THE MEDIATING ROLE OF SOCIAL SUPPORT AND SELF-EFFICACY ON THE RELATIONSHIP BETWEEN TRAUMA AND POST-TREATMENT SUBSTANCE USE AMONG LOW-INCOME WOMEN

by

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The Mediating Role of Social Support and Self-Efficacy on the Relationship Between Trauma and Post-Treatment Substance Use Among Low-Income Women

Abstract

By

LEIGH H. TAYLOR

This dissertation investigates interrelated constructs vital to substance use disorder recovery among a population of low-income women with a history of trauma. The women in this study were viewed within the nested socioeconomic dynamics affecting their early sobriety post-treatment intake. Recognizing that this sample was exposed to multiple vulnerabilities, had a significant history of trauma and the presence of co-occurring disorders, this study focused on the influential roles of abstinence self-efficacy (ASE) and social support for recovery (SSR) on post-treatment substance use outcomes.

There is a well-established connection between the experience of trauma and subsequent substance abuse among female survivors (Min, et al., 2014; Najavits, et al., 1998; Ullman, et al., 2013). Moreover, the effects of trauma are associated with lower abstinence self-efficacy, a decreased capacity to access social support for recovery and poorer treatment outcomes (Lopez-Castro, et al., 2015). Attempting to clarify these
relationships, this study evaluated the mediating effects of ASE and SSR on the relationship between trauma symptomatology and post-treatment relapse.

Data for this examination were collected from a NIDA funded longitudinal study. 62% of the women identified as Black; 88% of the women did not have more than a high school education; 74% were dependent on government subsidies; and 73% had a co-occurring mental health disorder. Structural equation modeling (SEM), was used to examine the direct and indirect effects of trauma symptomatology, ASE, and SSR on post-treatment intake substance use outcomes. Primary findings indicated that higher trauma symptomatology was significantly associated with lower levels of ASE. Moreover, ASE was shown to mediate the relationship between trauma and relapse.

These results suggest that clinicians may want to utilize interventions aimed at increasing ASE, that may increase a woman’s ability to develop resiliency in early recovery, mitigating the influence of trauma symptomatology. Future research will want to expand on these findings, evaluating more robust measures and the influence of time on these interrelated constructs and their influence on relapse in early recovery.

*Keywords.* women, substance use, trauma, self-efficacy, social support, relapse
Chapter One

Introduction

Under investigation for this dissertation is the mediating function of social support for recovery and abstinence self-efficacy on the relationship between trauma symptomatology and post-treatment intake substance abuse outcomes among low-income women with co-occurring disorders. Included within chapter are the following: conceptual definitions of concepts relevant to this dissertation; statistics addressing the scope of the problem relating to women with substance use disorders (SUD), including prevalence and outcomes; historical development of the problem; theoretical frameworks for understanding the intersection of individual and environmental factors impacting the relationship between trauma and recovery from SUD among this particularly vulnerable sample of women, specifically self-efficacy and social support; a statement of the problem and the importance of this work to the field of social welfare.

Conceptual Definitions

For the purpose of this examination, substance use disorders refer to the clinical diagnosis of the over-use of alcohol and/or drugs based on evidence of compromised control, social dysfunction, risky use and pharmacological criteria accordant with the Diagnostic and Statistical Manual of Mental Disorders 4th Ed. (DSM-IV) (APA, 1994). Trauma symptomatology is the psychological and somatic distress resulting from the experience of childhood or adult trauma (Elliot, & Briere, 1992). Early recovery refers to the first 12-months’ post-treatment intake. Social support for recovery (SSR) is the perceived experience of assistance in the form of instrumental aid, emotional concern, information, or appraisal women had from family, friends, service providers and
treatment related associates relative to their recovery from a substance use disorder (Dunkel-Schetter, Folkman & Lazarus, 1987; Laudet, Morgen, & White, 2006).

*Abstinence self-efficacy (ASE)* refers to the level of confidence an individual has in their ability to remain sober within scenarios of temptation (DiClemente, Carbonari, Montgomery, & Hughes, 1994). *Substance abuse outcomes* refer to any alcohol or drug use during the 12 months’ post-treatment intake. Two terms are applied specifically to the women in this sample: the first, *multiple vulnerabilities*, refers to the broader socioeconomic contexts surrounding them (e.g. low-income, homelessness, criminal justice involvement, low education, etc..) (Najavits & Hein, 2013); and second, *co-occurring disorders* relates exclusively to the presence of multiple physical and mental health issues.

**Rationale**

This dissertation provided a unique opportunity to investigate interrelated constructs vital to early recovery. The women in this study were viewed within the nested dynamics affecting their early sobriety, recognizing that this sample was exposed to multiple vulnerabilities, had a significant history of trauma and the presence of co-occurring disorders.

There is a well-established connection between the experience of trauma and subsequent substance abuse among female survivors (Min, et al., 2014; Najavits, et al., 1998; Ullman, et al., 2013). Moreover, the effects of trauma are associated with lower abstinence self-efficacy, a decreased capacity to access social support for recovery and poorer treatment outcomes (Lopez-Castro, et al., 2015). Adding to the body of literature this study focused on mediating mechanisms of recovery, specifically the roles of
abstinence self-efficacy (ASE) and social support for recovery (SSR) on post-treatment intake substance use outcomes within the first year of recovery.

**Problem Scope**

**National prevalence and current statistics.** The abuse of alcohol, illicit drugs and prescription medications are a threat to the health and well-being of millions of Americans and their families, and is as a problem of significant concern for the field of social welfare. Findings from the 2014 National Survey on Drug Use and Health (NSDUH) estimate that 8.4% of the population, or approximately 20.2 million individuals 18 and older, were diagnosed with a substance abuse disorder as defined by the DSM-IV (SAMHSA, 2015). According to the survey, alcohol use disorder was the most commonly occurring SUD with 17 million individuals being affected; second was marijuana with 4.2 million diagnoses; 1.9 million Americans had an opioid use disorder, related to either prescription pain relievers, and/or heroin; and finally, 913,000 Americans met the criteria for dependence or abuse of cocaine (NIDA, 2015).

**Local prevalence.** Regionally, while alcohol abuse is still prevalent and problematic, more individuals are now dying from drug overdosing as opposed to alcohol related causes (NIAAA, 2009). The Ohio Department of Mental Health and Addiction Services noted that across the region illicit drugs, such as powder and crack cocaine; marijuana; and opioids in the form of heroin, suboxone and prescription opioids were reported as being “highly available” and “extremely easy to get” (OSAM, 2016). As a result, Ohio has experienced an approximate 250% increase in overdose fatalities between 1999 and 2009 (NIDA, 2015).
**Prevalence among women.** In the United States 5.3 million women were diagnosed as abusing alcohol in 2014. Estimates show that 12.9%, or 15.8 million women ages 18 or older have used illicit drugs in the past year (SAMHSA, 2015). In a 2012 Ohio survey of alcohol and drug use, findings indicated that in the Cleveland region women reporting as self-described addicts were most likely to abuse alcohol, marijuana, powder and crack cocaine (OSAM, 2016).

**The costs of substance abuse.** Associated with the above statistics are the considerable physical, financial and social impacts of substance use disorders on the individual, their families and greater community. With expenses related to health care expenditures, crime, and loss of worker productivity, addiction has broad and severe economic implications, with annual costs accompanying substance abuse in the United States totaling $484 billion (NIDA, 2015).

**Cost to human life.** Substance abuse was related to the loss of 150,000 individuals in 2014—more than double the number of annual deaths since the war on drugs began in the 1980’s (NIDA, 2015). Alcohol related fatality is still the fourth leading and preventable cause of death annually, with approximately 62,000 men and 26,000 women dying from causes associated with alcohol (NIDA, 2015).

**Health costs.** Substance abuse is a significant public health issue, one that is directly linked to a number of medical concerns such as cancer, HIV, liver, heart and brain disease (NIDA, 2015). As such, emergency room treatment, drug treatment programs, Medicaid and Medicare expenditures related to substance abuse, and prevention research costs the United States more than $11 billion annually (NDIC, 2011).
**Crime costs.** Drug and alcohol related crime costs are more than $61 billion annually, with $56 billion going directly to the criminal justice system (NDIC, 2011). It is estimated that 50% of individuals arrested for violent crimes, such as homicide or assault were under the influence of illicit drugs (NDIC, 2011). Approximately 80% of offenders have substance related issues, and half of the incarcerated population are clinically addicted (NCASA, 2010).

**Productivity costs.** Defined as “the incapacitation of individuals, either by reduced motivation or by confinement in residential treatment programs, hospitals, or prison,” loss of labor force productivity due to substance abuse costs the nation $120 billion each year (NDIC, 2011). Employers are impacted by addiction due to absenteeism, reduced productivity, missed deadlines, and increased health care costs (NIDA, 2015).

**Societal costs.** Societal problems stemming from SUD have a disproportionate impact on women and their children (Abramsky, Watts, Moreno, Devries, Kiss, Ellsberg, Jansen, & Heise, 2011; Herrenkohl, Hong, Klika, Herrenkohl, & Russo, 2013; Min, Minnes, Kim, & Singer, 2013; Minnes, Singer, Min, Wu, Lang, & Yoon, 2013). Homelessness, sexual assault, domestic violence and child abuse are exacerbated by the rates of substance abuse in the United States. Research has noted that substance use is often a cause of homelessness, with approximately 38% of homeless individuals reporting dependency on alcohol and 26% abusing other drugs (Didenko, & Pankratz, 2007). Perpetrators of domestic violence were three times more likely to than others to have a SUD (Abramsky et al., 2011). In addition, substance use increases a woman’s risk for being the victim of violence and sexual assault (NIH, 2015). Addiction has a
significant impact on the long-term physical and psychological outcomes of children born to substance using mothers (Minnes et al., 2013). Children of parents with a SUD are three times as likely to be abused (Herrenkohl et al., 2013); and are at greater risk for developing an addiction themselves (Minnes et al., 2013).

**Women and the Influence of Gender on Substance Abuse Disorders and Treatment**

Gender exerts influence on the development, manifestation and outcome trajectories for individuals with a SUD, and must be accounted for in approaches to engagement in treatment and management of recovery (Covington, 2008; Tuchman, 2010). While women are less likely than men to drink alcohol or use illicit drugs, they are at increased risk for the rapid onset of a substance use disorder (Greenfield, et al., 2007). As a result, women may use alcohol and/or drugs in smaller amounts and have a briefer period of use but will enter treatment with more severe medical, behavioral and social problems (Hernandez-Avila, Rounsaville, & Kranzler, 2004).

**Historical Perspective.** Beginning in the 1970’s both women’s advocacy groups and organizations like the National Council on Alcoholism (NCA) began to unveil the “hidden epidemic” of alcoholism among women—advocating for improved awareness and specialized treatment services (Schmidt & Weisner, 1995, p. 310). Over the next decade the U.S. saw significant growth in research and treatment options not only for women, but for sub-sets of the population identified as particularly vulnerable, e.g. ethnic-minorities and low-income mothers (Schmidt & Weisner, 1995, p. 313). Additionally, the allotment of federal monies to the support of both institutional research and access to treatment had nearly tripled by the early 1990’s through the successful lobbying efforts of substance abuse coalitions (Schmidt & Weisner, 1995, p. 310). As a
result, there was an emergence of women-focused treatment units which recognized the importance of offering services beyond recovery-only programming. Acknowledging that women may experience gender specific barriers to treatment and recovery, women-only treatment programs began to incorporate ancillary services. Compared to general treatment centers, those identified as women-only units were offering additional supports such as child care, vocational, housing and financial services. Moreover, these programs were designed to view recovery as a life transition as opposed to a reliance the medical approach to SUD treatment. These actions were lauded by advocates who supported the view that substance use problems should be addressed within the broader context of a woman’s life; with treatment working to help women establish not only a life free of substance use, but one that offers stability and fulfillment as well (Schmidt & Weisner, 1995, p. 323). While these early efforts at specialized SUD treatment for women were promising, studies over the past two decades indicate that those salient barriers to treatment and success in early sobriety are still very much impacting a woman’s ability to engage in SUD treatment and recovery (Greefield et al., 2007; Schober & Annis, 1996; Weisner & Schmidt, 1992).

**Treatment Barriers and early recovery.** While scholars have identified general barriers to treatment seeking commonly experienced by both men and women related to privacy and confidentiality, beliefs regarding the necessity of treatment, and concerns about cost and time (Tucker, Vuchinich, & Rippes, 2004), the literature indicates that women are ultimately less likely to seek help for a substance use disorder (Greefield et al., 2007; Schober & Annis, 1996; Weisner & Schmidt, 1992). Women account for less than 40% of the admissions for substance use treatment, and only 7.4% of women
diagnosed with a SUD seek formal treatment (SAMHSA, 2015). While evidence shows that positive treatment outcomes are directly related to an individual’s length of time in treatment, early attrition rates of 45% to 65% are common among women (Brady et al. 2001; Hein, et al., 2009; Najavits et al., 1998; Sacks, McKendrick, & Banks, 2008; Schober & Annis, 1996). Reluctance to seek treatment and early attrition may be an artifact of the layered effects of both environmental and individual barriers to treatment and treatment retention influencing a woman’s ability to engage in SUD recovery programs.

*External barriers.* Studies show that women with multiple vulnerabilities are likely to experience a significant number of external barriers to treatment entry and retention related to resource access (Brady & Ashley, 2005; Resko & Mendoza, 2012; Tuchman, 2010; Weisner et al, 2002; Weisner & Schmidt, 1992). Tangible barriers, such as transportation and child care may create difficulties for treatment attendance (Brady, & Ashley, 2005). Additionally, women experience economic barriers, typically having lower education and employment rates than men (Brady & Ashley, 2005; Tuchman, 2010). The monetary impact of reduced work hours may limit a woman’s ability to engage in intensive treatment programs (Brady & Ashley, 2005; Greenfield, et al., 2007). Financially vulnerable women may also lack comprehensive health care coverage which would subsidize the cost of SUD treatment programs (Schmidt & Weisner, 2005). Moreover, women are more likely to be the primary caregivers of school age children, and experience stressors related to parenting and childcare (Brady & Ashley, 2005; Brereton, et al., 2014).
Internal barriers. Women with a substance use disorder are noted as having wider prevalence and more severe co-occurring physical and mental health diagnoses, accompanied by a history marked by traumatic experiences (Min et al., 2014; Morrisey, Jackson, Ellis, Amaro, Brown, & Najavits, 2005; Najavits, 2002; Tracy et al., 2012). Scholars have suggested that women may view their alcohol or substance use as a byproduct of their co-occurring mental or physical health disorder and instead utilize mental or physical health services (Greenfield et al., 2007; Hansen et al., 2004; Schober & Annis, 1996). Moreover, feelings of shame and stigma related to SUD treatment are more often reported by women, potentially motivating a reluctance to pursue or engage in SUD treatment (Wallhed-Finn, Bakshi, & Anreasson, 2015; Weisner & Schmidt, 1992).

