

CLARKE, PHILIP BRANKER, Ph.D. *The Relationship between Wellness, Emotion Regulation, and Relapse in Adult Outpatient Substance Abuse Clients.* (2012)
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Relapse prevention is a critical factor in recovery from substance abuse problems (NIDA, 2009). Treatment has been shown to influence positive recovery trajectories, yet relapse is a considerable complication both during and after treatment (Doweiko, 2002; Miller, Zweben, & Johnson, 2005). Identifying specific factors that can reduce relapse and improve the well-being of persons in recovery is a significant need.

Based on the existing literature, holistic wellness and the ability to emotionally self-regulate may be powerful factors in decreasing the prevalence and severity of addiction relapse. However, to date, no research has been conducted examining a holistic model of wellness as a predictor of relapse in addictions populations. The aspects of emotion regulation and emotion management strategies that affect relapse are not well understood. The purpose of this study was to address a significant gap in the substance abuse treatment literature by exploring the relationships among wellness, emotion regulation, and relapse.

Correlation analyses yielded negative correlations between wellness factors and difficulties in emotion regulation, and wellness factors and relapse. Positive correlations were found between wellness and reappraisal, difficulties in emotion regulation and suppression, and difficulties in emotion regulation and relapse. Logistic regression analyses indicated that Total Wellness, suppression, Social Self wellness, and Physical Self wellness were predictive of whether or not participants relapsed. Total Wellness, reappraisal, suppression, and difficulties in emotion regulation were predictive of total

relapse days. Social Self and Physical Self wellness were related to decreased relapse days and Creative Self wellness was associated with increases in relapse days. The hypothesis which stated that difficulties in emotion regulation and emotion regulation strategies would mediate the relationship between wellness and relapse and wellness and total relapse days was not supported. Finally, Total Wellness, difficulties in emotion regulation, and emotion regulation strategies explained variance in total relapse days above and beyond variance accounted for by socio-demographic variables. Future research should further explore the relationships between wellness, emotion regulation, and relapse by examining a variety of substance use behaviors as outcomes, utilizing additional measures of emotion regulation, and incorporating longitudinal research designs.

THE RELATIONSHIP BETWEEN WELLNESS, EMOTION REGULATION,
AND RELAPSE IN ADULT OUTPATIENT
SUBSTANCE ABUSE CLIENTS

by

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CHAPTER I

INTRODUCTION

The use and abuse of substances is prevalent in American society. According to the National Survey on Drug Use and Health [NSDUH], 22.5 million persons met criteria for a substance use disorder (SUD) (Substance Abuse and Mental Health Services Administration [SAMHSA], 2010). Addiction has a profound adverse impact on individuals and their loved ones. For instance, substance use results in approximately 12,000 deaths per year related to drunk driving (National Highway Traffic Safety Administration, 2011) and 4.3 million emergency room admissions in 2008 (SAMHSA, 2011). Additionally, alcohol is implicated in 40% of crimes in which someone was victimized including domestic violence and sexual assault (Bureau of Justice Statistics, 2011). Finding ways to prevent and treat substance abuse problems is thus a critical issue.

Substance abuse treatment has demonstrated efficacy at reducing substance use problems in its clients (National Institute on Drug Abuse [NIDA], 2009). However, the issue of relapse, a return to the use of a substance following a period of abstinence (Moss & Cook, 2012), remains a critical factor that impedes the treatment process, increases the risk of continued relapse, and prevents individuals from achieving a recovery lifestyle away from the alcohol or drugs (Doweiko, 2002). It is thus imperative to identify the factors implicated in the relapse process so that counselors can more effectively target interventions to reduce the likelihood of the occurrence of this event.

One area of potential for the treatment and conceptualization of relapse is exploring the role of holistic wellness factors on relapse. The link between wellness as a precipitant of relapse was identified in Marlatt's (1985b) Covert Antecedents model of relapse. This model depicts relapse as a process that occurs due to addicted persons putting themselves in high risk relapse situations because of lifestyle imbalance. The efficacy of lifestyle interventions in reducing relapse rates among persons with SUDs also suggests a relationship between wellness and relapse. For example, studies examining lifestyle interventions including exercise (Brown et al., 2009), meditation (Bowen et al., 2006), and biofeedback (Marlatt, 1985a; Sokhadze, Cannon, & Trudeau, 2008; Trudeau, 2005) have all resulted in decreased substance use and relapse. Finally, research conducted by Laudet, Becker, and White (2009) found that higher reported quality of life (a construct highly correlated with wellness) (Hattie, Myers, & Sweeney, 2004) predicted lower relapse rates.

Despite these conceptual insights and empirical data, the relationship between holistic wellness as a relapse trigger is unclear. The Covert Antecedents (Marlatt, 1985b) model of relapse may be useful for counselors in conceptualizing relapse prevention treatment, but the model has not received direct research support. Although, research on lifestyle interventions with substance abusing persons is promising, there is a dearth of literature examining the impact of holistic wellness interventions. Furthermore, it is uncertain whether higher levels of holistic wellness reduce the frequency and rates of relapse in persons with SUDs. Similarly, studies on quality of life often focus on life satisfaction (Laudet et al., 2009; Laudet, Morgen, & White, 2006) (a component of

wellness) while not obtaining holistic data on well-being. Quality of life research also frequently incorporates this construct as an outcome variable rather than a predictor of relapse (e.g. Foster, Powell, Marshall, & Peters, 1999).

Paradigms of emotion regulation are being increasingly explored in substance abuse populations (Aldao, Nolen-Hoeksema, & Schweitzer, 2010; Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007). There is evidence that persons with SUDs experience greater difficulty understanding and identifying their emotions (Fox, Hong, Siedlarz, & Sinha, 2008). Individuals with SUDs may also differ from non-addicted persons and those with other mental disorders in the emotion regulation strategies they utilize (Aldao et al., 2010; Pierrehumbert et al., 2002). Several studies indicate that those who can understand and manage their emotions more effectively are less likely to relapse (Riley & Schutte, 2003; Tomczak, 2010; Trinidad & Johnson, 2002). Identifying emotion regulation deficits and assets as well as strategies that are most impactful in the relapse process is critical. Moreover, research on emotion regulation and well-being lends support to the possibility of an association between these two constructs (Geisler, Vennwald, Kubiak, & Weber, 2010; Gross, 1998a; Gross & John, 2003; Schutte, Manes, & Malouff, 2009). Thus exploring the relationships among wellness, emotion regulation, and how they influence the relapse process may yield important information.

In this chapter, substance abuse and relapse are described as well as the constructs of wellness and emotion regulation. The problem of relapse is explicated including wellness and emotion regulation as contributing factors in the relapse process. Subsequently, the purpose of the study and research questions are identified. The chapter

concludes with a discussion of the significance of the study, a definition of terms included in the research, and a description of the organization of the study.

