatment status with perceived social support. The percent of substance users in women’s networks moderated the relationship between treatment motivation and perceived social support.

A sub sample analysis of 86 women in substance abuse treatment explored predictors of support for recovery. A significant relationship was found between the percent of members who support sobriety and support for recovery. This finding provides construct validity for the support for recovery measure.

Practice implications as well as directions for future research are included in this study. Findings suggest that clinicians should work with social network members and clients on improving communication and eliminating critical support to improve social support. Future research should focus on the impact of social relationships on treatment outcomes.
Chapter One

Introduction

A significant number of American women meet the criteria for current or lifetime substance abuse or dependence (Office of Applied Studies, 2004). In addition, approximately two million US women meet the criteria for co-occurring substance use and mental disorders. While substance use and mental disorders are complex individually, the combination or co-occurrence of both presents an even greater challenge for clients as well as for treatment and service providers. Although these disorders are taxing for both men and women, women present with unique manifestations of substance use and co-occurring disorders, which require exploration of gender differences and development of gender specific treatment (Brady & Back, 2008; Gearon, Nidecker, Bellack, & Bennett, 2003). For example, women experience improved program-related outcomes and report more satisfaction with treatment when they receive services addressing their needs as women (e.g. child-related issues including custody, day care, pregnancy and other gender-specific treatment issues such as social support and relationships) (Rowan-Szal, Chatham, Joe, & Simpson, 2000).

Research has documented the important role of social support in relation to both mental and substance use disorders. Individuals with either mental or substance use disorders have been found to have limited personal networks for support (El-Bassel, Chen, & Cooper, 1998). Those with co-occurring substance use and mental disorders have also been found to have limited personal networks for support (Dickey & Azeni, 1996). Individuals’ social networks and social support have an influence on substance use and experience of mental disorders, as well as treatment and recovery for both
substance use and mental disorders (Bandura, 1977; Gainey et al., 1995; Gearon et al., 2003). The social networks of individuals with substance use disorders or mental disorders have been found to differ from those of individuals without such disorders. Women in particular are influenced by their social networks both positively and negatively (Antonucci, 1985). For women who abuse substances, their social networks often consist primarily of substance-using members as they isolate themselves from those who are not users (Davis & DiNitto, 1998; Trumbetta, Mueser, Quimby, Bebout, & Teague, 1999). This is important because support specific to recovery, a type of support typically provided by non-using social network members, has been found to have the greatest impact on abstinence from substance use (Davis & Jason, 2005).

This chapter will discuss the purpose of this study and its relevance to social welfare. The rationale for focusing on women with substance use disorders and co-occurring mental disorders of depression, post traumatic stress disorder (PTSD), anxiety, mania, hypomania, and dysthymia will also be discussed. Additionally, the relationship between treatment motivation, treatment status and substance use will be discussed. Finally the research questions addressed by this study will be introduced.

*Purpose of the Current Study*

The purpose of this study is to examine predictors of perceived social support and support for recovery for women with substance use disorders or co-occurring substance use and mental disorders. The predictive role of social network composition and characteristics, treatment motivation, treatment status and the co-occurrence of a mental disorder will be explored. Understanding the impact of these factors will both fill gaps in existing knowledge and inform substance abuse treatment programming. This study
seeks to provide insight into what influences women’s perceived social support, which may guide clinicians in developing individualized treatment for substance recovery. Support specific to recovery is particularly important for successful treatment and recovery and thus understanding influences of perceived social support can allow clinicians to focus treatment interventions.

In addition to exploring direct effects of variables of interest, this study will also explore the possible indirect effects of social network characteristics. Specifically the possibility of social network characteristics moderating and/or mediating the relationships between treatment motivation, treatment status, co-occurring disorders and the dependent variable, perceived social support, will be explored.

The Social Welfare Problem

Substance Use Prevalence

Substance use disorders are a significant public health and social welfare problem. The 2006 National Survey on Drug Use and Health (NSDUH) interviewed approximately 67,500 persons 12 years and older in the United States as part of their annual survey sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA, 2007). Results indicate that 22.6 million individuals 12 years or older in the US (9.2% of the population) met criteria for current or lifetime substance dependence or substance abuse, based on the Diagnostic and Statistical Manual – Fourth Edition (DSM-IV) criteria. The majority, 15.6 million, were using alcohol only, while 3.2 million met criteria for dependence or abuse of both alcohol and illicit drugs and the remaining 3.8 million met criteria for illicit drugs only.
An estimated 6.5 million adult women in the US have a current substance abuse or dependence disorder (OAS, 2004). The US Department of Health and Human Services National Institute on Alcohol Abuse and Alcoholism reports that 5.3 million American women “drink in a way that threatens their health, safety, and general well-being” (USDHHS, 2005, p.6). Results from the Epidemiological Catchment Area Study (ECA) conducted in the early 1980s with 20,219 adults 18 years and older found that 13.8 percent of the US adult population met lifetime diagnostic criteria for alcohol abuse or dependence (Helzer, Robins, & McEvoy, 1987). Women however, had significantly lower lifetime and current rates of alcohol abuse and dependence than men; 4.57 percent of women and 23.83 percent of men met criteria for lifetime substance use disorders and 2.16 percent of women and 11.90 percent of men met criteria for current substance use disorders.

Mental Disorder Prevalence

Mental disorders are also a significant public health and social welfare problem. Data from the SAMHSA-sponsored NSDUH survey from 2006 estimated that 24.9 million adults age 18 years and older (11.3% of the U.S. population) were classified as having serious psychological distress (nonspecific psychological distress) in the previous year. This represents 13.7% of adult women and 8.7% of adult men in the US (SAMHSA, 2007). The National Institutes of Health (NIH) reports that based on the 2004 US census of adults 18 years and older, 57.7 million have a diagnosable mental disorder (US Census Bureau, 2005).

Results from the ECA estimate that 44 million adults (22-23% of the population) have a diagnosable mental disorder (Surgeon General, 1999). Conservative estimates
indicate that approximately 19 percent of the U.S. adult population has a mental disorder without a co-occurring substance use disorder (Surgeon General, 1999). Differences do exist in the types of mental disorder experienced by men and women and will be discussed in further detail within this chapter.

**Co-Occurring Substance Use and Mental Disorder Prevalence**

An estimated three percent of the US population has co-occurring addictive disorders (substance use disorders) and mental disorders (Surgeon General, 1999). Other estimates indicate that co-occurring disorders affect 10 million yearly (Hamilton, 2004). Results from the ECA indicate that the prevalence for a lifetime occurrence of substance use disorder was higher for those with some type of mental disorder compared with the prevalence in the general population without a mental health diagnosis. Of those in the general population, 16.7% had a lifetime substance use disorder, while 47% of those with schizophrenia, 32% with a mood disorder and 23.7% of those with an anxiety disorder reported a lifetime prevalence of a substance use disorder (Kessler, Nelson, McGonagle, Edlund, Frank, & Leaf, 1996). Other reports indicate that those with schizophrenia were 4.6 times more likely and those with bipolar disorder 6.6 times more likely to also have a co-occurring substance use disorder (Regier et al., 1990). The results of the ECA also show that there are distinct differences in the prevalence of substance use disorders in those with mental disorders. A high rate of co-occurrence of alcohol or drug use and psychiatric disorders has been identified, specifically within the population with severe mental illness (Mueser & Kavanagh, 2004; Regier et al., 1990).

The National Comorbidity Survey (NCS), from the early 1990’s, found strong relationships between substance use and mental disorders. The National Alliance on
Mental Illness (NAMI) reports that based on the NCS, 42.7 percent of those with a current addictive disorder have a mental disorder and 14.7 percent of those with a current mental disorder have an addictive disorder (NAMI, 2008). Their estimates of the occurrence of substance abuse among those with severe mental illness are even higher, around 50 percent.

The prevalence of co-occurring substance use and mental disorders is important, particularly when discussing the course of recovery and treatment. Warren, Stein and Grella (2007) emphasize that “individuals with co-occurring substance use and psychiatric disorders have a more severe clinical course and poorer outcomes than do individuals with one disorder” (p. 267). Substance use disorders are prevalent, particularly with those who have a mental disorder.

In 2002 The National Survey on Drug Use and Health (NSUDH) estimated that almost two million women (18 years and older) had co-occurring substance use and serious mental disorders (OAS, 2004b). In fact, women represented almost half (48%) of all those with co-occurring disorders from the 2002 survey. Therefore it is important to study both substance use disorders and co-occurring substance use and mental disorders.

*The Rationale for Focus on Women*

There are important differences between males and females with addiction disorders from both biological and psychosocial perspectives which influence the course of addiction, treatment, and co-occurrence of mental disorders (Brady & Back, 2008). Women often exhibit a telescoping effect when exposed to substances, meaning that the effects of substances on women, such as becoming intoxicated after drinking, occur faster for women than for men. This telescoping effect also helps explain the course women’s
substance use takes as the time from initial substance use to abuse or dependence is much shorter than for men (Brady & Back, 2008; Sannibale & Hall, 2001). The telescoping effect is evident in Sannibale and Hall’s (2001) work looking at 150 men and 150 women with lifetime alcohol dependence diagnosis from three settings: substance use treatment, a correctional setting and the community. The women in the study started drinking on average six years later than the males in the study, but developed dependence severity more quickly and ended up having more severe substance use disorders overall. The study also revealed that initiation into drinking at a young age and co-occurring psychological disorders, such as anxiety disorders, were more common for women and most predictive of alcohol use disorders.

Men are more likely to demonstrate a substance use disorder than women (Brady & Back, 2008); however there are gender differences present for those with substance use disorders. Female alcoholics have death rates related to alcohol, including alcohol-related accidents, physical health complications and suicide, which are 50 to 100 percent higher than those of male alcoholics (USDH&H, 2005). Women have higher rates of psychiatric comorbidity overall than men and present with either mood or anxiety disorders (Sannibale & Hall, 2001; Zilberman, Tavares, Blume, & el-Guebaly, 2003) or anxiety and depressive disorders (Brunette & Drake, 1998; Milani, Parrott, Turner, & Fox, 2004). Another study by Gearon and colleagues (2003) looked at 52 men and women with co-occurring severe mental illness and substance use disorders. Findings revealed that women with substance use disorders had higher rates of negative affect and a diagnosis of a depression or anxiety disorder that predated their substance use disorder than their male counterparts. Women in general, regardless of substance use status,
exhibit higher prevalence of depression and anxiety-related mental disorders, while males show higher rates of antisocial personality disorders (Brady & Back, 2008; Sannibale & Hall, 2001).

These findings are similar to what was found in Kessler and colleagues’ (2003) examination of the NCS in which women with substance use disorders (mostly alcohol disorders) were found to be more likely to have diagnoses of post traumatic stress disorder (PTSD) or social phobia than men. Major depressive disorder was also 1.7 times more likely to occur in American women than men regardless of substance use disorder status according to this national sample of men and women. The NCS results indicate that there is a higher rate of comorbidity for women than for men, presenting more complex issues for substance use treatment for women than for men.

DiNitto, Webb and Rubin (2002) report that, as is the case with substance use disorders, little research has been conducted investigating gender differences among those with co-occurring disorders. What literature that does exist reports a few important areas where women differ from men with co-occurring disorders. Women are more likely to have children, or to have more children than men, when both groups had co-occurring disorders, a responsibility also more prevalent for woman with a substance use disorder only (Brunette & Drake, 1997; Mowbray, Ribisl, Soloman, Luke, & Kewson, 1997).

In their examination of comorbidity and sex differences within existing literature, Zilberman and colleagues (2003) have concluded that women who present with depression and alcoholism often have more severe depressive symptoms and less severe alcoholism symptoms. This is the opposite of men with the same two co-occurring
disorders as they present with more severe alcoholism and less severe depression than women. These findings suggest that even when both sexes present with similar disorders, differences exist impacting the experience of symptoms, as well as treatment and recovery.

In Gearon and colleagues’ (2003) work, cocaine-abusing women report using as a response to depression and family pressures. Those with severe mental illness may utilize drugs to alleviate negative affective states such as boredom, anxiety and even depression, or in some cases may use drugs to facilitate their social interactions. What is obvious is that “accumulating evidence indicates that substance use may begin and be maintained differently, have different medical and psychosocial consequences, and require different treatment interventions for women” (Gearon et al., 2003, 229).

Treatment is another realm in which women and men differ with regards to substance use and co-occurring disorders. Women are less likely to enter treatment for substance use disorders than men, which may be due to sociocultural factors such as stigma, socioeconomic factors like child care, a fear of child custody issues, incarceration, pregnancy, or a lack of integrated treatment to address mental health issues (Brady & Back, 2008). One difference between women and men with co-occurring disorders which was apparent upon entry into inpatient chemical dependency treatment in DiNitto, Webb and Rubin’s (2002) study was that women reported having more social and family problems than males. This is a finding reported previously in other work (Weiss, Martinez-Raga, Griffin, Greenfield, & Huford, 1997) and it emphasizes the need for attention to gender differences in social relationships which may impact treatment.
Kin networks including substance users are another area where gender specific investigations are important. Sannibale and Hall (2001) studied gender differences in kin networks of those with lifetime alcohol dependence. Findings show that women were two and a half times more likely to have female relatives with alcohol-related problems than men were. Similarly, males were two and a half times more likely to have male relatives with alcohol-related problems than women were. The findings identify a relationship between having a same-sex relative with an alcohol-related problem and client alcohol disorders.

The population of interest for this study, low-income women with substance use disorders or co-occurring substance use and mental disorders, is one that has been understudied. Low income women are at higher risk for mental and substance use problems. In a study of 436 low-income women conducted by Bassuk and colleagues (1998), women were three times more likely to have a diagnosis of PTSD or a drug use disorder than women in the general population from the NCS. They were also two times more likely to have a diagnosis of Depression or Alcohol Use Disorder than women in the general population. Overall two-thirds of the low-income women investigated had at least one lifetime diagnosis of a mental or substance use disorder. Although no causal relationship can be explained by this study, these findings indicate that income or socioeconomic status is a factor in both substance use disorders and mental disorders for women.

A good deal of research has focused on primarily or exclusively male samples (for example: Beattie & Longabaugh, 1999; Clark, 2001; Crotty & Kulys, 1985; Hardiman & Segal, 2003; Hamilton, Ponzoha, Cutler, & Weigel, 1989; Laudet, Magura,
Vogel, & Knight, 2000; Macdonald, Jackson, Hayes, Baglioni, & Madden, 1998; MacDonald et al., 2004). Despite a majority of the research focusing on male samples, gender differences have been discovered through research for substance use disorders, mental disorders, and co-occurrence of substance use and mental disorders. Treatment needs and outcomes have also been found to differ by gender. Therefore, it is important to conduct research focused on women.

Less Severe Mental Disorders and Substance Use Disorders

A majority of research on co-occurring substance use and mental disorders has focused primarily on severe mental illness and substance use disorders (for example: Bellack & Gearon, 1998; Fowler, Carr, Carter, & Lewin, 1998; Hellerstein, Rosenthal, & Miner, 2001; Mueser, Bellack, & Blanchard, 1992; Mueser & Kavanagh, 2004; Trumbetta, Mueser, Quimby, Bebout, & Teague, 1999). Even research on social networks or social support and mental illnesses has primarily focused on more severe mental illnesses (Cohen & Sokolovsky, 1978; Erickson, Beiser, & Iacono, 1998; Hamilton, Ponzoha, Cutler, & Wiget, 1989; Macdonald, Jackson, Hayes, Balioni, & Madden, 1998; Pickens, 2003; Randolph, 1998; Semple et al., 1997; Trumbetta, Mueser, Quimby, Bebout, & Teague, 1999).

The term severe mental disorder sometimes referred to as severe mental illness or serious mental illness refers to mental disorders which have more severe symptoms and are chronic. Major thought disorders including schizophrenia, schizophrenia spectrum and bipolar disorders are included in this category. The diagnosis, duration and disability lead to the distinction of disorders as severe or serious mental illnesses. Major depression and PTSD have sometimes been included in research addressing severe
mental illness and substance use disorders, but primarily schizophrenia and schizophrenia spectrum disorders have been the main focus.

Individuals who have a severe mental illness co-occurring with a severe substance use disorder fall into the quadrant category IV (CSAT, 2005). In this quadrant (IV), illustrated by CSAT (2005), individuals primarily receive treatment from state hospitals, the emergency room and the criminal justice system. This category includes the most severe and persistent mental disorders as well as the most severe and unstable substance use disorders. Individuals falling into this category require the most comprehensive services and benefit greatly from services integrating treatment for both their substance use and mental disorders.

The women in this study with co-occurring substance use and mental disorders fall into the third quadrant or category illustrated by CSAT (2005). This category includes individuals who have less severe mental disorders and more severe substance abuse disorders. Generally treatment for these individuals comes from the substance abuse system, as is the case with the women in this study. The mental disorders included in this category are more moderate than those in the fourth category and can often be treated within the substance abuse treatment system in collaboration with mental health treatment.

An alternative model provided by Singer, Kennedy and Kola (1998) provides four quadrants representing the combination of mental illness and substance use both ranging from low to high severity. Quadrant I combines chemical dependency (severe substance use disorder) with a major mental illness (most severe). This quadrant (I) is equal to category four described above and includes those with co-occurring severe or serious
mental and substance use disorders. The women in this study fall into quadrant II which combines chemical dependency and less severe mental illness where the chemical dependency is the primarily diagnosis. Again the women in this quadrant (II) are primarily served in substance use treatment service agencies and may or may not have any treatment from mental health treatment providers.

Approximately six percent of the U.S. adult population has a severe mental health diagnosis which translates into one in 17 Americans (Kessler, Chiu, Demler, & Walters, 2005). Approximately one in four American adults meet the requirements for a mental disorder (Kessler, Chiu, Demler, & Walters, 2005), or an estimated 57.7 million adults based on the 2005 U.S. Census (U.S. Census Bureau, 2005). While it is important to explore severe mental illness, other mental disorders occur more commonly (for example anxiety and depression) and should be the focus of research in order for advances to be made in policy and practice for individuals with other less severe mental disorders.

Wasserman, Havassy and Boles (1997) found that women with substance use disorders may be likely to have a diagnosis of PTSD, more so than substance abusing males. This combination of substance use disorders and PTSD is reported to be highly prevalent (Najavits, 2002) and challenging for clinicians working with individuals with these co-occurring disorders. The co-occurrence of substance use and PTSD has been the focus of some research in the past decade, including an investigation of differences between those with just PTSD and those with co-occurring PTSD and substance use disorders (Najavits, Weiss, & Shaw, 1999).

In a study of homeless women, those with a current substance use disorder had lower psychological well-being, lower self-esteem and higher rates of depression and
anxiety than those with a lifetime substance use disorder or who were non-users (Nayamthi, Keenan, & Bayley, 1998). Mueser and Kavanagh (2004) report that, “the large majority of people with comorbid psychiatric and alcohol use disorders have an anxiety or affective disorder” (p. 139). Although they recognize the prevalence of less severe mental disorders, these authors emphasize more severe diagnoses of antisocial personality disorder, schizophrenia and bipolar disorders as co-occurring with alcohol and drug use. Still, the presence of affective and anxiety disorders are higher for those with substance use disorders than for the general population without substance use disorders. Women are more likely to experience anxiety and affective disorders than antisocial personality disorders, which are more likely to be experienced by men.

Overall a small number of studies have looked at less severe mental disorders, particularly co-occurring with substance use disorders. Studies have shown that women with substance use disorders are more likely to experience a co-occurring less severe mental disorder. It is of particular importance to focus research on women with substance use and co-occurring less severe mental disorders.

**Social Networks**

The term social network, often referred to as social support network, has been utilized to describe a variety of concepts. In some cases social support and social network are used interchangeably in reference to the same concepts. For the purpose of this study, social networks and social support will represent different concepts and will be conceptualized in this chapter as well as in chapter two.

Whittaker (1983) describes a social support network as “a set of interconnected relationships among a group of people that provides enduring patterns of nurturance (in
any and all forms) and provides contingent reinforcement for efforts to cope with life on a day-to-day basis” (p.29). Garabarino (1983) also describes social support networks as a network of mutual exchanges in which resources are exchanged.

Maguire (1983) describes networking as “a purposeful process of linking three or more people together and of establishing connections and chain reactions among them” (p. 13). Maguire further explains that social networks are important in the process of maintaining one’s social identity. Because social networks provide social identity maintenance as well as a support system, those with smaller social networks or even those with less dispersed networks may be more susceptible to negative effects of daily hassles. Issues such as the density of one’s network, including the amount of contact and the proximity of an individual with the members of their network, impact the amount of support one receives or perceives to be receiving.

Interactions between people are a common theme in most definitions of social networks. How one examines social networks can differ. For example, social networks can be defined by the outcomes which result from their presence, or one can focus on the structure of the social network (Biegel, Shore, & Gordon, 1984). Often social network characteristics (such as size and composition) have been examined in the context of severe mental illness (Becker, Albert, Angermeyer, & Thornicroft, 1997). A consistent finding has been that those with schizophrenia have smaller social networks consisting mainly of family or kin (Macdonald, Hayes, & Baglioni, 2000). Further examples will be discussed later in the section on social support, social networks and mental disorder within this chapter.
Research has shown similarly smaller social networks for women with substance use disorders and those with co-occurring disorders (El-Bassel, Chen, & Cooper, 1998; Savage & Russell, 2005). Macdonald and colleagues (2000) compared individuals with early psychosis with a matched control group without a mental disorder, and found a significant difference in the size of their social networks as well as the number of family, friends and acquaintances identified as part of their social networks. Specifically those with early psychosis reported an average network size of 3.69 members while those in the matched comparison group reported 5.31 members.

Research on the social networks of individuals with substance use and mental disorders does exist. Many researchers have looked at the size and composition of these social networks but have not explored the relationship of social networks with treatment status, motivation for treatment, and recovery. Findings have shown differences in network size for those with severe mental and substance use disorders (Macdonald, Hayes, & Baglioni, 2000).

Substance Use, Social Support and Treatment Status

Social support in scientific research became a focus in the mid-1970s as a connection between health and social relationships (House, Landis, & Umberson, 1988). Social support is an important issue during treatment for and abstinence from substance use. Social support can come from family, friends and professionals and can have strong influences on whether an individual exits or remains in the substance abuse culture. As presented in more detail in chapter two, research on social support, social networks and substance use has predominantly focused on how positive social support or interactions affect substance abuse treatment (Gainey, Peterson, Wells, Hawkins, & Catalano, 1995).
Research indicates that social networks, representative of social support, are involved in the process of socialization and can influence behaviors and contribute to the initiation of, use of, and abstinence from substance use (Bandura, 1977; Brofenbrenner, 1979; Gainey et al., 1995).