Coercion, SUD treatment and early recovery. Women with multiple vulnerabilities are more likely than the general population to be coerced into attending a SUD treatment program (Polcin & Weisner, 1999; Schmidt, Weisner & Wiley, 1998). Mandated enrollment in SUD treatment either through a government agency (e.g. welfare or child services), criminal justice system, workplace or family ultimatum has shown to have a mixed impact on treatment motivation and substance use outcomes (Klag, O’Callaghan, & Creed, 2005; Miller & Flaherty, 2000; Tam, Schmidt & Weisner, 1996; Wolfe, Kay-Lambkin, Bowman, & Childs, 2013). In Miller and Flaherty’s (2000) review of the literature they found that the demographics of women given SUD treatment as an “alternative consequence” had a spectrum of legal, financial, social, psychological and health problems compared to women entering treatment on their own volition. Coercion also indicated a significant reduction in treatment compliance and motivation when compared to women entering voluntarily (p.11). Interestingly, while women coerced into
treatment show less compliance with a recovery protocol as their voluntary counterparts, findings across the literature have indicated that coercion alone has a relatively small impact on comparative treatment outcomes (Wolfe, Kay-Lambkin, Bowman, & Childs, 2013, p. 2193). Conclusions drawn from these findings suggest that women forced into SUD treatment are more reserved in early recovery and that treatment motivation may be slower to develop, but that the overall effects of mandated treatment are not impacted by this initial reluctance (Wolf, Kay-Lambkin, Bowman, & Childs, 2013).

The Influence of Trauma on SUD Treatment and Recovery among Women

There is a well-established connection between the experience of trauma and subsequent substance use disorders among female survivors (Min, et al., 2014; Najavits, et al., 1998; Ullman, Relyea, Peter-Hagene, & Vasquez, 2013). Evidence suggests that between 35%–85% of women entering SUD treatment programs have known at least one form of trauma, such as childhood sexual or physical abuse (Cross, et al., 2015; Walsh, Keyes, Koenen, & Hasin, 2015); interpersonal violence (Cohen, et al., 2013; McHugo, et al., 2005; Sullivan, et al., 2016); or sexual assault (Ullman, et al., 2013; Walsh, et al., 2014). Research examining the interrelated experience of trauma and SUD acknowledge the need for an integrated and a multi-faceted approach to service delivery (Covington, 2008).

Trauma and SUD Treatment Engagement and Outcomes among Women. The combined effects of trauma symptomatology and substance use disorder impacts both the trajectory and outcomes for recovery (Najavits, et al., 1998). Women with trauma histories and a SUD have been shown to have low motivation to seek help, moreover they struggle to comply with or complete a program of treatment (Lopez-Castro, Hu, Papini,
Ruglass, & Hein, 2015). In their comprehensive review of post-treatment outcomes for individuals with a dual diagnosis of trauma and SUD, Najavits and Hein (2013), found that most studies saw improvement in trauma symptomatology at both treatment-exit and follow-up, but that maintaining sobriety was more difficult, revealing that women with a history of trauma have poorer SUD outcomes than their non-traumatized counterparts. Potentially, it is factors like abstinence self-efficacy and social support for recovery that may be significantly affecting the relationship between trauma symptomatology and recovery from a substance use disorder.

The Role of Social Support and Self-Efficacy on SUD Treatment and Early Recovery among Women

Social Support. Research on the effects of social support suggest two things; first, that social support mediates the effects of stress on an individual’s health and well-being (Dunkel-Schetter, Folkman, & Lazarus, 1987); and second, that interventions inclusive of social support assist in the alleviation of distress, while improving overall functioning (Gottlieb, 1983). A number of studies have shown that social support has an important role in the recovery process from substance use disorders (Brown, Jun, Min, & Tracy, 2013; Warren, Stein, & Grella, 2007). Greater social support for recovery has been associated with better mental health (Laudet, Magura, Vogel, & Knight, 200); increased quality of life post-treatment (Warren, et al., 2007); and decreased substance use (Laudet, Morgan, & White, 2006; Warren, et al., 2007).

Of interest to this investigation is the specific role of social support for recovery (SSR) among a highly vulnerable sample of women in recovery. Social support for recovery has demonstrated to be a vital piece of early treatment and SUD recovery.
Evidence suggests that as personal support networks shift due to the cessation of alcohol or drug use, and that the emergence of a recovery-oriented network is predictive of decreased substance use and enhanced quality of life (Humphreys, Moos, & Cohen, 1997; Laudet, et al., 2006).

**Self-Efficacy.** Studies have shown there is a connection between abstinence efficacy beliefs and substance use outcomes (Kadden, & Litt, 2011). Bandura (1986) notes that individuals who possess high abstinence self-efficacy (ASE), coupled with the necessary coping skills are more likely to have the wherewithal to abstain from using alcohol or drugs in settings of temptation. Additionally, even after a relapse event, individuals with high abstinence self-efficacy are more likely to use their period of sobriety as a mastery experience, and effectively returning to a state of abstinence maintenance, whereas individuals with low self-efficacy are at-risk for prolonged periods of relapse (Aase, Jason, & Robinson, 2008; Kadden, & Litt, 2011). While treatment for substance use disorders does not generally address abstinence self-efficacy directly, treatment related activities encourage changes in efficacy beliefs, modifying behavior through personal mastery, the vicarious experience of peers, verbal persuasion, and the provision of coping mechanism which regulate biological and emotional feedback when placed faced with high-risk relapse scenarios (Bandura, 1977; Ilgen, McKellar, & Moos, 2007).

**Trauma, ASE and SSR and Early SUD Recovery**

Among female survivors of trauma, self-efficacy plays a pivotal role in how individuals respond to stress and their quality of coping after a traumatic event (Bandura, 1997). Relatedly, a high level of trauma related symptomatology in women may impact
their ability to identify and utilize social support (Brown, Jun, Min & Tracy, 2013; Najavits, Weiss, Shaw, & Muenz, 1998). In their review of literature examining general self-efficacy and perceived social support among individuals with a trauma history, Benight and Bandura (2004) suggest that social support manifests as a protective factor to the impacts of trauma, only to the extent that it improves an individual’s efficacy beliefs (p.1132). “Supporters model coping attitudes and skills, provide incentives for engagement in beneficial activities, and motivate others by showing that difficulties are surmountable by perseverant effort,” thereby serving as an enabling function for enhancing self-efficacy (Benigt, & Bandura, 2004, p. 1134). Likewise, recovery oriented social support increases abstinence self-efficacy through the active coping strategies modeled by peers in treatment and 12-step programs (Finney, Noyes, Coutts, & Moos, 1998; Warren, et al., 2007). As self-efficacy in early recovery increases, women have greater success engaging, mobilizing and generating supportive relationships, and are more likely to engage in proactive sobriety maintenance (Benight, & Bandura, 2004; Warren, et al.,2007).

**Statement of the Problem**

Co-occurring trauma and substance use is associated with poorer treatment outcomes (Lopez-Castro, et al., 2015); the presence of additional mental health diagnoses (Brown, et al., 2013; Swendson, et al., 2010); and physical health issues (Weaver, Gilbert, El-Bassel, Resnick, & Noursi, 2015). This “profile of vulnerability” (Alexander, 1996) elevates a woman’s likelihood of existing on the margins of society and significantly exposed to experiences of disconnect from welfare and work (Bowie, & Dopwell, 2013; Keyser-Marcus, et al., 2014); homelessness (Turner, Danzinger, &
Seedfeldt, 2006); incarceration (Saxena, Grella, & Messina, 2015); and material hardship such as hunger, eviction and difficulty paying bills (Acs & Loprest, 2004; Seleman & Ybarra, 2011). If left untreated, the effects of trauma and a co-occurring SUD are substantial, having salient and lasting repercussions for a low-income woman and her family.

**Importance to Social Welfare**

Social welfare workers will confront the impact of substance use disorders and the presence of co-occurring disorders among vulnerable women and their families in situations beyond treatment centers and mental health facilities. Women are likely to be seen across settings such as hospitals, child welfare and aging services, courts and correctional facilities, employee assistance programs, and private practice. Unified approaches to research, prevention and intervention will be necessary to address the nested effects of both environmental and individual issues related to addiction, co-occurring mental and physical health diagnoses and financial fragility. As such, it is imperative that the social work profession continue to grow the body of knowledge related to these multi-faceted factors impacting the development and treatment of substance use disorders for this sub-group of at-risk women and disseminate best-practices for professionals, educators, and policymakers.

**For professionals.** The National Association of Social Workers (NASW) has outlined standards for social work practice in the addictions meant to “enhance the awareness of the skills, knowledge, values, methods, and sensitivities that social workers need to work effectively within systems dedicated to serving clients with substance use disorders” (NASW, 2013). These standards not only adhere to the broader ethics and
values of the profession, but highlight the importance of interdisciplinary leadership and collaboration. Multiple service providers are often necessary to address both the substance use disorder and associated issues; social workers therefore need to understand the roles and goals of multiple service providers to ensure the clients’ needs are met (NASW, 2013).

**For educators.** Social work educators need to incorporate content on substance use and addiction-related issues into their course material, adequately preparing students for practice, while continuing the development of specialized tracks of study that “address the etiology, prevention, or treatment of addictive behaviors as well as those that address ways of teaching this material across the curriculum” (CSWE, 2015). Likewise, the intersectional effects of gender and economic justice related to the development and treatment of SUD’s can be woven into the fabric across social work curricula courses.

**For researchers and policy makers.** Social workers share the responsibility to develop and implement gendered and trauma-informed approaches to recovery from SUD’s that address the unique needs of low-income women and their families. Women dealing with a SUD and additional mental or physical health diagnoses who are living in poverty often experience soft deterrents to help-seeking as a result of the fractured nature of current policy deliverance (Acs & Loprest, 2004). Policy is being crafted to acknowledge the impact of SUD’s across systems, recognizing the need for unified approaches to the prevention and treatment of substance use disorders within the larger context of poverty-related issues.

**Study Overview and Purpose**
A woman’s experience of trauma has been shown to impact substance abuse recovery outcomes. Given that research has demonstrated the influence of abstinence self-efficacy (ASE) and social support for recovery (SSR) on the pathways to sustained sobriety, this examination is a unique opportunity to gain deeper understanding of the role these critical components of early substance use recovery have on female survivors of trauma. Prior research has recognized the myriad effects that abstinence self-efficacy (ASE) (DiClemente, 1996; Laudet, & Stanick, 2010; Warren, et al., 2007) and social support for recovery (Cook, 2012; Mulia, Schmidt, Bond, Jacobs, & Korcha, 2008; Tracy, et al., 2010) have on substance abuse outcomes among women. Moreover, women with co-occurring trauma and substance use disorders may enter treatment with lower abstinence self-efficacy and have greater difficulty accessing social support for the recovery process early on (Covington, 2008; Najavits et al., 1997; Warren et al., 2007). While abstinence self-efficacy and social support for recovery have repeatedly shown to be related to treatment outcomes (Cook, 2012; Kadden, & Litt, 2011; Mulia, et al., 2008; Tracy, et al., 2010), less understood are their roles as mediators of these effects, particularly within early sobriety. Important to the development of interventions that foster resiliency in recovery among a sample of highly vulnerable women, this study would examine the effects of ASE and SSR on the relationship between trauma symptomatology and post-treatment intake substance use outcomes.
Chapter 2

Review of the Theoretical and Empirical Literature

This chapter will review the primary theoretical and empirical literature relating to women with co-occurring trauma experiences and substance use disorders. Addressed first is the theoretical work providing a person-in-environment framework for understanding the layered and reciprocal contexts impacting women with multiple vulnerabilities and their recovery from a SUD. Presented next is the literature associated with trauma and the theory of Stress and Coping; within this model are the role of Social Support, and theory of Self-Efficacy, with a specific focus on recovery from substance use disorders. Following this, there is an examination of the empirical work evaluating the relationship between trauma and post-treatment substance use outcomes, identifying those studies that have utilized concepts central to this dissertation—abstinence self-efficacy and social support for recovery. Included will be the identification of gaps in the previous literature, accompanied by the rationale and conceptual model for this evaluation. Finally, the research questions and hypotheses for this dissertation will be presented.

Theoretical Literature

Ecological Framework. A woman with multiple vulnerabilities receiving treatment for a SUD is embedded within layered systems of influence that should be acknowledged as part of the recovery process. According to Brofenbrenner (1977) an individual’s circumstances must be viewed as being affected across the lifespan through interactions with both their immediate and larger social environments (p. 514). Like the rings of concentric circles, Brofenbrenner’s (1977) ecological
environment is a conceptualized as a nested series of five systems with continual impact on an individual’s life and development (Brofenbrenner, 1977; Brofenbrenner, 1994). The microsystem is the closest ring encircling the woman, and is defined as the behaviors, interpersonal interactions and impact within a given setting (e.g., home, school, workplace, etc.) and defined by the role (e.g. daughter, mother, student, employee, etc.) an individual assumes within that setting (Brofenbrenner, 1974, p. 515). Next is the mesosystem, which is comprised of the interrelated processes of an individual’s microsystems such as the family, school system, or workplace (Brofenbrenner, 1974, p. 515). Further removed from the individual is the exosystem, this layer exerts formal and informal influence on major societal institutions encompassing the mesosystem, such as governmental bodies or mass media communication (Brofenbrenner, 1974, p. 515). Next is the macrosystem, conceived as the ring from which information and cultural ideology are shared and which “both explicitly and implicitly endows meaning and motivation to particular agencies, social networks, roles, activities and their interrelations” (Brofenbrenner, 1974, p. 516). Lastly there is the chronosystem, this abstract ring acknowledges the influence of time and change across systems—which includes an individual’s developmental transitions, and expands to incorporate those larger scale sociohistorical and environmental events (Brofenbrenner, 1994, p.40).

This person-in-environment model allows for a wholistic view of how multiple factors and system interactions occurring across a woman’s lifetime may have shaped the development of a SUD, as well as her subsequent ability to recover. While the ecological framework recognizes the impact of these various systems on the
individual, the following theories address how interactions at the micro and mesosystem level influence a woman’s internal and interpersonal capacity to harness sobriety supports post-treatment.

**The Stress-Coping Framework.** How a woman will negotiate a myriad of substantial life stressors is affected by her ability to assess and manage various scenarios and perceived challenges. According to Lazarus and Folkman (1984) *stress* is defined as those environmental forces that individuals experience as exceeding their capabilities or endangering their well-being, with two processes mediating that person-in-environment relationship—cognitive appraisal and coping (p. 19).

**Appraisal.** *Cognitive appraisal* is the “evaluative process that determines why and to what extent” the environment is determined stressful (Lazarus & Folkman, 1984, p. 18). In *primary appraisal* individuals assess their stake in a given encounter, gauging the potential for harm or benefit to self or others; *secondary appraisal* then ascertains what, if anything can be done to minimize risk or maximize potential benefits (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986, p. 993). The convergence of these appraisals determines the level of control an individual believes they possess over any given situation—either recognizing the potential for mastery or the possibility for harm. Moreover, it is through appraisal that an individual identifies what coping options are available, such as altering the situation, information seeking, or refraining from acting impulsively (Folkman, et al., 1986, p. 993).

**Coping strategies.** *Coping* is understood as the cognitive and behavioral strategies an individual draws upon to manage stress and exert control over their environment (Lazarus & Folkman, 1984). Three categories of coping have been
identified in the literature, problem-focused coping, emotion-focused coping and avoidance (Lazarus & Folkman, 1984). *Problem-focused* coping are actions taken to reduce the problem and is often linked with problem solving and support seeking (Lazarus & Folkman, 1984; Staiger, Melville, Hides, Kambouropoulos & Lubman, 2009). *Emotion-focused* coping is the regulation of emotional response when confronted with problems (Lazarus & Folkman, 1984, p. 44). Avoidance is conceptualized as the denial of a problem (Lazarus & Folkman, 1984). *Avoidance* coping, or escape coping, is a maladaptive mechanism characterized by an individual’s attempts to refrain from confronting unwanted feelings or situations (Benight & Bandura, 2004).