Substance Abuse

Substance use disorders (SUDs) are classified by a continuum of diagnostic criteria for chemical use issues including abuse and dependency on both legal and illegal substances. Substance abuse is defined as the continual use of drugs or alcohol despite consequences in the person's life (Fisher & Harrison, 2005), whereas dependence entails the inability to manage one's consumption of a substance despite the problems that ensue (Fisher & Harrison, 2005). The terms substance abuse, addiction, and (SUDs) are used interchangeably throughout the current study. However, the term SUDs is the diagnostic language incorporated in the American Psychiatric Association's [APA] Diagnostic and Statistical Manual of Mental Disorders, 4th ed., Text Revision (APA, 2000) used to describe a spectrum of addiction issues ranging from substance abuse to substance dependence. The continuum of SUDs will be further explicated in Chapter II. The NSDUH (2009) interviewed 67,000 persons in 2007 regarding substance use and discovered that 6.8 million persons meet criteria for an SUD. The prevalence of substance use problems was highest among men (12.35%). Substance use rates were similar between Caucasian persons and ethnic minorities, and although prevalence was higher among the unemployed than persons with employment (20% and 10.1% respectively), the majority of persons with SUDs in 2007 had full time jobs (60.4%) (NSDUH, 2009). Finally, there is a clear relationship between the occurrence of SUDs and co-occurring psychiatric disorders. For instance, a diagnosis of a mood disorder

increased the likelihood of having a substance use disorder ($OR = 2.8$, $CI = 95\%$) (Grant et al., 2004).

Several models of addiction have been proposed to explain the manifestation of substance abuse problems. The disease model and biopsychosocial models are highly utilized in research and clinical practice (Brooks & McHenry, 2009; Capuzzi & Stauffer, 2012). The disease model rests on the assumption that addiction follows an incurable disease process that grows progressively worse without treatment (Jellinek, 1960). Proponents of biopsychosocial models posit that addiction and recovery are the result of a combination of biological, psychological, and sociological factors (Brooks & McHenry, 2009; Fisher & Harrison, 2005).

Biopsychosocial models represent a more comprehensive and holistic approach to understanding addiction compared to the disease model. Consequently, this paradigm will be used as the framework for investigating relapse. The relapse construct will be operationally defined in the following section and common relapse precipitants will be identified. Three relapse models that fall within the biopsychosocial structure will be introduced. These relapse models attempt to explain prevalent relapse triggers and encompass a range of wellness and emotion regulation factors.

Relapse

Relapse, or “a return to drug use after a period of abstinence” (Moss & Cook, 2012, p. 260) has been defined in multiple ways by researchers and clinicians, and is also depicted variably based on model of addiction. For example, the AA Big Book upon which addiction 12-Step support groups are based, defined relapse dichotomously noting

that one is either using or abstinent (Alcoholics Anonymous, 2001). However, the Relapse Prevention (RP) model of addiction views relapse on a continuum by distinguishing between a lapse and a relapse (Marlatt, 1985b; Marlatt & George, 1984). A lapse is a brief return to substance use followed by an immediate return to abstinence. A relapse is a continual return to substance use over an extended period of time that can range from one episode of intoxication to the regular consumption of alcohol or drugs. Further, some researchers operationalize that relapse and abstinence can begin with each new day, while others ascribe that a certain number of sobriety days must occur in between relapses in order for different returns to substance use to be considered individual relapses (Miller, 1996).

Relapse is a common occurrence on the road to sustained sobriety that can have negative consequences. According to several sources, relapse occurs for approximately 40-60% of individuals who receive substance abuse treatment (Fisher & Harrison, 2005; McLellan, Lewis, O'Brien, & Kleber, 2000; National Institute on Drug Abuse [NIDA], 2009). Doweiko (2002) described relapse as a complicating factor in the treatment process. For instance, the National Institute on Drug Abuse (NIDA, 2009) noted that "Recovery from drug addiction is a long-term process and frequently requires multiple episodes of treatment. As with other chronic illnesses, relapses to drug abuse can occur and should signal a need for treatment to be reinstated or adjusted" (p. 3). Relapse can cause persons to leave treatment prior to completion or result in full resumption of substance use (Doweiko, 2002).

Research has identified multiple factors that are implicated in the relapse process. These relapse precipitants (processes that occur prior to the relapse) can be categorized into proximal, distal, intrapersonal, and interpersonal categories. Proximal precipitants refer to relapse triggers that immediately precede the relapse, and distal precipitants to ongoing or unchangeable factors (Witkiewitz & Marlatt, 2004, 2007). Intrapersonal relapse antecedents are risk factors occurring within the person and include affective variables such as cravings and stress (Greenberg, 2011; Hopper et al., 2006). Interpersonal relapse precipitants include systemic constructs such as social conflict and social support (Chong & Lopez, 2008; Moos & Moos, 2007). Relapse precipitant categories typically combine to create a vulnerability to relapse. Wellness and emotion regulation factors often occur amongst this diversity of relapse triggers. Relapse models based in biopsychosocial theory provide an optimal framework for explaining these processes.

Several models of relapse have been developed to address the myriad of relapse factors including the Relapse Prevention (RP) model (Marlatt, 1985b) (currently the Dynamic Model of Relapse) (DMR) (Witkiewitz & Marlatt, 2004) and the Stress Vulnerability Model of relapse (Ingram & Luxton, 2005). RP (Marlatt, 1985b) delineates that when a person with an SUD faces a high risk relapse situation, he or she will make either an effective or ineffective coping response. An effective coping response increases self-efficacy to abstain from substance use and increases the likelihood of continued sobriety. An ineffective coping response decreases relapse prevention self-efficacy, thereby increasing the likelihood of substance use. Notably, the Covert Antecedents

Model mentioned earlier is an adjunct portion of the RP model. Creators of the DMR propose that multiple proximal and distal factors combine resulting in relapse (Witkiewitz & Marlatt, 2004). Proponents of the Stress Vulnerability Model posit that stressors, in conjunction with other risk factors, increase the likelihood of relapse while protective factors can reduce the odds of relapse (Anderson, Ramo, & Brown, 2006; Sinha, 2008).

Substance abuse relapse is precipitated by deficits in holistic wellness (Marlatt, 1985b) and emotional responses to stress (Ramo & Brown, 2008; Sinha, 2001). Each relapse model contains elements accounting for wellness and emotion regulation factors. Given its importance in addressing the issue of relapse, the construct of wellness is defined in the next section. Models and research on wellness are discussed including studies on wellness-based interventions with substance abusing populations.

Wellness

Wellness is a construct that spans across disciplines including medicine, health promotion, and counseling. The term wellness has been operationalized from a counseling perspective to refer to the intentional seeking of mind, body, and spiritual health with the goal of fostering not only health, but wholeness (Myers, Sweeney, & Witmer, 2000). The theoretical model of wellness from a counseling perspective is called the Wheel of Wellness Model (Myers et al., 2000). This model posits that spirituality (life task 1) is at the core of wellness (and the Wellness Wheel) and is surrounded by self-direction (life task 2). Twelve other wellness components emanate from life task 2 ranging from physical health to creativity. The Indivisible Self model of wellness (Myers

& Sweeney, 2004) is an empirical model of wellness based on the factor analysis of a database of scores from the Wellness Evaluation of Lifestyle (WEL) (Myers et al., 1996) and Five Factor Wellness Inventory (5F-Wel) (Myers & Sweeney, 2005b). The factor analysis yielded one higher order wellness, five second order wellness factors, and seventeen third order wellness factors.