**Social Support, Social Networks and Substance Use Initiation**

For many substance-using women, their social networks are responsible for or contribute to their introduction to substance use and the substance use culture. The same social networks then may encourage or facilitate continued substance use. There are “negative” aspects of social networks to be considered, particularly when exploring an individual’s substance use initiation.

Gender differences exist in the relationship between social support, social networks and substance use initiation. Women may enter the drug subculture and substance abuse in a different manner than men, which influences their support network. Trulsson and Hedin (2004) describe young girls being introduced by male drug-dealing intimate partners to the drug subculture and drug use. Gearon and colleagues (2003) also describe women initiating and maintaining drug use differently than men, specifically that they are more likely to report having drugs given to them by a significant other or using sex to trade for drugs. In some cases they also report that they may end up in codependent relationships where all social support is attached to the drug subculture, making recovery extremely difficult.

Social networks and peer groups have been identified as large influences on drug use (and cigarette smoking) of adolescents as well as risk-taking behavior in general which is highly influenced by social learning and peer pressure (Pearson & Michell,
Friends are identified as drug-using partners by women in Gearon and colleague’s (2003) study and money supplied by women’s immediate family is often utilized to purchase drugs. Overall social networks and social support have an impact on the initiation of substance use and the course of substance use, in addition to the process of substance use recovery.

*Treatment Motivation, Social Support, and Substance Abuse Treatment*

Treatment motivation is a multidimensional concept often divided into stages which can be thought of as readiness for change related to substance-use behavior (Pelissier & Jones, 2006). Pelissier and Jones identify four stages of treatment motivation that are consistent with the transtheoretical model (Prochaska & Velicer, 1997): precontemplation, contemplation, action and maintenance. This model includes motivation from the precontemplation phase when an individual is unaware of their problem to the maintenance phase when they work to prevent relapse.

Similar to other concepts used in this study, treatment motivation has varying definitions resulting in some confusion its conceptualization (Drieschner, Lammers, & van der Staak, 2004). For the purpose of this study, treatment motivation is conceptualized as three stages or components: problem recognition, desire for help and treatment readiness (Knight, Holcom, & Simpson, 1994). Further explanation of the measurement of treatment motivation is described in chapter three. Treatment motivation is often assessed to determine how prepared one is for treatment or how likely one is to seek treatment as well as their resistance to treatment which includes their skepticism of the benefits of substance abuse treatment (Longshore & Teruya, 2006).
Motivation has been viewed primarily as a client attribute when discussing motivation in relation to substance use treatment and motivation is responsible for success or failure in treatment (Miller, 1985). Clients who have chosen to enter treatment and appear to have “surrendered” are those perceived as motivated while those who deny their substance use or resist treatment are not viewed as motivated (Miller, 1985). Research has shown that the presence of the motivation to quit or motivation to change is a significant predictor of treatment use, as is the perceived need for treatment (Neff & Zule, 2002). Although motivation is often thought to be a major influence on treatment and recovery, motivation doesn’t guarantee one will pursue treatment or a change in substance use behavior (Simoneau & Bergeron, 2003). Motivation is often utilized to describe the likelihood of an individual entering treatment as well as successful treatment outcomes (Cahill, Adinoff, Hosig, Muller, & Pulliam, 2003; Longshore & Teruya, 2006).

More recently, conceptualization of treatment motivation emphasizes that interpersonal exchanges or interactions with individuals produce motivation (Miller & Sanchez, 1994). This represents a shift from the view that motivation is intrinsic and includes the idea that extrinsic factors can also impact motivation. The view of motivation as extrinsically influenced includes the role of social support on motivation. For example pressures from family and other social networks members can provide external motivation to seek substance abuse treatment and recovery (Cahill, Adinoff, Hosig, Muller, & Pulliam, 2003). Other external motivators include criminal just involvement as well as child welfare involvement where recovery and treatment are mandated or strongly suggested.
Motivation influences individuals’ decision to seek treatment and make changes in their substance use behavior. Although motivation is often considered to be an intrinsic force influencing individuals to seek treatment and recovery, motivation can be influenced by extrinsic forces as well. Social support is one extrinsic force influencing motivation. Relationships have also been found between treatment motivation with substance users. In one study positive correlations were found between depression and anxiety symptoms and higher treatment motivation and likelihood of entering treatment (Cahill, Adinoff, Hosig, Muller, & Pulliam, 2003). This finding further illustrates the impact that many factors have on individuals’ treatment motivation both intrinsically and extrinsically.

Social Networks, Support, and Substance Abuse Treatment

Social networks and social support have a significant impact on drug and alcohol usage. Successful treatment and recovery often includes the support of non-substance-using members who support abstinence. Researchers have demonstrated that quitting drugs long-term requires leaving the drug subculture (Biernacki, 1986) which in many cases means cutting off all existing social networks including friends and drug-abusing intimate partners (Trulsson & Hedin, 2004). The process of stopping drug abuse behavior and ending relationships is extremely stressful and requires the acquisition of new supportive relationships. Maintaining abstinence from substances is positively linked to social support that promotes abstinence (Davis & Jason, 2005).

One study explored perceived social support of women following their decision to end substance abuse. Support was reported to be received from one’s biological family and non-substance abusers (Trulsson & Hedin, 2004). However, many women also
reported that their siblings were critical (providing criticism) of them, blamed them for their situation and refused to provide support as they worked toward sobriety.

Upon entry into substance abuse treatment, individuals are typically asked to stop socializing with substance-using or enabling individuals; instead they are encouraged to form a social network of non-substance users and those who support recovery. In a study looking at the social networks and neighborhood characteristics of 342 injection drug users (cocaine and heroin), predictors of continued drug use over one year were explored (Schroeder, Latkin, Hoover, Curry, Knowlton, & Celentano, 2001). The results indicate that those with social networks, which include members who use drugs, were more likely to continue drug use. The continued drug use was significantly predicted by drug-using associates in the study’s model even when drug treatment was taken into consideration. The relationship between contact with drug users and continued drug use was reportedly strongest at the bivariate level. Those individuals who had the lowest financial support from their network had continued drug use.

Client’s perception of social support predicts improvements in psychosocial functioning during treatment (Chong & Lopez, 2005). In the case of the study conducted by Chong and Lopez (2005), individuals who had more substance-using friends at intake for residential substance abuse treatment showed more improvement in psychosocial functioning over the course of treatment. Family relationships were not found to be significantly predictive of psychosocial functioning. The influence of substance-abusing friends’ support appeared to be more influential than other sources of support.

Although in the previous study, network members who were substance users were related to improvements in psychosocial functioning during treatment, substance users
appear to have a negative impact on recovery in other studies. A study of 130 homeless persons with co-occurring diagnoses found that those who improved their Drug Use Scale (DUS) scores (a decrease in their score) at the 18 month follow-up reported fewer substance users in their baseline social networks than those with higher DUS scores (Trumbetta, Mueser, Quimby, Bebout, & Teague, 1999). Additionally, this study also found that having fewer substance users in one’s social network at baseline was also predictive of better substance abuse recovery rates at the 18 month follow-up. These findings further demonstrate that the composition of one’s social network is more important than size, as social network size was not predictive of either DUS or Alcohol Use Scale (AUS) scores or psychiatric symptoms in this study.

Laudet and colleagues (Laudet, Cleland, Magura, Vogel, & Knight, 2004) report that during the early stages of treatment, support for recovery is most important because individuals may not be completely convinced they want to abstain from substance use. A study conducted with 351 clients with co-occurring disorders in residential drug abuse treatment programs corroborates this finding (Warren, Stein, & Grella, 2007). The study found that improvement in substance use and mental health were predicted by the social support that clients had available to them when they entered treatment. Those who felt they had greater support demonstrated improved psychological status during and following treatment as well as less drug usage six months following treatment. While this study lacks a long-term follow-up period that may better assess the effect of social support on abstinence and recovery, positive associations between social support and recovery are encouraging and provide reason for future long-term investigations.
Research indicates that the presence of substance users within one’s social network does not always predict one’s stage of recovery (Macdonald et al., 2004). However, individuals with co-occurring disorders who were in the late stage of recovery perceive greater social support from non-substance-using network members than those in earlier stages of treatment. This study emphasizes the importance of support for recovery and the differences between individuals with substance use disorders and those with co-occurring substance use and mental disorders.

Relationships between social support and well-being (including substance use) have been established. Researchers and treatment providers have recognized the impact that network members can have on the process of recovery. While this relationship has been consistently found in research, the direction of the relationship has not always been consistent. What remains unknown is whether there are characteristics of social networks that are predictive of social support in relation to substance use disorders and treatment outcomes. More recent research has also identified the importance of support specific to recovery. Existing research has identified key concepts critical for successful recovery such as minimizing contact with substance users.

Social Support, Social Networks and Mental Disorders

In addition to studies of social support and substance use disorders, researchers have looked at social networks and their relationship to individual’s mental health, as well as diagnosed mental disorders. As D’Augelli (1983) explains, social networks “can be a powerful indicator of mental health, far superior to the ordinary personologically oriented models so common to discussions of coping and adaptation” (p. 71). Specifically the support and challenge provided by one’s social network are some of the
most important components related to individual’s mental health status. Investigations of individuals with serious and chronic mental disorders reveal that their social networks differ in composition including being smaller in size (Goldberg, Rollins, & Lehman, 2003; Pickens, 2003; Rosenfield & Wenzel, 1997) and involving different types of support as well as fewer reciprocal exchanges between the individual and their network (for those with schizophrenia) (Cohen & Sokolovsky, 1978; Macdonald, Hayes, & Baglioni, Jr., 2000; Semple et al., 1997), particularly when the individual is homeless (Segal, Silverman, & Temkin, 1997). Individuals with severe and chronic mental illness may also experience less complex social networks with more kin than those without chronic mental illnesses (Pickens, 2003; Rosenfield & Wenzel, 1997).

Women with severe mental disorders tend to have fewer friends reported as part of their social network and instead may have a network comprised mostly of family and professionals, compared to those without mental disorders (Macdonald, Hayes, & Baglioni, 2000). The number of friends reported in the network may also be an indicator of depressive symptoms. In a study of adolescents, Ueno (2005) found that those who reported more friends in their network had fewer depressive symptoms. Additionally, women with larger social networks are less likely to have a co-occurring mental disorder (Ueno, 2005).

Earlier work found that even within the same mental diagnosis, those with more negative mental health symptoms of schizophrenia had smaller networks than those with fewer negative symptoms (Hamilton, Ponzoha, Cutler, & Weigel, 1989; Macdonald, Jackson, Hayes, Baglioni, & Madden, 1998). In Macdonald and colleagues’ (1998) work however, despite differences in social network size based on negative psychiatric
symptoms (of schizophrenia), and larger networks present for individuals with more social skills, perceived social support was not impacted by size of network. Additional work by Macdonald and colleagues (2000) illustrated that although individuals with early-onset psychosis had smaller social networks, their perceived social support was similar to the comparison group without mental illness. Although social network size has been found to be related to severe mental disorders, size has not been consistently found to predict individual’s perceived social support.

*Social Support, Social Networks, and Co-Occurring Substance and Mental Disorders*

Social support and social networks have been found to differ for individuals with either a substance use disorders or a mental disorder compared to individuals without disorders. The same is true for those with co-occurring substance use and mental disorders. Similar findings have been found for those with co-occurring disorders as for those with either substance use or mental disorders.

An investigation of 310 persons with co-occurring substance use and mental disorders involved in self-help groups revealed that greater perceived social support (including that received from attendance of self help groups) was associated with a decrease of mental health symptoms as well as a decrease in substance abuse (Laudet, Magura, Vogel, & Knight’s, 2000). Other work has shown that those with substance use disorders and low social support had a higher probability of onset of mental illness, indicating a relationship between social support and mental health or symptomatology (Pevalin & Goldberg, 2003). The probability of recovery was also negatively impacted by lower social support in this sample.
In Trumbetta and colleagues’ (1999) study of homeless persons with co-occurring disorders, smaller social networks predicted heavier alcohol use over time and predicted erosion of network members who supported recovery. Women with co-occurring disorders are reported to have smaller social networks than those without co-occurring disorders. This is based on research on individuals with a severe mental health diagnosis (including schizophrenia, major depression and psychosis) in comparison with those who do not have a severe mental health diagnosis (Albert, Becker, McCrone, & Thornicroft, 1998; Crotty, & Kulys, 1985; Goldberg, Rollins, & Lehman, 2003; Macdonald, Hayes, & Baglioni, 2000).

An important relationship has been found between social support and depression in women with substance dependence (Dodge & Potocky, 2000). In a cross-sectional survey of 64 women who were in residential chemical dependency treatment, Dodge and Potocky (2000) found that social support moderated depression and there was a significant association between increased social support and increased self-esteem. Similarly, in a longitudinal study of 172 clients in addiction treatment (both male and female) Dobkin, Civita, Paraherakis and Gill (2002) found that those with low social support had higher symptoms of psychological distress and depression as well as more severe substance abuse at intake. These two studies illustrate the relationship between substance use and mental health symptoms.

Corrigan and Phelan (2004) found that in addition to the presence of social support, less satisfaction with support networks was also correlated with depression measures. This study examined a sample of 176 seriously mentally ill men and women and demonstrated a relationship between satisfaction with ones support system and
recovery measures. This work implies that the presence of support is not necessarily as important as one’s satisfaction with what social support one is receiving. Along these same lines, less perceived social support was related to an increase in depression among a sample of 1,192 men and women with substance use disorders, where an increase in depression was also related to increased alcohol use (Peirce, Frone, Russell, Cooper, & Mudar, 2000). These studies suggest that the perception of social support for individuals with substance use and co-occurring mental disorders is more important than the actual size of their network.

Research on co-occurring disorders and social support has followed many of the same patterns of research on substance and mental disorders, and focus primarily on size and composition of social networks. Some research has found relationships between co-occurring disorders and perceived social support. This relationship indicates that aspects of social networks besides their size and composition may be influential for women with substance use and co-occurring mental disorders.

Gaps in Research

This chapter has included a review of literature relevant to substance use, co-occurring disorders, social networks, social support, treatment status, and treatment motivation. Several gaps have been found from this review.

First, there is a gap in the research focusing on women with substance use disorders and women with co-occurring substance use and (less severe) mental disorders. While there have been studies comparing both men and women, and identifying differences between the genders, there are fewer studies focusing on women with substance use disorders. What research that does exist indicates that women experience
substance use disorders and co-occurring disorders differently than men do, and are
influenced differently by social support. Women of low-income status, such as the
women included in this study, have been largely ignored or overlooked by the existing
research. This study aims to contribute to the literature on women, particularly low-
income women with substance use and co-occurring substance use and less severe mental
disorders.

Second, there is a lack of research exploring the impact of treatment motivation
and treatment status on perceived social support and support for recovery. Research has
indicated that substance use disorders and co-occurring disorders impact individuals’
perceived social support as well as available support for recovery. Research has shown a
relationship between social support and motivation but little is known about the
relationship between treatment motivation on social support. Individuals engaged in
recovery are often asked to make changes to their social networks, but less is known
about the impact that social networks have on women’s treatment motivation, perceived
social support and their support for recovery. Similarly, treatment status has been found
to impact social support and social networks. However, a better understanding of the
relationship between treatment status and perceived social support, including the impact
of social network characteristics, is still needed.

Finally, less severe mental disorders have been absent in a fair amount of research
as severe mental disorders, primarily schizophrenia and schizophrenia spectrum disorders
have been the major focus. The focus on severe mental illness, as well as mostly male
populations, has left a gap in the field: women with co-occurring substance use and less
severe mental disorders. These less severe mental illnesses, including PTSD, mania,
hypomania, generalized anxiety disorder (GAD), dysthymia and major depression are more common among women (Martin, 2007). While schizophrenia and schizophrenia spectrum disorders are important, other disorders represent the majority experienced by U. S. adults and most likely the majority experienced by those who are involved in treatment and recovery for substance use disorders.

This chapter has identified several gaps in existing research. This study seeks to address these gaps, and focuses on low-income women with substance use disorders and those with co-occurring less severe mental disorders. The effect of treatment motivation, co-occurring disorders and treatment status will also be explored in the study. Additionally, the role of social network characteristics as mediators and / or moderators with perceived social support will be explored. Further explanation of the conceptual model is included in chapter two.

Statement of the Problem

Substance use disorders are prevalent in the US. Several factors influence the course of treatment for substance use disorders, including co-occurring mental disorders, social networks and social support. Low-income women with substance use and co-occurring disorders, specifically those with less severe mental disorders, are an understudied population. This study will explore the relationship between co-occurring mental disorders, treatment motivation, treatment status and social network characteristics with overall perceived social support. The goal of this study is to fill gaps in existing knowledge and provide insights useful for improvements to treatment services and prevention planning.

Research Questions
The overall research question for this study is: What is the relationship between co-occurring mental disorders, social network characteristics, including composition of social networks, treatment motivation and treatment status, on perceived social support and support for recovery? Three specific research questions will be addressed in the study.

RQ1: How do social network characteristics, treatment status, co-occurring disorders and treatment motivation relate to overall perceived social support?

RQ2: How do social network characteristics, treatment status, co-occurring disorders, and treatment motivation relate to support for recovery for the subsample of women engaged in treatment?

RQ3: Is the relationship between the independent variables (treatment status, co-occurring disorder status, and treatment motivation) and overall perceived social support moderated and/or mediated by social network characteristics?
Chapter 2

Conceptual Framework and Literature Review

This chapter provides an additional review of literature relevant to the variables of interest in this study. Based on the review of literature and existing research studies, a conceptual model is presented. This chapter presents the conceptual model, research questions and hypotheses.

Historical Development of Social Support as a Concept

Social support is complex in that it has many different definitions. As Maguire (1983) describes, “social support is a feeling and attitude, act of concern and compassion” (p.51). He also explains that social support is often thought of as something that relatives, good neighbors and friends provide to individuals. From another perspective social support can be thought of more broadly and can refer to all social relationships which promote health and well-being (Cohen, Underwood, & Gottlieb, 2000). Social networks are described as the antecedent to social support, indicating the necessity of an existing network to provide social support for individuals (Langford, Bowsher, Maloney, & Lillis, 1997).

Many researchers focus on social support as a positive concept, including Bates and Toto (1999), whose work defines social support as “those interactions in which one individual or group directly provides another individual with a sense of connection, resources, and / or affirmation” (p. 139). Cohen and colleagues (2000) remind us that “social support is embedded in relationships, but clearly, not all relationships are supportive, and not all supportive relationships are supportive in the same way” (p.144).
Social support is not only a positive concept, but a concept including both positive and negative, or less positive, aspects.

Social support is often conceptualized as relationships which promote health. Social structure or the presence of social ties were found to be protective in Durkheim’s (1951) work on suicide; specifically those who committed suicide were less likely to have strong social ties to a church or their community. This finding supports the concept of social relationships acting as a buffer for stress and a promoter of both physical and mental health, a common focus of social support research.

Continuing in the 1970s, John Cassel, an epidemiologist, and Gerald Caplan, a social psychiatrist, both wrote seminal works on the implications of social support for public health (Caplan, 1974; Cassel, 1976). Specifically, Caplan identified that social support and social connections played an important role in aiding individuals through the provision of support to handle stressful situations enabling them to maintain their mental health. Cassel identified the protective nature of social support as a buffer between the degree of stress and individual’s health. Predating this work, other researchers found links between social connections and mental health (Faris, 1934; Ware, 1956).

While research has often focused on links between social support and physical and mental health, it is important to remember that social support is also important for normal human development. In the field of psychology, social support research originated in Bowlby’s (1969, 1973) theory of attachment, focusing on the impact of the emotional bond between infants and their caregivers on early childhood social development as well as on emotional development. Infants who form secure attachments to their caregiver have positive social and emotional development as children and later in
life. Those with less secure attachments do not experience the same social and emotional development and their relationships later in life are affected. As D’Augelli (1983) explains, social support or social connections enable individual growth and development to occur. D’Augelli’s work corroborates earlier work by Bowlby and the theory of attachment by explaining how social support and social connections promote social development, as do other aspects of early childhood relationships, such as modeling behavior. Early childhood attachments and relationships influence future relationships which have been found to impact both the physical and mental health of individuals. Research on social support has focused on the relationship between social connections and health (both physical and mental).

Models of Social Support

Stress-Buffering model

In many cases, social support is discussed as a protective characteristic or a buffer against the negative effects of stress. Cobb (1976) described social support as information which has two functions, primarily to protect from or buffer the effect of stressors, and second to fulfill social needs. The Stress-Buffering model explains that social support is related to well-being for those under stress, but does not consider the implication of social support for those not under stress. This model is often applied to findings on health and mental health: “social support is thought to maintain regulation of these response systems and prevent extreme responses associated with dysfunction” (Cohen, Underwood, & Gottlieb, 2000, p.10). An association between social support and health, both physical and mental, has been detected in many studies although a direct
causal relationship has not been discovered (Maguire, 1983), nor has much experimental work been conducted on the effects of illness on social support networks (Brugha, 1995).

As Taylor and Aspinwall (1996) explain, social support can be a valuable coping resource. Thoits (1995) also describes social support as a coping resource and conceptualizes social support as “a social ‘fund’ from which people may draw when handling stressors” (p.64). Relying on family, friends or colleagues for protection against stress or feelings of helplessness is a common reaction of humans and even tighter attachments are created with the prevalence of threats (McFarlane & van der Kolk, 1996). An individual’s ability to maintain social relationships may also mediate the effects created by the presence of stress (Taylor & Aspinwall, 1996).

The origin and type of social support play an important role in the availability of social support as a coping tool. Supportive relationships with those who are not family may be more influential for overall quality of life than relationships with family (Jackson & Antonucci, 1992). All relationships, even those with family, may play an important role in individual coping.

Main / Direct Effect model

Another perspective, which is a more inclusive, looks the effects of social support even when someone is not under stress. The Main or Direct Effect model hypothesizes that social support is beneficial for everyone, even when stress is not present. This alternative to the Stress-Buffering model proposes that having an extensive social network might aid in avoiding stressful situations rather than only buffering against the effect of stressful events (Cohen, et al., 2000). From this perspective, social support has a
direct effect on individuals’ experience of stressors by aiding in the avoidance of stressful situations, resulting in improved health.

The Main or Direct Effect model is useful in explaining the influence of social support even without the presence of stressors. Both the Main Effect model and the Stress-Buffering model only focus on the impact of social support on stressors and health and ignore the effects of outside occurrences on social support. For example, while both models acknowledge the impact social support can have on the effects of stress or the avoidance of stress, they ignore the impact stressors can have on social support and the availability of necessary social support.

*Measuring Social Support*

In addition to varying definitions of social support, there have also been some differences in measurement of social support. Two major aspects of social support are “received” or “actual” social support that is being provided to an individual and “perceived” social support which is support that is viewed as available or is perceived to have been provided (Norris & Kaniasty, 1996). The two perspectives of social support raise the question of which is more important to capture, perceived or received social support?