**Effects of trauma on appraisal and coping.** Either as a result of a singular traumatic experience or repeated exposure to violence, an individual’s capacity to adequately appraise future high-risk situations may become compromised, making them more prone to substance use and substance use relapse than a non-exposed counterpart (Lazarus, 1991; Walters, Simioni & Evans-Campbell, 2002). Relevant to those in recovery from SUD, research suggests that faulty appraisal may occur in two ways. The first may manifest as an underestimation of the risk a situation poses, such as spending time with individuals under the influence of alcohol and/or drugs (Waldrup, Back, Verduin & Brady, 2007). The second occurs when a situation is deemed overly threatening and social resources as unavailable, for example a woman may drink to manage extreme anxiety related to trauma exposure (Staiger, et al., 2007). Over time, these deficient appraisals can lead to maladaptive behaviors, like
the misuse of prescription medications or heavy episodes of drinking in an attempt to cope with trauma symptomatology (Ehring & Quack, 2010; Lazarus, 1991).

Avoidance coping, trauma and SUD. Social learning theorists assert that individuals who use alcohol and/or drugs with the expectancy of regulating or reducing unpleasant emotions or negative affect often lack more appropriate emotion or problem focused coping skills (Cooper, Russell & George, 1988; Hasking, Lyvers & Carlopio, 2011). Research has shown that women who experienced various forms of victimization (e.g. child abuse or sexual assault) were more likely to engage in drinking or substance use to cope (Hussey & Singer, 1993; Najavits & Hein, Ullman et al., 2013). Avoidance coping in the form of substance use is linked to the successive development of a SUD and is a robust predictor within the literature of patterns of substance abuse and relapse (Cooper, Russell & George, 1988; Finkelhor & Browne, 1985; Garland, Gaylord, Boettiger & Howard, 2010; Hasking, Lyvers & Carlopio, 2011; Kassel, Boronvalova & Mehta, 2006; Ullman, et al., 2013). Moreover, the psychological effects of trauma are linked to a decreased capacity to identify positive coping strategies once in treatment for a SUD (Finkelhor & Browne, 1985, p. 7; Staiger et al., 2007, p. 221).

Coping, social support and self-efficacy. Additional mechanisms related to trauma, coping and recovery from substance use disorders are social support and the development of abstinence self-efficacy (Folkman, et al., 1986; Laudet & Stanik, 2010; Majer, Jason, Ferrari, Venable, & Olson, 2002; Tracy, Muson, Peterson, & Floersch, 2010; Warren, et al., 2007). Often a goal of SUD treatment is the creation of a recovery-oriented social support network meant to serve as a protective factor for
women in early sobriety (Najavits & Hein, 2013). The presence of family, friends and recovery related associates produce opportunities for the development of pro-sobriety, or emotion and problem focused coping mechanisms (Benight & Bandura, 2004). Through the vicarious exposure to adaptive and sobriety centered coping modeled by a recovery-oriented network women are more likely to develop higher levels of abstinence self-efficacy (Bandura, 1997; DiClemente et al., 1995; Ilgen, McKellar, & Tiet, 2005; McKellar, Ilgen, Moos & Moos, 2008). Abstinence self-efficacy is the foundation of recovery oriented coping and is indicative of the level of skill a woman has to manage her sobriety. Outlined below are the means by which social support for recovery functions as a mechanism of coping linked to social learning opportunities and the development of abstinence self-efficacy among women in early recovery from a SUD.

**Social Support.**

Social support is often used as a broad term descriptive of those processes through which social relationships influence health and well-being (Goettleib, 1981). For this examination, social support specifically refers to the social resources that an individual *perceives* to be available through nonprofessional informal helping relationships, or personal networks (e.g. family, friends, support group members) (Cohen, Underwood & Gottlieb, 2000, p.7). It is the perception of support, or the belief that assistance is available that has been identified in the research as being important—“helping individuals perceive events as less stressful and providing resources to cope successfully with stress” (Cohen, et al., 2000; Cohen & Willis, 1985; Green, et al., 2002, p.11). Network members often provide input in the
appraisal of stressful situations and assessment of coping strategies (Cobb, 1976). While network support in early SUD recovery can offer positive problem-focused and/or emotion focused coping strategies that assist in the management or understanding of distressful situations, for women with low socioeconomic status and co-occurring disorders research suggests that personal networks may encourage maladaptive coping strategies related to substance use (Brereton, et al., 2014; Cohen, et al., 2000; Cohen & Willis, 1985; Everett, Camille- Hall & Hamilton-Mason, 2010; Panebianco, Gallupe, Carrington & Colozzi, 2016).

The presence of family and friends who are substance users, increase a woman’s likelihood of “initiating or sustaining drug use, affect HIV risk, and serve as a barrier to treatment” (Savage & Russell, 2005, p. 201). Among women with large networks where resources are inadequate, reciprocity may also create unnecessary strain and avoidance of support (Green, et al., 2002). Falkin and Strauss (2003) note in their research that often times sources of social support enabled a women’s substance use either in overt or subtle, unintentional ways. For example, the provision of money for food and clothes may be used to purchase alcohol or drugs, or more indirectly through the provision of childcare, supporters create opportunities for substance use (Falkin & Strauss, 2003, p. 153). Similarly, social support may be scarce among family and friends who are angry or exhausted by a woman’s substance use and associated behaviors (Savage & Russell, 2005, p. 201).

**Social support for recovery (SSR).** Defined as the perceived support a woman experiences from family, friends and associates in relation to her SUD recovery (e.g. information, advice, etc.), social support for recovery is considered a principal
component in the maintenance of early sobriety and is associated with decreased substance use (Humphreys, Moos & Cohen, 1997; Laudet, Mogan & White, 2006). Evidence suggests that as a woman progress in SUD treatment her existing substance-use oriented network erodes, and ideally, a new recovery oriented support network emerges (Laudet, Morgan & White, 2006). Essential to the development of sobriety, “recovery-oriented support may foster greater self-efficacy toward ongoing abstinence because recovering individuals can acquire effective coping strategies from their peers” (Laudet, Morgan & White, 2006, p. 35).

*Trauma and social support for recovery.* For women who have experienced trauma, family members or friends may have been perpetrators, complacent, or victimized as well, unable to offer support, or at worst be coercive and depleting of resources (Green, et al., 2012; Savage & Russell, 2005). Najavits and colleagues (1998) found that women with significant trauma and a substance use disorder had trouble accessing recovery support (p. 453). Women coerced or otherwise reluctant to engage in SUD treatment, can view support in treatment as “controlling or coercive, and may damage feelings of competency and efficacy” (Green, et al., 2012, p. 7). Moreover, research shows that women with a history of trauma have difficulties with forming or maintaining interpersonal relationships and often struggle to relate to their peers (Min, Tracy & Park, 2014; Najavits, et al., 1998). A lack of social support in recovery limits exposure and opportunity for increases in abstinence self-efficacy and post-treatment coping, preventing the vicarious exposure and mastery experiences that are fundamental for developing skills in sobriety (Bandura, 1986; Green et al., 2012).
**Self-Efficacy.** Self-efficacy theory accounts for the set of beliefs that underlie discrete areas of behavioral functioning; performance and motivation are determined by how effective people believe they can be at a specific task, such as their ability to abstain from alcohol or drug use (Bandura, 1977). Efficacy is not viewed as a set of static, or inherent abilities, but rather, beliefs are continually being shaped by four key sources of information: 1) *mastery experiences*, or the resilient sense of efficacy stemming from overcoming obstacles through perseverance; 2) *vicarious experience*, which mediates beliefs through the modeled achievement of others; *verbal persuasion* provides “persuasive boosts” and mobilizes greater efforts; *physiological and affective states*, or the biological and emotional feedback within a particular situation (Bandura, 1977). Self-efficacy beliefs affect human performance through the *cognitive*, or an individual’s self-enabling or self-debilitating thoughts; *motivational*, or the ability to overcome obstacles and challenges to meet goals; *affective*, and the regulation of emotional states, which affects vulnerability to stress and depression and *decisional processes*, which affect the array of options people consider and choices they make (Bandura, 1977, p. 116; 2001, p. 13).

**Abstinence Self-efficacy (ASE).** Bandura notes that abstinence self-efficacy affects every phase of change in substance abuse—the initiation of change, successes in the change process, recovery from a lapse, or extended period of relapse, and long-term sobriety maintenance (Bandura, 1999, p. 214). Individuals successful in their recovery from substance use disorders, either through treatment or on their own, have greater ASE at the outset than those who do not change, or those who struggle with relapse (Bandura, 1986; Carbonari & DiClemente, 2000; Carey & Carey, 1993). Similarly, highly
efficacious individuals see greater gains from treatment—developing self-regulatory skills and the ability to harness the effort to succeed in sobriety (Bandura, 1977; Kadden & Litt, 2011; Velicer, DiClemente, Rossi & Prochaska, 1990). ASE has shown to be predictive of substance use post-treatment, even after controlling for the influence of demographic variables, history and level of use and withdrawal (Bandura, 1977; Kadden & Litt, 2011; Warren, et al., 2007). Likewise, post-treatment ASE predicts who is likely to relapse and show soon that slip will occur, as well as which situations make them vulnerable to experiencing relapse (Bandura, 1994; DiClemente et al., 1995; Ilgen, McKellar, & Tiet, 2005; McKellar, Ilgen, Moos & Moos, 2008).

Abstinence self-efficacy has shown to mediate the relationship between coping and relapse (Marlatt & Gordon, 1978). The Relapse Model suggests that the relapse process is activated when an individual is placed in a scenario of temptation, such as being around others who are socially drinking alcohol, that may threaten one’s self-control (Marlatt & George, 1984; Velicer et al., 1990). Once placed in this high-risk situation, individuals may utilize effective coping strategies, like declining a drink, which not only stymy the likelihood of relapse, but provides a mastery experience which will strengthen overall ASE, further reducing the probability of relapse (Marlatt & Donovan, 2005; Marlatt & Gordon, 1978). On the other hand, those that lack coping strategies in the face of temptation may also foster feelings of helplessness and a desire to “give in” (Marlatt & Gordon, 1978). This deficit in ASE may then translate into an increased probability of a lapse or isolated slip, and whether this sole incident morphs into an extended period of relapse (Marlatt & Gordon, 1978).

**Empirical Literature**
The following review examines those studies evaluating the relationship between trauma, substance use and SUD treatment outcomes, as well as those that assessed the effects of self-efficacy and social support on these relationships. Inclusion criteria were as follows: 1) while some studies include mixed samples of both men and women, attention is primarily given to studies dedicated exclusively to women; 2) independent variables needed to include at least one of the following: trauma, self-efficacy and/or social support; and 3) the dependent variables evaluated pertained to substance use treatment outcomes. A total of 28 empirical articles met these conditions (Table 1).

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Trauma, substance use and the Stress-Coping Framework
Sullivan and colleagues (2016) identified trauma symptomatology as predictive of daily alcohol and drug use among women experiencing IPV. Tracking a group of 41 women through surveys regarding their daily substance use, researchers found that women with trauma symptomatology reaching the level of a PTSD diagnosis consistent with the DSM-IV had greater odds of engaging in alcohol and/or drug use on any given day when compared with women without a PTSD diagnosis. “Most notably, the odds of engaging in both drug and alcohol use on a given day, versus not engaging in any substance use, were nearly 15 times greater for women with (vs. without) current PTSD” (Sullivan, et al., 2016, p. 10). Similarly, using data from a large and diverse sample of women (N=1863), Ullman and colleagues (2013) examined the effects of adult victimization on problem alcohol and substance use. Results produced using structural equation modeling indicated trauma symptomatology and substance use coping mediated the relationship between victimization and substance use, and were predictive of drinking and drug use outcomes. Furthermore, in a mixed-gender (N=52) evaluation of trauma exposure and substance use, scholars found that higher trauma symptomatology was associated with more severe addiction among a population of residential treatment seeking adults (Reynolds, Mezey, Chapman, Wheeler, Drummond, & Baldacchino, 2005). Individuals in this study who were diagnosed as having PTSD additionally reported longer duration of use, more days of use in the month prior to treatment, and connected their substance use to the experience of trauma, with substance use significantly increasing post-trauma (p. 257). These findings support the theoretical stress-coping hypothesis, and the
assertion that women engage in substance use as a way to manage trauma associated symptomatology.

**Impact of trauma on treatment outcomes.** Recognizing the absence of interventions appropriate for use among women with a comorbid diagnosis of trauma symptomatology and substance use disorder, Najavits and colleagues (1998) developed an accessible cognitive-behavioral psychotherapy for the simultaneous treatment of both PTSD and SUD. Findings from the twelve-week program of treatment ($N=27$) indicated positive improvements across a variety of domains, most notably though was the decrease in substance use from pretreatment to the 3-month follow-up, as well as decreases in the level of trauma symptomatology (Najavits et al., 1998). Likewise, Morrisey and colleagues (2005) conducted a quasi-experimental study across nine major U.S. cities from 2001-2003, surveying 2,026 women referred to substance abuse treatment programs. The goal of the Women, Co-occurring Disorders and Violence Study (WCDV) was to evaluate the effectiveness of service approaches designed specifically to address the presence of comorbid diagnoses. Results obtained via hierarchical linear modeling showed that integrated interventions addressing trauma symptomatology and SUD slightly outperformed the comparison group, particularly at the 6 and 12-month follow-up, with women using less and reporting less severe symptoms related to exposure to trauma (Morrisey, et al., 2005, p. 1215).

Most recently, Lopez-Castro and colleagues (2015) examined abstinence rates of women who received treatment for SUD and PTSD ($N=353$). Using data from a NIDA funded multi-site clinical trial, this examination utilized latent growth mixture
modeling to identify sub-group trajectories and evaluate the association between each group trajectory, pretreatment risk factors and posttreatment behaviors (Lopez-Castro, et al., 2015, p. 3). Findings illustrated multiple paths to recovery, with 3 sub-categories of future substance use being identified—“low risk/ infrequent use”; “high risk/infrequent use”; and “high risk/frequent use”. Women in the study who fell into the “high risk/frequent use” category post-treatment tended to be older, showed little reduction in their trauma symptomatology over the treatment period, and did not utilize follow-up care. Important to acknowledge was how exposure to previous SUD treatment, severity of trauma symptomatology and frequency of use prior to treatment were indicators of the difference between lasting sobriety, brief lapses, and prolonged relapse (Lopez-Castro, et al., 2015, p. 8).

**Trauma, Social Support for Recovery and Substance use.** Savage and Russel (2005) examined the mediating effects of social support on trauma symptomatology among a sample of women with multiple vulnerabilities and co-occurring disorders (N=644). Results illustrate the complexities of social support networks, particularly among low-income women. While approximately 80% of the women indicated that social support encouraged healing from trauma and the cessation of substance use, there was indication that a significant number of individuals were related to the woman’s trauma problem, and 15% of the women reported that family and friends were involved in their substance use (p. 205). Falkin and Strauss (2003) evaluated the support networks of women offenders (N=100), and found that the women were readily able to identify supporters offering help to cease their drug use, primarily among their partners (54%), their parents (44%), siblings
(31%), friends and other relatives (41%). Conversely, 9% of the participants identified their partners as enabling of their substance use, and an even larger number, 14% noted that their friends provide support, but that 18% said these same friends also enable their drug use (p. 151).