Research on wellness has examined the construct as a correlate with other variables, a predictor variable, and an outcome variable. Wellness has been correlated with mattering (Connolly & Myers, 2003; Gibson & Myers, 2006) and is inversely related to constructs such as body shame (Sinclair & Myers, 2004). Wellness in conjunction with other variables is predictive of life satisfaction (Degges-White & Myers, 2006), job satisfaction (Connolly & Myers, 2003), and state and trait psychological well-being (Hermon & Hazler, 1999). Wellness outcomes have been assessed in Caucasian and ethnic minority high school students (Rayle & Myers, 2004) and gay males (Dew, Myers, & Wightman, 2006), for example. Wellness interventions have demonstrated moderate efficacy in studies of police officers (Tanigoshi, Kontos, & Remley, 2008), a first year college student success course (Choate & Smith, 2003), and a case study with a 13 year old student with Asperger's Disorder (Moorhead, Green, McQuiston, & Ozimek, 2008).

Although there is a dearth of research on holistic wellness and substance abuse, some research has been conducted in this area. A study of wellness and college student drinking by Lewis and Myers (2010) found that the Coping Self (ability to negotiate environmental demands) and Essential Self (allows a person to make sense of life events)

were related to substance use. In a subsequent study, Lewis and Myers (in press) found an inverse relationship between Coping Self, Physical Self (exercise and nutrition) and drinking and driving among college students.

Emotion regulation is a key component of both the Wheel of Wellness Model (Myers et al., 2000) and the Indivisible Self Model of Wellness (Myers & Sweeney, 2004). Research also suggests a link between emotion regulation and well-being (Geisler et al., 2010; Gross, 1998a; Haga, Kraft, & Corby, 2009; Schutte et al., 2009) as well as associations between emotion regulation and substance abuse (Fox et al., 2007, 2008). In the next section emotion regulation is described and studies demonstrating a link between emotion regulation and substance abuse are identified.

Emotion Regulation

A general definition of emotion regulation states that it is “the processes whereby people manage their own emotions” (Koole, 2009, p. 1). Emotions help direct one’s way through the world. They provide an alert system if a threat is imposing and also provide us with experiences that reinforce behaviors. Emotions may cause a person to approach a given situation, yet avoid another. Persons dealing with substance abuse problems must navigate emotions such as stress, negative moods, and cravings in order to maintain sobriety (Tate, Brown, Glasner, Unrod, & McQuaid, 2006). Emotion regulation has been depicted through several models including the Ego Depletion model, Process Model, and Integrated Model of Emotional Intelligence.

The Ego Depletion Model is founded on the idea that a limited amount of emotion regulation resources exist within any one person, and that once depleted, exerting self-

control becomes increasingly difficult (Baumeister, Bratslavsky, Muraven, & Tice, 1998). The Process Model posits that emotions are created through a series of processes before the emotion manifests. Following the emergence of an emotion, response modulation or emotion regulation can occur via cognitive reappraisal or emotion suppression (Gross, 1998b). The Integrated Model of Emotional Intelligence holds that emotional intelligence (EI) involves the ability to correctly identify and express emotions, incorporate emotions to enhance the cognitive process, use the cognitive process to comprehend emotions, and regulate emotions (Mayer, Roberts, & Barsade, 2008; Mayer & Salovey, 1997).

Several studies were conducted examining emotion regulation with addictions populations. For example, a study examining EI as measured in three clinical groups including 35 participants receiving treatment for an SUD, showed that persons with SUDs scored lower than the non-clinical control group regarding using emotion to aid cognition, emotion comprehension, emotion management, and overall EI (Hertel, Schutz, & Lammers, 2009). Further, the SUD participants had the lowest EI scores of the clinical groups in the study which included persons with Major Depressive Disorder and Borderline Personality Disorder. Individuals in a study comparing cocaine abstaining participants at the start and completion of drug treatment (week one and week three to four, respectively) with a control group using the Difficulties in Emotion Regulation Scale (DERS) showed increased problems comprehending and regulating emotions at intake. However, these issues improved by the end of treatment (Fox et al., 2007).

Based on the literature presented thus far, there is clear potential for the existence of relationships among wellness, emotion regulation, and relapse. Deficits in wellness and emotion regulation may increase the risk of relapse in a recovering person. The following section presents a statement of the problem regarding relapse and the importance of studying the role of wellness and emotion regulation in the relapse process.

Statement of the Problem

Substance abuse has a wide scope, affecting millions of persons in the United States. The negative impact of substance abuse is exacerbated when accounting for significant indirect costs of addiction in lost workplace productivity, substance related deaths and injury, family violence, and the stress experienced by loved ones of the substance abuser. Relapse prevention is a critical factor in recovery from substance abuse problems (NIDA, 2009). Treatment has been shown to influence positive recovery trajectories, yet relapse is a considerable complication both during and after treatment (Doweiko, 2002; Miller et al., 2005). Identifying specific factors that can reduce relapse and improve the well-being of persons in recovery is largely important.

Based on the existing literature, holistic wellness and the ability to emotionally self-regulate may be powerful factors in decreasing the prevalence and severity of addiction relapse. However, to date, no research has been conducted examining a holistic model of wellness as a predictor of relapse in addictions populations. The aspects of emotion regulation and emotion management strategies that affect relapse are not well understood. Further, the relationships among wellness, emotion regulation, and relapse are currently unknown.

Purpose of the Study

The purpose of this study was to address a significant gap in the substance abuse treatment literature by exploring the relationships among wellness, emotion regulation, and relapse. A major goal was to assess the predictive ability of wellness, emotion regulation deficits, and type of emotion regulation on the occurrence and rate of relapse. Given that emotion regulation may impact both wellness and relapse, it was important to examine the mediating effects of emotion regulation deficits and emotion regulation skills on the relationship between wellness and relapse.

Research Questions

The following research questions have been designed to test the relationships among wellness, emotion regulation, and relapse:

Research Question 1: What are the relationships among total and second order wellness factors, difficulties in emotion regulation, emotion regulation strategies, relapse, and number of days of substance use since treatment initiation?

Research Question 2: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment?

Research Question 2a: Do the 5 second order wellness factors influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment?

Research Question 3: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies predict number of days of substance use since treatment initiation while adjusting for number of days since starting treatment?

Research Question 3a: Do the 5 second order wellness factors predict the number of days of substance use since treatment initiation after adjusting for number of days since starting treatment?

Research Question 4: How do difficulties in emotion regulation mediate the relationship between Total Wellness and relapse? How do difficulties in emotion regulation mediate the relationship between Total Wellness and number of days of substance use since treatment initiation?

Research Question 4a: How do emotion regulation strategies mediate the relationship between Total Wellness and relapse? How do emotion regulation strategies mediate the relationship between Total Wellness and number of days of substance use since treatment initiation?

Research Question 5: Are Total Wellness, difficulties in emotion regulation, and emotion regulation strategies significantly predictive of relapse and number of days of substance use after controlling for select socio-demographic variables and number of days since starting treatment?