Wills and Shinar (2000) argue that perceived social support is a best or conservative measure, as it has inverse correlations with individual’s symptomatology. A relationship between perceived social support and depression as well as co-occurring depression and alcohol use was found in a study of 1,192 adults whom were randomly drawn from household residents in the state of New York (Peirce, Frone, Russell, Cooper, & Mudar, 2000). Norris and Kaniasty (1996) also conclude that perceived social
support is superior in its relationship with psychological health and as a buffer against stress compared with received social support. Similar conclusions resulted from a study of American Indian women participating in residential substance abuse treatment showing a relationship between perceived social support and psychosocial improvements (Chong & Lopez, 2005). Other researchers have also found a stronger relationship between perceived social support and mental health compared with received social support and mental health, further supporting the use of perceived social support as a measure of social support (Wethington & Kessler, 1986). Existing research illustrates that perceived social support can be more important in terms of having a positive impact on outcome measures than received social support.

It may be optimal when possible to measure both perceived and received social support, but the ability to measure received social support typically requires access to members of the social network of the individual of interest. This makes efforts to study received social support complicated, if not impossible, as well as time consuming. Given the strength of association between perceived social support and symptomatology, it seems reasonable to utilize a measure of perceived support for research purposes. It is important to remember that even when measuring perceived social support, received social support contributes to the amount of perceived social support reported, thus a measure of perceived social support is in some ways reflective of social support that is received (Norris & Kaniasty, 1996). For this study, a measure of perceived social support is used to assess social support, a decision supported by existing research and literature. Further information on the social support measure used in this study is included in chapter three.
Types of Social Support

In the pursuit of defining and measuring social support, many researchers have developed categories of social support that can be present independently or together (Rook & Underwood, 2000; Vaux, 1988; Wilcox & Vernberg, 1985; Wills & Shinar, 2000). These categories allow for more exact measurement of the types of social support individuals experience. For example, Wills and Shinar (2000) describe six types of support which create a multidimensional measure of social support. The first of these types of support is emotional support, which includes listening to others’ feelings and the provision of appropriate, sometimes sympathetic responses. Second, instrumental support includes monetary support and assistance with daily activities. The third is informational support, which includes providing information about resources to an individual. The fourth type of support is companionship support, which is provided by someone who engages in activities with another, including going to dinner together, shopping, and other entertainment activities. Finally, the fifth type of support is validation, which refers to support from an individual who confirms another’s feelings and behaviors and provides reassurance.

Other researchers describe an alternative model with four types of social support, similar to the six above (Langford, Bowsher, Maloney, & Lillis, 1997). These four types of social support are emotional, instrumental, informational and appraisal support. The first three types of support are described in the first model, while the final type of support, appraisal support, differs. Appraisal support refers to information provided to the individual which aids in self-evaluation, sometimes referred to as affirmational
support (Langford, et al., 1997). This model and the first model illustrate the types of support often measured by researchers studying social support.

**Negative Social Support**

While the majority of research on social support has been from a positive perspective, including the Stress-Buffering model and Main / Direct Effect Model, it is also important to consider how social support and social networks may exert an undermining effect on individuals. Oetzel, Duran, Jiang, and Lucero (2007) investigated the relationship between critical appraisal and isolation for individuals with mental or substance use disorders. They found that social undermining, both critical appraisal and isolation, were associated with five categories of mental and substance use disorders represented in their sample (having a mood disorder, an anxiety disorder, a substance use disorder, any disorder, or two or more disorders). More specifically, having a substance use disorder was significantly associated with both critical appraisal from social supports and isolation. Having a mood disorder was associated significantly with critical appraisal. This is one example of the importance of examining social support from an undermining perspective as it also has an impact on individuals, particularly those with substance use and mental disorders.

While positive support is an important buffer or coping tool for the negative effects of stress exposure, unsupportive social relationships or interactions may also play an even larger role than supportive ones. “There is some evidence that the negative aspects of social interaction and anticipated social support have more adverse effects on well-being than positive social interactions and social support have on ameliorating well-being” (Taylor & Aspinwall, 1996, p. 94). It is important to look at the type of social
support and relationships one has and not just the presence of them as coping
mechanisms, but also the absence of them. Defining positive and negative forms of
social support is crucial as well. Other researchers have also found a relationship
between social undermining, substance use and mental disorders (Cranford, 2004; Finch,
1998), further supporting the notion that research should include evaluations of social
support from both the positive and undermining perspectives.

Support for Recovery

Perceived social support, as previously described, includes several categories of
support, while support for recovery refers to support specifically directed for an
individual’s pursuit of abstinence and recovery from substance use disorders. Similar to
the categories described for social support in the section above, support for recovery can
include emotional or instrumental support, for example, but is support that is specifically
focused on recovery or abstinence. Support for recovery may also include the modeling
of non-substance use behavior and companionship for activities that do not include
substance use.

Women with substance use disorders often lack the necessary support for
recovery or sobriety (Majer, Jason, Venable, & Olson, 2002). In some instances, women
receive inconsistent support for recovery, particularly from male significant others
(Laudet, Magura, Furst, Kumar, & Whitney, 1999). Often times, substance users have
social networks with many substance using members or members who enable and support
substance use. In one study of men and women in treatment for crack use, almost 30% of
the women reported having no one who could provide support for recovery from
substance use (Boyd & Mieczkowski, 1990).
Without support for recovery, the process of recovery can become significantly more difficult and relapse may be more likely. The positive effect of support for recovery, particularly through an absence of substance use from social network members as well as more comprehensive methods of support specific to recovery, appear to be important in the process of treatment and recovery (Gordon & Zrull, 1991). Wasserman, Stewart, and Delucchi (2001) studied 128 opioid maintenance patients and their general and abstinence-specific social support. They found that patients who had greater abstinence-specific structural support, meaning fewer users in their networks and less negative abstinence-specific functional support (identified as exposure to drugs, demoralization, and complaints about drug use) were more likely to abstain from cocaine use. Social support (from a general perspective) was not found to impact abstinence in this study. Similarly, Beattie and Longabaugh (1999) explored the impact of general and alcohol-specific social support on short- and long-term abstinence and found that alcohol-specific social support better predicted long-term (15 months) abstinence, although both were significant predictors of short-term (3 month) abstinence.

The importance of support for recovery when trying to attain abstinence was also apparent in Kaskutas, Bond, and Humphrey’s (2002) study of 654 men and women seeking treatment for alcohol use problems. The role of Alcohol Anonymous (AA) relationships which provided 24-hour support, behavior modeling and advice for achieving and maintaining sobriety was especially important for individuals who reported having a “wet” social network (having members who were drinkers). Abstinence rates were twice as high for those with support for recovery, mainly received from those met through AA, both 30 and 90 days post achieving abstinence.
For substance users who are still deciding about changing their lifestyle in terms of substance use and associations with social network members, support for recovery is most crucial. Support specific to recovery is important at early stages of recovery due to changes in available support as one abstains from substance use and disassociates with substance users or those who support and/or enable substance use (Laudet, Cleland, Magura, Vogel, & Knight, 2004). Support for recovery continues to be important through later stages of substance abuse treatment and can improve treatment and recovery outcomes.

Existing literature has identified a difference in the role of overall social support and support specific to recovery on treatment and recovery. Although overall social support is important, support for recovery has been demonstrated to contribute more or to be more predictive of recovery and abstinence than general social support. Therefore, when studying individuals with substance use disorders it is important to investigate their support for recovery as well as the overall social support. This study includes a subsample analysis to examine support for recovery of those women who are engaged in substance abuse treatment to examine predictors of support specific to recovery.

*Treatment Motivation and Social Networks*

Individuals’ social networks may have a direct or indirect influence on treatment motivation through the presence of social network members and their relationships with substance users (Joe, Simpson, & Broome, 1998; Miller & Sanchez, 1994). In a study of 140 adults in a Canadian outpatient public readaptation center for those with substance disorders, significant others were found to influence treatment motivation or individuals’ perception of competence (self-efficacy) in the recovery process (Simoneau & Bergeron,
Feedback received from significant others influenced individuals’ motivation for treatment and perception of competence related to recovery.

Treatment motivation has been found to have an influence on treatment and recovery, in that those with more motivation show a decrease in substance use and a decrease in treatment engagement (e.g. Joe, Simpson, Greener, & Rowan-Szal, 1999). Simpson and colleagues (1997) found that professionals providing therapeutic treatment have an influence on clients’ treatment motivation. In a study of 396 opioid users recruited from three methadone maintenance programs, subjects’ pre-treatment motivation was shown to have an indirect positive effect on therapeutic relationships (Joe et al., 1999). Treatment motivation and professionals within social networks appear to have a bi-directional influence on one another indicating the importance of both in the context of substance use and recovery.

In addition to the impact that specific members like professionals and significant others can have on individuals’ motivation to seek treatment, the type of support these members provide can also influence motivation. Critical network members (those who criticize the individual) often have a positive impact on substance users’ treatment motivation or on their decision to seek substance abuse treatment (Taylor & Aspinwall, 1996), although having a negative effect in other areas. Research from the parent study shows that positive features of social networks, including the presence of non-substance users and members who support sobriety, predicts higher treatment motivation scores (Tracy & Johnson, 2007).

Family members, particularly children, also play a role in women’s motivation to seek treatment. Children can be seen by women with substance use disorders as
motivators for treatment (Tracy, 1994). As a part of women’s social network and familial support, children play a role as motivators for entry into and completion of treatment as found in an analysis from the parent study utilizing the 86 women in substance abuse treatment (Tracy & Martin, 2007).

_Treatment Status and Social Networks_

Engagement in treatment has been found to be related to changes in social networks which are common among those in substance abuse treatment (Knight & Simpson, 1996). This finding is based on a study of 439 heroin addicts’ relationships with family and friends during the first three months of engagement in drug abuse treatment. This study illustrates an association between a decrease in substance use by individuals in treatment and their familial relationships, specifically a reduction in conflict with family members. Those with less familial conflict also reported better treatment outcomes including more abstinence. Knight and Simpson conclude that based on their findings, treatment should focus on improving family and friend relationships including decreasing conflict and eliminating deviant friendships which can be replaced with more supportive relationships promoting substance abuse treatment and abstinence.

Women in alcoholism treatment were compared with women who were abstinent in Schilit and Gomberg’s (1987) study of social support. Findings revealed that women in alcohol treatment experienced unhappiness and isolation in early life as well as felt more isolated while they were in treatment. The social networks of these women in treatment included fewer close friends and the women reported being less close to their mothers and spouses than women who were not in treatment. Isolation reported during
the study could be explained as a result of necessary disassociations with social network members who are enablers of women’s substance use or substance users themselves.

Other research, investigating homeless women in the Los Angeles, California area, found that women who were current substance users had fewer personal resources and less social support than those who were past substance users or non-users (Nyamanthi, Keenan, & Bayley, 1998). They also found that of the 1,013 homeless women included in the study, those who were current substance users (not engaged in treatment or recovery) were more likely to rely on substance-using friends for social support than those who were not substance users or who were past substance users.

In a study of 102 White women in heterosexual relationships seeking outpatient treatment for their alcohol-use, the majority of women’s networks (75%) consisted of those who drank (Manuel, McCrady, Epstein, Cook, & Tonigan, 2007). For women with larger networks (those with 11 to 14 members identified) the frequency of days they drank was higher compared with those who identified six or fewer network members. Additionally, women who identified their spouse/significant other as a moderate to heavy drinker himself drank more frequently (although often fewer drinks each time they drank) than those who reported having a significant other who was a light or non-drinker.

Research shows relationships between social networks and treatment or recovery status. Those who aren’t engaged in treatment or in recovery rely more heavily on support from substance users. Those who are in treatment and engaged in recovery often report relying less heavily on substance users for support, although they also report being more isolated.
Co-Occurring Mental Disorders and Social Networks

Individuals with substance use and mental disorders have been characterized as having smaller social networks and perceive less social support than those with out such disorders (El-Bassel, Chen & Cooper, 1998; Macdonald, Hayes, & Balioni, 2000; Savage & Russell, 2005). Reports also indicate that those with these disorders have weak social support structures (Schilit & Gomberg, 1987). Often the symptoms and course of the two disorders as well as difficulty engaging in a treatment plan can lead to the destruction of social networks (Dickey & Azeni, 1996).

Relationships between various social network members impact the psychological well-being of individuals. For example negative psychiatric symptoms are associated with critical appraisal in Oetzel and Colleague’s (2007) study of 169 American Indian women. As these authors explain, often those with a present mood disorder perceive interactions with social network members as being critical, resulting in higher reports of critical or negative interactions. In addition, individuals with depression are more likely to perceive their social networks less positively and report less extensive social networks than those without depression (Kessler, Price, & Wortman, 1985).

A sample of 411 adults over 60 years of age in Hong Kong was used to explore the impact of social support on the relationship between stressful life events and depression. Findings show that support provided by social networks moderated the impact of stressful life event exposure on depression (Chou & Chi, 2001). Other research also shows a relationship between a lack of social ties (isolation) and depressive symptoms, particularly in the elderly (Kawachi & Berkman, 2001).
Kawachi and Berkman (2001) conclude that there are gender differences in the effect of social ties (social networks) and mental health. Specifically, women have higher rates of psychological distress and are also more reliant on social ties than men, resulting in a more pronounced impact of social networks on mental health for women. The relationship between social networks and mental health can be both direct as well as indirect, with social networks acting as mediators or moderators between mental health and other factors (Kawachi & Berkman, 2001). For example, Savage and Russell (2005) studied the social support networks of 644 women who were survivors of interpersonal violence and had co-occurring disorders. They found that social network characteristics had a mediating effect on the relationship between traumatic stress and psychiatric distress for women with co-occurring disorders.

Social Networks and Social Support / Support for Recovery

As mentioned earlier in this chapter, social networks are often considered the antecedent to social support. The composition of one’s social network can impact perceived, received social support and support specific to recovery. There have also been differences found in both social networks and social support based on gender. Trulsson and Hedin (2004) investigated the role of social support for females engaging in recovery from drug abuse in two separate qualitative studies. They emphasize the importance of investigating the issue from a gender-specific perspective because of the differences between males and females from initiation to drug use through the recovery process. Researchers have demonstrated that women and men typically rely on different types of social support (Davis & Jason, 2005). For example, women have higher levels of support
from friends, who have both greater positive and negative impact on women, whereas men tend to seek support from family primarily (Davis & Jason, 2005).

It has been acknowledged by researchers that social networks of men and women are different (Manuel, McCrady, Epstein, Cook, & Tonigan, 2007). In Davis and Jason’s (2005) exploration of the gender differences in social support of chronic substance abusing men and women, differences were discovered in composition of social networks. Women reported higher percentages of family in their networks than men, although the percentages were not significantly different in this sample. Significant differences were reported based on the gender of network members; males reported having higher percentages of males in their networks, while females had higher percentages of females in their networks. Another important difference was discovered in this study in relation to substance use support. Women’s length of residency in substance abuse treatment was significantly related to a decrease in support for substance use from network members, and was not for men. This finding has implications for substance abuse treatment, specifically for women as treatment may have an impact on women’s social networks and support and not just their substance using behaviors which can aid in the recovery process and maintaining sobriety.

Other research also indicates that negative familial circumstances, such as domestic violence, have a greater impact on women’s substance use and recovery compared with men (Lev-Wiesel & Shuval, 2006). The presence of substance users in their social network also more negatively impacted women than men in Lev-Wiesel and Shuval’s (2006) study of 81 men and 81 women in methadone centers.
While research has shown that women can be more strongly (negatively or positively) impacted by social networks and social support (Antonucci, 1985), Sun (2007) reveals that women have more difficulty separating from network members who trigger or support substance use as well as difficulty developing new and more supportive relationships. It is theorized that this gender-specific difference could be explained by women’s difference in attachment, and feminine characteristics that emphasize friendship and loyalty. Sun (2007) also explains that women may have difficulties particularly when negative network members are blood relatives or their significant other, including the father of their child(ren). In some cases, particularly with low-income women, their networks may be heavily tied to the community in which they live, and financial issues may prevent them from being able to physically remove themselves from the substance use supportive community.

Social network members’ impact the social support individuals perceive to be available to them. In a study of 29 mental health consumers engaged in programming at community mental health centers in Ohio, findings indicated that members of a respondent’s personal networks were representative of respondent’s perceived social support (Moxley, 1988). This finding was corroborated by Peirce and colleagues (2000) by results from a random sample of 1,192 adults in New York. Their three-wave panel model employing structural equation modeling found positive correlations between social network contacts and perceived social support.

Other researchers have also identified a connection between perceived social support and personal social networks of individuals (Gottlieb & Green, 1984; Turner & Marino, 1994). Specifically, one’s social network is the structural basis upon which one
develops their perception of available social support. While perceived social support is not a direct measure of one’s social network, contact, including things like frequency of and type of contact with social network members, has an impact on one’s perception of available or received social support.

Greater social support was perceived to be provided from non-substance using social contacts for participants with co-occurring substance use and mental disorders in the late stages of recovery, compared with those in early stages of recovery (Macdonald et al., 2004). As mentioned earlier, the influence of non-substance using social network members on social support is most apparent for individuals who are in the early stages of recovery when support has diminished as they begin to disassociate with drug users (Laudet, Magura, Vogel, & Knight, 2004). While support from non-substance users may be most crucial in the early stages of recovery, it is those in later stages of recovery who report the most support from non-substance users.

Macdonald and colleagues (2004) studied 34 clients with co-occurring disorders in substance use and mental illness treatment in Australia. Their findings included results that greater perceived social support was more likely to come from professionals within the client’s network. They also found that there were no differences in the number of substance users in one’s network based on one’s recovery stage, despite differences in perception of social support.

While particular members of social networks or the type of support provided by members has an impact on social support, other aspects of social networks may not. Macdonald and colleagues (1998) found that those with larger social networks did not report more perceived social support than those with smaller social networks. In fact it
seems, based on existing research, that other factors such as composition of social networks and type of support provided by social network members are more influential as predictors of perceived social support.

Social network characteristics also exhibit relationships with support specific to recovery. Participation in self-help groups, leading to an increase in social network members who were non-substance users, led to an increase in both individuals’ support for recovery as well as their overall quality of relationships (Humphreys, Mankowski, Moos, & Finney, 1999). This finding was a result of an investigation of 2,337 male veterans engaged in substance abuse treatment where abstaining network members had a great impact on individual’s abstinence from substances. Overall, individuals’ social networks influence their perceived social support and support for recovery. The composition of social networks and the type of social support impact reported or perceived social support.

*Treatment Motivation and Social Support / Support for Recovery*

The relationship between treatment motivation and social support is an important one. The presence of treatment motivation may be a result of specific types of social support, a shift in the conceptualization of treatment motivation as described in chapter one (Miller & Sanchez, 1994). Similar in nature to the relationship between treatment motivation and social networks, individual’s available support can have an impact on their motivation to seek treatment.

Support for a relationship between treatment motivation and social support can be found in a study of 351 clients in residential drug abuse treatment with co-occurring disorders (Warren, Stein, & Grella, 2007). Clients within the sample felt that they could
abstain from substance use when they had more support available to them. Having more social support also motivated clients to engage in treatment and abstain from substance use.

The relationship between motivation for treatment and social support can be seen in interventions geared towards motivating substance users for treatment. In some cases treatment providers can motivate clients who present as unmotivated in treatment through their interactions with them (Simoneau & Bergeron, 2003). Specifically some aspects of motivational interventions include providing feedback to the substance user, and offering advice relating to the status of their substance use. While motivation is often thought of as an intrinsic factor within individuals, social support and other extrinsic factors may have a dramatic impact on motivation to seek treatment (Joe, Simpson, & Broome, 1998). In some cases, motivation for treatment and change may come after a great deal of coercion or persuasion from both social supporters as well as other environmental influences such as the court system or the child welfare system (Simoneau & Bergeron, 2003).

*Treatment Status and Social Support / Support for Recovery*

Social support can influence individuals’ seeking substance abuse treatment. Those who continue substance use may have more substance users in their networks and thus less positive social support or support for recovery. For example, Schroeder and colleagues (2001) found that the presence of more substance users within networks was associated with a greater likelihood of continued drug use while fewer substance users was associated with engagement in treatment. They report that this finding is likely due to support for use, commonly exhibited by substance users, rather than support for
recovery. In another study, those engaged in treatment perceived social support as coming from non-substance users, family, and close friends, while substance users not in treatment perceived the majority of their support as coming from other substance users (Macdonald et al., 2004).

Treatment status, particularly in the early stages, may be most influenced by an individual’s support for recovery (Laudet, Cleland, Magura, Vogel, & Knight, 2004; Warren, Stein, & Grella, 2007). This indicates that those in treatment may experience more support for recovery than those not in substance use treatment. The source of perceived social support has also been found to change with engagement in substance abuse treatment. For example, Knight and Simpson (1996) found that those who were engaged in treatment relied less on substance users for social support.

Co-Occurring Disorders and Social Support / Support for Recovery

Similar relationships exist between co-occurring disorders and social support as are found between co-occurring disorders and social networks. Research, including a study of 581 homeless women, has shown a negative relationship between social support and depressive symptoms, indicating that more social support is beneficial for mental health (Nyamathi, Bennett, Leake, & Chen, 1995). A similar negative relationship was found between depression and perceived social support for 1,192 adults with alcohol use disorders (Peirce, Frone, Russell, Cooper, & Moodar, 2000). The findings indicated that depression can influence perceived social support or the perception of available support. Earlier research indicates that those with depression are prone to having less perceived social support in addition to perceiving their networks as being less positive and less
extensive (Kessler, Price, & Wortman, 1985). Similarly, those who are satisfied with their social support are reported to be less depressed or lonely (Fry & Barker, 2002).

As discussed in chapter one, the presence of a mental disorder can also influence the size of one’s social network (Goldberg, Rollins, & Lehman, 2003; Pickens, 2003; Rosenfield & Wenzel, 1997) as well as the reciprocal nature of relationships individuals have with their social network (Cohen & Sokolovsky, 1978; Macdonald, Hayes, & Baglioni, Jr., 2000; Semple et al., 1997), impacting the type of social support they perceive and receive. Individuals with co-occurring disorders have also been found to have more tension in relationships with family, decreasing the availability of positive family support (Mueser & Fox, 2002). Specifically, less severe co-occurring mental disorders with substance disorders have not been as prevalent in the literature on social support for this particular population, although mental disorders have been shown to impact social support and social networks of individuals.