Laudet, Morgan and White (2006) examined stress and quality of life as a function of time in recovery, hypothesizing that social supports, spirituality, religiousness, life meaning, and 12-step affiliation would mediate stress and enhance life satisfaction. Recovering individuals (N = 353) were recruited from inner-city ethnic minority members whose primary substance had been crack or heroin (p. 33). The structural equation modeling analyses showed that both general social support and social support for recovery significantly enhanced quality of life. Also of note was that while recovery support increased over the first two years in sobriety, it became a less critical factor when compared to general social support over time, with the authors suggesting that “recovering persons become less focused on abstinence and concentrated more on living a normal life” (p. 68).

Davey-Rothwell, Chander, Hester, and Latkin (2011) assessed the relationships between social networks and binge drinking episodes among a sample of women with at risk for HIV/STIs and living in an urban neighborhood (N=567), specifically examining those mediating network characteristics related to episodes of heavy drinking. After controlling for individual-level factors, such as race and age, episodes of heavy drinking were associated with decreased odds of having social network members in substance use treatment, being employed full time, and with whom the participant socialized. In a mixed-gender study, scholars assessed the
relation between the presence of social network members that were substance users at intake to SUD treatment and subsequent drug use in a population of patients with co-occurring disorders \((N=57)\) (McDonald, Griffin, Kolodziej, Fitzmaurice, & Weiss, 2011). Mixed model analyses reported that multiple drug users as network members at intake was predictive of more days of drug use over the course of the next 15 months, compared to those patients without substance using network members. Moreover, individuals with multiple drug users over 15 months noticeably increased substance use over time, while those who did not name multiple drug users showed a decline in use (p. 104). In a similar study drawing data from state funded residential treatment programs \((N=141)\), the size of the daily network was the most profound predictor of the frequency at which an individual used alcohol or drugs, as well as relapse status at 3 and 6 months, with a larger daily social network predictive of better treatment outcomes (Zywiak, Neighbors, Martin, Johnson, Eaton, & Rohsenow, 2009).

Project MATCH examined 942 individuals receiving intensive outpatient services, and sought to ascertain which aspects of social support for drinking were most strongly related to alcohol treatment outcome (Zywiak, Longabaugh, & Wirtz, 2002). Results of regression analyses revealed that both the percentage of abstainers, frequency of drinking in the network and the size of daily network, was predictive of outcomes 3 years’ post-treatment (p. 120). Unexpectedly, support for drinking from the four most important people in the network did not appear to be related to drinking outcomes (p.119).
Designed to determine if treatment for substance use, the Network Support Project examined if an alcohol dependence treatment intervention would change an individual’s social network from one supportive of drinking to one supportive of sobriety (Litt, Kadden, Kabel-Cormier & Petry, 2007; Litt, Kadden, Tennen & Kabela-Cormier, 2016). Initial findings showed that while network support interventions did increase abstinence self-efficacy and post-treatment drinking outcomes, they did not necessarily alter social support for drinking. At two-years post-treatment the authors found that network support treatment recipients had 20% more days abstinent than the other treatment conditions. Latent growth modeling additionally showed that social network changes were accompanied by increases in self-efficacy and coping predictive of positive long-term drinking outcomes (Litt, Kaden, Kabela-Cormier, & Petry, 2009, p. 229). In the most recent trial of the Network Support project interventions attempted to enhance the ability of participants to create abstinence-supportive networks (p. 203). A mixed-gender sample (N=193) were treated with either the social network intervention (SN) or a cognitive behavioral (CB) program, and followed for just over two years. Results showed that the network intervention outperformed the CB program, with participants having longer periods of abstinence, fewer heavy drinking days and experienced fewer consequences associated with drinking. SN individuals increased their support for abstinence network members by 8%, when compared to the null change in the CB individuals’ networks. Central to this dissertation, mediation analyses revealed that the network treatment effects “were mediated by changes in abstinence self-efficacy and in social
network variables, especially the proportion of non-drinkers in the social network” (p. 210).

**Trauma, Abstinence Self-Efficacy and Substance Use**

**ASE as a predictor.** Abstinence self-efficacy has repeatedly shown to be a predictor of treatment outcomes among individuals with substance use disorders. Dolan and colleagues (2008) examined ASE in a sample of 163 individuals receiving treatment for cocaine dependence. Their results indicated that abstinence self-efficacy in the first week of treatment was predictive of cocaine use at the 3-month follow up, when controlling for pre-treatment severity of use. These findings correlate with findings from McKellar, Ilgen, Moos and Moos (2008) who identified self-efficacy a “robust” predictor of short and long-term post-treatment sobriety from alcohol use (p. 148). In their mixed-gender sample of 420 adults were assessed five times over 16 years with changes in self-efficacy being most evident during the first year of sobriety post-treatment seeking (McKellar et al., 2008). Characteristics associated with positive or improved self-efficacy over the duration of the study included being female and possessing higher levels of education (p. 153). Critical to the current examination, findings showed that improvements in social support predicted greater self-efficacy at one year (p. 154).

Drawing similar conclusions, Walton, Blow, Bingham, and Chermack (2003) researched the interrelationships of client background characteristics and risk for posttreatment substance use, as well as environmental factors measured early in treatment and how such factors predict posttreatment alcohol and drug use. Their findings showed that among intrapersonal asset variables, self-efficacy was the only
predictor of post-treatment alcohol use. Additionally relevant were client characteristics, or the presence of multiple vulnerabilities as markers of low self-efficacy, including having lower income, being female, greater problem severity, and being unmarried. Likewise, Laudet and Stanick (2010) found that commitment to abstinence strongly predicted reductions in alcohol and drug use among outpatient treatment seekers with multiple vulnerabilities \((N=250)\). Multivariate results revealed abstinence self-efficacy to be among four domains predictive of commitment to post-treatment abstinence, approximately 26.6% of the explained variance. An additional, an unexpected yet significant result was the strong influence of 12-step involved peers supportive of recovery within an individual’s network. Applicable to this discussion, Laudet and Stanick (2010) connect social support for recovery to abstinence self-efficacy, stating that the vicarious exposure to “friends’ commitment to abstinence in all aspects of their daily life (e.g., choice of activities, coping strategies, associates) is likely to inform and to reinforce one’s own motivation as well as to provide a model if/when temptations to drink or to use drugs arise” (p. 324).

Saxeena, Grella and Messina (2015) conducted a secondary data analysis of trauma-informed SUD treatment programs among a sample of women offenders with multiple vulnerabilities \((N=203)\). This examination accounted for differences in trauma symptomatology and the influence of continuous care on post-treatment abstinence self-efficacy and substance use. Higher levels of trauma, and low levels of education were negatively associated with self-efficacy and increased substance use for those not participating in the continuous care programs, but that for individuals receiving continuing care “the rate of number of substances used decreased by 63%,
the odds of high psychiatric severity decreased by 46%, and the self-efficacy score increased by .05 points for every additional type of traumatic event endorsed” (p. 12).

Social Support, Abstinence Self-Efficacy and Substance Use. Majer and associates (2002) specifically examined the mediating roles of social support for recovery and abstinence self-efficacy on a sample of residents in Oxford House treatment programs (N=100). Significant relationships between treatment and demographic variables were detected on measures of social support for recovery and abstinence self-efficacy, expressly that residence time and 12-step participation were related to increased levels of social support for recovery and abstinence self-efficacy. Nevertheless, residents who reported statuses related to exposure to trauma, such as being a veteran, perceived making identification with other recovering peers difficult, ultimately reporting lower levels of social support (p. 214). In addition, residents who were parents had overall lower ASE (p. 213). Similarly, Warren and colleagues (2007) evaluated individuals with co-occurring disorders and substance use disorders, attempting to identify intervening or mediating variables contributing to improved treatment outcomes. Data were collected from a sample of 351 clients receiving care in residential substance abuse treatment programs, half of whom had additional PTSD diagnoses. Analyses using structural equation modeling revealed that greater social support at treatment intake predicted better mental health status and less heroin and cocaine use; and greater self-efficacy predicted less alcohol and cocaine use at 6 months’ post treatment entry (p. 271). Being African-American was also indicative of having greater ASE, but was also related to more cocaine use (p. 271).
**Findings from the Women’s Network Project.** Much of the impetus shaping the aims and research questions posed in this dissertation are guided by findings from its parent study, the Women’s Network Project (WNP). The WNP examined the personal support networks and factors associated with post-treatment substance use among women with multiple vulnerabilities and co-occurring disorders receiving either residential (RT) or intensive outpatient (IOP) SUD treatment ($N=377$).

**Social support.**

Findings from the WNP study repeatedly identified various types of social support as a vital and necessary component of maintaining early sobriety. In Brown and colleagues (2013) examination of quality of life post-treatment intake, greater levels of support for recovery were associated with greater quality of life in three of the four QOL domains (Environmental, Psychological and Social). Additional findings utilizing a mixed linear regression analysis indicated that less perceived sobriety support from alters was related to substance use at follow-up, an indicator closely related to the measure of social support for recovery this dissertation utilizes (Min, Tracy & Park, 2013).

**Trauma and social support.** When correlates of quality of life (QOL) were examined, Tracy and colleagues (2012) found that both trauma symptomatology and social support for recovery were significant factors related post-treatment QOL, a significant contributor to early sobriety maintenance post-treatment. While race and co-occurring disorders were significant at the bivariate level for one or more QOL domains, they did not remain significant in the final step of the regression analysis when trauma symptomatology and social support were included (Tracy et al., 2012, p.
246). Specifically, higher Physical QOL at 6 months’ post-treatment intake ($R^2 = .42$) was associated (p < .05) with fewer trauma symptoms ($\beta = -.19$) and greater perceived recovery support ($\beta = .16$); improved Psychological QOL at 6 months’ post-treatment intake ($R^2 = .43$) was associated (p < .05) with fewer trauma symptoms ($\beta = -.15$), and greater perceived recovery support ($\beta = .20$); and both Environmental and Social QOL domains at 6 months’ post-treatment intake were significantly associated with recovery support ($\beta = .18$) and ($\beta = .28$) respectively (p. 246).

Brown and colleagues (2013) expanded upon these findings, specifically examining the impact of co-occurring disorders, trauma and social support for recovery on QOL. Regression results indicated that while the presence of a dual disorder was associated with lower quality of life, this effect disappeared when controlling for trauma symptomatology; leading to the conclusion that trauma related symptomatology may be the explanatory factor for the relationship, rather than the co-occurring exposure of a mental health disorder and SUD (p. 69).

Abstinence self-efficacy. While treatment effects were not explicitly examined in this study, abstinence self-efficacy mean scores did increase at each follow-up interview over the year following treatment intake for women in both residential and intensive outpatient programs (Min et al., 2013). Moreover, a hierarchical OLS regression analysis showed that lower levels of trauma symptoms and higher levels of abstinence self-efficacy at intake were related to higher levels of ASE at 6-months’ post-intake (Taylor, Park, Francis, Min, & Tracy, 2017b). Additionally, more treatment related professionals and peers ($b = 0.38$, $SE = 0.19$, $p = .049$), fewer network members that were negative ($b = 0.30$, $SE = 0.13$, $p = .02$), and more close
people \((b = 0.48, SE=0.20, \ p = .01)\) in the network were associated with greater ASE at 6-months’ post-intake, even after controlling for baseline ASE and other covariates, resulting in 6.5% increases in R-square \((p = .002)\) (Taylor, Francis, Min & Tracy, 2016). Relatedly, findings from longitudinal mixed model analyses conducted by Min, Tracy and Park (2014) indicated that previous treatment history and higher abstinence self-efficacy were related to more perceived sobriety support from alters at 3 and 6-month post-treatment intake interviews (p. 280).

**Trauma and ASE.** Relevant to this dissertation were a number of findings from the WNP study regarding the relationship between trauma and ASE, and how social support or personal support network characteristics were related to these constructs. When changes in a woman’s networks over a 12-month period of time were examined (Min et al., 2013), findings show higher levels of trauma symptomatology were associated with a higher number substance using alters, and alters who the woman used alcohol and/or drugs with, but also with a higher number of treatment related alters. A notable comparison in these findings indicated that while women with higher levels of abstinence self-efficacy also had a higher number of treatment-related alters, they had fewer substance using alters and individuals with whom alcohol and/or drugs were used (Min et al., 2013). Moreover, both trauma symptomatology and ASE showed significant associations with substance use at 12-months’ post-treatment intake \((p. < .01)\) — with regression analyses indicating that women with higher levels of abstinence self-efficacy \((OR = 0.98, 95\% CI = 0.96,\ 0.99)\) were less likely to use substances by the 12-month follow-up (Tracy et al., 2016, p. 58).
**Nested purpose of the current investigation.** Evidenced in the findings of the WNP study was the influence of trauma symptomatology, ASE and SSR on early recovery and associated outcomes. Trauma and ASE were shown to be predictive of post-treatment intake substance use, and were associated with a variety of changing characteristics in a woman’s network over time. These findings are supportive of the assertion that ASE and SSR are both influential and malleable in early recovery. What can be further clarified using the longitudinal data of the WNP study are the explicit pathways of influence ASE and SSR have on the relationship between trauma symptomatology and substance use post-treatment intake.

**Confounders and Covariates.** Relevant to this study are those demographic, clinical, treatment related and personal network characteristics that may act as confounding variables on the relationships of interest within the analysis model.

**Demographic covariates and multiple vulnerabilities.** Key demographic variables, particularly those relating to the vulnerable status of this sample of women have been highlighted throughout this chapter. Those characteristics included race (Warren et al., 2007), education (Saxeen, Grella & Messina, 2015), employment (Davey-Rothwell et al., 2011), homelessness and legal involvement (Najavits & Hein, 2013), marital status (Walton et al., 2003), and being responsible for children (Majer et al., 2002). Age was identified from the WNP studies as a covariate—older age was related to fewer substance using alters and more alters providing sobriety support (Min et al., 2013).

**Treatment related covariates.** First, the type of treatment program, either residential or intensive outpatient may be important to consider. While women
receiving RT and IOP were demographically similar in regards to the presence of multiple vulnerabilities and co-occurring disorders, women in RT had higher levels of trauma symptomatology and lower-ASE at baseline. Moreover, there were support network differences in women according to treatment modality (Kim, Tracy, Brown, Jun, Park, Min & McCarty, 2015; Min, et al., 2013). Women in RT not only had less support for sobriety, they also had a higher number of associates that were substance users (Kim et al., 2015; Min, et al., 2013). Moreover “fewer residential women (5% residential vs. 21% outpatient) reported substance use in past 30 days than outpatient women at T2; by T4 30% of women from residential treatment and 20% of women from outpatient treatment reported substance use” (Min et al., 2013, p. 331). Women with a history of previous substance abuse treatment were less likely to have relapsed at 12 months’ post-treatment intake (OR = 0.43, 95% CI = 0.23, 0.82) (Tracy et al., 2016, p.58).

**Personal network covariates.** Tracy and colleagues (2016) identified that a “higher numbers of substance using alters at 6-months’ post-treatment intake were associated with an increased likelihood of substance use by 12-months’ post-treatment intake (OR = 1.08, 95% CI = 1.02, 1.14)” (p. 58). This same study found that the number of isolates, or those individuals within a woman’s network who are not connected to other members, were associated with lower odds of substance use at follow-up (OR = .92, 95% CI = .86, .99) (p. 59).