Significance of the Study

Given the prevalence of relapse in the process of substance abuse recovery and the significance of relapse as a barrier to recovery, it is critical to understand the factors implicated in the process. Relapse can result in multiple losses to the substance abusing

individual and those in that person's social system. A study of holistic wellness, emotion regulation, and relapse is imperative for several reasons: Recovery from substance abuse problems is increasingly being viewed from a holistic perspective. This includes burgeoning research on the quality of life of persons with SUDs and an increased focus on gaining the perspectives of recovering persons on their own sobriety journeys (Foster et al., 1999; Laudet, 2007; Laudet et al., 2006). Thus a study directly examining wellness as it relates to relapse will be a significant addition to the literature. To date, a holistic wellness conceptualization of relapse including wellness factors and emotional regulation has not been empirically explored. The current study examines the relationship among wellness, emotion regulation, and relapse. Hence, there is potential to begin the development of an empirical model of relapse based on holistic wellness. This may not only start to fill a gap in the literature, it also may provide counselors with further guidelines for structuring relapse prevention interventions, and contribute to a strength-based model of relapse prevention.

Definition of Terms

The terms described/listed below are included in this study:

Relapse is a return to the use of a substance following a period of abstinence (Connors & Maisto, 1996; Miller, 1996; Witkiewitz & Marlatt, 2007). Wesson, Havassy, and Smith (1986) add that relapse is “a discrete event, which occurs at the moment a person resumes drug use or as a process which occurs over time” (p. 5). For example, relapse can be defined along a spectrum ranging from slip or lapse (a brief return to use followed by an immediate return to abstinence), to full-blown relapse (a stage of resumed

substance use) based on the duration of return to use and quantity of substance that was consumed (Marlatt & Gordon, 1985; Miller, 1996). For purposes of this study, relapse is defined as any use of alcohol or drugs since starting treatment as well as the total number of days of substance use since starting treatment.

Wellness is defined differently depending on the author and the wellness model. Several persons in the health fields have operationalized this term. Travis, Callander, and Ryan's (Wellness Associates, 2011) definition of wellness is comprised of several notions: A wellness lifestyle develops intentionally, changes and unfolds across the lifespan, involves a mutual relationship between oneself and the system in which one exists, is a holistic merging of mind, body, spirit, and emotions, and is validation and care for oneself. Ng, Davis, Manderscheid, and Elkes (1981) described wellness as the combination of multiple factors including environment, physical, behavioral, psychological, and social. William Hettler defined wellness as “. . . an active process through which people become aware of, and make choices toward a more successful existence” (Ardell, 2001, para 1). Related to this study wellness will be defined as “a way of life oriented toward optimal health and well-being, in which body, mind, and spirit are integrated by the individual to live life more fully within the human and natural community. Ideally, it is the optimum state of health and well-being that each individual is capable of achieving” (Myers et al., 2000, p. 252).

Emotion regulation: Gross's Process Model forms the foundation for operationalizing emotion regulation strategies that will be used in this study. According to Gross (1998b) emotion regulation is defined as:

. . . the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions. Emotion regulatory processes may be automatic or controlled, conscious or unconscious, and may have their effects at one or more points in the emotion generative process . . . (p. 275)

Mayer and Salovey's (1997) Integrated Model of Emotional Intelligence will be used to assess emotion regulation problems in this study. The researchers and their colleagues define emotion regulation as the "ability to manage emotions and emotional relationships for personal and interpersonal growth" (Mayer, Salovey, Caruso, & Sitarenios, 2001, p. 235).

Organization of the Study

The study is presented in five chapters. Chapter I described the focus and rationale of the study including constructs, model definitions, and research questions that will be explored in subsequent sections. Chapter II presents a review and critique of the literature on substance abuse, relapse, wellness, and emotion regulation. Each construct and related research is described and de-constructed including an exploration of grounding theories and models as well as research on the interrelationships of these factors. In Chapter III, the methodology of the study is explicated including research questions, design, and data analysis. Chapter IV describes the results of data analyses and Chapter V concludes the study with a discussion of implications of the research results.

CHAPTER II

REVIEW OF THE LITERATURE

In Chapter I, the rationale for a study of the relationships among wellness factors, emotional self-regulation, and substance abuse relapse was presented. In this chapter, substance use disorders (SUDs), the prevalence of SUDs and relapse, factors associated with relapse, and models of relapse are examined. Theories of addiction are reviewed with an emphasis on the biopsychosocial framework. Marlatt and Gordon's (1985) Relapse Prevention (RP) model is reviewed. Wellness theory and models, particularly those based in counseling, are examined. The relationship of emotion regulation to relapse, craving, and wellness is examined. The chapter concludes with a summary of the literature reviewed which underscores the need for further study of the relationships among wellness factors, emotion regulation, and relapse.

Substance Use Disorders

Substance use disorders encompass a spectrum of severity regarding chemical use issues ranging from abuse to dependency on both legal and illegal substances. Substance abuse is defined as the persistent use of chemicals despite negative effects in the person's life (Fisher & Harrison, 2005), while dependence involves uncontrollable consumption of a substance despite the problems that ensue (Fisher & Harrison, 2005). These disorders are triggered by an underlying deficit in holistic wellness (Marlatt, 1985a) and emotional responses to stress (Ramo & Brown, 2008; Sinha, 2001) which result in decreased quality

of life (Foster et al., 1999; Smith & Larson, 2003). Understanding the scope of substance abuse among adults is important for understanding the nature and scope of problems related to relapse. In this section, substance abuse and dependence are defined. These definitions provide a foundation for examining the prevalence and incidence of substance abuse problems among adult populations, and contribute to understanding the challenges associated with relapse.

The *DSM-IV TR* (APA, 2000) identifies two general categories of substance use disorders (SUD); substance abuse and substance dependence. Substance abuse is defined diagnostically as chemical use resulting in persistent or “recurrent” negative consequences in one’s social, occupational, academic, and home life. A person also meets criteria for a substance abuse diagnosis if his or her use puts him or her in danger (such as driving under the influence of alcohol or drugs), or creates legal issues. Substance dependence is distinguished from abuse due to the diagnostic criteria of tolerance and withdrawal. Tolerance refers to the need for increased consumption/exposure to a substance to reach intoxication and withdrawal is the physical and psychological discomfort resulting from the body’s physical dependence on the substance (Doweiko, 2002). Additionally, a substance dependence diagnosis can meet criteria of having a history of failed attempts to abstain or reduce use, significant amount of time allocated to using, acquiring, and recuperating from use of the substance, and persistent use despite the onset and/or worsening of psychological and physical problems due to chemical use.

A person can be diagnosed with substance abuse or dependence regardless of whether the chemical they are using is alcohol or drugs. Moreover, a person can be

dependent upon or abusing both alcohol and drugs. Individuals who are dependent upon 3 or more substances are diagnosed with polysubstance dependence. The multiple and varied definitions associated with SUDs contribute to difficulties in determining the exact extent or prevalence of these conditions (APA, 2000; Miller, 1996).

In the past decade, two large scale epidemiological studies have been conducted to evaluate the prevalence of drug and alcohol use, and co-occurring mental health problems. These included the National Survey on Drug Use and Health (NSDUH) and the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). The results of these studies provide evidence of the incidence and prevalence of SUDs, rates of SUDs across gender, age, and ethnicity, disorders that co-occur with SUDs, and rates of SUDs across education levels and employment status.