Conceptual Model

Based on a review of literature and existing research on the variables of interest for this study, a conceptual model was developed. This conceptual model illustrates hypothesized relationships between the variables of interest. These relationships will be explored to answer the study research questions as well as test the presented hypotheses included at the end of this chapter. Figure 1 illustrates the conceptual model including direct and indirect effects of predictors on the outcome variables, social support. Since the support for recovery measure was only administered to the 86 women involved in substance abuse treatment, a subscale analysis was conducted exploring predictors of support for recovery. Due to the smaller sample size for the support for recovery scale,
this study will not be able to fully examine the illustrated paths in the model for the support for recovery variable as is possible for perceived social support.

Figure 1.

Research Questions and Hypotheses

RQ1: How do social network characteristics, treatment status, co-occurring disorders and treatment motivation relate to overall perceived social support?

Hypothesis 1. Network size will not be related to overall perceived social support. There should be no difference in scores of perceived social support for those with varying sized networks.

Hypothesis 2. A higher percentage of network members that are alcohol/drug users will be associated with less overall perceived social support.

Hypothesis 3. Women with a greater percentage of family / household members in their social networks will have higher overall perceived social support.
Hypothesis 4. A higher percentage of critical members (members who are almost always critical) will be associated with lower overall perceived social support.

Hypothesis 5. A greater percentage of network members who always support sobriety will be associated with more overall perceived social support.

Hypothesis 6. A greater percentage of professionals in women’s networks will be associated with higher overall perceived social support.

Hypothesis 7. Women’s overall perceived social support will not be predicted by treatment motivation.

Hypothesis 8. Women’s overall perceived social support will not be predicted by current participation in treatment (treatment status).

Hypothesis 9. Women with co-occurring disorders will report lower overall perceived social support than women with substance use disorders only.

RQ2: How do social network characteristics, treatment status, co-occurring disorders, and treatment motivation relate to support for recovery for the subsample of women engaged in treatment?

Hypothesis 10. Network size will not be related to support for recovery. There should be no difference in support for recovery scores for those with varying sized networks.

Hypothesis 11. A higher percentage of network members that are alcohol/drug users will be associated with less support for recovery.

Hypothesis 12. Women with a greater percentage of family / household members in their social networks will have higher support for recovery scores.
Hypothesis 13. A higher percentage of critical members (members who are almost always critical) will be associated with lower support for recovery.

Hypothesis 14. A higher percentage of members who always support sobriety will be associated with more support for recovery.

Hypothesis 15. A higher percentage of professionals will be associated with higher support for recovery.

Hypothesis 16. Women involved in residential treatment will have higher support for recovery scores than women involved in outpatient treatment.

Hypothesis 17. Treatment motivation will be positively associated with support for recovery.

Hypothesis 18. Women with co-occurring disorders will report lower support for recovery than women with substance use disorders only.

RQ3: Is the relationship between the independent variables (treatment status, co-occurring disorder status, and treatment motivation) and overall perceived social support moderated and/or mediated by social network characteristics?

Hypothesis 19. The percentage of family members within women’s social networks mediates or moderates the relationship between the independent variables and overall perceived social support.

Hypothesis 20. The percentage of members who support sobriety (those who almost always support sobriety) mediates or moderates the relationship between the independent variables and overall perceived social support.
Hypothesis 21. The percentage of members who almost always provide critical support mediates or moderates the relationship between the independent variables and overall perceived social support.

Hypothesis 22. The percentage of members who are substance users mediates or moderates the relationship between the independent variables and overall perceived social support.

Hypothesis 23. The percentage of members who are professionals mediates or moderates the relationship between the independent variables and overall perceived social support.
Chapter 3
Methodology

Parent Study Design

This study is a secondary data analysis. The data for the original study were collected from August 2003 to January 2004. The original study design was a cross-sectional survey employing purposive sampling. As previously mentioned it was collected for Dr. Elizabeth Tracy’s NIDA funded pilot study “Personal Social Networks of Women with Co-Occurring Substance Abuse and Mental Disorders” (RO1 DA 013944).

Sampling for Parent Study

Data collection.

Data were collected from 136 women with current substance use disorders and co-occurring disorders (women with both a substance use and a mental disorder) in face to face interviews. Interviews were conducted by trained researchers and lasted one hour and 45 minutes on average. Three recruitment sites were utilized: 41 women were interviewed from one residential treatment program, 45 women were interviewed from one outpatient substance abuse treatment program and 50 women were interviewed who were already participants in an ongoing longitudinal study of cocaine-exposed infants and their mothers conducted by Dr. Lynn Singer (RO1 07957) (Tracy & Johnson, 2007; Tracy & Martin, 2007). A stipend of $45 and transportation costs were given to the women for participation in the study.
Purpose of Parent Study

The original study sought to describe the characteristics of women’s social networks, their perceived social support and to compare these two areas for women with co-occurring disorders and those with substance use disorders only. The purpose of the original study was to gain an understanding of the social networks of women with substance use and co-occurring mental disorders.

Eligibility for Parent Study

Eligibility for inclusion were that women had to be 18 years of age or older, with no known diagnosis of schizophrenia, or current use of any medication typically prescribed for a major thought disorder (Tracy & Johnson, 2007), to ensure that study participants were cognitively capable to give informed consent. The 86 women in treatment had to have been in substance abuse treatment for at least three weeks and willing to nominate a family member or significant other for participation in a simultaneous study on family care giving (Biegel, Katz-Saltzman, Tracy, & Townsend, 2006; Biegel, Ishler, Katz, & Johnson, 2007; Katz-Saltzman, Biegel, & Townsend, In Press; Martin, 2007). The women recruited from the cocaine-exposed infants study previously reported using eight or more alcohol drinks per week or reported marijuana or cocaine (Martin, 2007).

For the purpose of this study, current substance use disorder was defined as having a DSM-IV diagnosis of substance abuse or dependence for at least one drug (including alcohol) in the 12 months prior to the study. A current co-occurring disorder was defined as presence of at least one substance abuse or dependence disorder (including drug or alcohol) and at least one mental disorder (including anxiety,
depression, dysthymia, mania, hypomania or post traumatic stress disorder) in the 12 months prior to entry into the study.

A total of 109 women from the outpatient and residential treatment programs were eligible and 101 or 92.6 percent were successfully contacted by study investigators. Of the contacted women, four women refused to participate and ten women gave consent to participate but were unable to be interviewed before the end of the study period. An additional 126 women were eligible from the longitudinal cocaine-exposed infants study and 80.9 percent or 102 of them were successfully contacted by study investigators. An additional 50 from the longitudinal study were excluded from this study for not having a current substance use disorder, and two cases were excluded due to invalid data collection. One woman was removed as an outlier at 75 years old from the treatment group. A final sample of 136 women from the three recruitment sites was used in this study: 86 from community-based residential and outpatient substance use treatment facilities and 50 from the longitudinal study.

**Recruitment Sites**

*Residential treatment program.* Forty-one women in residential treatment were recruited from a non-profit substance abuse treatment facility in the greater Cleveland area primarily serving African-American and low socioeconomic status women (Tracy & Johnson, 2007). During the study period, this substance abuse treatment facility could provide services to 30 women in the early stages of recovery, and could provide treatment in on-site family suites to women with children between birth and three years of age. On average, women who participated in treatment at this facility spent between 30 and 50 days in residential treatment, and an average of 90 days in intensive outpatient
treatment (which is four hours per day for four days a week). The average overall stay at
the facility was 120 days. The facility also provided aftercare services, transitional
housing, and vocational training for as many as 20 women, for an average of 90 days in
aftercare and up to 24 months in transitional housing and vocational training.

Outpatient treatment program. The 45 women in the outpatient treatment
program were recruited from a substance abuse treatment facility, also located in the
greater Cleveland area. This facility serves a slightly more diverse population than the
residential treatment program, but serves mostly African American women of low
socioeconomic status. Individual and group treatment for substance abuse and
dependence for women in more acute phases of early recovery were provided at this
facility. Services included in the outpatient facility include cognitive behavioral
treatment, motivational enhancement therapy, supportive-expressive therapy, dialectical
behavior therapy, relapse prevention therapy, anger management, individual and group
counseling as well as integrated dual disorder treatment for women with co-occurring
mental disorders. Women received intensive outpatient therapy as well as aftercare
services following completion of intensive outpatient therapy.

Longitudinal study. The women recruited from the longitudinal study were
engaged in follow-up interviews for six to eight years after the birth of their child who
was prenatally exposed to cocaine. For these 50 women, their current substance abuse
treatment status was unknown. They may or may not have been involved in some form
of treatment prior to this study. Since there was no information available regarding their
treatment status, these women were not included with those who were receiving either
residential or outpatient substance abuse treatment. They are not a no treatment or control group since their status is unknown.

Study Measures

The measures utilized in the parent study were all pretested prior to their use. The following measures were included in the parent study and are also utilized in the current study. Additional measures were also utilized in the parent study and are not included here as they are not a part of the current study.

*Diagnostic Interview Schedule for DMS-IV (DIS-IV):*

The lifetime and current substance abuse or dependence for the sample of 50 women from the longitudinal study, as well as lifetime and current mental diagnosis for the 86 women in treatment (specifically generalized anxiety disorder, posttraumatic stress disorder, major depression, dysthymia, mania and hypomania) were determined with the DIS-IV measure. Some demographic information was also assessed with the DIS-IV. To assess these diagnoses only those sections addressing the alcohol, drug abuse or dependence and the specific mental disorders were administered. Specifically these sections were: A. Demographics, B. Generalized Anxiety Disorder, E. Post Traumatic Stress Disorder, F. Depression/Dysthymia, G. Mania/Hypomania, R. Alcohol Dependence/Abuse, S. Drug Dependence/Abuse.

The DIS-IV was administered to study participants by an interviewer who was trained in both administration and scoring of the measure. The measure was chosen for its ability to provide diagnostic information based on the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) without the requirement of a clinical evaluation (Robins, Cottler, Bucholz, Compton, North, & Rourke, 1999). It should be noted that the
diagnostic information provided by this measure is for research purposes only and not a clinical diagnosis made by a mental health professional. The DIS-IV measure, providing a DSM compatible diagnosis, is a revision of the reliable and valid original Diagnostic Interview Schedule (DIS) (Helzer, Robins, & McEvoy, 1985; Robins, Helzer, Croughan, & Ratcliff, 1981).

*Computerized Intake Assessment Instrument-Cleveland (CIAI-C)*

For the 86 women in inpatient and outpatient treatment, the Computerized Intake Assessment Instrument-Cleveland (CIAI-C) was administered within the previous 12-month period from the time of the study, to assess substance use disorders. Given the recent administration of this measure and its provision of a DSM-compatible diagnosis, authorization to utilize existing data to avoid re-assessing the study participants was sought. The CIAIC-C was developed as a uniform measure to establish a DSM-compatible diagnosis for clients within Cuyahoga County for which the parent study took place (University of Akron, 2001).

*Treatment Motivation Scale*

The Texas Christian University (TCU) Treatment Motivation Scale measures an individual’s motivation to enter and engage in treatment (Knight, Holcom & Simpson, 1994). The Treatment Motivation Scale was administered to all women in the current study and measures motivation for treatment. This is a 24-item self-administered instrument which includes three subscales: Problem Recognition, Desire for Help and Treatment Readiness. Responses to items were on a five point Likert type scale (strongly disagree, disagree, neither disagree nor agree, agree, and strongly agree). The first two
subscales, Problem Recognition and Desire for Help were completed by 136 respondents and 100 respondents completed the third subscale, Treatment Readiness.

The first subscale, Problem Recognition was nine items resulting in a potential score range of nine to 45. The Desire for help, the second subscale had a potential score range of seven to 35 from seven items. The final subscale, Treatment Readiness consisted of eight items and had a potential score range of eight to 40. The summed score of this scale produces a possible range of 24 to 120. Higher scores on this scale represent higher treatment motivation. Higher scores on the three subscales represent higher levels of problem recognition, desire for help and treatment readiness, in order of subscales. The full scale shows good reliability (Cronbach’s alpha = .91) from the parent study and for the subscales; Problem Recognition (Cronbach’s alpha = .91), Desire for Help (Cronbach’s alpha = .87) and Treatment Readiness (Cronbach’s alpha = .77).

The current sample is slightly larger than that utilized in the parent study to test the reliability of the scale and subscales. For the current study, the subscales had good reliability; Problem Recognition $\alpha = .96$, Desire for help $\alpha = .91$ and Treatment Readiness $\alpha = .79$. The full Treatment motivation scale had a Cronbach’s alpha of .94; indicating very good internal reliability.

Social Network Map. The Social Network Map was utilized to collect information on compositional, structural and social characteristics of women’s social networks (Tracy & Whittaker, 1990). To collect information for the Social Network Map, interviewers asked respondents to identify as many people they could come up with that they had any contact with in the past month. After identifying social network members, respondents were asked how often they relied on each named individual for support including support...
for sobriety, emotional, concrete, and informational support. Respondents were asked to provide information about each network member including their relationship to the respondent (e.g. family, friend, neighbor, or professional). Respondents rated whether they relied on each individual almost always, sometimes, or hardly ever for each of the above mentioned types of support. Reciprocity of relationships as well as substance use by social network members was also reported by respondents. For this study, the overall number of network members, the percentage of network members who were critical (provided negative support or criticism), and the percentage who provided support for sobriety were utilized. Separate variables were created identifying the percent of members who are almost always critical, are sometimes / hardly ever critical as well as the percent who almost always support sobriety and those who sometimes / hardly ever support sobriety. The percent of substance users, family and household members, and professionals were also utilized in this study. With the exception of the total number of network members, the other social network characteristic variables were represented by percentage of total social network. These percentages were calculated by dividing the number of members who fit into each category of interest by the total number of network members. The percentage of network members who fell into each category of interest were utilized instead of the number of network members as percent is more representative of network composition. The percentage of networks members was easier to interpret and provides a better perspective of the division of women’s networks given that network size differs among women within the study.

To test the reliability of the scoring of this measure, a test-retest of social network members and percentage agreement of ratings were utilized (.70 and .76), demonstrating
good reliability, with some relational aspects of social networks being less stable than others (Tracy, Catalano, Whittaker, & Fine, 1990). The construct validity of the Social Network Map was measured by running correlations of perceived social support with standardized social support instruments. The results of this comparison was that greater satisfaction with emotional support was associated with greater support satisfaction overall \( (r = .32, p = .000) \) (Tracy & Abell, 1994). A similar comparison was conducted with the current study. A Pearson correlation was conducted comparing perceived social support (ISEL scores) with the percentage of network members who almost always provided emotional support. The results show that as the percentage of network members who almost always provide emotional support increases the perceived social support (ISEL score) increases \( (r = .247, p = .000) \). This indicates good construct validity of the social network map within this particular sample.

*Social support for recovery scale.* The Support for Recovery Scale was utilized to measure recovery support for the participants in the study who were in treatment. The scale was administered as part of participant’s interviews to the 86 women in treatment. Since only those women in treatment were administered the measure, a subsample analysis will be conducted to explore predictors of support for recovery for these women only.

The scale was adapted from that developed by Laudet, Magura, Vogel and Knight (2000) who found two factors following a principal components factor analysis. This scale includes 14-items each with a 4-point scale measuring the extent of support and understanding (8 items), and the sources of support and encouragement (6 items) (the two subscales represent the separate factors revealed in the factor analysis). This scale is
summed to create a possible range of 14 to 56 with higher scores representing higher levels of support for recovery. The scale has shown good internal consistency, the first factor the extent of support and understanding (subscale a) had a Cronbach’s alpha = .88, while the second, sources of support and encouragement (subscale b) had a Cronbach’s alpha = .66 (Laudet, Magura, Vogel, & Knight, 2000). The parent study revealed acceptable internal consistency for the entire scale (Cronbach’s alpha = .78). The current study has similar internal consistency for the entire scale (Cronbach’s alpha = .75). This scale was only administered to those in substance abuse treatment (either outpatient or residential). Analysis for research question three utilizes this scale and includes only the subsample of individuals in treatment (n = 86).

**Overall Perceived Social Support.** The Interpersonal Support Evaluation List (ISEL) measures overall perceived social support. The scale is 16 items, each measured on a four point scale with answers ranging from definitely true to definitely false. There is a possible scale range of 0 to 48, with higher scores representing higher perceived social support. There are four subscales within the ISEL scale: Appraisal, Belonging, Self-Esteem and Emotional Support. This scale has been well validated and shows good reliability (Cronbach’s alpha = .85) (Cohen, Mermelstein, Kanarck, & Hoberman, 1985). The ISEL scale shows good reliability with the 86 women from the parent study (Cronbach’s alpha = .77) (Tracy & Johnson, 2007). Even higher reliability was found for the 82 women who were involved in the parent study of substance abusing women and their caregivers (Cronbach’s alpha = .81) (Biegel, Ishler, Katz, & Johnson, 2007).

This current study has similar reliability (α = .81) to that demonstrated by the parent study. Although the full scale has decent reliability from the Cronbach’s alpha test
the subscales show significantly less internal consistency indicating potentially problematic aspects of the measure. For the current study, the appraisal subscale has a Cronbach’s alpha of .67, the highest internal consistency of all of the subscales, followed by the belonging subscale ($\alpha = .66$), the emotional support subscale was also fairly low ($\alpha = .52$), and the self-esteem subscale with the lowest internal consistence ($\alpha = .46$). In this study, only the full scale of the ISEL was utilized which demonstrated good reliability.

**Co-Occurring disorder or substance use disorder groups.** Every participant has a current substance abuse or dependence diagnosis. Based on results from the DIS-IV and CIAI-C measures, respondents were placed into either the substance use disorder only group if they did not have a current mental disorder diagnosis or the co-occurring disorder group if they had both a current substance use and a current mental disorder.

**Demographic Information**

Demographic information included the following variables: age, racial or ethnic identification, marital status, number of children (biological), education, employment status, and family income. Women’s Welfare status was also included in the interview, including being on Welfare, Food Stamps, Medicaid / Healthy Start benefits, Housing Subsidies, and other income subsidies including Supplemental Security Income, Social Security, and Child Support. This demographic information was collected as part of the C-DIS in the demographic section.

**Age.** Women’s age was measured as a continuous variables representing the age of the respondent at the time of their interview.

**Racial identification.** Women were asked to identify their race as one of seven categories. These categories included African American, Caribbean or West Indian
Black, Mexican-Latino Non-Black, Puerto Rican-Latino Non-Black, White (non-Latino), Biracial or Multiracial, and Other. For this study, the racial identification variable was collapsed into a dichotomous variable and recoded as African American and other in order to be utilized in analyses as more than 80% of the women were African American.

*Marital status.* Marital status of the women was a categorical variable. Women were asked to identify whether they were married, widowed, separated, divorced or never married.

*Children.* The number of biological children respondents had was a continuous variable representing the number of children women reported.

*Education.* Education was measured as a categorical variable. Women had six categories of educational attainment to select that represented their education. These six categories include: Elementary/Junior High, GED, High School Diploma, Vocational or Technical Diploma, Associates Degree or higher, and None.

*Employment status.* Women’s employment status was measured by a seven category variable to capture their employment status at the time of their interview. These seven categories included working full-time, part-time, unemployed and looking for work, unemployed and not looking for work, student, in job training and homemaker.

*Household income.* Women’s income was measured as their family income before taxes in 11 categories. These represent income ranges: Less than $5,000, $5,000 to $8,999, $9,000 to $14,999, $15,000 to $19,999, $20,000 to $24,999, $25,000 to $29,999, $30,000 to $34,999, $35,000 to $39,999, $40,000 to $43,999, more than $44,000, and Don’t know family income. These categorical income ranges provide a picture of women’s family incomes.
Welfare status variables. Women’s current welfare status was measured as a dichotomous variable where women responded either yes or no that they were currently receiving welfare at the time of their interview. Other Welfare status variables including Food Stamps, Medicaid / Healthy Start, Housing Subsidies, Supplemental Security Income, Social Security and Child Support were all measured as dichotomous variables including yes and no response options. These questions simply asked women if they received any of these forms of support at the time of their interview.

Treatment Status. The 86 women who were either in residential or outpatient treatment substance abuse treatment were included in the group of women who were currently participating in treatment, as they were engaged in treatment at the time of their interviews. The remaining 50 women from the community were assigned to the group of those who were not known to be participating in substance use treatment.

Type of Treatment. For analyses examining predictors of support for recovery, the type of treatment was utilized. Since this subgroup analysis only included the 86 women who were in treatment, the type of treatment variable identifies if the women were in residential or outpatient treatment.

Data Analysis

The total sample consisted of 136 women with substance use disorders, some with co-occurring mental disorders. This full sample was utilized to address research question one and three. A subsample analysis was conducted to identify predictors of support for recovery. Only those who were engaged in substance abuse treatment at the time of their interview were administered the support for recovery questionnaire. Therefore a total of 86 women in substance abuse treatment were included for analysis of research question
two. Aside from a different sample size, the same techniques were utilized to analyze research questions one and two and are described below.

Data analysis was conducted utilizing SPSS software. Univariate statistics were utilized to examine the distribution of the variables utilized in this study, including dispersion, variation and normalcy. Descriptives such as mean, median, mode, standard deviation, skewness and kurtosis were examined to ensure normal distribution. Histogram plots, including a normal curve, were utilized to test for normal distribution of the study variables. This preliminary analysis checked for outliers in the sample. Skewness was acceptable within the range of 0 to 2.00 and kurtosis acceptable within the range of 0 to 7.00.

Bivariate relationships were examined to determine any problems of mulitcolinearity between predictor and control variables. To test several of the proposed hypotheses the size and direction of correlations, based on Pearson correlations were utilized for relationships between continuous variables. Independent samples t-tests were utilized to explore the differences between those with co-occurring disorders and substance use only disorder since this was a dichotomous variable. Correlations and t-tests that were statistically significant at the .05 alpha level in the expected or hypothesized direction were evidence for the rejected null hypotheses. For other hypothesis predicting no relationship between predictor variables and outcomes, an absence of a significant relationship (p>.05) was evidence for the proposed hypothesis.

Covariates were identified by examining Pearson r correlations and independent T-tests for demographic variables that showed relationships with the two dependent variable measures individually, perceived social support and support for recovery. Those
variables that were significantly related to either of the dependent variables were included in the multivariate model with that particular variable.

Ordinary Least Squares (OLS) Regression models were utilized to identify predictors of perceived social support and support for recovery (in separate models) as described in research questions one and two. OLS Regression models were also utilized to answer the third research question and test the hypotheses that social network characteristics mediated and / or moderated predicted relationships. A further description of the technique utilized to address this question is provided later.

Research Question 1: How do social network characteristics, treatment status, co-occurring disorders and treatment motivation relate to overall perceived social support?

Hypothesis 1. Network size will not be related to overall perceived social support. There should be no difference in scores of perceived social support for those with varying sized networks. Bivariate correlations were utilized to test this hypothesis by exploring the relationship between the size of women’s networks and their perceived social support. Pearson correlations would be expected to show no significant relationship between the two, network size and overall perceived social support, in order to support this hypothesis.