**Critique of the Empirical Literature**

**Strengths.** There are a number of strengths within the empirical body reviewed here. Notably, a number of these studies utilized longitudinal data, capturing
changes over time in ASE, personal support networks and other factors influencing early SUD recovery among women (Tracy et al., 2013; McKellar et al., 2008; Najavits & Hien, 2013). A number of examinations accessed large and diverse samples, increasing both the statistical power thus reducing the likelihood of type II error, as well as increasing knowledge of this vulnerable population sub-set (Laudet et al., 2006; Saxena, et al., 2015; Tracy et al., 2016; Ullman et al., 2013; Warren et al., 2007). Furthermore, conceptual definitions and operationalization such as trauma symptomatology, self-efficacy, social support, recovery, and relapse were expanded upon and explored in a variety of ways, increasing the field’s understanding of these varied and complex constructs.

**Limitations.** Common in social science research are those limiting factors that make comparison, interpretation, and generalizability of empirical findings challenging. This critique highlights how matters such as sample size, the use of secondary cross-sectional data, non-universal terminology, multiple measures and self-report data limit generalizations, conclusions about both causality and temporal precedence, and makes any identified relationships difficult to interpret (Babbie & Rubin, 2008).

A number of studies reviewed here had small sample size. One example being the seminal Seeking Safety examination had a sample size of 17 women, limiting the statistical power of any analyses to detect significant effects (Najavits et al., 1998; Babbie & Rubin, 2008). Conversely, longitudinal studies, such as Walton and associates (2003), experienced some level of attrition, which could impact any ability
to generalize findings owing to differences in participant characteristics remaining in the study compared to those lost at follow-up (Babbie & Rubin, 2008).

An additional limitation to the empirical data reviewed here is the varying understanding of the nature of the concepts under investigation. One contributor is the lack of common theoretical guidance. A number of studies failed to identify theoretical underpinnings directing the study (Warren et al., 2007). As a result, key variables could be excluded, the selection of measures and analyses may be misguided, and cultural nuances may introduce measurement error when not anchored in the same explanation for the phenomena under study (Tsogia, Copello & Orford, 2001). As a result, there is diminished capacity to compare results across studies using similar concepts or populations.

Correspondingly, conceptual definitions and operationalization of constructs varied across studies, affecting the relationship or generalization of findings within the literature (Falkin & Strauss, 2003; Najavits & Hein, 2013; Warren, et al., 2007). This occurred frequently, and for each of the principal concepts being investigated in this dissertation.

**Trauma.** Trauma was both conceptualized and operationalized in numerous ways. A common method was to examine trauma according to type, e.g. interpersonal or domestic violence childhood sexual abuse (Saxena, et al., 2015; Sullivan et al., 2016). Often a study utilized the clinical diagnosis of PTSD as the sole measure of the trauma construct (Lopez-Castro et al., 2015; Reynolds, et al., 2005), or as in the case of the WNP data, trauma was understood as a manifestation of symptoms (Tracy et al., 2016). What also varied was whether the frequency of trauma exposure had been
measured in relation to type or diagnosis. While this broad understanding of trauma contributes to the body of knowledge and the field’s understanding of the concepts, it does restrict comparisons across studies and any results garnered using that unique conceptualization.

**Relapse.** Important to this critique are the various ways relapse, the primary outcome of the present investigation, was defined and measured. The timing, frequency, severity, and duration of a lapse in sobriety in early recovery provides researchers with an abundance of information about the nature of managing a SUD post-treatment intake. Furthermore, the effect of resiliency constructs—ASE and SSR on these various aspects of SUD relapse and recovery are important to test, particularly as they too are changing in strength as a woman proceeds through treatment. Interestingly, few studies measured relapse in a way that accounted for these important aspects of a woman’s management of sobriety in the first 12 months.

**ASE and SSR.** Both mediators of interest to this dissertation have multiple description and measures accounting attempting to account for their nature. For example, social support was often applied as an umbrella term encompassing multiple domains of social support (e.g. recovery, informational, tangible), as well as referring to personal support networks and their various characteristics (Falkin & Strauss, 2003; Warren, et al., 2007). Similarly, abstinence self-efficacy was measured using a variety of scales, like the DAASES (Min et al., 2014); the Situational Confidence Questionnaire (SCQ) (McKellar et al., 2008); or the Cocaine Related Assessment of Coping Skills (CRACS) (Dolan et al., 2010). Although these were similarly rooted in Marlatt and Gordon’s (1978) theory of relapse, each scale was markedly different,
from the scenarios presented to the number of response options offered. These nuanced differences cannot be overlooked in the validity and reliability of each scale and if they fully represent across the literature “abstinence self-efficacy” (DeVellis, 2016).

**Treatment modalities.** Equally problematic were the multiple treatment modalities (e.g. IOP or RT) potentially acting as a confounder of outcome results. While the majority of these studies were not investigating treatment effects of specific interventions, that does not eliminate the influence of the treatment setting on a woman’s recovery, particularly the development of a recovery-oriented network. Frequency of access to treatment related individuals, both therapists and peers in recovery, could be acting as a mediator of ASE, SSR and post-treatment outcomes.

**Timing.** Finally, timing of measurement is important considering that these concepts are likely to change in strength or influence during early recovery. For studies measuring ASE comparisons should only be made among those that measured ASE at the same time point. For example, McKellar and colleagues (2008), as well as the WNP data set captured ASE at 3, 6 and 12 months’ post-treatment intake, but other studies using cross-sectional data and only having one time point may be providing a biased picture of what is occurring in early recovery (Majer et al, 2002; Warren et al., 2007).

**Gaps in the Literature**

Although there is a fit between the theoretical frameworks and empirical body of knowledge, recognized gaps exist. Given the impact of trauma symptomatology on early recovery outcomes it is important to clarify the processes through which
motivational constructs such as abstinence self-efficacy and social support for recovery operate. This present investigation would address the following gaps identified in the current body of research:

While the addiction literature has conducted a number of evaluations utilizing ASE as a predictor of relapse in SUD recovery (Dolan et al., 2008; McKellar et al., 2008; Walton et al., 2003), as well as examining treatment effects on post-treatment ASE relative to substance use (Saxena et al., 2015) there has not been a direct analysis of how abstinence self-efficacy mediates the relationship between a woman’s trauma symptomatology and early SUD recovery (pathway $a_1$ to $a_2$ in Figure 1).

Likewise, recovery-oriented changes to a woman’s network were predictive of both post-treatment ASE and substance use outcomes (Litt et al., 2007; Litt et al., 2016; McKellar et al., 2008), and though a number of studies illustrated the influence of network composition on ASE a woman’s quality of life and early SUD recovery and relapse (Brown et al., 2013; Falkin & Strauss, 2003; McDonald et al, 2011; Savage & Russell, 2005; Tracy, et al., 2013; Zywiak et al, 2002), there was not a specific evaluation of social support for recovery and its effect on the relationship between trauma and post-treatment intake substance use (pathway $b_1$ to $b_2$ in Figure 1).

Therefore, research focused on clarifying these connections will enhance the field of social work’s understanding of what actually occurs under the broader scope of constructs that support early sobriety.

**Conceptual model**
Presented below in figure 1 is the conceptual model of the hypothesized relationships being tested for this examination which address the current gaps in the literature. Pathway $c'$ illustrates the direct effect trauma symptomatology asserts on substance use 12 months’ post-treatment intake. Pathways $a_1$ and $a_2$, $b_1$ and $b_2$ denote the direct and indirect effects between trauma symptomatology, abstinence self-efficacy, social support for recovery, and substance use 12 months’ post-treatment intake, respectively. Pathway $d_1$ is the relationship between ASE and SSR.

**Figure 1.** Conceptual Model

**Aims, Research Questions and Hypotheses**

**Rationale**

Theory and previous research suggest that that the high occurrence of trauma symptomatology impacts a woman’s ability to access social support networks (Brown et al., 2013; Najavits et al., 1998); and that self-efficacy beliefs are not only influenced by traumatic events, but shape future coping strategies (Benight & Bandura, 2004); all of which have demonstrated effects on substance abuse outcomes. The following aims and
research questions build upon these previous findings, attempting to explain the processes through which trauma symptomatology, social support for recovery and abstinence self-efficacy influence substance use outcomes in early recovery.

**Aims**

The aims of this dissertation are: 1) to examine the relationship between trauma symptomatology and post-treatment substance abuse outcomes among a sample of women with multiple disorders and co-occurring vulnerabilities, specifically looking at substance use 12 months’ post-treatment intake; and 2) to examine the role of abstinence self-efficacy (ASE) and social support for recovery (SSR) as mediators of the relationship between a woman’s trauma symptomatology and substance use 12 months’ post-treatment intake.

**Research Question 1:** In what ways are woman’s trauma symptomatology, abstinence self-efficacy, and perceived social support for recovery related to substance use in the 12 months’ post-treatment intake?

**Hypothesis a:** Greater levels of trauma symptomatology will be associated with an increased likelihood of substance use 12 months’ post-treatment intake.

**Hypothesis b:** Greater levels of trauma symptomatology will be associated with lower levels of abstinence self-efficacy and lower levels of perceived social support for recovery.

**Hypothesis c:** Greater levels of abstinence self-efficacy will be associated with greater perceived social support for recovery.
**Hypothesis d:** Lower levels of abstinence self-efficacy and social support for recovery will be associated with an increased likelihood of post-treatment intake substance use 12 months’ post-treatment intake.

**Research Question 2:** Do abstinence self-efficacy and perceived social support for recovery mediate the effects of trauma symptomatology on post-treatment substance use outcomes, after controlling for relevant covariates?

**Hypothesis e:** Abstinence self-efficacy and social support for recovery will mediate the relationship between trauma symptomatology and post-treatment intake substance use.
Chapter 3

Methodology

Presented first in this chapter are those elements related to the parent study that this current examination draws data from (i.e., the study design, purpose, eligibility criteria, sampling and data collection methods, description of study measures and data analysis plan). Of primary focus are the study measures utilized for this dissertation, a data analysis plan for the research questions and hypotheses presented in Chapter Two, with final comments about the management of missing data and the protection of human subjects.

Parent Study Design

Data for this dissertation was drawn from the longitudinal NIDA funded evaluation “The Role of Personal Social Networks in Post Treatment Functioning” (RO1 DA 022 994 01A2; P.I.: Dr. Elizabeth M. Tracy, PhD), which examined personal networks among women with multiple vulnerabilities and co-occurring disorders in treatment for substance use disorders. Data was collected at four time-points from October 2009 through May 2012.

Purpose of Parent Study. This larger examination of personal support networks had three aims. First, to assess the contribution of personal support network characteristics (e.g., structural, compositional, and social support) on post-treatment functioning relative to the severity of substance use and presence of a co-occurring disorders (e.g., mental health disorder or trauma symptomatology). Second, to examine the social network patterns of women in treatment for SUD over time—identifying network characteristics as women progress through the recovery process. Finally, this
study was a longitudinal evaluation, comparing the characteristics of personal support networks of women co-occurring disorders over time.

**Data Collection.** The parent study conducted face-to-face interviews which utilized computer based data collection methods. Interviews were conducted by master and doctoral level students who received training in research interviewing and the informed consent process. Interviews took approximately 2 hours, and were conducted by trained interviewers at one-week post-intake (T1), with follow up interviews occurring at one month (T2), 6 months (T3), and 12 months (T4) post-intake. Participants were provided with an incentive of a $35 gift card at each assessment. Retention in the parent study was 93% at T2 (N=346), and 81% at both T3 and T4 (N=300). Women lost at the 12-month follow up were more likely to have been in a residential treatment and to have reported higher education and higher trauma symptomatology scores; no differences in race, age, homelessness, legal involvement, employment, dual disorder status, or SUD treatment history (Min et al., 2014).

**Eligibility criteria.** To be eligible for inclusion in the parent study, participants had to be at least 18 years of age and receiving substance abuse treatment from one of the three participating county funded treatment facilities. A diagnosis of having a substance use disorder was determined at intake, per county guidelines. While participants with a dual disorder of substance use and mental illness were allowed, those women with a diagnosis, or receipt of medication for a severe thought disorder, such as Schizophrenia, were excluded from the study (Tracy & Johnson, 2007).

If eligible, participating agencies would present clients with information about the study. If women expressed interest, agency staff arranged a meeting for the prospective
participant with one of the study’s research interviewers. At this appointment, the interviewer would describe the study and lead the participant through the informed consent process.

**Sample.** Participants for the parent study ($N = 377$) were drawn from two-intensive outpatient programs, and one residential treatment facility in an urban part of Ohio. Funded through the county, these non-profit agencies provided specialized services for low-income women and women without health insurance. Determined by county level criteria, placement in either the intensive outpatient, or residential program was assessed immediately prior to intake. Intensive outpatient program (IOP) participants ($N = 258$) received a weekly minimum of 8 hours of individual and group counseling sessions. Participants in the residential treatment program ($N = 119$) received 24 hour services, that included structured activities for at least 30 hours per week. All women were provided with an assessment, case management, and crisis intervention services.

**Study Measures**

The following measures were utilized in the parent study and were identified for use in this examination. All variables included in this dissertation, as well at the time point of collection are listed in Table 2.

**Independent variable.**

**Trauma symptomatology.** The Trauma Symptom Checklist-40 (TSC-40) is a 40-item valid self-report measure of the latent construct *trauma-related symptomatology*, and “evaluates symptomatology in adults associated with childhood or adult traumatic experiences” (Elliott and Briere, 1992, p. 391; Zlotnick et al., 1996). It has a high reliability score of $\alpha = .93$ for this sample. Women were asked about the frequency of
symptoms over the previous two months using a 4-point scale (0 = never to 3 = often) with a possible range of 0-120. The TSC-40 yields six sub-scales related to the long-term effects of trauma—Disassociation (“spacing out—or going away in your mind”), Anxiety (“feeling tense all the time”), Depression (“uncontrollable crying”), Sexual Abuse Trauma Index (“Flashbacks—sudden vivid distracting memories”), Sexual Problems (“Low sex drive”), and Sleep Disturbances (“Insomnia—or trouble getting to sleep”).

**Mediating variables**

**Social support for recovery.** The Social Support for Recovery (SSRS) scale is a nine-item self-report measure capturing the latent construct of woman’s’ perceived level of social support for recovery from substance use among the people in their lives, such as family, friends, roommates, and recovery associates (Laudet, Magura, Vogel, & Knight, 2000). The SSR has an acceptable reliability of $\alpha = .85$ for this sample, and previous documentation of predictive and convergent validity (Laudet, et al., 2000). Using statements such as “The people in my life understand that I am working on myself” or “I’m on my own in recovery, I don’t get any support”, women were asked to what extent the people in their lives were encouraging or supportive of their recovery and efforts to change their substance use behaviors. A Likert-type scale, the SSR provides response options ranging from 1 = Strongly agree to 4 = Strongly disagree.