The NSDUH was administered to 67,500 individuals annually with the most recent published results in 2009. The NESARC was administered in two waves, one in 2001-2002 and a second in 2004-2005 surveying the same group of 43,000 participants (Caetano, 2006). Wave one of the NESARC estimated that 9.7 million persons in the United States meet criteria for alcohol abuse and nearly 8 million are alcohol dependent (Grant et al., 2004). NSDUH results identified that 6.8 million persons are dependent upon or abuse drugs, including nearly 4 million persons with marijuana related SUDs (NSDUH, 2009). Pain relievers and cocaine were the next highest substances of abuse or dependence with 1.7 million and 1.6 million addicted or abusing these substances, respectively.

Significant gender and age differences in substance use patterns exist. The NESARC showed that men were more than two times as likely to suffer from alcohol abuse or dependence as women (12.35% and 4.87%, respectively; Grant et al., 2004) and the NSDUH noted similar patterns for SUDs overall (NSDUH, 2009). Grant et al. (2004) noted that as age increased, rates of alcohol abuse and dependence decreased. The NSDUH estimated that prevalence rates in SUDs varied across cultures as well. Asian persons showed the lowest prevalence rate for substance use disorders at 4.7% followed by Hispanics (8.3%), African Americans (8.5%), Caucasians (9.4%), and Pacific Islanders (9.9%). The highest rates of substance abuse were found among multi-racial persons (10.8%), and American Indians and Alaska Natives (13.4%) (NSDUH, 2009).

The NESARC and NSDUH studies identified correlations between co-morbid alcohol use disorders and drug use disorders, substance use and psychiatric diagnoses, and educational level, employment, and rates of substance use disorders. For instance, persons with alcohol use disorders were more likely to be diagnosed with a drug use disorder (Stinson et al., 2005). Additionally, the odds ratios of having an SUD and co-occurring mood or anxiety disorder are 2.8 and 1.9 ($CI = 95\%$), respectively. This data suggests that the occurrence of an SUD increases the likelihood of also receiving a mood or anxiety disorder diagnosis and vice versa (Grant et al., 2004). College graduates showed an SUD rate of 7.5% in 2007 compared to high school graduates (9.3%), non-high school graduates (9.8%), and persons who had attended some college (10.3%) (NSDUH, 2009). Unemployed persons showed higher rates of substance use disorders (20%) compared to those with full time employment (10.1%), or part-time employment

(10.6%), although in terms of actual numbers, the majority of persons with SUDs in 2007 had full time jobs (60.4%) (NSDUH, 2009).

As seen in this brief review of factors associated with prevalence, SUDs are a pervasive problem in the United States affecting persons regardless of factors such as gender, ethnicity, age, or employment status. Treatment strategies that address prevention as well as remediation for SUDs have been developed and implemented (Miller et al., 2005). However, a major limitation for all interventions stems from the complex problem of relapse (Doweiko, 2002). Relapse is best understood within the context of substance abuse theory and in order to better understand relapse, it is helpful to first understand the dynamics of substance abuse disorders.

Theories of Substance Abuse

A review of substance abuse theories is critical in understanding the manifestation and treatment of addiction and occurrences that affect the treatment process such as relapse. Several theories or models of substance abuse have been developed including various types of biological, psychological, and socio-cultural models (Doweiko, 2002). In the following section I will discuss a biological model of addiction called the disease model of addiction given its prominence in substance abuse research and treatment (Fisher & Harrison, 2005). I will also discuss the biopsychosocial model; a holistic paradigm that combines all three models of addiction and thus offers a comprehensive framework for understanding and treating addiction. In this section, these models will be described, research on each model will be presented and critiqued, and the usefulness of each model in counseling will be explored.

Disease Model

The disease model of addiction is one of the most highly researched and utilized paradigms used in substance abuse treatment and research (Fisher & Harrison, 2005). It forms the cornerstone of 12-step support groups such as Alcoholics Anonymous (Alcoholics Anonymous, 2001) and serves as a guidepost in the diagnosis of addiction and research on topics such as the genetics and the physiology of addiction. The primary tenet of the disease model is that addiction is a medical illness or disease involving a loss of control over substance use (Brooks & McHenry, 2009; Jellinek, 1960). Further, the disease model assumes that addiction is an illness that worsens if left untreated (Fisher & Harrison, 2005; Jellinek, 1960) in a succession of identifiable phases. Thirdly, this model assumes that addiction is a lifelong illness that can be managed, but never fully alleviated (Doweiko, 2002). Literature on the development of the disease model, research supporting the disease model, and a critique of disease model assumptions are presented here.

One of the first writings referencing the disease Model is Jellinek's text entitled *The Disease Concept of Addiction* (1960). In this book, the author outlines stages of alcohol dependence in the "Jellinek Curve"; the inverse U-shaped curve which traces the development and recovery from addiction using a disease model. The addiction process occurs in three phases: the crucial phase, the chronic phase, and the rehabilitation phase (Jellinek, 1960). The crucial phase depicts the initial descent into uncontrolled use of a substance. This phase starts with experimental use which eventually deteriorates into compulsive use; the hallmark of the chronic phase. During the chronic phase of addiction,

the individual hits “rock bottom” (the low point of the U-shaped curve) in which the person is trapped in a cycle of addiction. The turning point of the curve (in which recovery begins) is when the individual accepts that his substance use problem is a disease and he or she and receives treatment and recovery support (the Rehabilitation phase) (Jellinek, 1960).

Current research regarding the disease model of addiction focuses on studies examining addiction as a chronic illness with genetic and physiological factors (Agrawal & Lynskey, 2008; Koob & Volkow, 2010; McLellan et al., 2000). One of the most highly cited articles supporting the disease model compared the course of addiction to other chronic diseases including asthma, hypertension, and type 2 diabetes mellitus (McLellan et al., 2000). The article consisted of a review of studies on addiction with the following findings: Treatment and medications reduce substance use, long-term treatment is needed for sustained positive outcomes, comparable levels of relapse and treatment adherence exist across addiction and the other three diseases (McLellan et al., 2000). The literature review findings by McLellan et al. (2000) were bolstered by longitudinal research on addiction and treatment careers (Hser, Longshore, & Anglin, 2007).

Treatment careers research examines the chronic nature of addiction by assessing patterns of abstinence and relapse in addicted persons over time (Hser, Longshore, et al., 2007). The thesis of treatment careers is that “once initiated, drug use often escalates to more severe levels, with repeated cycles of cessation and relapse occurring over an extended period” (Hser, Anglin, Grella, Longshore, & Prendergast, 1997, p. 543). In a longitudinal study of 1,271 participants, Dennis, Scott, Funk, and Foss (2005) found that

the median duration of a substance use career was 27 years. Additionally, for half of the participants, nine years elapsed between when participants first received treatment and completely abstained from use. Research by Hser, Huang, Chou, and Anglin (2007) tracked patterns of heroin addiction to find that the majority of the 471 participants used the drug on and off throughout the 33 year study. These studies suggest that substance abusing persons often exhibit lifelong patterns of cycling in and out of treatment, relapse, and abstinence similar to other forms of chronic illness (Hser et al., 1997).