Hypothesis 2. The percentage of network members that are alcohol/drug users will be associated with less overall perceived social support. Bivariate correlations were utilized to test this hypothesis including the percent of alcohol/drug users with perceived social support.

Hypothesis 3. Women with a greater percentage of family / household members in their social networks will have higher overall perceived social support. To test this
Hypothesis, bivariate correlations were first utilized comparing the percent of family/household members with perceived social support.

Hypothesis 4. A higher percentage of critical members (members who are almost always critical) will be associated with lower overall perceived social support. To test this hypothesis, bivariate correlations examined the percent of members almost always critical and perceived social support.

Hypothesis 5. A greater percentage of network members who always support sobriety will be associated with more overall perceived social support. Similar to the last hypothesis, bivariate correlations between the percentage of members who always support sobriety and perceived social support were examined.

Hypothesis 6. A greater percentage of professionals in the network were associated with higher overall perceived social support. Bivariate correlations between the percentage of professionals and perceived social support were examined to test this hypothesis.

Hypothesis 7. Women’s overall perceived social support will not be predicted by treatment motivation. Similar to the first hypothesis, bivariate correlations were conducted between treatment motivation and perceived social support. If no significant relationship was found then the hypothesis was supported.

Hypothesis 8. Women’s overall perceived social support will not be predicted by current participation in treatment (treatment status). For this hypothesis Independent t-tests were conducted between treatment status and perceived social support.

Hypothesis 9. Women with co-occurring mental disorders will report lower overall perceived social support than women with substance use disorders only.
Independent T-tests examining the relationship between co-occurring mental disorder and overall perceived social support were conducted.

Research Question 2: How do social network characteristics, treatment status, co-occurring disorders, and treatment motivation relate to support for recovery?

Hypothesis 10. Network size will not be related to support for recovery. There should be no difference in support for recovery scores for those with varying sized networks. A bivariate correlation between network size and support for recovery was conducted.

Hypothesis 11. A higher percentage of network members that are alcohol/drug users will be associated with less support for recovery (as measured by a lower support for recovery score). Bivariate correlations were examined between the percentage of alcohol/drug users and support for recovery.

Hypothesis 12. Women with a greater percentage of family / household members in their social networks will have higher support for recovery scores. To test this hypothesis, bivariate correlations between the percent of family / household members and support for recovery were examined.

Hypothesis 13. A higher percentage of critical members (members who are almost always critical) will be associated with lower support for recovery. Bivariate correlations between the percentage of members almost always critical and support for recovery were examined.

Hypothesis 14. A higher percentage of members who always support sobriety will be associated with more support for recovery (a higher support for recovery score). To
test this hypothesis, bivariate correlations examining the relationship between the percentage that always support sobriety and support for recovery were conducted.

**Hypothesis 15.** A greater percentage of professionals will be associated with higher support for recovery (measured by a higher support for recovery score). Bivariate correlations between the percentage of professionals and support for recovery were utilized.

**Hypothesis 16.** Women involved in residential treatment will have higher support for recovery scores than women involved in outpatient treatment. For this hypothesis, type of treatment and support for recovery were entered into an Independent T-test to explore their relationship.

**Hypothesis 17.** Treatment motivation will be positively associated with support for recovery. Bivariate correlations were utilized to examine the relationship between treatment motivation and support for recovery.

**Hypothesis 18.** Women with co-occurring disorders will report lower support for recovery than women with substance use disorders only. Co-occurring disorders and support for recovery were included in a T-test to explore this hypothesis.

**Multivariate Models for Main Effects**

Multiple regression equations were utilized to estimate the contribution of each independent variable / predictor variable on the explained variance of the two dependent or outcome variables to address research question one and two. First this was done with perceived social support as the outcome or dependent variable to answer research question one. The second model, utilizing a sub-sample, answered research question two and included support for recovery as the outcome or dependent variable. Based on the
presented hypotheses, those independent or predictor variables showing significant relationships (p<.05) based on T-tests and bivariate correlations with the dependent variables were entered into the multivariate models. Variables which added no explained variance in the multivariate model were dropped from the analyses.

Mediation and Moderation for Indirect Effects

Research Question 3: Is the relationship between the independent variables (treatment status, dual disorder status, type of mental health disorder and treatment motivation) and overall perceived social support and moderated and/or mediated by social network characteristics?

To test the following six hypotheses regarding mediation and moderation of social network characteristics, a different data analysis plan was used than that described for research questions one and two. Below, following the proposed hypotheses is an explanation of the methods utilized to explore the proposed hypotheses and test the research question. A more lengthy statistical exploration must be employed to determine if social network characteristics mediate, moderate or show both mediation and moderation. Correlations were examined between the independent variables and social network characteristics as well as between social network characteristics and overall perceived social support to check for problems of multicolinearity. A cut off of a correlation value of .80 was utilized to check for multicolinearity between the variables of interest (Allison, 1999).

Hypothesis 19. The percentage of family members within women’s social networks mediates or moderates the relationship between the independent variables and overall perceived social support.
Hypothesis 20. The percentage of members who support sobriety (those who almost always support sobriety) mediates or moderates the relationship between the independent variables and overall perceived social support.

Hypothesis 21. The percentage of members who almost always provide critical support mediates or moderates the relationships between the independent variables and overall perceived social support.

Hypothesis 22. The percentage of members who are substance users mediates or moderates the relationships between the independent variables and overall perceived social support.

Hypothesis 23. The percentage of members who are professionals mediates or moderates the relationships between the independent variables and overall perceived social support.

Mediation.

To explore mediation the four steps outlined by Baron and Kenny (1986) and Judd and Kenny (1981) were followed. The first step shows that the independent variables are correlated with the dependent variable, perceived social support. OLS regression was utilized to test this relationship. This step established that there is an effect that may be mediated by the potential mediating variables, represented in path C’ (See Figure 2 below). This initial step is important in the test of mediation, for without a relationship to mediate there is no need to continue.
Step two demonstrates that a relationship exists between the independent variables and the mediating variables, the social network characteristics. Relationships were explored between the three independent variables co-occurring disorder, treatment status and treatment motivation and the moderating variables (social network characteristics). This second step is also important as the independent and mediating variables should be correlated as well for a mediating effect. This relationship is shown in path A.

Step three shows that the mediator variables or social network characteristics affect the outcome variable, overall perceived social support (ISEL scores) as shown in Path B. The relationships between the social network characteristics and overall perceived social support are necessary to demonstrate a correlation that isn’t a result of a relationship between the mediator variables and outcome variables simply because both are caused by the initial independent variables. Thus the independent variables must be
controlled in the task of establishing an effect of the mediator on the outcome or dependent variable.

The final step establishes that the mediator completely or partially mediates the relationship between the independent and outcome variables. Controlling for the mediating variables the relationship shown in path C’ should be zero if full mediation exists. However, partial mediation may also exist in which path C’ isn’t zero when the mediating variable is controlled when looking at the relationship between the independent and outcome variables. To test these four steps, three OLS regression models are needed (Holmbeck, 1997). First a model demonstrating the relationship between X and Y (the predictor variables and the dependent variable). This first model establishes if there is a relationship which can be mediated. The second model explores the relationship between X and M (the predictor variables and the mediators). There should be a relationship present for mediation to be occurring,

The third OLS model explores steps three and four: the relationship between M and Y (the moderators and the dependent variable) as well as tests for mediation. This allows for the effect of the mediators on the dependent variable controlling for the predictor variables to be explored. Additionally the relationship between the predictor variables and the dependent variable, controlling for the mediating variables is also examined. If mediation exists, then the predictor variables should be less highly associated with the dependent variable in the final equation than the subsequent equations. The regression coefficient can also be utilized as an indicator of whether mediation is occurring completely or partially.
If all four steps are met and the data is consistent with the hypotheses, then the social network characteristics fully mediates the relationship between the independent and the outcome variable. If the first three steps are met and not the fourth than partial mediation exists.

*Moderation.*

To assess if the social network characteristics moderate the relationship between the independent and outcome variables additional multivariate models were utilized. Again this technique follows an outline by Baron and Kenny (1986). The assumption is that the moderating variables or social network characteristics change the relationship between the independent variables and the outcomes variables. The moderating variables can amplify or even reverse the effect of the independent variables on the outcome variables. Figure 3 below illustrates the relationship between the predictor variables, dependent variable and the moderating variables.

![Diagram](image)

*Figure 3.*

| X = Independent Variables: Co-Occurring Disorder, Treatment Status, Treatment Motivation |
| M = Moderators: Social Network Characteristic Variables |
| Y = Dependent Variable: Perceived Social Support (ISEL scores) |

To evaluate this research question, interaction terms between the independent variables and the moderating variables included in the hypotheses were introduced into
several multivariate models. A separate Hierarchical Ordinary Least Squares Regression Model was utilized to examine the potential moderating effects of each social network characteristic hypothesized to have a moderating effect (percent of family, percent of substance users, percent who are critical, percent who support sobriety and percent of professionals). To determine which interactions to utilize, significant bivariate and multivariate relationships from research question one and the corresponding hypotheses guided the selection. Those variables which had significant relationships were included in the moderation model. Once it was determined which variables were to be included in the interaction term, the variables were checked for multicolinearity. Continuous variables were centered to attenuate the problem of multicolinearity due to significant relationships between variables, particularly the interaction terms and both the independent and moderating variables (Hoffman, 2004). To center the variables, the mean of the variable was subtracted from each value to produce the centered variable. The treatment motivation scale, as well as the five social network characteristic variables were centered. Both treatment status and co-occurring disorder status are dichotomous variables and were thus unable to be centered. The centered variables were utilized to create the interaction terms.

Once the predictor variables and the moderation variables were centered, and the interaction terms created, regression models were utilized to test the presented hypotheses. The regression models included several steps to test potential moderation. First the centered moderator was entered into the model. In the second step, the centered independent or predictor variable (treatment motivation) along with treatment status and co-occurring disorder status were entered with the covariate housing subsidies, as it was
significantly correlated with overall perceived social support. The third step introduced the cross product or interaction term or terms between the centered moderator and the independent variable (centered when appropriate). If a significant increase was shown on the $R^2$ value following the inclusion of the interaction term(s) from the $R^2$ of the main effect then moderation exists. To further interpret significant interactions, plots of the interactions were created and examined.
Chapter 4

Findings

Sample Characteristics

The sample consisted of 136 women with current substance use disorders, including both abuse and dependence disorders. Table 1 reports descriptive statistics for the sample. The women ranged in age from 21 to 55 years old with an average age of 35.24 years. A majority of the women (82.4% or 112) identified themselves as African American, 12.5 percent identified themselves as White, and the remaining 5.1 percent of the women identified themselves as Mexican, Puerto Rican, Multiracial or Other. The number of biological children the women had ranged from zero to 12, but on average the women had 3.75 children (or a median of four children). The majority of women in the sample (71.3%) were never married while 6.6 percent were currently married and the remaining 22.1 percent were widowed, separated or divorced. More than three-fourths (78.7%) of the women were living with someone at the time of their interview.

More than half (55.1%) of women in the sample completed elementary or junior high school while 39% percent obtained a high school diploma or GED. One woman in the sample reported receiving no education, 2.9 percent a vocational or technical diploma and the remaining 2.2 percent an associate’s degree or higher. Some women reported being in an educational program at the time of the interview (7.4% or 10 women). Almost 17 percent (16.9%) of women were currently working full or part-time while 55.8 percent were unemployed and 30.1 percent of the unemployed were looking for work. The remaining women were in job training (2.9%) or reported being homemakers (16.2%).
The women in the study were predominantly of low-income status, with almost half (47.1%) of the women having an annual family income below $5,000 and 80 percent of the women having an annual family income below $14,999. One-third of the women were receiving welfare at the time of their interview and almost as many (31.6%) received housing subsidies. A majority of the women (60.3%) received food stamps and Medicaid or Healthy Start benefits. More than half of the women (53.7%) reported not having enough money to make ends meet.

Substance Use Disorder

The women in the sample all had a current substance use disorder and 34 (25%) of the women had multiple substance use diagnoses (ranging from two to four diagnoses). Table 2 reports descriptive statistics for women’s substance use disorders. Most women had a substance dependence diagnosis including 56 percent with a cocaine dependence diagnosis and 53 percent with an alcohol dependence diagnosis. Other substance dependence diagnoses included Marijuana dependence (24%), PCP (5%), Sedatives (3%) and Amphetamines or Inhalants (each representing 0.7%). Diagnoses of substance abuse were less common, but almost one quarter (24%) of the women were diagnosed with alcohol abuse. Three other substance abuse diagnoses were present in this sample, marijuana (10%), Cocaine (3%) and PCP (2%).

Descriptive Results of Study Variables

Co-occurring mental disorder. Seventy-seven (56.6%) of the women in the sample had a co-occurring current mental disorder. As shown in Table 3, the most common mental disorder was Major Depressive Episode (MDE) (40%), followed by Post Traumatic Stress Disorder (PTSD) (32%), Manic Episode (21%), Generalized Anxiety
Disorder (GAD) (15%), Hypomania (3%) and Dysthymia (2%). Forty-five women had more than one mental disorder diagnosis as shown in Table 4. Of the remaining 59 women who did not have a current mental disorder diagnosis, 10 (18.5% of those with substance use disorder only) women had lifetime mental disorder diagnoses. For the entire sample of 136 women, a total of 60 (44.1%) women had a record of a lifetime mental disorder diagnosis, and 41 (30.1%) of these women had more than one lifetime mental disorder diagnosis (see Table 4). The most comment lifetime mental disorder diagnosis as shown in Table 3 was MDE (3.6%), followed by PTSD (27.2%), Mania (19.1%), GAD (8.8%), Hypomania (5.9%), and Dysthymia (1.5%).

Social network composition. Women reported having social networks of one to 38 members with an average of 10.73 and a median of 11 network members. Table 5 illustrates women’s social network compositions. Network members were slightly older on average than the women in the sample with a mean age of 41.7 years old. On average women reported more women than men in their social networks (64.9% females and 35.1% males). Their social networks were composed of an average of 49% family / household members, 17.8% friends, 13.8% professionals, 8.2% from other organizations such as church, 6.1% work / school, 4.8% neighbors. The women reported that their social networks consisted on average of 37.7% members who use alcohol and or drugs, 13.5% who utilized both alcohol and drugs, and 62.2% members who did not use alcohol or drugs. More than half the average number of members (68.6%) was reported as supporters of sobriety while fewer (16.8%) hardly ever supported sobriety.

Women reported being very close to an average of 52.6% of their network members, and not very close to 15.9% of their network members. Women reported being
in daily contact with an average of 39.7% of network members, in weekly contact with 33% members, and in monthly contact with 10.4% of their network members. In terms of how long women have known members of their networks, they reported an average of 60.6% they had known for more than five years, 17.6% were known for one to five years and 21.8% were known for less than one year.

_Treatment motivation._ Women’s treatment motivation was relatively high as reported in Table 6. Three subscales made up the full treatment motivation scale: problem recognition (M = 34.14, SD = 9.46), desire for help (M = 29.58, SD = 6.08), and treatment readiness (M = 33.49, SD = 4.89). The overall treatment motivation scale showed on average women had treatment motivation scores at the higher end of the possible range (M = 88.35, SD = 26.12). The reliability for this scale was good with the subscale reliabilities ranging from good to acceptable based on the Cronbach’s alpha test (full scale α = .91, problem recognition α = .91, desire for help α = .87, treatment readiness α = .77).

_Overall perceived social support._ As shown in Table 6, women reported a mean perceived social support score of 34.62 (SD = 7.61). This full scale had acceptable reliability (α = .81).

_Support for recovery._ Women who were in either outpatient or residential treatment also received the Support for Recovery scale. Descriptive results from this scale for the 86 women in treatment are also shown in Table 6. The women had fairly high mean scores of 47.51 (SD = 7.61) for the full scale and mean scores of 20.81 (SD = 2.87) for subscale A (extent of support and understanding) and mean scores of 26.7 (SD = 3.5) for subscale B (sources of support and encouragement).
Treatment status. A total of 86 (63.2%) women were in substance abuse treatment (either residential or outpatient). The remaining 50 (36.8%) women were not known to be receiving any substance abuse treatment at the time of their interview. These 50 women were not considered a no treatment group as their treatment status was unknown.

Type of treatment. Of the 86 women in substance abuse treatment, 41 (47.7%) were in residential substance abuse treatment. The other 45 (52.3%) were in an outpatient substance abuse treatment program.

Correlations between variables. A correlation matrix was used to explore the relationship between variables of interest in this study. This correlation matrix was utilized to identify potential multicollinearity, indicated by significant correlations above .80, between the predictor or independent variables. The variables included in this matrix were those utilized in all three research questions as independent variables and as moderators / mediators in research question three. Table 7 illustrates the correlation matrix and identifies significant correlations. None of the variables were significantly correlated such that there was concern for multicollinearity.

Research Questions and Hypotheses Findings

Preliminary Data Analysis

Univariate statistics, including frequencies and descriptive statistics (mean, median, standard deviation, range, skewness and kurtosis) were examined for each of the variables in the study. All the included variables had skewness and kurtosis within the normal range and there were no extreme outliers. Histogram plots including normal curves were also assessed to ensure that variables were normally distributed.
Bivariate correlations were also utilized to address many of the hypotheses for the research questions. The results of the correlations related to research questions one and two are discussed in the following section and are shown for both of the dependent variables for this study in Table 8. Student t-tests were used to compare groups of women on some of the variables. Multivariate analyses were utilized to examine the amount of variation explained by predictor variables of the dependent or outcome variables. Multivariate analyses were also utilized to test potential moderation and mediation based on the proposed hypotheses.

Research Question 1

How do social network characteristics, treatment status, co-occurring mental disorders and treatment motivation relate to overall perceived social support?

Bivariate findings

Hypothesis 1. Network size will not be related to overall perceived social support.

Findings: Women’s perceived social support was found to be significantly associated with network size, contrary to the proposed hypothesis based on bivariate correlations. The more network members reported by women, the higher their perceived social support scale was measured by the ISEL ($r = .180$, $p=.042$). Although this is a relatively small effect size based on a low $r$ value, this finding does not support the proposed hypothesis.

Hypothesis 2. A greater percent of network members who are alcohol/drug users will be associated with less overall perceived social support.
Findings: Bivariate correlations were utilized to explore the relationship between percent of alcohol / drug users and perceived social support. Overall perceived social support was not associated with the percent of alcohol and / or drug users within women’s social networks and thus the hypothesis was not supported (r = .026, p = .774).

Hypothesis 3. A greater percent of family / household members with be associated with higher overall perceived social support.

Findings: Based on bivariate correlations, there was not a significant relationship between the percent of family / household members and women’s overall perceived social support (r = -.020, p = .823). There was no support for this hypothesis.

Hypothesis 4. A greater percent of critical members will be associated with lower overall perceived social support.

Findings: Significant associations were found between the percent of members who were almost always critical (r = -.266, p = .002) based on bivariate correlations. The association was in the expected direction: a higher percentage of members who were almost always critical were associated with lower overall perceived social support. This finding exhibits support for the hypothesis, although this correlation is also weak. The percent of critical members was included in the multivariate model.

Hypothesis 5. A greater percent of network members who always support sobriety will be associated with more overall perceived social support.

Findings: No significant relationship was found based on bivariate correlations between the percent of members who always support sobriety and overall perceived social support (r = .150, p =.092). There was a significant but weak relationship found based on a bivariate correlation between the percent of members who hardly ever support
sobriety and overall perceived social support ($r = -.190, p = .032$). The lower the percent of members who hardly ever support sobriety the higher women’s overall perceived social support scores were. Although the hypothesis was not supported, there is evidence that there is a relationship between members who are not supportive of sobriety and overall perceived social support. This finding is also consistent with the findings for the previous hypothesis for critical support. The variable percent of members who hardly ever support sobriety was explored in the multivariate model since there was a significant association found with perceived social support in the process of testing this hypothesis.

Hypothesis 6. A greater percent of professionals in women’s social networks will be associated with higher overall perceived social support.

Findings: Bivariate correlations revealed that there was not a significant association between the percent of professionals in women’s social networks and their overall perceived social support ($r = .058, p = .518$). This hypothesis was not supported.

Hypothesis 7. Women's overall perceived social support will not be predicted by treatment motivation.

Findings: Consistent with the hypothesis, there was no association found between treatment motivation and women’s overall perceived social support ($r = .026, p = .770$). This hypothesis was also tested with bivariate correlations.

Hypothesis 8. Women's overall perceived social support will not be predicted by treatment status.

Findings: To test this hypothesis an Independent samples t-test was utilized to explore the relationship between treatment status and overall perceived social support.
This hypothesis was also supported based on the absence of an association between treatment status and overall perceived social support ($t = .650, p = .517$).

Hypothesis 9. Women with co-occurring mental disorders will report lower overall perceived social support.

Findings: This hypothesis was also tested utilizing an Independent samples t-test between co-occurring mental disorder and overall perceived social support. Having a co-occurring mental disorder was significantly associated with lower overall perceived social support ($t = 2.001, p = .048$). Women with co-occurring mental disorders had significantly lower mean scores for overall perceived social support. The hypothesis is supported and the co-occurring disorder variable was included in the multivariate model.

Multivariate findings main effects for research question one

A multiple regression equation was utilized to identify statistically significant relationships between three social network characteristics (total number of network members, percent of critical members, percent of members who hardly ever support sobriety), and co-occurring disorder status with the dependent variable, perceived social support. Bivariate relationships were utilized to identify potential covariates to be included in the model. Pearson r correlations and Independent samples t-tests were utilized to explore relationships between perceived social support and several demographic variables illustrated in Table 9. One variable, receiving housing subsidies, was found to be significantly related to perceived social support. This variable was included as a covariate in the Ordinary Least Squares regression model. The dependent or outcome variable, perceived social support (ISEL scores) was regressed on the predictor variables, and the covariate.
Table 10 displays the unstandardized regression coefficients (B), intercept, and standardized regression coefficients (β) for each variable in the model. The model significantly predicted women’s perceived social support, F (5,122) = 4.452, p<.01. The model R² was .154 indicating that 15.4 percent of the variance in women’s perceived social support scores was predicted by the model.

Two variables in the model had significant relationships with the outcome, perceived social support, similar to the relationships shown at the bivariate level. The percent who were always critical (t = -2.479, p<.05) and having a co-occurring mental disorder (t = -2.004, p<.05). The percent of network members who were always critical predicted the most variance in women’s perceived social support scale scores. As the percentage of members who were almost always critical increases by one percent, women’s perceived social support scores decrease by 2.479. Women with co-occurring mental disorders also had perceived social support scores which were approximately two points lower than those without a co-occurring disorder.