**Abstinence self-efficacy.** The Drug and Alcohol Abstinence Self-Efficacy Scale (DAASES) is a 20-item valid self-report measure assessing the latent construct of an individual’s confidence to abstain from drinking or using drugs within high-risk relapse scenarios (DiClemente, et al., 1994). The DAASES demonstrates both predictive and
convergent validity (Kadden & Litt, 2011), and has reliability score of $\alpha = .97$ within this sample, as well as both convergent and predictive validity with this sample (Taylor, Francis, Min, & Tracy, 2017a). Women were asked to rate their level of confidence to abstain from using alcohol or drugs on a Likert-type scale with five response options ranging from $1 = \text{Not at all confident}$ thru $5 = \text{Extremely confident}$. The DAASES is comprised of four subscales: negative affect; social situations/positive affect; somatic; and withdrawal and/or cravings. Negative affect item stems gauge feelings of anger, depression, worry or frustration. Similarly, social or positive affect items assess ASE with statements such as “When I am trying to relax” or “When I see people drinking at a bar or at a party”. Somatic items include being tired, or in physical pain. Lastly, withdrawal is evaluated with language exploring cravings, urges and willpower.

Dependent variable.

Substance use 12-months post-treatment intake. A self-reported dichotomized variable (0 = “Not used”, 1 = “Used”), this measure assessed the occurrence of any alcohol and/or drug use post-treatment intake at the six (T3) and twelve-month (T4) follow-up interviews. Individuals were asked “since we last spoke, which of these substances have you used...?”. Respondents were given a list of 12 substances: alcohol, marijuana/hash, heroin, methadone (to get high), other opiates/analgesics (e.g., morphine, codeine), sedatives, crack, cocaine other than crack, methamphetamine or other amphetamines/stimulants, PCP or other hallucinogens (LSD, mescaline, peyote), inhalants/solvents (glue, gasoline), and ecstasy. Participants who responded “Yes” to any substance use at either T3, T4 or both times, were considered to have used substances in the last 12 months.
**Covariates.** Covariates included in this present analysis were selected based on either theoretical or empirical findings.

**Demographic variables.** The following demographic characteristics were selected owning to their significance in previous studies as indicators of a woman’s ability to engage in and maintain sobriety post-treatment intake (Majer et al., 2002; Min et al., 2013; Najavits & Hein, 2013; Saxena, Grella & Messina, 2015; Warren et al., 2007).

*Age.* Age was measured continuously in years, and with a range of 18-63 for this sample.

*Race.* Race was a recoded dichotomized variable, with participants coded as being 0 = “Black,” or 1 = “Non-Black”.

*Education.* Education was coded categorically with three response options, indicating a woman’s highest level of educational achievement—“Elementary/Junior High=1”, “GED or High School=2”, or “Vocational/Associates/Bachelor=3”.

*Source of income.* For this analysis, source of income was coded as either being “On the job=1”, “Receiving welfare or government assistance=2”, or “Other (e.g. illegal activities, legitimate source, no income) =3”.

*Marital status.* Originally, this categorical variable asked women to identify if they were “Married =1”, “Widowed/Separated/Divorced = 2” or “Never Married =3”.

*Currently responsible for raising children.* Participants were asked if they were presently responsible for the care of any children under the age of 18. This was a dichotomized variable “No = 0”, “Yes = 1”.

*Legal issues.* Participants self-reported about any current legal involvement, including being on parole, probation or awaiting sentencing (Min et al., 2014). For this
study, this variable was a dichotomized variable, “No legal involvement = 0” or “Legal involvement = 1”.

**Homelessness.** Participants were asked if they had ever been homeless. This was a dichotomized variable “No=0”, “Yes=1”.

**Treatment characteristics.** The literature reviewed above indicated how previous treatment, as well as the type of treatment being received may influence post-treatment recovery (Kim, Tracy, Brown, Jun, Park, Min & McCarty, 2015; Min, et al., 2014). Therefore, both treatment history and treatment modality will be controlled for. It should be noted dual diagnosis was eliminated for inclusion as a covariate owing to issues with multicollinearity with the independent variable identified in Min and colleagues (2014) evaluation utilizing the same set of data.

**Treatment modality e.g., intensive outpatient (IO) or residential program (RP).** This variable is coded into two categories based on the type of treatment program a participant was enrolled in, either “Residential=0” or “Outpatient=1.”

**Treatment history.** Assessed at T1, participants were asked if they had “ever been in drug or alcohol treatment in ANY setting before coming to this program?” Answers were simply coded as either “No=0” or “Yes=1”.

**Personal support network characteristics.** Based on results from the parent study that identified specific network characteristics related to substance use post-treatment intake (Tracy, et al., 2016), this examination includes one network composition variable, the number of alters using substances, and one structural variable, the number of isolates, or alters not connected to anyone else in a woman’s network as control variables.
Personal network characteristics such as composition, support and structure, were assessed using the social network software, EgoNet (McCarty, 2002). To categorize social network composition, participants were required to list 25 individuals (alters) with whom they have had contact over the past six months. Alters could be any person who made the respondent feel good, feel bad, or those who played a role in their life. EgoNet additionally gauged social network structure, querying participants about the various connections and interactions between each unique pairing of alters.

**Data Analysis Plan**

**Preliminary analyses.**

**Univariate screening.** Using Mplus version 7.1 and SPSS version 24 statistical software, frequencies and descriptive statistics on all variables were screened for the following: correct coding; the presence of missing data; representation of variance among responses, as evidenced by examination of the frequencies, mean values, range, and skewness and kurtosis of the interval level predictors according to Curran’s criteria (skewness < 2, kurtosis < 7) (Curran, West, & Finch, 1996); finally, frequencies and histograms would be referenced for gaps, or cases lying outside three standard deviations from the mean, the threshold for outliers established for this examination.

**Bivariate screening.** A Pearson’s product-moment correlation coefficient matrix was used to examine possible multicollinearity, scores above .80 were considered an indication of multicollinearity (Allison, 1999). Stem-and-Leaf plots, along with boxplots visually detected cases outside of three standard deviations from the mean.

**Research Questions One and Two.**
Research Questions One and Two and their associated hypotheses probing the roles of social support for recovery on the relationship between trauma symptomatology and substance use 12-months’ post-treatment intake was addressed through the use of Structural Equation Modeling (SEM). The development of the SEM model was a multi-staged process (Kenny, 2011): 1) assessment of the latent structure of the three measures, the TSC-40, DAASES and SSRS; 2) identification and assessment of fit of the measurement model; 3) identification of the path model—inclusion of covariates and pathways for direct and indirect effects; 4) evaluation of model fit of the structural model and full partial “pruning” and re-specification of the SEM model (Little, 2013, p.196); 5) testing of the partial and full mediation models.

Constructing the measurement model. Assessed first was the underlying, or latent constructs of each of the three measures—the TSC-40, the DAASES and the SSRS. A fixed factor set to 1 was used to standardize the latent space, therefore relationships are discussed as correlations, as opposed to covariance. Owing to the absence of existing literature or lack of consensus among the literature, a confirmatory factor analysis (CFA) was performed for each of these measures and their related sub-scales. Model fit was assessed using commonly accepted guidelines: a non-significant Chi square ($\chi^2$); Tucker Lewis Index (TLI) and Comparative Fit Index (CFI) $> .95$; Root Mean Squared Error of Approximation (RMSEA) $\leq .06$; and a Standardized Root Mean Square Residual (SRMSR) $\leq .08$ (Hu & Bentler, 1998). Once the structure of the latent constructs was determined, these were entered into the measurement model which was assessed for goodness-of-fit using the above indices and standards to answer research question one and hypotheses a-d.
Results from the SEM model and testing of full and partial mediation were used to answer research question two and its hypothesis. Since the outcome variable *substance use 12 months’ post-treatment intake* is binary, the weighted least squares estimator with mean and variance adjustments (WLSMV) was used, which computes ordinary least squares parameter estimates for continuous outcomes and probit parameter estimates for categorical outcomes. Model fit was evaluated using the guidelines outlined above. A bootstrap approach in which the standard error is computed based on 5000 bootstrap replicates was used to test for a significance of mediated effects. Preacher and colleagues (2007) encourage bootstrapping when examining mediating relationships; this use of non-parametric resampling provides a “pseudo-population” based on the sample the data and does not make assumptions about the distribution of the sample (p.190).

**Management of Missing Data**

Cases with missing data on the outcome variable, substance use post-treatment intake, were eliminated leaving a sample of *N* = 304. Of this sample, approximately 14 cases (<5%) had missing data on the ASE and SSR scales, therefore scores were imported from T1 for SEM analyses.

**Power Analysis.** In the context of mediation models containing one predictor, one mediator, and one outcome, Hoyle and Kenny (1999) recommend that *N* be at least 100 with a highly reliable mediator, and that *N* be at least 200 if the mediator has less than optimal reliability. The sample size (*N* = 304) for this study exceeds these sample size recommendations, providing adequate power to test the hypothesized mediation effects.

**Institutional Review Board (IRB)**
The parent study received approval from the Intuitional Review Board (IRB) at Case Western Reserve University for the protection of human subjects. Additionally, a certificate of confidentiality was provided by the National Institute of Health (NIH). This examination utilized de-identified data and was the study protocol was approved for by the University IRB.
Chapter 4

Results

This chapter attends to the findings of this dissertation. Reported first is the power analysis; next are the demographic and clinical characteristics for the women sampled in this study; following are the preliminary analyses, including univariate and bivariate screening; and finally, the results for each of the two research questions and their associated hypotheses are reviewed.

Sample Characteristics

Demographics and clinical characteristics. This sample consisted of 304 women receiving treatment for a substance use disorder, Table 2 provides a broad presentation of the participants’ demographic profile. Primary to this study were those characteristics related to the presence of multiple vulnerabilities and/or co-occurring disorders. The mean age of the women in this study was 36.5 (SD = 10.68), with a range of 18 – 63. Sixty percent of the women identified as Black and 34% as white. Over one-third of the women did not have more than a junior high school education, and only 12% of the participants had more than a high school education. Seventy-four percent of the participants indicated reliance on government subsidies. A majority of the women, 78.2%, were responsible for raising children at the time of treatment. Almost half of the sample had experienced a form of homelessness 43%, and/or legal involvement 43%, such as being on parole. The majority of participants were receiving IOP care 73%, and 72% had received a previous form of SUD treatment. This sample of women had an average score of 44.7 (SD = 21.07) on the TSC-40, a comparatively high average of trauma symptomatology when compared to a demographically similar sample of women.
who experience childhood sexual abuse (Elliot & Briere, 1992). Relatedly, 73% women met the criteria for the diagnoses of a co-occurring disorder as derived by the CDIS-IV, such as Major Depression or Anxiety.

Preliminary Analyses

Univariate screening. Preceding advanced statistical analyses data were screened for univariate normality and outliers. Following Curran and colleagues (1996) criteria, all interval level variables fell within the acceptable range for skewness < 2| and kurtosis < 7}. Histogram curves showed normality on all continuous variables, with the exception of “number of isolates”, which appeared to have outlying cases in its upper range.

Bivariate screening.

Multicollinearity. Findings from the Pearson’s product-moment assessment indicated that there were a number of significant associations among variables of interest.
that breached the .80 predetermined threshold (Allison, 1999), indicative of multicollinearity at the bivariate level. Particularly problematic were categories among the employment, education and marital dummy codes; “Education: High School/G.E.D.” was perfectly correlated \((r = 1.00)\) with “Employment: Welfare/Government Subsidies”, and “Employment: Other” \((r = 1.00)\). “Employment: Job” and “Married” had a correlation of \(r = .883\). To manage the presence of multicollinear constructs, and to increase the number of cases per group for use in the SEM model, the three categorical variables “Employment,” “Education” and “Marital Status” were dichotomized and recoded into the following: Employment was coded “Job/other” = 1, “Welfare/Government Subsidies” = 2; Education was coded “Less than High School” = 1, “More than High School” = 2; and Marital Status was coded “Married/Oher” = 1, “Never Married” = 2. Results for the complete correlation matrix utilizing the dichotomized variables is presented in Table 3.

**Outliers.** Boxplots for all continuous variables were examined for outliers. Findings revealed that “number of isolates” had 4 outliers affecting the mean score \((M = 4.5, SD = 5.8)\). Detailed descriptives showed 4 “extreme” cases occurring among women who had not used substances by the 12-month follow-up. Between group comparisons indicated only nominal difference in the group mean scores (“Used”, \(M = 4.6, SD = 5.4\), (“Not Used”, \(M = 4.2, SD = 5.9\)), therefore it was decided to proceed without any transformation.

**Research Question One**
In what ways are woman’s trauma symptomatology, abstinence self-efficacy, and perceived social support for recovery related to substance use in the 12 months’ post-treatment intake?

The development of the CFA model used to answer research question one entailed the following: 1) assessment of the latent structure of the three measures, the TSC-40, DAASES and SSRS; and 2) the identification and assessment of fit of the measurement model.

**Constructing the measurement model.** Assessed first was the underlying, or latent constructs of each of the three measures—the TSC-40, the DAASES and the SSRS. A fixed factor set to 1 was used to standardize the latent space, therefore relationships will be discussed as correlations, as opposed to covariance. Owing to the absence of existing literature or lack of consensus among the literature, a confirmatory factor analysis (CFA) was performed for each of these measures and their related sub-scales. Model fit was assessed using commonly accepted guidelines: a non-significant Chi square ($\chi^2$); Tucker Lewis Index (TLI) and Comparative Fit Index (CFI) >.95; Root Mean Squared Error of Approximation (RMSEA) <.06; and a Standardized Root Mean Square Residual (SRMSR) and/or Weighted Root Mean Square Residual (WRMSR) of ≤.08. Once the structure of the latent constructs was determined, these were entered into the measurement model which was assessed for goodness-of-fit using the above indices and standards.

**Confirmatory factor analysis of the TSC-40.** There is a dearth of literature identifying the latent constructs comprising the 40-item trauma symptom checklist, leading to a lack of consensus about the underlying nature of the TSC-40 and its six
subscales (Dissociation, Depression, Anxiety, Sexual Abuse, Sexual Problems, Sleep Problems) (appendix A). A model to test the sub-scales as presented by Elliot and Briere (1992) in their seminal study validating the TSC-40 proved untenable—6 items were not associated with any sub-scale (e.g. “feeling isolated from others,” “loneliness”), while multiple items were assigned to multiple sub-scales (e.g. “dizziness” was ascribed to both Dissociation and Anxiety). An EFA using scores from T1, or one-week post-treatment intake, and orthogonal varimax rotation with a constrained six-factor extraction was conducted to provide a simple structure template for a CFA (appendix A). For the CFA, sub-scales were modified so that no items dually loaded and all 40 items were incorporated into an appropriate sub-scale based on factor loadings, logic and current theory. An example of scale modifications included a truncated sexual abuse index, reduced to four items and retitled “Abuse” to more aptly represent the experience of abuse in general. For CFA analysis, items were parceled and represented as composite mean scores for each sub-scale. Modification indices suggested that correlating the measurement errors of the anxiety and sleep sub-scale indicators would significantly improve model fit. The CFA yielded acceptable fit statistics, \( \chi^2 = 24.57, \text{df} = 8, p \leq .001, \text{CFI} = .98, \text{TLI} = .96, \text{RMSEA} = .08, \text{SRMSR} = .02 \), sub-scale correlations are presented in appendix B and the CFA model factor model is presented below in figure 2.
There is a lack of consensus in the empirical literature about the underlying nature of the Drug and Alcohol Abstinence Self-Efficacy Scale (DiClemente et al., 1994; Glozah, Adu & Komesuor, 2015). The 20 items and their associated sub-scales are presented in appendix C. Results from earlier studies have yielded two competing models. The first is a higher order four-factor latent structure based on the sub-scales derived from the relapse literature (e.g. negative affect; social situations/positive affect; somatic; and withdrawal and/or cravings). (DiClemente et al., 1994). The second model asserts that ASE is a unidimensional construct (Glozah, Adu & Komesuor, 2015). For this examination, a new model was conceptualized—one that utilized parceled composite sub-scale mean scores as indicators of one latent construct of ASE, retaining the sub-scales nature while at the same time reducing items. This parsimonious model yielded excellent fit statistics, $\chi^2 = 2.64$, $df = 2$, $p \leq .26$, CFI = .99.
TLI = .99, RMSEA = .03, SRMSR = .004, and was selected for inclusion in the measurement model.