In addition to treatment careers research, studies investigating the heritability and brain physiology of addiction have provided fruitful information on the disease model of addiction. For instance, in a review of the addiction genetics research, Agrawal and Lynskey (2008) discovered heritability rates of addiction to nicotine, alcohol, cannabis, and illicit drugs ranging from 30 to 70%. Li and Burmeister (2009) found several genes implicated in the addiction process as evidenced by meta-analytic research of genes correlated with addiction vulnerabilities in animals. While genetics may predispose someone to develop an addiction problem, substance use itself can affect chemicals in the brain in a manner indicative of a disease process (NIDA, 2009).

Studies have demonstrated that use of a substance changes the brain chemistry, which can result in a loss of control over a substance (Koob & Volkow, 2010; Volkow et al., 2010). The phenomena of tolerance and withdrawal provide evidence for the disease model because they demonstrate that brain and physiological alterations occur with compulsive ingestion of a substance (McLellan et al., 2000). Tolerance refers to an addicted person's need for increased use of a substance to obtain the desired effect, and

withdrawal symptoms are the physiological reactions to the absence of a drug experienced by a chemically dependent individual (APA, 2000). For example, a brain scan of a non-using person compared to a methamphetamine abuser will look different; the addicted person's brain may show a depletion of activity by dopamine neurotransmitters unlike the brain of the non-using person (Hoffman & Froemke, 2007). Further, there is evidence that metabolic activity in the prefrontal cortex of the brain decreases while activity in the midbrain or limbic brain increases (Volkow et al., 2010). This process is the dysregulation of the "stop" and "go" parts of the brain, resulting in a loss of control over one's ability to abstain from or control one's substance use (Koob & Volkow, 2010). These studies are suggestive of a loss of control that is one of the hallmarks of the disease model.

Despite a plethora of evidence supporting the disease model of addiction, there is also research and anecdotal evidence that challenges the assumptions of this model. The disease model assumes that addiction grows increasingly worse in the absence of intervention and that addiction cannot be cured. However, research by Granfield and Cloud (1996, 1999) shows empirical support for the phenomenon of natural recovery; recovery from addiction without treatment intervention. Granfield and Cloud (1996) conducted qualitative research with a sample of 46 middle class adult persons who had been substance dependent for at least one year, had not been substance dependent for a minimum of one year before data was collected, and had not participated in treatment or more than one month of self-help groups. Participants reported that social and

socioeconomic resources such as supportive families and high levels of educational attainment may have facilitated recovery without treatment (Granfield & Cloud, 1996).

A second critique of the disease model that follows from its notion that addiction cannot be cured is that this model exclusively advocates for abstinence-only programs. This is problematic because harm reduction models, which espouse that abstinence-only approaches may not be the best fit for each person receiving treatment, have received empirical support (MacMaster, 2004). Harm reduction methods focus on minimizing the problems caused by substance use through methods such as controlled drinking (MacMaster, 2004). Harm reduction approaches such as Motivational Interviewing (MI) have been established as evidence-based methods of substance abuse treatment and prevention (Miller & Rollnick, 2002; Miller et al., 2005). For instance, a review of four meta-analyses showed that participants with alcohol, marijuana, or other drug problems who received MI interventions had equivalent treatment outcomes to participants receiving other evidence-based treatments and better outcomes than participants receiving no treatment (Lundahl & Burke, 2009).

Another tenet of the disease model is that the addiction is the principal problem for the substance abusing person above and beyond psychological and interpersonal issues (Brooks & McHenry, 2009). However, numerous studies suggest that psychosocial factors play a key role in the manifestation and remission of a substance use disorder (Broome, Simpson, & Joe, 2002; Chong & Lopez, 2008; Laudet et al., 2006; Miller, Westerberg, Harris, & Tonigan, 1996; Moos & Moos, 2007). Tsuang et al. (1998) conducted a study of 3,372 male twin pairs to identify the differential impact of

environmental and genetic variables on the development of heroin, marijuana, stimulant, sedative, and psychedelic addiction. Family and nonfamily environmental influences together accounted for a significantly higher amount of variance in addiction rates than genetic influences across all substances except heroin. For example, genetic influences explained 33% of the variance in stimulant addiction, while family and nonfamily environmental influences combined to account for 67% of the variance.

Research on recovery capital has begun to identify specific environmental stimuli that can prevent the return to compulsive use of a substance, thus weakening the disease model argument that the addiction itself is the main problem. Recovery capital is defined as “the sum total of one’s resources that can be brought to bear on the initiation and maintenance of substance misuse cessation” (Cloud & Granfield, 2008, p. 1972). Recovery capital can be divided into categories which include social, physical, human, and cultural capital. These categories involve factors that affect relapse risk ranging from social support networks, financial stability, occupational potential, physical and mental health, and value system.

In a study of recovery capital, Laudet and White (2008) sampled 312 individuals who met criteria for an SUD for a minimum of one year with the exception of the previous month. The researchers administered baseline and follow-up measures assessing abstinence, stress, quality of life, and a multitude of additional recovery capital constructs. 12-Step support group involvement and life meaning predicted abstinence over the 12 months of the study (Laudet & White, 2008). Further, predictors of abstinence at one year follow up (sustained recovery) differed based on the participants’

stage of recovery. High baseline stress predicted abstinence in the group with less than 6 months recovery at baseline. 12-step support group involvement predicted sustained recovery for participants with 6-18 months recovery and general social support predicted sustained recovery for those with three or more years of recovery (Laudet & White, 2008). Contrary to the assumptions of the disease model, the study by Laudet and White (2008) provides evidence that psychosocial constructs influence the addiction and recovery process.

The disease model has received some empirical and anecdotal support. Research suggests that there is a biological basis for validating the loss of control assumption of the disease model. Evidence also exists that for some persons, addiction worsens without treatment and requires long-term management. However, the experiences of persons in natural recovery and the impact of psychosocial factors in the recovery process suggest the disease model does not provide a comprehensive explanation of addiction. To that end, it is imperative to examine other theories and models of addiction to determine best fit explanations for the development of addiction, the occurrence of relapse, and the maintenance of abstinence and recovery. The biopsychosocial model is inclusive of components of the disease model as well as psychosocial models of conceptualizing addiction and recovery. This model will be explored given evidence that it offers a more holistic elucidation of substance use disorders incorporating strengths from the disease, psychological, and sociocultural models of addiction (Fisher & Harrison, 2005).

Biopsychosocial Model

Creators of biopsychosocial models describe addiction as the result of a combination of biological, psychological, and social factors (Brooks & McHenry, 2009). Biopsychosocial models provide a more comprehensive explanation of the manifestation and treatment of substance abuse problems when compared to the disease model alone (Fisher & Harrison, 2005). The following section will elaborate on biopsychosocial models by describing research supporting the three domains of this model, as well as the benefits and limitations of this paradigm.

Many theories of addiction exist in the substance abuse literature that often fall into the categories of the biological, psychological, and social. For instance, theories such as the addictive personality (Nakken, 1989) and social learning models are psychological in nature and include constructs such as outcome expectancies and self-efficacy (Marlatt & Gordon, 1985). Biological models of addiction include genetic risk factors, neurological problems and neuroadaptation theories of the brain (Chiauzzi, 1991). Social theories of substance abuse refer to environmental influences such as the social networks and levels of social support among recovering persons. The biopsychosocial model posits “interactionism” among these three factors (Van Wormer & Davis, 2003) that affects the development and recovery from chemical addiction.