Summary of research question 1. Overall at the bivariate level hypotheses 4, 5, 7, 8, and 9 were supported by either significant relationships or the absence of significant relationships. For those independent variables that had significant relationships with the dependent variable overall perceived social support mostly weak relationships were present. Based on the multivariate model, significant relationships were found between the percent of critical network members and co-occurring mental disorders with overall perceived social support as predicted by hypotheses 4 and 9. In the multivariate model hypothesis 5 was not supported as there was not a significant relationship between the
percent of network members who hardly ever support sobriety with overall perceived social support.

Conversely, the remaining hypotheses (1, 2, 3, and 6) were not supported based on significant or non-significant bivariate relationships. In the case of hypothesis 1, the total number of network members was significantly associated with overall perceived social support, contrary to the hypothesized relationship. This relationship was not significant in the multivariate model. The percent of substance users, family / household members and professionals were not significantly related to women’s overall perceived social support. The absence of relationships seems to indicate that the relationship of the social network members with the women, instead the type of support they provided, in this case whether they provided critical (negative) support was important and significantly related to women’s overall perceived social support.

Research Question 2.

How do social network characteristics, treatment status, co-occurring mental disorders, and treatment motivation relate to support for recovery?

Bivariate findings

This research question is a subsample analysis including the 86 women in substance abuse treatment. The support for recovery scale was only administered to women in treatment at the time of their interview. Findings from the analyses testing the presented hypotheses are summarized in Table 8.

Hypothesis 10. Network size will not be related to support for recovery.
Findings: No significant association was found between women’s network size and their support for recovery scores (r = .121, p = .267) based on bivariate correlations between the two variables. This hypothesis is supported.

Hypothesis 11. A greater percentage of network members that are alcohol/drug users will be associated with less support for recovery.

Findings: Bivariate correlations between the percent of alcohol/drug users and support for recovery were utilized to test this hypothesis. The percentage of alcohol and or drug users in one’s social network was negatively associated with support for recovery scores (r = -.218, p = .044). Those with a higher percentage of users in their network had lower support for recovery. This hypothesis is supported, although the correlation is weak between the two variables.

Hypothesis 12. Women with a greater percentage of family / household members in their social networks will have higher support for recovery scores than those with few or no family in their social networks.

Findings: No relationship was found between the percent of family (r = .064, p = .560) based on bivariate correlations between women’s social networks and their support for recovery scores. This hypothesis was not supported.

Hypothesis 13. A greater percentage of critical members (members who are almost always critical) will be associated with lower support for recovery.

Findings: This hypothesis was not supported, as there was no significant association between the percent of critical members and support for recovery scores (r = -.152, p = .162) based on bivariate correlations.
Hypothesis 14. A greater percentage of members who always support sobriety will be associated with more support for recovery.

Findings: This hypothesis was also tested utilizing bivariate correlations. A significant association was found between the percent of members who almost always support sobriety (r = .363, p = .001) and support for recovery. This hypothesis was supported and the correlation being above .30 indicates a medium level of correlation. Women with a greater percentage of members who always support their sobriety had higher support for recovery scores. This correlation supports the construct validity of the dependent measure support for recovery. Women who have identified more network members whom they feel support their sobriety have higher scores on the support for recovery scale indicating that they had available sobriety support.

Hypothesis 15. A greater percentage of professionals will be associated with higher support for recovery.

Findings: This hypothesis was not supported based on bivariate correlations. There was no relationship between the percent of professionals within women’s networks and their support for recovery scores (r = -.102, p = .351).

Hypothesis 16. Women involved in residential treatment will have higher support for recovery scores than women involved in outpatient treatment.

Findings: This hypothesis was tested with an Independent Samples t-test between treatment type and support for recovery. Type of treatment was not significantly associated with women’s support for recovery scores (t = 1.155, p = .251). This hypothesis is not supported.
Hypothesis 17. Treatment motivation will be positively associated with support for recovery.

Findings: Treatment motivation and support for recovery were positively associated ($r = .280, p = .009$) based on bivariate correlations although the relationship is considered small. Those with higher treatment motivation had higher support for recovery, supporting the hypothesis.

Hypothesis 18. Women with co-occurring mental disorders will report lower support for recovery than women with substance use disorders only.

Findings: There were no significant differences found between women with co-occurring mental disorders and those with a substance use disorder only ($t = .062, p = .951$). This hypothesis is not supported based on the Independent Samples t-test between co-occurring disorder and support for recovery.

*Multivariate findings – main effects of research question two*

Similar to Research Question one, an Ordinary Least Squares regression equation was utilized to identify statistically significant relationships between predictor variables and the dependent or outcome variable, support for recovery. The predictor variables were selected based on the relationships found through hypothesis testing above. Three predictor variables were significantly related to the outcome variable and selected for entry into the regression model: percent who are substance users, percent who almost always support sobriety and treatment motivation scale scores. Correlation analyses confirmed that there were no problems of multicolinearity with the variables of interest (see Table 7).
The same method was also utilized to identify covariates as was utilized for research question one. Demographic variables and the outcome variable, support for recovery, were entered into T-test and Pearson r correlations to identify any relationships. Three variables were found to have significant associations with support for recovery and were utilized as covariates (shown in Table 9): Women’s age, their current welfare status, and receipt of Medicaid / Healthy Start benefits.

Based on the proposed hypotheses and significant relationships found at the bivariate level, six variables were entered into the model (percent of members who use alcohol and/or drugs, percent who almost always support sobriety, treatment motivation, client age, Medicaid / Healthy Start Benefits, and Welfare Benefits). Support for recovery was regressed on these six predictor variables. Table 11 displays the unstandardized regression coefficients (B), intercept, and standardized regression coefficients (β) for each variable in the model. The model significantly predicted women’s support for recovery, F (6,79) = 3.825, p<.01.

One variable in the model a significant relationship with the outcome, support for recovery. The percent who almost always support sobriety was significantly associated with support for recovery (t = 2.339, p<.05). Overall the model R² value was .225; in other words 22.5 percent of the variance in women’s support for recovery scores was predicted by this model.

Summary of research question 2. Four of the nine hypotheses were supported by significant bivariate relationship and one a non-significant bivariate relationship (hypotheses 10, 11, 14, and 17). The multivariate model was significant, however only the percent of social network members who supported sobriety was significantly
associated to support for recovery. This finding provides construct validity to the measuring as the two measures are examining the same type of support and should be highly associated. The percentage of substance users and women’s treatment motivation were hypothesized to be associated with support for recovery but were only found to be significant at the bivariate level however the correlations were relatively weak.

The remaining five hypotheses were not supported based on the non-significant bivariate relationships (hypotheses 12, 13, 15, 16, and 18). In this case the absence of significant relationships illustrates that the relationship of the social network members with the women and in most cases the type of support (with the exception of support specific to recovery) is not significantly associated with support for recovery.

Research Question 3.

Is the relationship between the independent variables (treatment status, co-occurring mental disorder and treatment motivation) and perceived social support moderated and/or mediated by social network characteristics?

Mediation

As discussed in chapter three, the process of testing for mediation includes four steps, the first being crucial for continuation. First, to test whether social network characteristics mediated the relationships between the independent variables and the outcome variable, a relationship needed to be found between the independent variables and the dependent variable. To test this first step, an OLS regression model was utilized to regress perceived social support on the three predictor variables (co-occurring disorder, treatment status and treatment motivation). This model also included the covariate housing subsidies, included in the model for research question one based on its
significant relationship with perceived social support (see Table 9). The regression analysis was not significant \( F(4,123) = 1.300, \ p = .274 \) and none of the three predictors had a significant relationship with perceived social support. A summary of the OLS regression model for this first step is provided in Table 12. Since there was not a significant relationship to mediate, the procedure to check for mediation was not continued. Therefore the hypotheses that social network characteristics mediate the relationships between treatment status, co-occurring mental disorder and treatment motivation and perceived social support were not supported.

**Moderation**

Although there was not a significant relationship found between the three predictor variables and the outcome variable, perceived social support, moderation is still a possibility. Variables that moderate the relationship can be responsible for a lack of a direct effect of the predictor variables on the outcome variable. For the previously described analysis conducted for research question one, co-occurring disorder status was significantly related to perceived social support in the multivariate model which included three social network characteristic variables and housing subsidies as a covariate. The presence of a relationship between co-occurring disorder and perceived social support with social network characteristics as a part of the model is further support for testing possible moderation. As a part of testing for moderation the following hypotheses were tested first utilizing Independent T-tests and Pearson correlations prior to the inclusion of moderators and interaction terms in the multivariate model.

Five separate multivariate models were utilized to explore potential moderation of each of the five social network characteristics separately based on the proposed
hypotheses and preliminary tests. The determination of which interaction terms were included was based on the results of T-tests and Pearson correlations conducted to demonstrate the relationships between the potential moderators and the three predictor variables. Each of the five regression models was a hierarchical regression model which included in the first step the centered moderator variable. The second step included the three predictor variables (the centered treatment motivation variable, co-occurring disorder, and treatment status; which were not centered as they are dichotomous variables) and the covariate variable housing subsidies. The third step included the interaction term or terms created between the moderator and predictor variables depending on preliminary results. The results of the preliminary t-tests and correlations are shown in Table 13. Below each of the five models addressing separate hypotheses are described.

Hypothesis 19. The percentage of family / household members within women’s social networks moderates the relationship between the independent variables and overall perceived social support.

Independent T-tests were utilized initially to explore the relationship between the presence of family and co-occurring disorder. No significant relationship was found between the percent of family who were social network members and women’s co-occurring disorder status (t = 1.235, p = .219). Analysis for research question one, and the mediation portion of this research question also indicates that there was no direct effect of co-occurring disorder status on perceived social support, although a significant relationship exists at the bivariate level, (t = 2.001, p = .048). Due to an absence of a significant relationship between co-occurring disorder and percentage of family /
household members, these two variables were not included as an interaction term to explore the possibility of moderation.

The remaining two predictors, treatment status and treatment motivation were also not significantly related to perceived social support at the bivariate or multivariate level. This could be caused by a moderating effect of social network characteristics. Bivariate relationships, evaluated with Pearson r correlations, indicate that treatment motivation was significantly related to the percent of family / household members (r = -.304, p = .000) within women’s social networks. This relationship provides support for use in a regression model to determine if the percentage of family / household members moderates the relationship between treatment motivation and perceived social support.

An Independent t-test was utilized to evaluate the relationship between treatment status and percentage of family / household members. The percent of family / household members within women’s networks were significantly related to treatment status (t = 4.725, p = .000). Since there is a significant relationship between percent of family / household members and treatment status, the interaction term between the two was utilized in the regression model to determine if family / household members moderate the relationship between treatment status and perceived social support. Finally, preliminary analyses revealed that there was not a significant relationship between the percent of family / household members in women’s networks and their perceived social support (r = -.020, p = .823).

**Hierarchical Regression Model**

This first model tested Hypothesis 19, that the percent of family / household members were moderators. The first step of the model included the centered percent of
family/household members as the potential moderating variable. By including this variable in the first step this identifies any predictive power of the variable on the outcome perceived social support in addition to control for this relationship when exploring the relationship between variables entered in subsequent steps with the outcome variable. The second step included housing subsidies as a covariate, treatment status, co-occurring disorder status and centered treatment motivation variables. The final step included two interaction terms, the interaction between treatment status and percent of family/household members and the interaction between treatment motivation and percent of family/household members.

Results of this model, shown in Table 14 indicate that the percent of family/household members in women’s social networks does not moderate the relationship between the predictor variables and the outcome variable. None of the three steps in this model were significant and the final model had an $R^2$ value of .043 which indicates very little explanation of variance (4.3%) in overall perceived social support explained by this model. None of the variables entered in any of the steps had a significant relationship with the outcome perceived social support. In order to support the hypothesized moderation, a significant increase in the $R^2$ value would have to be present following the inclusion of the interaction terms in the third step. In this model the $R^2$ did not significantly increase. Hypothesis 19 is not supported based on this regression model.

Hypothesis 20. The percentage of members who support sobriety (those who almost always support sobriety) moderates the relationship between the independent variables and overall perceived social support.
To test this hypothesis, preliminary analyses were conducted to determine if there were significant associations between the potential moderator and predictor variables. These results are summarized in Table 13. Co-occurring disorder and the percent of network members who support sobriety were not significantly related indicating there is not likely to be a moderating relationship ($t = -0.230, p = 0.818$). Relationships were found between both treatment status and treatment motivation and the percent of members who support sobriety. Treatment status was significantly related to the percent of members who support sobriety ($t = -5.457, p = 0.000$). Treatment motivation was also significantly related to the percent of members who support sobriety ($r = 0.440, p = 0.000$). A significant relationship was not present between the percent who support sobriety and perceived social support, however percent who hardly ever support sobriety was significantly associated with perceived social support as discussed for analysis for research question one. Interaction terms between treatment status and the percent that support sobriety and treatment motivation and the percent that support sobriety were included in the model to explore potential moderation.

Hierarchical Regression Model

The hierarchical regression model to test the possible moderation of the percent of members who support sobriety was similar to the first model. The first step included the centered percent of members who support sobriety. The second step was the same (including the three predictor variables and the covariate). For the third step two interaction terms were included, the interaction between treatment status and the percent who support sobriety and the interaction between treatment motivation and the percent who support sobriety.
Similar to the first model, none of the three steps were significant, nor was the entire model (see Table 15). The $R^2$ value increased for all three steps in the model, but none was a significant increase. The final model $R^2$ value was .074, indicating that this model predicted 7.4% of the variance in women’s perceived social support scores. There were also no significant relationships found between any of the variables entered in the model and perceived social support in any of the three steps. Hypothesis 20 is not supported and the percent of members who support sobriety did not moderate the relationship between the predictor variables and perceived social support.

Hypothesis 21. The percentage of members who almost always provide critical support *moderates* the relationships between the independent variables and overall perceived social support.

To assess the possible moderating power of members who are critical (provide negative support), Independent t-tests and Pearson r correlations were utilized to examine the relationships between the percent of critical members with the three predictors variables; co-occurring disorder, treatment status and treatment motivation. There were not significant relationships between co-occurring disorder ($t = -.611, p = .543$) or treatment motivation ($r = -.143, p = .096$) and the percent of critical members. Treatment status was significantly related to the percent of critical members ($t = 3.538, p = .002$). Pearson r correlations between the percent of critical members and perceived social support were also conducted. Results show that the percent of members who are critical was significantly related to perceived social support ($r = -.266, p = .002$). The multivariate model utilized to explore research question one also shows a significant relationship between the percent of members who are critical and perceived social
support. The interaction between treatment status and the percent of critical members will be included in the multivariate model to test for moderation.

**Hierarchical Regression Model**

For this third model, the moderating effect of the percent of members who provide critical support was explored. The first step included the centered percent of members who provide critical support. The second step remained the same with the predictor variables and the covariate. The third step included one interaction term between treatment status and the percent of members who provide critical support.

This model did show a significant R² for step one, and an increase in the R² value for the second step as shown in Table 16. There was also a small increase between the second and third steps, which were non-significant. The final model had an R² value of .115 (11.5%), showing a higher amount of the variance in women’s perceived social support than the previous two models. The overall model was significant (the final step: F(6,121) – 2.616, p>.05) and the centered percent of members who provide critical support was negatively related to perceived social support in all three steps. This result is consistent with the findings from research question one in which the percent of members who provided critical support was a significant predictor of perceived social support. These results do not support Hypothesis 21 and the percent of members who provide critical support was not found to be a moderator, although there is a direct negative relationship effect of the percent of members who provide critical support on perceived social support.

**Hypothesis 22**. The percentage of members who are substance users *moderates* the relationships between the independent variables and overall perceived social support.
Following the same procedure as with the previous hypotheses, independent t-tests and Pearson correlations were utilized to explore associations between the percent of substance users and the three predictor variables as shown in Table 13. No significant relation was detected between co-occurring disorder status and the percent of substance users within women’s networks ($t = -.767, p = .867$) based on an Independent t-test. Significant relationships were found based on an Independent T-test and a Pearson r correlation between treatment status and percent of substance users ($t = 4.997, p = .000$) and treatment motivation and percent of substance users ($r = -.512, p = .000$). A significant relationship was not found between percent of substance users and perceived social support ($r = -.026, p = .774$). Moderation effects of percent of substance users on the relationship between treatment status and treatment motivation on perceived social support were tested based on these initial results.

Hierarchical Regression Model

The moderating effect of percentage of substance users was tested in the fourth model. For the first step of the Hierarchical OLS regression model the centered percent of substance users was entered. Again the same variables were entered into the second step as the previous models: the predictor variables and covariate. The third step included the interaction terms: treatment status and percent of substance users and treatment motivation and percent of substance users.

The results of this fourth model are provided in Table 17. There was a significant change in the $R^2$ after the third step introducing the interaction terms ($R^2\Delta = .068, p<.05$). The final step of the model was also significant and the final $R^2$ value was .109, indicating the model predicted 10.9% of the variance in women’s perceived social
support scores. The interaction term composed of treatment motivation and percent of substance users had a significant relationship with perceived social support (t = -2.286, p<.05). This indicates that percent of substance users was a moderator of the relationship between treatment motivation and perceived social support. There was not a significant relationship between the interaction term (treatment status X percent of substance users) and perceived social support. This indicates that percent of substance users only moderates the relationship between treatment motivation and perceived social support. This model illustrates support for Hypothesis 22, that percent of substance users does moderate the relationship between treatment motivation and perceived social support.

Figure 5 illustrates the interaction between treatment motivation and percent of substance users within women’s social networks. The plot of the interaction illustrates that when women have a greater presence of substance users, having more treatment motivation predicts lower perceived social support. Inversely, when women have fewer substance users within their social networks, more treatment motivation predicts higher perceived social support.

Hypothesis 23. The percent of members who are professionals moderates the relationships between the independent variables and overall perceived social support.

For this final moderation model, the preliminary independent t-test and Pearson correlations were utilized to determine which interaction terms to include in the multivariate model. The results of these relationships are shown in Table 13. Similar to the previous hypotheses, no significant relationships were found between co-occurring disorder and the percent of professionals within women’s networks (t = -.767, p = .444). Significant relations were found with treatment status, treatment motivation and the
percent of professionals based on an Independent T-test and a Pearson r correlation. Treatment status was significantly associated with the percent of professionals \((t = -7.290, p = .000)\). Treatment motivation was also significantly associated with the percent of professionals \((r = .435, p = .000)\).

The percent of professionals did not have a significant relationship with perceived social support based on Pearson r correlations. The percent of professionals within women’s networks and both treatment status and treatment motivation were included in interaction terms utilized in the multivariate model based on these preliminary findings.

**Hierarchical Regression Model**

The fifth and final model tests the hypothesis that the percent of professionals in women’s social networks moderate the effect of predictor variables on perceived social support. For the first step of the Hierarchical OLS regression model, the centered percent of professionals variable was entered. The second step was the same as the previous four models and included the predictor variables and the covariate. The third step included two interaction terms; treatment status and percent of professionals and treatment motivation and percent of professionals.

The overall model was significant although the first two steps were not \((F = 2.568, p<.05)\). Results of this final regression model are shown in Table 18. The \(R^2\) for the final step did significantly increase \((R^2\Delta = .080, p<.01)\) indicating that percent of professionals does moderate the relationship between the predictor variables and perceived social support. The final model predicted 13% of the variance in women’s perceived social support scores \((R^2 = .130)\).
In the full model both interaction terms were significantly related to perceived social support (treatment status and percent of professionals: \( t = -3.191, p < .01 \)), treatment motivation and percent of professionals: \( t = 2.862, p < .01 \)). This model demonstrates support for Hypotheses 23, percent of professionals moderates the relationship between treatment motivation, treatment status and perceived social support.

To further interpret the moderation effects of the percent of professionals, simple slope plots were created based on the interaction terms shown in Figure 6 and Figure 7. Based on these plots, a higher percent of professionals within women’s social networks buffered the negative relationships between treatment motivation and women’s perceived social support (see Figure 6). When women have lower treatment motivation, the presence of professionals in their social networks can improve their perceived social support.

The simple slope plot of the interaction between treatment status and percent of professionals is shown in Figure 7. The interaction plot illustrates that the presence of professionals in women’s social networks buffered the negative effect of not being in substance abuse treatment on perceived social support. For women who were not in treatment, the greater the presence of professionals resulted in higher perceived social support. In the case of women who were in substance abuse treatment, a higher presence of professionals did not result in higher perceived social support, but slightly lower social support than for women in treatment with a lower presence of professionals in their social network.

Summary of research question 3. Mediation was not able to be tested for the presented research hypotheses as there was not a significant relationship between the
independent and dependent variables without the presence of the potential mediating variables in a multivariate model. Moderation was able to be explored for the presented research hypotheses. Only two of the hypotheses (hypotheses 22 and 23) were partially supported and the percent of substance users moderated the relationship between treatment motivation and overall perceived social support as well as the percentage of professionals moderated the relationship between both treatment motivation and treatment status with overall perceived social support. These findings indicate that the relationship between treatment motivation and overall perceived social support is dependent on substance users and professionals within women’s social networks. The relationship between treatment status and overall perceived social support is dependent on professionals within women’s networks.

Most of the hypotheses were not supported. The percent of substance users, the percent of network members who support sobriety, and the percent of members who are critical were not found to be moderators (hypotheses 19, 20, and 21). The independent variable, co-occurring disorder, was not moderated by any of the possible moderators as hypothesized.

Revised Conceptual Model

Based on the findings from this study, below is a revised conceptual model illustrating the relationships found based on the explored research questions. For simplicity, the dependent variables are represented separately in the new model (Figure 4).
Power Analysis

Post hoc power analyses were conducted to determine the power of the analyses for both the full sample exploring the predictors of perceived social support and for the sub sample exploring the predictors of support for recovery. “The power of a statistical test is the probability that it will yield statistically significant results” (Cohen, 1977, p. 1).
If power is found to be greater than .80 then the likelihood of a Type II error occurring is decreased and there is good power in the statistical model. G*3.0.10 software was utilized to conduct the necessary post hoc Power analyses.

The post hoc power analysis was first conducted for the full sample included in research question one. A total N of 128 was included in this analysis (eight women were excluded in the multivariate model due to missing values). Based on a medium effect size of 0.15 and the six predictor variables utilized in the model, the results indicate that there is sufficient power present for this model $\text{Power}(1-\beta \text{ err prob}) = 0.92$, well above the .80 level. This indicates that significant results are not likely due to a Type II error and therefore there is more confidence in the significant relationships.

The second post hoc power analysis was conducted for the sub sample of 86 women utilized in research question two. A total N of 86 was included as there was no missing data for the multivariate model. Based on the medium effect size of 0.15 and six predictor variables utilized in the model, the results are below the .80 level for this mode, $\text{Power}(1-\beta \text{ err prob}) = .74$. Since the power is below the level where power is sufficient to assume there are no Type II errors this level of power does indicate that the sample size was smaller than the optimal size to detect potential significant relationships present in the model. Any significant results that were found are however still valid, as given the lack of power they must have a significant association to still be present in the model.