**Figure 3.** DAASES CFA Model Results (N= 304).

*Confirmatory factor analysis of the SSRS.* While similar versions of the SSRS have been analyzed in regards to their latent structure, the nine-item version of the SSRS had yet to be subjected to a confirmatory factor analysis prior to this study. Laudet and colleagues (2007) found that the original 14-item version of the SSRS construct was composed of two-factors—1) Extent of Support and 2) Understanding and Sources of Support and Encouragement in Recovery. The WNP study utilized a briefer nine-item version of the SSRS which did not contain items related to various sources of support, as such it made sense to run a unidimensional model of the SSRS (appendix D). For CFA analyses the nine-item scale was reduced to 4 items. Items were selected based on strength of factor loadings and to eliminate redundancy. Results demonstrated acceptable model fit, $\chi^2 = 2.26$, df = 2, $p < .32$, CFI = .99, TLI = .99, RMSEA = .02, SRMSR = .01. Factor loadings and correlations are presented in Figure 4.
Results.

Findings from the CFA measurement model which included all possible associations among the factors and the outcome variable returned an acceptable fit: \( \chi^2 = 113.60, \text{df} = 84, p = .017; \) CFI = .96; TLI = .96; RMSEA = .03, WRMR = .65. All factor loadings were moderate to strong, 0.48 – 0.96 (p < .001). Correlations between key variables are presented in figure 5. Results supported Hypothesis a, trauma symptomatology was correlated with post-treatment substance use in the hypothesized direction and at a level of statistical significance \( r = 0.20, \) (p = .007). Hypothesis b was also supported, trauma symptomatology was negatively correlated with both mediating variables, ASE \( r = -0.15 \) (p = .01), and SSR \( r = -0.10 \) (p = .14), although the relationship between SSR and trauma symptomatology was not significant. Supporting hypothesis c, abstinence self-efficacy and social support for recovery had a positive relationship and were significantly correlated, \( r = 0.35 \) (p = .000). Hypothesis d was
partially supported, while ASE and SSR were both negatively correlated with post-treatment substance use, only the relationship with ASE remained statistically significant. 

\[ r = -0.31 \ (p = .000), \ r = -0.14 \ (p = .07). \]

**Figure 5.** Correlations among Primary Variables from Measurement Model (N= 304).

**Research Question 2:** Do abstinence self-efficacy and perceived social support for recovery mediate the effects of trauma symptomatology on post-treatment substance use outcomes, specifically substance use 12 months’ post-treatment intake when controlling for all relevant covariates?

To answer research question two and its associated hypothesis the following steps were taken: 1) identification of the path model; 2) inclusion of covariates and evaluation of model fit accompanied by full partial “pruning” and re-specification of the SEM model; and 3) testing of the partial and full mediation models.

**Identification of the Structural Model.**

Results for the parallel partial mediation structural model included only relationships among key variables. Fit statistics were practically identical to the
measurement model, $\chi^2 = 229.53$, df = 190, $p = .02$; CFI = .96; TLI = .96; RMSEA = .03, WRMR = .65. The pathways between SSR and trauma ($\beta = -.01$, $p < .24$), as well as SSR with the outcome ($\beta = -.03$, $p < .734$) were non-significant, therefore there was no justification for their inclusion to test for indirect effects and they were subsequently pruned away. The path between ASE and SSR was retained, owing to its theoretical and statistical significance. All other pathways were significant at $p \leq .05$. Covariates were then added based on correlations with mediating variables at $p < .20$, and the IV and/or DV at $p < .10$, presented in appendix E, which included: age, race, marriage, education, experiences of homelessness, treatment modality, treatment history and the number of AOD users in the woman’s network. Standardized coefficients among the latent constructs and observed variables for the saturated model are presented in appendix F. Results for this model produced good fit statistics, $\chi^2 = 221.42$, df = 192, $p = .07$; CFI = .97; TLI = .96; RMSEA = .02, WRMR = .80.

A trimmed model further eliminated the non-significant pathways ($p < .05$) between covariates and key variables. Fit statistics for the trimmed model indicated a slight change in model fit, $\chi^2 = 196.71$, df = 166, $p = .02$; CFI = .97; TLI = .96; RMSEA = .03, WRMR = .80. Figure 6 displays the standardized coefficients among the latent constructs and observed variables for the trimmed model. Because the WLSMV estimator was used, significance between the full and trimmed models was probed using DIFF test in Mplus, which indicated that there was no statistically significant difference between the two models. Consequently, the more parsimonious model has explained the data equally well as the saturated model and was accepted as the final model used for testing.
of full-mediation (Yuan & Bentler, 2004). Approximately 61.2% of the explained variation in post-treatment substance use was explained by this trimmed model.

Full-mediation, or the removal of the $c^1$ pathway and the direct effect between trauma symptomatology and post-treatment substance use revealed a decrease in model fit, $\chi^2 = 221.37$, df = 169, $p = .004$; CFI = .95; TLI = .94; RMSEA = .03, WRMR = .85. There was a significant difference between the full and partial models, therefore full mediation was rejected, and the trimmed partial mediation model was accepted as the final model.

**Figure 6.** Trimmed Structural Equation Model ($N = 304$). Rectangles indicate observed variables, ovals represent latent constructs, and small circles reflect residual or disturbance terms (variances). Coefficients (standardized) were all significant at the $p < .05$ level.
Interpretation of the Results.

Higher trauma symptomatology was directly related to an increase in the predicted probability of substance use 12-months’ post-treatment intake ($\beta = .21, p < .01$). Lower levels of ASE were related to both an increase in the predicted probability of higher levels of trauma symptomatology ($\beta = -.14, p < .05$), as well as an increase in the predicted probability of substance use 12-months’ post-treatment intake ($\beta = -.31, p < .001$). Furthermore, the relationship between ASE and SSR was statistically significant ($\beta = .35, p < .001$), with higher levels of ASE being associated with an increase in the predicted probability of higher levels of SSR. Finally, primary to this study and research question two, results indicated that abstinence self-efficacy was a significant mediator of the relationship between trauma symptomatology and post-treatment substance (95% CI .002 - .096).

Among the relationships between the principal variables and covariates, only treatment history was a statistically significant predictor of post-treatment relapse ($\beta = -.15, p < .001$). Having had experiences of homelessness ($\beta = .25, p < .001$), being Black ($\beta = -.14, p < .01$), not being married ($\beta = -.13, p < .05$) and a having higher number of substance using associates ($\beta = .15, p < .01$) were associated with an increase in the predicted probability of having higher trauma symptomatology. Higher levels of education ($\beta = .28, p < .001$) and fewer alcohol or drug using associates ($\beta = -.22, p < .01$) were associated with an increased predicted probability of higher levels of social support for recovery. Finally, being married ($\beta = -.13, p < .05$) and non-Black ($\beta = .14, p < .05$) were associated with an increase predicted probability of having higher levels of abstinence self-efficacy.
Chapter Five

This chapter provides a review and summary of the key findings of this study, placing them within the broader context of the existing theoretical and empirical body of literature reviewed earlier. This is followed by a review of the strengths and limitations of this investigation. Presented next are the implications these results have for social work practice. Finally, directions for future research are identified.

Summary of Primary Findings

This was a unique opportunity to investigate those interrelated constructs vital to early SUD recovery among a population of vulnerable low-income women. The women in this study were viewed within the nested and complex dynamics affecting their early recovery from a substance use disorder. Recognizing that this sample was exposed to multiple vulnerabilities, had a significant history of trauma and the presence of co-occurring disorders, this investigation focused on the influential roles of abstinence self-efficacy and social support for recovery. The following are the key findings for each research question and their associated hypotheses:

1) Significant associations exist between trauma symptomatology, abstinence self-efficacy, social support for recovery and substance use outcomes.
   a) Higher levels of trauma symptomatology were associated with post-treatment intake substance use.
   b) Higher levels of trauma symptomatology were associated with lower levels of abstinence self-efficacy at a level of statistical significance.
c) ASE and SSR were positively associated and maintained a strong statistically significant relationship.

d) While both ASE and SSR were negatively correlated with the outcome, only lower levels of abstinence self-efficacy were associated with an increased likelihood for having used at 12 months’ post-treatment intake at a level of statistical significance.

2) Only abstinence self-efficacy was found to significantly mediate the relationship between trauma symptomatology and substance use 12-months’ post-treatment intake.

The Relationships between Trauma, ASE and SSR and Relapse in Early Recovery

Research Question One (hypotheses a – d). According to the stress-coping framework, women with a history of violent victimization may have a decreased capacity for managing trauma associated symptomatology, and that the use of maladaptive coping strategies, namely drinking and/or drug use, lead to the development of a substance use disorder (Lazarus & Folman, 1984). Once in treatment, highly-traumatized women may also lack the ability to identify or harness recovery-oriented supports, such as ASE or SSR (Folkman, et al., 1986; Laudet & Stanik, 2010; Majer, Jason, Ferrari, Venable, & Olson, 2002; Tracy, Muson, Peterson, & Floersch, 2010; Warren, 2007). Efforts to understand these relationships were addressed by research question one, which examined the nature of the relationships between trauma symptomatology, abstinence self-efficacy, social support for recovery and substance use relapse in early recovery. With the exception of the non-significant results among SSR, trauma and relapse, findings within this examination supported results within the extant literature reviewed in Chapter Two.
The damaging effects of trauma have long been associated with substance use and its influence on early recovery and relapse (Benight & Bandura, 2004; Lazarus, 1991; Najavits et al., 1998; Sullivan et al., 2016; Ullman, 2013; Walters, Simioni & Evans-Campbell, 2002). Congruent with these findings, hypothesis a in the present investigation was supported, and as scores on the TSC-40 increased, so did the association with having used substances by 12-months’ post-treatment intake. Likewise, higher levels of trauma symptomatology were associated with lower levels of ASE and SSR (hypotheses b).

Hypothesis c was also supported, and similar to earlier findings by Laudet and associates (2000), perceived social support and abstinence self-efficacy were significantly associated, having the strongest correlation among any of the variables under investigation. However, unlike findings in Warren and colleagues (2007) examination, who found that both abstinence self-efficacy and perceived social support were significantly associated with measures of relapse, only ASE was significantly related to post-treatment substance use in this study (hypothesis d). This could be due to variances in measurement of the SSR construct, as well as differences in the populations studied. Overall these findings were encouraging, supporting both the theoretical and empirical literature, and affirming the influence of both trauma and ASE on early SUD recovery (Najavits & Hein, 2016; Sullivan et al., 2016; Tracy et al., 2012).

**Research Question Two (hypothesis e).** Structural equation modeling was performed to ascertain the pathways of direct and indirect effects between trauma symptomatology and relapse post-treatment intake as mediated by ASE and SSR. Hypothesis e was only partially supported, and results indicated that only abstinence self-efficacy mediated the relationship between trauma symptomatology and post-treatment
substance use. One explanation for these findings could be that women with a history of trauma need more time, or additional intervention to develop a recovery oriented support network. This could also indicate that while these mechanisms are interrelated, they may maintain a relationship of a different nature. Future research could explore the possibility of a moderated effect, or moderated mediation between these constructs.

**Significant Covariates.**

Although a number of covariates were identified as relevant *a priori*, either due to theory or previous empirical findings, for these analyses only a woman’s treatment history was a significant predictor of substance use 12-months’ post treatment intake. This suggests that previous SUD treatment serves as a protective factor upon re-engaging with the treatment process. Race, homelessness and a higher number of substance using associates were all related to having more severe trauma symptomatology. These results are in accordance with the literature reviewed above, noting that women who have precarious living conditions and who associate with drug using peers are more likely to be exposed to high-risk situations. Similarly, race and marital status were found to influence a woman’s abstinence self-efficacy. This may suggest that studies may want to explore the possibility of measurement invariance for the ASE constructs between groups, specifically race, to ensure that the construct is capturing the same idea across cultural identities. While social support for recovery did not perform with the hypothesized level of significance, it was significantly related to a woman’s level of education, as well as the number of alcohol and/or drug using associates, which again is supportive of findings from the WNP and similar examinations.

**Limitations**
This study and its findings are best viewed in light of a number of limitations, such as issues related to the use of secondary and self-report data, the impact of utilizing a specialized population, as well as the quality and timing of measurement.

The use of self-report data has long been documented as a weakness in social science research. Although self-report has a number of utilities in relation to ease and low-cost of use, the practice of relying on a participant uncorroborated (i.e. no additional scientifically reliable evidence) report is a chief introduction of measurement error into empirical investigations (Babbie & Rubin, 2008). Moreover, the study of highly unique sub-set of the population like the woman in this examination prevents any generalization of results beyond women with similar demographic and clinical characteristics. Relatedly, these findings may not be applicable for comparisons with or application to the current opioid epidemic. Further research would need to support any broader generalizations of the results (Babbie & Rubin, 2008).

A primary limitation of utilizing the WNP data-set was the measurement of the outcome variable. This was a categorical dichotomized measure of post-treatment intake substance use, which lacks the ability to capture the complexities of relapse in early sobriety. Specifically, the timing, frequency, duration, and severity of the lapse are unknown. This is a significant deficit considering how ASE functions as a mechanism of recovery; strength of abstinence self-efficacy may also mediate a woman’s ability to recover from a lapse—minimizing the frequency or severity of a relapse episode (Benight & Bandura, 2004).

Additional shortcomings are related to the use of abbreviated measures for both ASE and SSR. While there are benefits to the use of brief measures specifically related to
the reduction in measurement error and interview fatigue during long interviews like the one conducted in the WNP study design, they do limit coverage of the construct (DeVellis, 2016). As originally conceptualized abstinence self-efficacy is both a measure of confidence and temptation (DiClemente, 1986). A 20-item version DAASES that only probed confidence was used in the parent study, and while research has shown that the brief measures of ASE have demonstrated both validity and reliability, it must be acknowledged we limit the knowledge base about these constructs when using shorter scales. Likewise, the adapted version of the SSRS eliminated those items that identified sources of support. Although this made sense in the broader context of the WNP study design which mapped the personal support network characteristics using other measures, it reduced the scope of the SSR construct. This may have reduced the content and construct validity of the SSRS, placing restrictions on the comparison of performance between the 9-item version of the WNP study and its more robust counterparts (Laudet et al., 2000; DeVellis, 2016).

Timing of the measurement of the mediating variables may also be impacting any ability to find indirect effects. Considering the evidence suggesting that women with a history of trauma may be slower at developing a supportive network or abstinence self-efficacy (Benight & Bandura, 2004; Lazarus, 1991), the WNP study design may not have detected significant effects for SSR owing to the time limited data points. The definition of early recovery in regards to duration and the development of capacity building coping strategies may want to be extended for populations with documented delays, such as women with significant trauma symptomatology. Likewise, future research may want to
instead consider examining the moderating, or buffering effects of SSR and ASE on the relationship between trauma symptomatology and substance use outcomes.