Research supporting a biological component to the biopsychosocial model was discussed in the above section on the disease model of addiction, but will be reviewed briefly here. Biological causes of addiction have both face validity and research support. Twelve Step groups which are based on physiological tenets of “loss of control” had

100,000 members as early as 1950 (Alcoholics Anonymous World Service, 2011a) and have disseminated over 30 million copies of the AA Big Book (Alcoholics Anonymous World Service, 2011b). The disease model has also found empirical support, particularly in the seminal article by McLellan et al. (2000) which suggested that addiction follows a similar disease course to medical problems such as asthma, hypertension, or diabetes. Research examining family history of addiction lends support to the biology of addiction. A sample of alcohol addicted persons and their siblings were compared to a control group and their siblings revealing half the brothers and nearly 25% of sisters of the alcohol dependent sample were addicted to alcohol in their lifetime (Bierut et al., 1998). Research on the neurobiology of addiction has shown that changes in the brain occur in the addicted person in which metabolic brain activity is decreased in the frontal lobes of the brain (responsible for executive functioning such as decision-making and planning) as well as research on tolerance showing significant decreases in dopaminergic activity in the brains of substance dependent persons (Hoffman & Froemke, 2007). Biology thus plays a significant role in the addictive process. However, psychological factors also play an important part in SUDs.

Evidence of psychological factors interwoven in the addiction process abound. Psychological theories of addiction and the efficacy of psychosocial treatment for substance abuse are indicative of this. The psychoanalytic perspective highlights the role of underlying psychological issues such as anxiety in the addictive process (Lewis, 2010). According to psychoanalytic theory, persons employ various psychological defense mechanisms to cope with anxiety. Psychoanalytic theorists also note that certain

substances are used to deal with specific painful emotions. For example, narcotics may be used to numb feelings of rage and stimulants may be abused to decrease boredom (Lewis, 2010). Similarly, Nakken (1996) stated that persons with addictive personalities seek opportunities to “act out” in order to increase pleasure and a sense of control while decreasing emotional pain (as cited in Lewis, 2010).

Several psychological approaches including cognitive-behavioral therapy, motivational interviewing, and relapse prevention are among the top evidence-based treatments in the addiction field in efficacy studies (Miller et al., 2005). Other psychological interventions such as behavior therapies have been able to demonstrate the extinction of craving responses through exposure therapies (Robbins, Ehrman, Childress, Cornish, & O’Brien, 2000). Empirical support for psychological constructs associated with addiction such as self-efficacy (Cheung, Lee, & Lee, 2003), coping (Gossop, Stewart, Browne, & Marsden, 2002), and motivation (Chiauzzi, 1991) also provides evidence of a psychological component to substance abuse.

Socio-environmental components of addiction have received support in research on social variables as well as systemic theories and approaches to addiction. Social support tends to contribute to positive recovery outcomes across substance abuse literature as evidenced by both quantitative and qualitative research. There is evidence that social support may serve a protective factor improving life satisfaction in recovery (Laudet et al., 2006) and that recovery specific support (above and beyond general social support) drives the relationship between social support and abstinence (Beattie & Longabaugh, 1999). In a qualitative study of recovering drug dependent persons in Hong

Kong, a Q-sort process revealed that study participants identified social support as one of the primary reasons for long-term duration of recovery (Cheung et al., 2003). Further, recovering persons have indicated via qualitative study that social support, specifically “personal relationships” and “social inclusion” plays a role in their quality of life (De Maeyer, Vanderplasschen, & Broekaert, 2009).

Sociological research and theory has contributed to the knowledge on social factors of addiction. In Howard Becker’s book *The Outsiders* (1963), he used social control theory to test his hypothesis that recreational marijuana use has a primary social influence as opposed to intra-individual or psychological factors. Through his qualitative study, one can recognize the influence of the marijuana culture in inducting and maintaining marijuana users. He wrote that new users must be in the company of experienced users to learn how to use marijuana and experience its effects. Becker described how the acquisition and use of the drug are affected by the macro level social control of society and micro level controls of the drug culture.

Inconsistent Nurturing as Control (INC) theory is a relational communication paradigm that has been examined among marriages and partnerships in which one partner either has depression or a substance abuse problem (Duggan, Dailey, & Le Poire, 2008). The theory follows that as one partner’s depression or substance abuse worsens, the non-using or non-depressed partner unknowingly reinforces depressive or substance using behaviors in an attempt to cope with or reduce the behavior. A common example is the spouse of the alcohol dependent person who agrees at times to drink with the person thinking their partner will control their drinking since their partner joined them. Without

realizing it, the spouse of the alcohol dependent person has reinforced the drinking behavior by partaking in the activity with the person. As the addiction or depression worsens, the loved one begins to use more punishing behavior towards the substance use in an attempt to predict the unpredictable, yet end up vacillating between reinforcing and punishing behavior of the substance use (Duggan et al., 2008).

Community reinforcement approaches are systemic interventions that demonstrate efficacy in treatment research (Miller et al., 2005), and address relational patterns described by INC theory. The Community Reinforcement and Family Training (CRAFT) modality is a directive counseling approach in which the clinician provides services for the family members or loved ones of the addicted person and teaches them skills to get the substance abuser into treatment (Meyers, Villaneuva, & Smith, 2005). CRAFT also teaches the family member how to interact with the addicted person in ways that increase their likelihood of entering treatment, does not directly or indirectly reinforce substance use, and reinforces sobriety. For example, a mother with a daughter who abuses alcohol will be taught how to reinforce her daughter for non-substance abusing activities and to not interrupt the occurrence of negative natural consequences that occur for her daughter based on her drinking.

Several researchers have noted evidence supporting a biopsychosocial model of addiction. For example, upon a thorough review of constructs that contribute to SUDs, Galizio and Maisto (1985) noted that “. . . a multifactor model is necessary for the prediction and control of substance abuse in general . . .” (p. 426). Chiauzzi (1991) similarly concluded that an interactive biopsychosocial model is indicated when assessing

substance abuse, implementing relapse prevention interventions, and defining addictive disorders ranging from gambling addiction to alcoholism (Griffiths, 2005).

Further support for a biopsychosocial model was provided via the Syndrome Model of addiction (Shaffer et al., 2004). The model consists of both “distal” and “proximal antecedents” of addiction. “Distal antecedents” is a term used to describe stable, unchangeable, on-going and long-term factors that can facilitate the onset of an addictive disorder such as family history of addiction or having a co-occurring mental illness. Repeated exposure to a potentially addictive chemical or behavior causes changes in brain chemistry which combines with biopsychosocial distal components to make one susceptible to relapse. A feedback loop then occurs between biopsychosocial “proximal antecedents” (factors that immediately precede relapse) and pleasure from continued use of the substance or engagement in the addictive behavior. These first two stages of the model yield an observable group of addiction symptoms that also fall within biopsychosocial categories (Shaffer et al., 2004). This model illustrates the prevalence and interrelationship of biopsychosocial factors in the development and manifestation of addiction.