For research question three, five different OLS models were utilized to test for moderation and one model for mediation. A power analysis for the first step of the mediation model shows that given the sample size of 128 women, a medium effect size and five predictor variables, power was high, $\text{Power}(1-\beta \text{ err prob}) = .93$. 
Two separate power analyses were utilized for the five moderation models, one identical to that conducted for research question one indicating high power. The second utilized the same sample size and medium effect size, but differed by including seven predictor variables. The power was also very good for this model, \( \text{Power}(1-\beta \text{ err prob}) = .90 \).

With the exception of the OLS model for research question two, the power analyses revealed that there was sufficient power to conduct the analyses and avoid Type II errors. Research question two obtained power below the .80 level, which could account for a lack of significant findings.
Table 1.
*Descriptive Statistics (N = 136)*

<table>
<thead>
<tr>
<th>Variables</th>
<th>% or M</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>35.24</td>
<td>7.65</td>
<td>21 - 55</td>
</tr>
<tr>
<td>Race (African American)</td>
<td>82.40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing status (Lives with Someone)</td>
<td>78.70%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital Status (Never Married)</td>
<td>71.30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education (HS diploma or greater)</td>
<td>34.50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Children</td>
<td>3.75</td>
<td>2.42</td>
<td>0 - 12</td>
</tr>
<tr>
<td>Employment Status (Employed F-T or P-T)</td>
<td>16.90%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welfare Assistance (Yes in Last 6 months)</td>
<td>42.60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welfare Assistance (Currently Receiving)</td>
<td>33.10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Stamps (Currently Receiving)</td>
<td>60.30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicaid Assistance (Currently Receiving)</td>
<td>60.30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing Subsidies (Currently Receiving)</td>
<td>31.60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual Family Income before Tax below $15,000</td>
<td>80.10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough Money to Make Ends Meet</td>
<td>53.70%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2.

*Current Substance Use Diagnoses*

<table>
<thead>
<tr>
<th>Substance</th>
<th>Abuse</th>
<th>Dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Valid</td>
</tr>
<tr>
<td>Alcohol</td>
<td>33</td>
<td>24.0%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>12</td>
<td>10.0%</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sedatives</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cocaine</td>
<td>3</td>
<td>3.0%</td>
</tr>
<tr>
<td>Opiates</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hallucinogens</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PCP</td>
<td>2</td>
<td>2.0%</td>
</tr>
<tr>
<td>Inhalants</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 3.
*Current and Lifetime Mental Disorder Diagnoses*

<table>
<thead>
<tr>
<th>Mental Disorder</th>
<th>Current N = 77</th>
<th></th>
<th>Lifetime N = 66</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized Anxiety</td>
<td>20</td>
<td>15.0</td>
<td>12</td>
<td>8.8</td>
</tr>
<tr>
<td>Post Traumatic Stress</td>
<td>43</td>
<td>32.0</td>
<td>37</td>
<td>27.2</td>
</tr>
<tr>
<td>Major Depressive Episode</td>
<td>54</td>
<td>40.0</td>
<td>43</td>
<td>31.6</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>2</td>
<td>2.0</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Manic Episode</td>
<td>29</td>
<td>21.0</td>
<td>26</td>
<td>19.1</td>
</tr>
<tr>
<td>Hypomania</td>
<td>4</td>
<td>3.0</td>
<td>8</td>
<td>5.9</td>
</tr>
<tr>
<td>Number of Diagnoses</td>
<td>Current</td>
<td></td>
<td>Lifetime</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>---------</td>
<td>-------</td>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>0</td>
<td>59</td>
<td>43.4</td>
<td>76</td>
<td>55.9</td>
</tr>
<tr>
<td>1</td>
<td>32</td>
<td>23.5</td>
<td>19</td>
<td>14.0</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>16.9</td>
<td>23</td>
<td>16.9</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>11.0</td>
<td>10</td>
<td>7.4</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>4.4</td>
<td>7</td>
<td>5.1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>0.7</td>
<td>1</td>
<td>0.7</td>
</tr>
<tr>
<td>Total With at Least 1 Diagnosis</td>
<td>77</td>
<td>56.6</td>
<td>66</td>
<td>48.5</td>
</tr>
</tbody>
</table>
Table 5.

**Social Network Composition**

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Members (Range: 1 - 38)</td>
<td>10.73</td>
<td></td>
</tr>
<tr>
<td>Average Age of Network Members</td>
<td>41.70</td>
<td></td>
</tr>
</tbody>
</table>

**Percentage of Network Members**

- Females: 64.9%
- Males: 35.1%
- Family: 39.0%
- Household: 9.7%
- Friends: 17.8%
- Professionals: 13.8%
- Other Organizations: 8.2%
- Work/School: 6.1%
- Neighbors: 4.8%
- Use Alcohol and/or Drugs: 37.7%
- Didn't Use Alcohol or Drugs: 62.2%
- Support Sobriety: 68.6%
- Hardly Ever Support Sobriety: 16.8%
- Members Women Were Very Close To: 52.6%
- Members Women Were Not Very Close To: 15.9%
- Members Have Daily Contact: 39.7%
- Member Have Weekly Contact: 33.0%
- Member Have Monthly Contact: 10.4%
- Members Known for +5 Years: 60.6%
- Members Known for 1 - 5 Years: 17.6%
- Members Known Less than 1 Year: 21.8%
### Study Scale Descriptives

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Actual Range</th>
<th>Potential Range</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Motivation</td>
<td>136</td>
<td>88.35</td>
<td>26.12</td>
<td>24 - 119</td>
<td>24 - 120</td>
<td>0.91</td>
</tr>
<tr>
<td>Problem Recognition</td>
<td>136</td>
<td>34.14</td>
<td>9.46</td>
<td>9 - 45</td>
<td>9 - 45</td>
<td>0.91</td>
</tr>
<tr>
<td>Desire for Help</td>
<td>136</td>
<td>29.58</td>
<td>6.08</td>
<td>10 - 35</td>
<td>7 - 35</td>
<td>0.87</td>
</tr>
<tr>
<td>Treatment Readiness</td>
<td>100</td>
<td>33.49</td>
<td>4.89</td>
<td>8 - 40</td>
<td>8 - 40</td>
<td>0.77</td>
</tr>
<tr>
<td>Perceived Social Support</td>
<td>128</td>
<td>34.62</td>
<td>7.61</td>
<td>13 - 47</td>
<td>0 - 48</td>
<td>0.81</td>
</tr>
<tr>
<td>Appraisal</td>
<td>136</td>
<td>10.13</td>
<td>2.14</td>
<td>0 - 12</td>
<td>0 - 12</td>
<td>0.67</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>134</td>
<td>7.57</td>
<td>2.45</td>
<td>0 - 12</td>
<td>0 - 12</td>
<td>0.46</td>
</tr>
<tr>
<td>Belonging</td>
<td>134</td>
<td>8.67</td>
<td>2.71</td>
<td>2 - 12</td>
<td>0 - 12</td>
<td>0.66</td>
</tr>
<tr>
<td>Emotional</td>
<td>131</td>
<td>8.31</td>
<td>2.65</td>
<td>0 - 12</td>
<td>0 - 12</td>
<td>0.52</td>
</tr>
<tr>
<td>Support for Recovery</td>
<td>86</td>
<td>47.51</td>
<td>5.44</td>
<td>32 - 56</td>
<td>14 - 56</td>
<td>0.75</td>
</tr>
<tr>
<td>Subscale A</td>
<td>86</td>
<td>20.81</td>
<td>2.87</td>
<td>14 - 24</td>
<td>8 - 24</td>
<td>0.46</td>
</tr>
<tr>
<td>Subscale B</td>
<td>86</td>
<td>26.70</td>
<td>3.50</td>
<td>17 - 32</td>
<td>6 - 32</td>
<td>0.75</td>
</tr>
</tbody>
</table>
Table 7.

Correlation Matrix: Independent / Predictor Variables

<table>
<thead>
<tr>
<th></th>
<th># Members</th>
<th>% Substance Users</th>
<th>% Critical</th>
<th>% Don't Use</th>
<th>% Hardly Ever Critical</th>
<th>% Hardly Ever Supp. Sobriety</th>
<th>% Professionals</th>
<th>% Household/Family</th>
<th>Co-Occurring MD</th>
<th>Treatment Status</th>
<th>Treatment Motivation</th>
<th>Type of Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Substance Users</td>
<td>1</td>
<td>-.012</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Critical</td>
<td>-.204*</td>
<td>.166</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Support Sobriety</td>
<td>.041</td>
<td>-466**</td>
<td>-298**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Don't Use</td>
<td>.012</td>
<td>-1**</td>
<td>-.166</td>
<td>.466**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Hardly Ever Critical</td>
<td>.183*</td>
<td>-.228**</td>
<td>-.622**</td>
<td>.232*</td>
<td>.228**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Hardly Ever Supp. Sobriety</td>
<td>-.075</td>
<td>.481**</td>
<td>.213*</td>
<td>-.763**</td>
<td>-.481**</td>
<td>-.086</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Professionals</td>
<td>.159</td>
<td>-386**</td>
<td>-.298**</td>
<td>.327**</td>
<td>.386**</td>
<td>.438**</td>
<td>-.281**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Household/Family</td>
<td>-.500**</td>
<td>.289**</td>
<td>.215*</td>
<td>-.097</td>
<td>-.289**</td>
<td>-.301**</td>
<td>.122</td>
<td>-.568**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-Occurring MD</td>
<td>.030</td>
<td>.014</td>
<td>.053</td>
<td>.020</td>
<td>-.014</td>
<td>-.088</td>
<td>-.062</td>
<td>.066</td>
<td>-.106</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Status</td>
<td>.184*</td>
<td>-.422**</td>
<td>-.308**</td>
<td>.365**</td>
<td>.422**</td>
<td>.318**</td>
<td>-.329**</td>
<td>.533**</td>
<td>-.394**</td>
<td>-.034</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Treatment Motivation</td>
<td>.050</td>
<td>-.512**</td>
<td>-.143</td>
<td>.440**</td>
<td>.512**</td>
<td>.185*</td>
<td>-.402**</td>
<td>.435**</td>
<td>-.304**</td>
<td>.044</td>
<td>.703**</td>
<td>1</td>
</tr>
<tr>
<td>Type of Treatment</td>
<td>.056</td>
<td>-.029</td>
<td>-.109</td>
<td>.014</td>
<td>.029</td>
<td>.283**</td>
<td>.008</td>
<td>.178</td>
<td>-.054</td>
<td>-.005</td>
<td>-.055</td>
<td>-.476**</td>
</tr>
</tbody>
</table>

* p<.05, ** p<.01
Table 8.

*Bivariate Correlations for Research Question 1 and 2*

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variable</th>
<th>ISEL</th>
<th>Support for Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 10</td>
<td>Total Number of Network Members</td>
<td>.180*</td>
<td>.121</td>
</tr>
<tr>
<td>2, 11</td>
<td>Percentage Substance Users</td>
<td>-.026</td>
<td>-.218*</td>
</tr>
<tr>
<td></td>
<td>Percentage Use Alcohol Only</td>
<td>.046</td>
<td>-.127</td>
</tr>
<tr>
<td></td>
<td>Percentage Use Drugs Only</td>
<td>-.067</td>
<td>-1.01</td>
</tr>
<tr>
<td></td>
<td>Percentage Use Alcohol and Drugs</td>
<td>-.066</td>
<td>-.128</td>
</tr>
<tr>
<td></td>
<td>Percentage aren’t Substance Users</td>
<td>.026</td>
<td>.218*</td>
</tr>
<tr>
<td>3, 12</td>
<td>Percentage of Family and Household Members</td>
<td>-.020</td>
<td>.064</td>
</tr>
<tr>
<td>4, 13</td>
<td>Percentage Almost Always Critical</td>
<td>-.266**</td>
<td>-.152</td>
</tr>
<tr>
<td></td>
<td>Percentage Hardly Ever Critical</td>
<td>.206*</td>
<td>.141</td>
</tr>
<tr>
<td>5, 14</td>
<td>Percentage Almost Always Support Sobriety</td>
<td>.150</td>
<td>.363**</td>
</tr>
<tr>
<td></td>
<td>Percentage Hardly Ever Support Sobriety</td>
<td>-.190*</td>
<td>-.225*</td>
</tr>
<tr>
<td>6, 15</td>
<td>Percentages of Professionals</td>
<td>.058</td>
<td>-.102</td>
</tr>
<tr>
<td>7, 17</td>
<td>Treatment Motivation Scale</td>
<td>.028</td>
<td>.280**</td>
</tr>
<tr>
<td>8</td>
<td>Treatment Status</td>
<td>-.818</td>
<td>1.155</td>
</tr>
<tr>
<td>16</td>
<td>Type of Treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9, 18</td>
<td>Co-Occurring Disorder</td>
<td>2.001*</td>
<td>.062</td>
</tr>
</tbody>
</table>

* * p<.05, ** p <.01
Table 9.  
*Correlations for Covariates*

<table>
<thead>
<tr>
<th></th>
<th>Perceived Social Support N = 136</th>
<th>Support for Recovery N = 86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital Status</td>
<td>-.069</td>
<td>-.154</td>
</tr>
<tr>
<td>Living with Someone</td>
<td>-.066</td>
<td>-.025</td>
</tr>
<tr>
<td>Age</td>
<td>.073</td>
<td>.233*</td>
</tr>
<tr>
<td>Race</td>
<td>-.023</td>
<td>-.166</td>
</tr>
<tr>
<td>Number of Children</td>
<td>.212</td>
<td>.207</td>
</tr>
<tr>
<td>Education</td>
<td>-.009</td>
<td>.079</td>
</tr>
<tr>
<td>Welfare Status</td>
<td>.153</td>
<td>.294*</td>
</tr>
<tr>
<td>Food Stamps</td>
<td>.158</td>
<td>-.005</td>
</tr>
<tr>
<td>Medicaid / Healthy Start</td>
<td>-.085</td>
<td>-.234*</td>
</tr>
<tr>
<td>SSI</td>
<td>-.076</td>
<td>.011</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-.256*</td>
<td>-.143</td>
</tr>
<tr>
<td>Social Security</td>
<td>-.048</td>
<td>-.159</td>
</tr>
<tr>
<td>Annual Family Income</td>
<td>.016</td>
<td>-.194</td>
</tr>
<tr>
<td>Employment Status</td>
<td>.169</td>
<td>.103</td>
</tr>
</tbody>
</table>

* p<.05, ** p<.01
Table 10.

Summary of OLS Regression Model for Variables Predicting Perceived Social Support (Research Question 1).

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Network Members</td>
<td>.227</td>
<td>.128</td>
<td>.152</td>
<td>.078</td>
</tr>
<tr>
<td>Percent Almost Always Critical</td>
<td>-.075</td>
<td>.030</td>
<td>-.217</td>
<td>.015*</td>
</tr>
<tr>
<td>Percent Hardly Ever Support Sobriety</td>
<td>-.043</td>
<td>.026</td>
<td>-.144</td>
<td>.097</td>
</tr>
<tr>
<td>Co-Occurring Mental Disorder</td>
<td>-2.595</td>
<td>1.295</td>
<td>-.169</td>
<td>.047*</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-2.063</td>
<td>1.402</td>
<td>-.126</td>
<td>.144</td>
</tr>
</tbody>
</table>

* p<.05
Table 11.
Summary of OLS Regression Model for Variables Predicting Support for Recovery (Research Question 2).

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Use Alcohol &amp;/or Drugs</td>
<td>-.812</td>
<td>2.803</td>
<td>-.033</td>
<td>.773</td>
</tr>
<tr>
<td>Percent Almost Always Support Sobriety</td>
<td>.057</td>
<td>.024</td>
<td>.269</td>
<td>.022*</td>
</tr>
<tr>
<td>Treatment Motivation</td>
<td>.045</td>
<td>.044</td>
<td>.127</td>
<td>.310</td>
</tr>
<tr>
<td>Client Age</td>
<td>.077</td>
<td>.073</td>
<td>.118</td>
<td>.294</td>
</tr>
<tr>
<td>Welfare Status</td>
<td>.211</td>
<td>.143</td>
<td>.159</td>
<td>.145</td>
</tr>
<tr>
<td>Medicaid / Healthy Start</td>
<td>-.709</td>
<td>1.332</td>
<td>-.063</td>
<td>.596</td>
</tr>
</tbody>
</table>
Table 12.

*Summary of OLS Model: Step 1. Relationship between Independent Variables and Dependent Variable, Perceived Social Support (Research Question 3).*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SEB</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Motivation</td>
<td>-.007</td>
<td>.036</td>
<td>-.024</td>
<td>.851</td>
</tr>
<tr>
<td>Treatment Status</td>
<td>1.287</td>
<td>1.988</td>
<td>.083</td>
<td>.519</td>
</tr>
<tr>
<td>Co-Occurring Mental Disorder</td>
<td>-2.388</td>
<td>1.371</td>
<td>-.156</td>
<td>.084</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-1.604</td>
<td>1.473</td>
<td>-.098</td>
<td>.278</td>
</tr>
</tbody>
</table>
Table 13.

*Bivariate Correlations for Research Question 3*

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Variable</th>
<th>Treatment Status</th>
<th>Treatment Motivation</th>
<th>Co-Occurring Disorder</th>
<th>Perceived Social Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Family / Household Members</td>
<td>4.725**</td>
<td>-.304**</td>
<td>1.235</td>
<td>-.020</td>
</tr>
<tr>
<td>20</td>
<td>Support Sobriety</td>
<td>-4.246**</td>
<td>.440**</td>
<td>-.230</td>
<td>.150</td>
</tr>
<tr>
<td>21</td>
<td>Critical Support</td>
<td>3.195**</td>
<td>-.143</td>
<td>-.611</td>
<td>-.266**</td>
</tr>
<tr>
<td>22</td>
<td>Substance Users</td>
<td>4.997**</td>
<td>-.512**</td>
<td>-.167</td>
<td>-.026</td>
</tr>
<tr>
<td>23</td>
<td>Professionals</td>
<td>-7.290**</td>
<td>.435**</td>
<td>-.767</td>
<td>.058</td>
</tr>
</tbody>
</table>

** p< .01
Table 14.

*Summary of Hierarchical Regression Model: Percent of Family / Household Members as a Moderator between predictors and Overall Perceived Social Support  (Research Question 3: Hypotheses 19).*

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th></th>
<th></th>
<th>Step 2</th>
<th></th>
<th></th>
<th>Step 3</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SEB</td>
<td>β</td>
<td>B</td>
<td>SEB</td>
<td>β</td>
<td>B</td>
<td>SEB</td>
</tr>
<tr>
<td>% Family/Household (Centered)</td>
<td>-.006</td>
<td>.027</td>
<td>-.020</td>
<td>-.008</td>
<td>.030</td>
<td>-.026</td>
<td>.007</td>
<td>.058</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-Occurring Disorder</td>
<td>-1.630</td>
<td>1.482</td>
<td>-.100</td>
<td>-1.710</td>
<td>1.502</td>
<td>-.105</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Motivation (Centered)</td>
<td>-.007</td>
<td>.036</td>
<td>-.025</td>
<td>-.009</td>
<td>.038</td>
<td>-.033</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Status</td>
<td>1.124</td>
<td>2.086</td>
<td>.072</td>
<td>1.309</td>
<td>2.185</td>
<td>.084</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Motivation X % Family/Household</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.029</td>
<td>.083</td>
</tr>
<tr>
<td>Treatment Status X % Family/Household</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.000</td>
<td>.001</td>
</tr>
<tr>
<td>R²</td>
<td>.000</td>
<td></td>
<td></td>
<td>.041</td>
<td></td>
<td></td>
<td>.043</td>
<td></td>
</tr>
<tr>
<td>ΔR²</td>
<td>.000</td>
<td></td>
<td></td>
<td>.041</td>
<td></td>
<td></td>
<td>.002</td>
<td></td>
</tr>
<tr>
<td>FΔ</td>
<td>.050</td>
<td>1.296</td>
<td></td>
<td>.141</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 15.

*Summary of Hierarchical Regression Model: Percent of Members who Support Sobriety as a Moderator between predictors and Overall Perceived Social Support*  
(Research Question 3: Hypotheses 20).

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Support Sobriety (Centered)</td>
<td>B</td>
<td>SEB</td>
<td>β</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-.036</td>
<td>.021</td>
<td>.150</td>
</tr>
<tr>
<td>Co-Occurring Disorder</td>
<td>-1.771</td>
<td>1.468</td>
<td>-.108</td>
</tr>
<tr>
<td>Treatment Motivation (Centered)</td>
<td>-.032</td>
<td>.038</td>
<td>-.111</td>
</tr>
<tr>
<td>Treatment Status</td>
<td>1.406</td>
<td>1.986</td>
<td>.090</td>
</tr>
<tr>
<td>Treatment Motivation X % Support Sobriety</td>
<td>- .025</td>
<td>.059</td>
<td>-.071</td>
</tr>
<tr>
<td>Treatment Status X % Support Sobriety</td>
<td>.001</td>
<td>.001</td>
<td>.152</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.022</td>
<td>.038</td>
<td>.051</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>.022</td>
<td>.016</td>
<td>.013</td>
</tr>
<tr>
<td>$F\Delta$</td>
<td>2.882</td>
<td>.662</td>
<td>.854</td>
</tr>
</tbody>
</table>
### Table 16.

**Summary of Hierarchical Regression Model: Percent Provide Critical Support as a Moderator between predictors and Overall Perceived Social Support  (Research Question 3: Hypotheses 21).**

<table>
<thead>
<tr>
<th>% Provide Critical Support (Centered)</th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>SEB</td>
<td>β</td>
<td>B</td>
</tr>
<tr>
<td>-0.091</td>
<td>0.029</td>
<td>-0.266**</td>
<td>-0.098</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-2.031</td>
<td>1.429</td>
<td>-0.124</td>
</tr>
<tr>
<td>Co-Occurring Disorder</td>
<td>-2.272</td>
<td>1.325</td>
<td>-0.148</td>
</tr>
<tr>
<td>Treatment Motivation (Centered)</td>
<td>0.004</td>
<td>0.035</td>
<td>0.013</td>
</tr>
<tr>
<td>Treatment Status</td>
<td>0.432</td>
<td>1.997</td>
<td>-0.028</td>
</tr>
<tr>
<td>Treatment Status X % Critical Support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.071</td>
<td>0.112</td>
<td>0.115</td>
</tr>
<tr>
<td>ΔR²</td>
<td>0.071</td>
<td>0.041</td>
<td>0.002</td>
</tr>
<tr>
<td>FΔ</td>
<td>9.612**</td>
<td>1.425</td>
<td>0.337</td>
</tr>
</tbody>
</table>

**p<.01
Table 17.

Summary of Hierarchical Regression Model: Percent of Members who Use Substances as a Moderator between predictors and Overall Perceived Social Support (Research Question 3: Hypotheses 22).