**Strengths**

The study design and data for this evaluation had a number of strengths. Among these are a strong theoretical foundation and the use of longitudinal data that allowed for advanced statistical evaluations and conclusions about a causal model of early recovery. Additionally, the WNP study had a high retention rate and minimal missing data, making results more generalizable to the population under investigation. Multiple measures of related constructs allowed for the validation of the specific scales utilized in this dissertation.

Early recovery from a SUD is a process of layered influence inclusive of a woman’s psychological and environmental circumstances—as such, it was important to identify those philosophies that provide both an explanation and guide. Directing this investigation was an encompassing theoretical base that drew upon multiple theories to guide the formulation of both the research questions and choice of statistical methods to address them.

The longitudinal data drawn from the WNP study allowed for the use of advanced statistical methods to examine mechanisms impacting early sobriety. While SEM does not definitely prove causality, it does indicate that the explanation provided fits the data collected as an illustration of the function of resiliency constructs in early recovery among a population of vulnerable women (Little, 2013).

This investigation had a number of unique contributions to the literature. First, while evaluating a specialized sub-set of the populations limits the generalization of
findings, it does provide vital understanding of nuanced factors affecting the early recovery of a hard-to-treat population of women. Furthermore, testing of the mediating roles of ASE on relationship between trauma symptomatology and post-treatment intake substance use has not yet been explicitly examined in previous research. Clarifying the pathways of these relationships can help inform social work practice and policy, and moreover shapes the direction of future research, all of which are elaborated on in the following sections.

**Implications for the Field of Social Work**

**Practice Implications**

Social workers who provide services for vulnerable women and their families will likely confront issues related to substance use in a variety of settings beyond mental health or addiction treatment centers. As such, it is imperative that clinicians have a broad and informed understanding of the multi-faceted layers impacting the development and treatment of a SUD. This is especially critical for women with a significant history of trauma and who are struggling with a substance use disorder. Therefore, trauma informed care should be a critical component of social work practice across domains of service.

This study and its related findings have implications for clinical practice and interventions that address mechanisms of recovery, particularly those related to trauma, abstinence self-efficacy or social support for recovery. A distinct absence in the empirical body reviewed in Chapter Two was the utilization of interventions specifically designed to increase abstinence self-efficacy or social support for recovery—ASE and SSR were often framed as artifacts of an intervention or a result of exposure to treatment in general (Kadden & Litt, 2011; Laude et al., 2000). As the body of evidence continues to identify
abstinence self-efficacy as a vital and plastic construct in early recovery, social work practitioners may want to monitor and incorporate intentional efforts to create capacity in ASE. Likewise, social support is an acknowledged component of recovery but women were often only provided exposure to recovery-oriented individuals via treatment or 12-step program engagement, and not necessarily intentional network interventions (Laudet et al., 2000; Kadden & Litt, 2011; Warren et al., 2007). Contributions from the findings of this study not only provide further evidence as to the importance of ASE on early recovery, but suggest that there should be additional focus on how ASE and SSR may influence one another. Further consideration could also be given to the effects of timing in relation to the development of ASE and SSR while in SUD treatment.

**Directions for Future Research**

Future research can expand on these findings, improving the field’s understanding of the interconnected relationships among resiliency concepts influencing a woman’s early recovery and sobriety maintenance. Highlighted within this discussion are those strengths and limitations of the present investigation, many of which relate directly to study design. Future research could build on this work by first addressing the limitations.

The exogenous variable, trauma symptomatology, was measured using the TSC-40. Due to the lack of advanced or contemporary research on this measure, future examinations should continue to test its latent constructs, building on the template utilized in this dissertation. Furthermore, while the TSC-40 has demonstrated to be a reliable and valid measure of trauma symptomatology, measurement invariance should be investigated with more robustness, testing various models, as well as examining these models between groups (e.g. by gender, race, age, trauma type, etc.) and over time.
Outcome measures of relapse can be elaborated upon and crafted to more fully document the multiple dimensions of relapse. As the field of addiction and recovery evolves from an abstinence-only perspective to one of harm reduction (Erikson, Riley, Cheung & O’Hare, 2015), factors related to the management of recovery become of heightened interest. Researchers may want to focus on issues related to the timing, severity and duration of a lapse, in addition to the severity and type of use that occurs. A comprehensive depiction of relapse events, both time-to-event and specifics pertaining to use and the process of post-lapse recovery are important for intervention and SUD treatment (Ciesla, Valle & Spear, 2008). Assessing relapse as a multi-dimensional construct sensitive to changes over time will also allow for a more robust examination of the influence of resiliency constructs in sobriety.

Just as with relapse, the measurement and timing of measurement of ASE and SSR can be improved upon in future studies. Investigations attending solely to the relationships between these concepts and SUD recovery would likely want to use the full measures of abstinence self-efficacy and social support for recovery. The added content may increase the sensitivity of the measure to capture effects and encompasses a broader and more definitive picture of the constructs. The conceptual framing of both ASE and SSR asserts that these are malleable elements of sobriety and subject to significant and frequent change in early recovery (Benight & Bandura, 2004; Laudet et al, 2000). Studies seeking to understand their influence and interactions would want to follow-up with participants through early recovery at regular intervals, possibly with more frequency and of longer duration than previously done. Precise measurement in regards to timing may
be more likely to detect changes, particularly among women who have difficulty managing social support or developing ASE because of their trauma history.

A number of studies, including this examination have identified treatment history as an influential predictor of relapse in early recovery (Tracy, et al., 2012; Laudet, 2000). Future research could further examine this relationship, for example, testing the influence of previous treatment on both ASE and SSR. Perhaps women who have connected to treatment oriented individuals before, and who have had some time in sobriety may be quicker to develop recovery oriented networks and increased ASE in the present.

Additional studies may also want to clarify the relationship between ASE and SSR. A better understanding of how these interrelated constructs influence recovery would better inform intervention and treatment. Specifically, there is a need to identify how ASE and SSR together may be moderating substance use outcomes.

Moreover, measurement equivalence should be a priority to researchers examining changes ASE and SSR. Scales need to be evaluated for consistency over time and between groups, particularly considering the role demographic and clinical characteristics like race have on early recovery outcomes. It could be that subtle cultural differences may be impacting the shared meaning of concepts like abstinence self-efficacy (Little, 2013).

Future research would want to account for the shifting trends related to drug use and addiction in the United States. Research examining the current opioid epidemic has identified layered effects of demographic and clinical characteristics that may act as risk or protective factors in the development and treatment of an opioid addiction (SAMSHA, 2016). While this dissertation addressed many of the risk factors, such as having a history
of trauma, additional elements such as having chronic pain or experiences of discrimination have been identified in specific relation to prescription opioid use and abuse (SAMSHA, 2016). Of specific concern is that those individuals most at-risk for an opioid overdose fit the “profile of vulnerability” described in this dissertation, therefore it is imperative that researchers participate in action-oriented research to identify how these risk factors in opioid use disorders are potentially influenced by social support constructs or self-efficacy.
Appendix

Appendix A.

### The TSC-40 Items and EFA factor loadings

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Factor Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>1. Headaches</td>
<td>0.38</td>
</tr>
<tr>
<td>2. Insomnia</td>
<td>0.74</td>
</tr>
<tr>
<td>3. Weight loss (without diesting)</td>
<td>0.30</td>
</tr>
<tr>
<td>4. Stomach Problems</td>
<td>0.35</td>
</tr>
<tr>
<td>5. Sexual Problems</td>
<td>0.10</td>
</tr>
<tr>
<td>6. Feeling isolated from others</td>
<td>0.24</td>
</tr>
<tr>
<td>7. “Flashbacks” (sudden, vivid, distracting memories)</td>
<td>0.31</td>
</tr>
<tr>
<td>8. Restless sleep</td>
<td>0.66</td>
</tr>
<tr>
<td>9. Low sex drive</td>
<td>0.23</td>
</tr>
<tr>
<td>10. Anxiety attacks</td>
<td>0.38</td>
</tr>
<tr>
<td>11. Sexual overactivity</td>
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</tr>
<tr>
<td>12. Loneliness</td>
<td>0.22</td>
</tr>
<tr>
<td>13. Nightmares</td>
<td>0.43</td>
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<tr>
<td>14. “Spacing out” (going away in your mind)</td>
<td>0.26</td>
</tr>
<tr>
<td>15. Sadness</td>
<td>0.35</td>
</tr>
<tr>
<td>16. Dizziness</td>
<td>0.25</td>
</tr>
<tr>
<td>17. Not feeling satisfied with your sex life</td>
<td>0.12</td>
</tr>
<tr>
<td>18. Trouble controlling your temper</td>
<td>0.18</td>
</tr>
<tr>
<td>19. Waking up early in the morning</td>
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</tr>
<tr>
<td>20. Uncontrollable crying</td>
<td>0.36</td>
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<tr>
<td>21. Fear of men</td>
<td>0.12</td>
</tr>
<tr>
<td>22. Not feeling rested in the morning</td>
<td>0.32</td>
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<tr>
<td>23. Having sex that you didn’t enjoy</td>
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<tr>
<td>24. Trouble getting along with others</td>
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</tr>
<tr>
<td>25. Memory problems</td>
<td>0.20</td>
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<tr>
<td>26. Desire to physically hurt yourself</td>
<td>0.13</td>
</tr>
<tr>
<td>27. Fear of women</td>
<td>0.12</td>
</tr>
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<td>28. Waking up in the middle of the night</td>
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</tr>
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<tr>
<td>30. Passing out</td>
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<tr>
<td>31. Feeling that things are “unreal”</td>
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<tr>
<td>32. Unnecessary or over-frequent washing</td>
<td>0.31</td>
</tr>
<tr>
<td>33. Feelings of inferiority</td>
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<tr>
<td>34. Feeling tense all the time</td>
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<tr>
<td>35. Being confused about your sexual feelings</td>
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<tr>
<td>36. Desire to physically hurt others</td>
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<tr>
<td>37. Feelings of guilt</td>
<td>0.18</td>
</tr>
<tr>
<td>38. Feeling that you are not always in your body</td>
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<tr>
<td>39. Having trouble breathing</td>
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<tr>
<td>40. Sexual feelings when you shouldn’t have them</td>
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</table>

The Original TSC-40 Sub-Scales

- Dissociation – 7, 14, 16, 25, 31, 38
- Anxiety – 1, 4, 10, 16, 21, 27, 32, 34, 39
- Depression – 2, 3, 9, 15, 19, 20, 26, 33, 37
- SATI (Sexual Abuse Trauma Index) – 5, 7, 13, 21, 25, 29, 31
- Sleep Disturbance – 2, 8, 13, 19, 22, 28
- Sexual Problems – 5, 9, 11, 17, 23, 29, 35, 40

The Revised TSC-40 Sub-Scales

- Dissociation Items: 14, 25, 30, 31, 38
- Anxiety Items: 1, 4, 10, 16, 32, 34, 39
- Depression Items: 3, 6, 9, 12, 15, 18, 20, 24, 26, 33, 36, 37
- Abuse Items: 7, 13, 21, 27
- Sleep Problems Items: 2, 8, 19, 22, 28
- Sexual Problems Items: 5, 11, 17, 23, 29, 35, 40

Note: Response were scored according to frequency in the past month and ranged from 0=Never to 3=Often.

Higher scores indicated higher levels of trauma symptomatology.
Appendix B.

<table>
<thead>
<tr>
<th>Correlations for TSC-40 Sub-Scales</th>
<th>EST.</th>
<th>S.E.</th>
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</thead>
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<td>Dissociation</td>
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<tr>
<td>Depression with</td>
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<td></td>
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<tr>
<td>Dissociation</td>
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<td>.03</td>
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<td>Anxiety</td>
<td>.86*</td>
<td>.02</td>
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<tr>
<td>Abuse with</td>
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<td></td>
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<tr>
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<td>.04</td>
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<tr>
<td>Depression</td>
<td>.71*</td>
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<tr>
<td>Abuse</td>
<td>.66*</td>
<td>.04</td>
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<tr>
<td>Sexual Problems with</td>
<td></td>
<td></td>
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<td>Dissociation</td>
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<td>.05</td>
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<tr>
<td>Anxiety</td>
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<td>.05</td>
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<td>Depression</td>
<td>.66*</td>
<td>.04</td>
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<tr>
<td>Abuse</td>
<td>.64*</td>
<td>.04</td>
</tr>
<tr>
<td>Sleep problems</td>
<td>.37*</td>
<td>.06</td>
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</table>
**DAASES 20 Confidence Items**

1. If you were drug sick because of stopping or withdrawing from drug or alcohol use (WD)
2. If you had a headache (PH)
3. If you were feeling depressed or lonely (NA)
4. If you wanted to relax (PA)
5. If you were concerned about someone (PH)
6. If you were worried (NA)
7. If you had the urge to try using just once to see what happens (WD)
8. If you were being offered drugs or a drink in a social situation (PA)
9. If you had dreamt about using (PH)
10. If you wanted to test your will power over using (WD)
11. If you were feeling a physical need or craving (WD)
12. If you were physically tired (PH)
13. If you were in some physical pain or injured (PH)
14. If you felt like blowing up because of frustration (NA)
15. If you saw others drinking or using (PA)
16. If you felt that everything is going wrong for you (NA)
17. If people with whom you used to drink or use encouraged you to use (PA)
18. If you were feeling angry or frustrated (NA)
19. If an urge or impulse to use caught you unprepared (WD)
20. If you were excited or celebrating with others (PA)

Note. Response options had a range of 0 - 5. Higher scores indicated higher ASE. WD = withdrawal; PH = physical concerns; NA = Negative Affect; PA = positive affect.
Appendix D.

<table>
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<tr>
<th>The SSRS Nine-Item Scale</th>
<th>EST</th>
<th>S.E.</th>
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</thead>
<tbody>
<tr>
<td>1. The People in my life understand that I am working on myself.</td>
<td>.44*</td>
<td>.03</td>
</tr>
<tr>
<td>2. No one in my life really understands me.</td>
<td>.52*</td>
<td>.03</td>
</tr>
<tr>
<td>3. I know my family is there no matter what.</td>
<td>.40*</td>
<td>.02</td>
</tr>
<tr>
<td>4. The people in my life go out of their way to show me support.</td>
<td>.94*</td>
<td>.16</td>
</tr>
<tr>
<td>5. The people in my life are no help at all.</td>
<td>.46*</td>
<td>.03</td>
</tr>
<tr>
<td>6. My friends and relatives don't bother with me much.</td>
<td>.60*</td>
<td>.03</td>
</tr>
<tr>
<td>7. I'm on my own in recovery, I don't get any support.</td>
<td>.52*</td>
<td>.04</td>
</tr>
<tr>
<td>8. I get a lot of support from everyone I know.</td>
<td>.52*</td>
<td>.03</td>
</tr>
<tr>
<td>9. I know my friends are there for me no matter what.</td>
<td>.52*</td>
<td>.03</td>
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</table>

*Note.* Response options had a range of 0-5. Higher scores indicated higher SSR.
### Appendix E.

**CORRELATIONS**

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<th>TSC WITH</th>
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<th>( p )</th>
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<td>SSR</td>
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<table>
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<table>
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### Appendix F.

Table 3/

*Standardized Estimates for Saturated SEM Model (N = 304)*

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<table>
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