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SEB</td>
<td>β</td>
</tr>
<tr>
<td>% Substance Users (Centered)</td>
<td>-.007</td>
<td>.025</td>
<td>-.026</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-1.614</td>
<td>1.481</td>
<td>-.099</td>
</tr>
<tr>
<td>Co-Occurring Disorder</td>
<td>-2.387</td>
<td>1.377</td>
<td>-.156</td>
</tr>
<tr>
<td>Treatment Motivation (Centered)</td>
<td>-.009</td>
<td>.039</td>
<td>-.031</td>
</tr>
<tr>
<td>Treatment Status</td>
<td>1.265</td>
<td>2.002</td>
<td>.081</td>
</tr>
<tr>
<td>Treatment Motivation X % Substance Users</td>
<td>.004</td>
<td>.072</td>
<td>.061</td>
</tr>
<tr>
<td>Treatment Status X % Substance Users</td>
<td>-.003</td>
<td>.001</td>
<td>.320*</td>
</tr>
<tr>
<td>R²</td>
<td>.001</td>
<td>.041</td>
<td>.109</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.001</td>
<td>.040</td>
<td>.068</td>
</tr>
<tr>
<td>FA</td>
<td>.083</td>
<td>1.275</td>
<td>4.595*</td>
</tr>
</tbody>
</table>

*p<.05
Table 18.

Summary of Hierarchical Regression Model: Percent of Members of Professionals as a Moderator between predictors and Overall Perceived Social Support (Research Question 3: Hypotheses 23).

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SEB</td>
</tr>
<tr>
<td>% Professionals (Centered)</td>
<td>.034</td>
<td>.052</td>
</tr>
<tr>
<td>Housing Subsidies</td>
<td>-1.873</td>
<td>1.51</td>
</tr>
<tr>
<td>Co-Occurring Disorder</td>
<td>-2.49</td>
<td>1.378</td>
</tr>
<tr>
<td>Treatment Motivation (Centered)</td>
<td>-.010</td>
<td>.036</td>
</tr>
<tr>
<td>Treatment Status</td>
<td>.632</td>
<td>2.141</td>
</tr>
<tr>
<td>Treatment Motivation X % Professionals</td>
<td>.008</td>
<td>.003</td>
</tr>
<tr>
<td>Treatment Status X % Professionals</td>
<td>- .578</td>
<td>.181</td>
</tr>
<tr>
<td>R²</td>
<td>.003</td>
<td>.046</td>
</tr>
<tr>
<td>ΔR²</td>
<td>.003</td>
<td>.043</td>
</tr>
<tr>
<td>FΔ</td>
<td>.420</td>
<td>1.364</td>
</tr>
</tbody>
</table>

** p<.01
Interaction Between Treatment Motivation and Percent of Substance Users within Women’s Social Networks. (Research Question 3)

**Interaction between Treatment Motivation and % of Substance Users (moderator)**

- Lower % Substance Users (\(Y = 35.29 + .11 X\))
- Mean % of Substance Users (\(Y = 35.20 + .028X\))
- Higher % of Substance Users (\(Y = 34.31 + -.055 X\))
Interaction Between Treatment Motivation and Percent of Professionals Within Women’s Social Networks. (Research Question 3)
Interaction Between Treatment Status and Percent of Professionals within Women’s Social Networks. (Research Question 3)

Figure 7.

Interaction between Treatment Status and % of Professionals (moderator)
Chapter 5
Discussion and Implications

This final chapter includes a discussion of the main research findings and their implications. The strengths and limitations of the study will also be discussed as well as future research considerations.

Summary of Findings

Direct relationships with overall perceived social support.

RQ1: How do social network characteristics, treatment status, co-occurring disorders and treatment motivation relate to overall perceived social support?

Consistent with existing research, women in the current study who had co-occurring disorders reported lower perceived social support (El-Bassel, Chen, & Cooper, 1998; Macdonald, Hayes, & Balioin, 2000; Savage & Russell, 2005). Earlier work has shown that mental disorders have been found to influence individuals’ perception of their social networks and their social support (Kessler, Price, & Wortman, 1985). This appears to hold true in this study, and women with a co-occurring disorder reported lower perceived social support. This finding reiterates existing conclusions on the differences in overall perceived social support between those with a co-occurring disorder and those with a substance use disorder only.

Women with a greater presence of critical social network members also reported lower perceived social support. This finding is consistent with research showing that received social support and personal network members contribute to individuals’ perceived social support (Gottlieb & Green, 1984; Moxley, 1988; Turner & Marino, 1994). Those who are less supportive and provide criticism are perceived to provide less
support (Norris & Kaniasty, 1996). Other research has also shown that critical members more strongly impact perceived social support than members who are not critical or are supportive (Taylor & Aspinwall, 1996).

Taylor and Aspinwall (1996) have also found that critical support can have a positive impact on treatment motivation despite the often negative impact on perceived social support. For individuals with substance use disorders, often social support is perceived to be more negative and social network members to provide more critical appraisal (Oetzel, Duran, Jiang, & Lucero, 2007). Thus those with a co-occurring mental disorder are likely to perceive more critical support from social network members in addition to potentially having network members who are more critical due to their ongoing substance use and mental health problems.

Although not significant in the multivariate model, the size of women’s social networks was significantly associated with their perceived social support, contrary to existing research (Macdonald, et al., 1998). In this study the size of women’s social network was positively correlated with their perceived social support. This finding may reflect the association between mental disorders and social network size or the association between greater social skills and larger social networks (Hamilton et al., 1989; Macdonald et al., 1998). Although existing research fails to show the same association, some research does indicate that received social support impacts the perception of social support (Langford, Browscher, Maloney, & Lillis, 1997), thus those with larger networks may receive more social support than those with smaller networks.

Finally, the percent of social network members who hardly ever support sobriety was negatively associated with women’s perceived social support (although not
significant in the multivariate model). As the percent of women’s networks that hardly ever supported sobriety decreased, women’s perceived social support increased. This finding may reflect women’s consideration of social support. For those seeking treatment, support may be framed around support for sobriety. Substance users may provide support, but not support specific to recovery and sobriety. This may be of particular importance for women with substance abusing partners who provide support for continued substance abuse rather than support for sobriety.

Some aspects of women’s social network composition which were hypothesized to impact women’s perceived social support were not significantly associated with perceived social support. The percent of professionals, substance users, and family / household members in women’s networks did not directly influence perceived social support as was hypothesized. Women’s treatment motivation and treatment status were also not significantly associated with their perceived social support.

These findings indicate that the categorization of social network members in relation to the women was less important than the type of support social network members provide (for example critical support). The absence of a significant relationship between overall perceived social support and the percent of family / household members may be due to the finding from existing literature that peers and significant others are more influential than family members (Chong & Lopez, 2005). In this study the relationship between peers or significant others with overall perceived social support was not explored. The absence of relationships between family / household members may also be due to women taking family support for granted, thus perceiving them as providing little or no support. Alternatively family of substance users often become
frustrated with substance users over the course of their substance use and with each failed attempt at recovery. Family may become critical of women with substance user disorders by criticizing them or providing negative support, which was found to be significantly associated with women’s overall perceived social support.

The absence of a relationship between co-occurring mental disorders and overall perceived social support may indicate that overall perceived social support is not impacted by mental disorders.

*Indirect relationships with overall perceived social support.*

**RQ3:** Is the relationship between the independent variables (treatment status, co-occurring disorder status, and treatment motivation) and overall perceived social support moderated and/or mediated by social network characteristics?

Mediation was not able to be explored due to an absence of a significant relationship between the three predictor variables and perceived social support. Therefore, women’s social networks did not mediate the relationship between their treatment motivation, treatment status and co-occurring disorder status and their perceived social support. Moderation effects were still tested, as a significant relationship between predictor and dependent variables is not a requirement for the moderation model. Two social network characteristics did moderate the relationships between women’s perceived social support and their treatment motivation and treatment status.

It is important to note that although some moderation effects were found, it cannot be ruled out that these were due to chance. Although the power for this analysis was good, there is a possibility that the sample differs from the overall population of women
with substance use or co-occurring disorders and thus relationships may be found that would not normally occur within the larger population. Still it is important to acknowledge the relationships discovered through this research and pursue exploration of such relationships further.

The percent of professionals within women’s networks moderated the relationship between treatment status and perceived social support as well as between treatment motivation and perceived social support. For women who were not in treatment, having more professionals in their social network increased their perceived social support. For women in treatment, having more professionals as a part of their social network was associated with lower perceived social support. This finding indicates that for those who are not in substance abuse treatment, professionals have a greater positive impact on their perceived social support.

Women in treatment often report feelings of isolation (Schilit, & Gomberg, 1987). While women in treatment may experience a great deal of support from professionals, particularly support for sobriety, they may be disconnected from their usual social network and support system. Commonly, substance abuse treatment includes cutting ties with substance users or substance abuse enablers. For many substance users, other substance users were the primary providers of social support. For women in residential treatment, the nature of treatment leads to less contact with social network members, even if the woman in treatment is not attempting to cut ties and establish a network which supports recovery. Therefore, it is not surprising that women in treatment, even with a great deal of professionals in their network, would report having lower social support.
The presence of professionals in women’s networks also moderated the relationship between women’s treatment motivation and their perceived social support. Women with lower treatment motivation and a greater presence of professionals had higher perceived social support than those with low treatment motivation and fewer professionals. For women with higher treatment motivation, a greater presence of professionals had the opposite effect: lower perceived social support. Professionals had a positive impact on individuals with low treatment motivation, although they negatively impacted perceived social support with higher treatment motivation. This indicates that professionals have a more positive impact on women with lower treatment motivation. This finding supports the theory that professionals can have a positive impact on client treatment motivation, something often reflected in motivational interventions (Simoneau & Bergeron, 2003).

The presence of substance users within women’s social networks was also found to moderate the relationship between treatment motivation and perceived social support. Women with low treatment motivation reported higher perceived social support with the presence of more networks members who were substance users. Women who reported higher treatment motivation and a greater presence of substance users within their social networks had lower perceived social support. This finding is also consistent with research indicating that substance users often provide support for substance use rather than support for sobriety, with more substance users being associated with continued substance use (Wasserman, Stewart, & Delucchi, 2001). Women with a greater number of network members who use substances appear to be less motivated to seek treatment and recovery although they may perceive social support from substance using members.
Direct relationships with support for recovery.

RQ2: How do social network characteristics, treatment status, co-occurring disorders, and treatment motivation relate to support for recovery for the subsample of women engaged in treatment?

Women who reported having more social network members who supported sobriety reported higher support for recovery. Several researchers have found that social network members contribute to perceived social support (Gottlieb & Green, 1984; Moxley, 1988; Norris & Kaniasty, 1996; Turner & Marino, 1994). This finding is of particular importance as it provides construct validity for the support for recovery measure by demonstrating that there is a significant relationship between having members who support sobriety and support for recovery women perceive. Given the small subsample utilized and a lower than desirable power analysis to explore relationships with support for recovery, other potentially significant results were unable to be discovered.

Other significant relationships were detected in correlational analyses but did not maintain significance in the multivariate model, potentially due to the low power caused by the small sample size for this subsample analysis. The percent of substance users in women’s networks was negatively associated with support for recovery. This finding is consistent with research showing lower support for recovery for those with substance users a part of their social network (Boyd & Mieczkowski, 1990), while those with fewer substance users in their network have higher support for recovery (Tracy & Johnson, 2007).
Treatment motivation was also positively correlated with support for recovery at the bivariate level, which is consistent with existing research showing a relationship between treatment motivation and support (Warren, Stein, & Grella, 2007) where motivation is often influenced by social support. Treatment programs focusing on motivational interventions stem from this relationship assuming that motivation can influence the pursuit of treatment and achievement of abstinence.

Women’s social network size was not significantly associated with their support for recovery scores, as hypothesized. Several of the variables hypothesized to have a relationship with support for recovery did not in this study. The percent of family/household members, and the percent of critical network members were not related to women’s support for recovery scores. Women’s treatment status and co-occurring mental disorders were also not significantly related to women’s support for recovery scores in this study.

The absence of significant relationships could be due to the small sample size and lower power for the research analyses. Or there may be alternative explanations for the absence of relationships. First, the percent of family/household members were not significantly associated with women’s support for recovery. This could be due to the stronger influence of peers and significant others (Chong & Lopez, 2005) or due to frustration of family over women’s continued substance use or potential past recovery failures.

There was also an absence of a significant relationship between a higher percent of critical network members and lower support for recovery scores. This relationship may be affected by family who are critical but want women to recover. Trulsson and
Hedin (2004) report that siblings often blame women for their situation and are quite critical, but that this criticism can motivate women to seek treatment.

The percentage of professionals was also not significantly associated with women’s support for recovery scores. Women may not perceive professionals as providing support for recovery possibly because they take this support for granted or potentially because they do not have access to professionals who can provide support for recovery. This finding may also reflect that professionals are not providing support to women that is perceived as supportive of recovery. Alternative treatment models may aid professionals in providing the support women perceive as specific to their recovery, further improving their treatment outcomes.

In terms of an absence of a relationship between co-occurring mental disorders and support for recovery, there may not be a difference in available support for recovery based on the presence of a mental disorder. The absence of a finding may indicate that individuals with co-occurring substance use and mental disorders are not at a disadvantage while seeking recovery due to an absence of support for recovery.

Practice Implications

The findings from this study lead to several practice implications. Based on the finding that women with co-occurring substance use and mental disorders have lower perceived social support, treatment which identifies co-occurring disorders and treats them would be most beneficial for clients. Given existing research indicating that the experience of mental disorder symptoms impact outcomes such as perceived social support (Peirce, Frone, Russell, Cooper, & Moodar, 2000), treatment to reduce or eliminate mental disorder symptoms may benefit women such as those in this current
study. Although not addressed in this particular study, the presence of mental disorder symptoms also interferes with recovery. Treatment which integrates both substance abuse and mental health treatment may best benefit women with co-occurring disorders. One example of this is Integrated Treatment in which treatment for both substance use and mental disorders is provided by a multidisciplinary team rather than by separate providers (Ohio SAMI CCOE, 2008). By providing the necessary treatment to address all of client’s needs, treatment may be more effective and recovery more likely.

The significant relationship between critical social network members and perceived social support is also important for practitioners. Critical support or critical appraisal has been found in previous work to be more influential than other forms of more positive support (Taylor & Aspinwall, 1996). This relationship suggests that it is important for clinicians to identify and address critical network members who are a part of their client’s social networks. Traditionally individuals in substance abuse treatment are encouraged to form relationships with individuals who are sober and support their sobriety. When possible, women should be encouraged to form and foster these positive relationships. In the case of women who have substance using and critical family / household network members, efforts could be made to help women relocate themselves to a more supportive living environment.

Alternatively, if eliminating negative relationships is not possible, interventions that can educate social network members on the implications of their critical support as well as help them understand the course of substance abuse (and co-occurring mental disorders) may better support clients in recovery. A psychoeducational model which can work on improving existing relationships and eliminate or reduce critical support may be
beneficial for clients seeking treatment and recovery for substance use and co-occurring mental disorders (Tracy & Biegel, 1994). Focusing efforts on therapeutic interventions which develop strong and supportive social networks may benefit clients in recovery.

Clients with co-occurring disorders often perceive their social networks less positively and have fewer reciprocal relationships which can lead to less healthy, supportive relationships in the long run. In the case of clients with co-occurring substance use and mental disorders, clinicians may consider treatments which help clients perceive their social network in a more positive manor. One way to do this would be to educate them on how to improve their relationships, particularly to increase reciprocity leading to more supportive and healthy relationships (Tracy & Biegel, 1994). Treatment which can include an educational piece for both social network members and clients on improving existing relationships may improve the perception of available social support as well as received social support and have a positive impact on their treatment and recovery.

Social and communication skills trainings may also be valuable tools for both clients and network members. For individuals with unsupportive and non-reciprocal relationships, training on how to interact and communicate with social network members for both the clients as well as those within their social networks may improve the support and quality of relationships available to clients. Substance abuse treatment and recovery for many includes cutting ties with individuals who are substance users or who enable the client’s substance use. By focusing on strengthening social relationships with individuals who can provide positive support as well as educating clients on how to form new
healthy and supportive relationships with non-substance users, clients may see an increase in their perceived social support.

A relationship was found between professionals, treatment motivation and treatment status. Specifically, clinicians have been found to have a positive impact on client motivation to seek treatment and recovery, especially for clients not in treatment. To further improve their influence on treatment motivation, professionals working with substance abusing clients should consider motivational treatments to aid clients in seeking recovery. One such method is Motivational Interviewing, which allows the clinician to take a client-centered approach to aiding their client to make behavioral changes (Rollnick & Miller, 1995). Engaging in methods which improve client motivation may further benefit the client in pursuit of sobriety and recovery.

This study found a strong relationship between social network members who support sobriety and women’s support for recovery. Support for recovery is critical for women seeking recovery (Gordon, & Zrull, 1991; Kaskutas, Bond, & Humphrey, 2002; Wasserman, Stewart, & Deluchhi, 2001). Similar to the relationship between network members who are critical and perceived social support, the impact of members who support sobriety and support for recovery should be addressed by clinicians working with women who are seeking recovery. Psychoeducational models which can educate network members on the importance of supporting sobriety, as well as educate clients on the importance of sobriety support may be beneficial. It is common for substance abuse treatment models to encourage those in recovery to cut ties with substance users and those who support substance use. It is possible that individuals who have previously supported substance use may be capable of supporting sobriety with the proper
understanding of such. Encouraging clients to seek support from those who support sobriety is also important and often exists in substance abuse treatment models.

**Strengths**

A major strength of this study is the sample size of 136 women. Power analyses revealed that this sample was sufficient to provide good power for analyses with the full sample. The standardized measures of mental and substance use disorders are also strengths of this study. Having accurate diagnoses of current and lifetime substance use disorders and mental disorders is important and results in more accurate findings.

Additionally the method utilized to establish treatment status is a strength. Women who were included in the study for participation in either a residential or outpatient treatment were a part of the current participation in treatment group. This ensures accurate results from the analyses.

The wide range of social network variables included in this study is also a strength as few existing studies have incorporated the same range of social network variables. The inclusion of social network members who support sobriety along with the support for recovery measure provided construct validity.

This study addressed a gap in existing research by focusing on low income women with less severe mental illness in combination with substance use disorders.

**Limitations**

Despite the strengths of this study, there are also some limitations. First, this study is a secondary data analysis of a sample of non-randomly selected women representing a rather homogenous population from one city. These factors may limit the generalizability of the findings to other populations. Since this study is cross-sectional in
nature, findings represent only one time point in women’s lives and therefore may not be as representative of their overall perceived social support and social networks as findings from a longitudinal study might be. For example, women may be more depressed at the time of their interview due to having lost custody of their children or involvement with the criminal justice system. In the case of this sample, of the 86 women in treatment, 68% of the women had one or more children in someone else’s custody, including in the care of a relative, in formal foster care or placed with adoptive parents through the child welfare system (Tracy & Martin, 2007). The analyses conducted to explore the research questions and hypotheses are correlations and therefore no causal relationship can be detected.

Issues of measurement of social support may also be a limitation of the study. As discussed in chapter two, social support is a complex concept for which one single definition does not exist. For this study, a measure of perceived social support was utilized to represent women’s social support. This measure, as well as the other variables in this study, was measured by self reports of the female subjects. Relying exclusively on self-report data may introduce bias based on respondents feeling social pressure to provide desirable responses, or in the case of social support and social networks women may not accurately recall individuals who provide support or the type of support provided to them. Additionally psychological distress can impact individuals’ responses, as well as their perceptions of social support, as described in chapter two.

The sub-sample analysis including only the 86 women in treatment for the support for recovery measure was also a limitation. Only those women who were known to be involved in substance abuse treatment at the time of their interview were administered the
support for recovery measure. This sample size did not provide adequate power for the conducted multivariate analysis indicating that there may be undetected relationships between the predictor variables and support for recovery.

Finally this study being a secondary data analysis is a limitation. The research questions and analyses are limited within the constructs of the existing parent study. Investigation of further variables and areas of interest not included within the originally constructed study was not possible. For example, it is unknown how many treatment episodes women had engaged in prior to the study which may impact their treatment motivation as well as their available social support and the type of support provided by their network members. Other issues such as women’s criminal justice involvement was also not evaluated by the study and could have an impact on the variables of interest in this study.

**Future Research**

Future research is needed to further address the gaps in existing research and literature identified in this study; low-income women with substance use and co-occurring, less severe mental disorders. In particular, studies that are longitudinal in design and include a larger sample size, particularly for exploration of support specific to recovery, would be most beneficial. Social networks and social support are dynamic concepts and this particular study only measures these relationships at one point in time. A longitudinal model that is able to examine these social relationships over time would better address questions surrounding this population.

Exploring the social networks and social support of clients with substance use and co-occurring mental disorders from the perspective of both the clients and the social
network members would also help to better understand the role of social networks and social support for women with substance use disorders. In the case of this study, the social network and social support was only measured through the eyes of the subjects of the study, thus providing only a one-sided view. Having a multi-perspective, longitudinal model would better capture social support and the social networks of this population and would provide a more realistic picture of the dynamic nature of both, leading to stronger research conclusions and improvements in treatments. Additionally, existing research has identified a connection between mental health symptoms and social networks or social support. Including measures of mental health symptoms in further research can allow for a more thorough investigation of the impact of mental disorders on social support and substance abuse treatment and recovery.

Future research should also explore the relationship of social support and social networks on treatment outcomes and the recovery process. In this study there is an assumption that social support and support specific to recovery has an impact on treatment and recovery. Research is needed to explore this assumption. Having an understanding of how social networks and social support impact treatment and recovery can further positively impact treatment models and client recovery.
References


Center for Substance Abuse Treatment (CSAT) (2005). *Substance Abuse Treatment for Persons With Co-Occurring Disorders.* Treatment Improvement Protocol (TIP)
Series 42. DHHS Publication No. (SMA) 05-3922. Rockville, MD: Substance
Abuse and Mental Health Services Administration.

among American Indian women in treatment. *American Indian and Alaska
Native Mental Health Research: The Journal of the National Center, 12*(1), 62-85.

and sense of control as mediators or moderators? *International Journal of Aging
and Human Development, 52*(2), 155-171.

179-198.

38, 300-314.

functional components of social support. In I. G. Sarason, & B. R. Sarason
(Eds.), *Social support: Theory, research and applications* (pp. 73-94). The


Cohen, S., Underwood, L. G., & Gottlieb, B. H. (2000). *Social support measurement and