There are several notable clinical and empirical strengths and limitations to biopsychosocial models. These models provide the framework for comprehensive substance abuse treatment in which aspects of the whole person receive attention (Capuzzi & Stauffer, 2012; Shaffer et al., 2004). Shaffer et al. (2004) stated the following about the Syndrome Model of addiction: “This model requires clinicians to develop multidimensional treatment plans that account for the many relationships among the

multiple influences and consequences of addiction” (p. 372). This represents a distinct advantage of adopting a biopsychosocial model over the disease model. Biological, psychological, and social domains have also each received empirical support as they relate to SUDs (Agrawal & Lynskey, 2008; Beattie & Longabaugh, 1999; Miller et al., 2005).

However, biopsychosocial models have been criticized for their complexity, rendering treatment planning a potentially convoluted process. A second limitation is the need for further research establishing the principle of interactionism among the biological, psychological, and social factors. Although studies support the individual domains, minimal research directly tests biopsychosocial models as a whole. An investigation of holistic wellness may begin to address this gap in the literature given its identification of a Total Wellness factor comprised of five identifiable components (Myers & Sweeney, 2004). Wellness models have also been used in clinical practice and research (Myers & Sweeney, 2005a; Myers & Sweeney, 2008).

In this section on substance abuse theories, the disease model and biopsychosocial models were explored. Relapse is a main component of addiction in each model and is also explained differently depending on the theory from which the relapse model is derived. The following section will focus on relapse models from a biopsychosocial framework. First, relapse will be defined, common relapse factors will be identified, and two models of relapse that encompass biopsychosocial constructs will be presented.

Relapse

Theories of addiction such as the disease model and biopsychosocial model provide frameworks for explaining how addiction develops. Inherent in each model is the process by which addictions are sustained, and both incorporate consideration of SUD as chronic relapsing conditions. This section will focus on one of the primary barriers to recovery from addiction; the relapse process. Relapse is perhaps the most difficult of all issues related to addiction (Hoffman & Froemke, 2007). It is a complex process to understand (Hufford, Witkiewitz, Shields, Kodya, & Caruso, 2003; Witkiewitz & Marlatt, 2007), in part because definitions in the literature are inconsistent (Miller, 1996), leading to differing theories and models that purport to explain and predict relapse (Conger, 1951; Marlatt & Gordon, 1985; Wills & Shiffman, 1985; Zubin & Spring, 1977). An understanding of how relapse is defined and the factors associated with relapse are important foundations for understanding these models.

Substance abuse relapse is a return to the use of a substance following a period of abstinence (Connors & Maisto, 1996; Miller, 1996; Witkiewitz & Marlatt, 2007). A more specific definition of relapse was provided by Wesson et al. (1986): “a discrete event, which occurs at the moment a person resumes drug use or as a process which occurs over time” (p. 5). For example, relapse can be defined along a spectrum ranging from slip or lapse (a brief return to use followed by an immediate return to abstinence), to full-blown relapse (a stage of resumed substance use) based on the duration of return to use and quantity of substance that was consumed (Marlatt & Gordon, 1985; Miller, 1996).

Twelve Step self-help groups such as Alcoholics Anonymous view any substance use as a relapse (Alcoholics Anonymous, 2001).

Relapse is a cyclical, recurrent process for a large proportion of substance abusers (Mishra & Ressler, 2000). It is not uncommon for those who choose to undertake the journey of recovery to experience transitions in and out of relapse (Scott, Foss, & Dennis, 2005). In fact, the results of multiple studies reveal that 40 to 60% of persons entering addiction treatment relapse (Fisher & Harrison, 2005; McLellan et al., 2000; NIDA, 2009). For example, Dennis et al. (2005), in a longitudinal study of 1,271 persons receiving substance abuse treatment, showed that participants attended treatment on three or four occasions over a period of nine years before achieving one year without a relapse. Hser, Huang, et al. (2007), in a study of relapse among heroin addicted persons over a 33-year period, found that nearly 60% of study participants continued to use the drug regularly throughout the study. Because relapse is a significant issue in the recovery process, identifying factors associated with relapse and relapse prevention is imperative.

A multitude of biopsychosocial factors have been implicated in the relapse process. Relapse precipitants involve interpersonal, intrapersonal, or a combination of the two dynamics as well as long-term (distal) factors that are unchangeable or occur over time (Witkiewitz & Marlatt, 2004, 2007). These factors trigger a recovering person's return to substance use, thereby placing the person at risk for leaving treatment or resuming the uncontrolled use of substances. In the following section, several biopsychosocial relapse triggers (interpersonal, intrapersonal, and long-term) are

described with an emphasis on emotion-related triggers. Research concerning each domain of relapse precipitant is explored and critiqued.

Interpersonal factors are important constructs in the fields of psychology, human development, and the social sciences (Laudet et al., 2006). Additionally, the plethora of evidence-based treatments for substance abuse that incorporate significant interpersonal components (e. g., community reinforcement approaches, behavioral marital therapy, and social skills training) is indicative of the need to address social aspects of relapse (Miller et al., 2005). Interpersonal relapse factors entail how interactions with others can lead to a relapse and includes constructs such as social support and social conflict.

Strong research support exists for the influence of social support and social conflict on relapse and recovery (Moos & Moos, 2007). Chong and Lopez (2008) found aspects of social support and social conflict to be predictive of relapse both at six months and one year after treatment in a study of 346 American Indian women (Chong & Lopez, 2008). Factors such as “having a father who had warned the client about alcohol and drug problems when she was growing up” (p. 32) reduced the likelihood of alcohol intake. Family conflict at the beginning of treatment and having substance users in one’s social network increased the likelihood of substance use at one year follow up (Chong & Lopez, 2008). Broome et al. (2002) reported that clients in short-term inpatient addiction treatment who had a negative social environment or lived with a substance user after completing treatment were three times more likely to relapse on cocaine and 2.5 times more likely to regularly consume alcohol one year post treatment. Further, Marlatt (1985c) reported that 16% of relapses are due to social strain.

Social factors can also reduce relapse risk. In a qualitative study of recovering drug dependent persons in Hong Kong, a Q-sort process revealed that study participants identified social support as one of the primary reasons for long-term duration of recovery (Cheung et al., 2003). There is evidence that social support may serve a protective factor by improving life satisfaction in recovery and that recovery specific support (above and beyond general social support) drives the relationship between social support and abstinence (Laudet et al., 2006; Beattie & Longabaugh, 1999). Self-help groups are an example of recovery specific support. They have been associated with reduced substance use and consequently may be a source of positive social support (Moos & Moos, 2007). Similarly, an inverse relationship was found between self-help participation and relapse in a two year study of post treatment cocaine abusers (McKay, Merikle, Mulvaney, Weiss, & Koppenhaver, 2001). Notably, social support in general may increase with length of sobriety while social support specific to recovery (e.g. encouragement from peers to avoid relapse triggers) declines (Laudet et al., 2006).

Hunter-Reel, McCrady, and Hildebrandt (2009) offered a critique of the research on social support in relation to relapse. They noted that the interaction of social support with variables such as coping, stress, self-efficacy, and craving is absent in the addiction literature. The predominant research on social support and relapse does not assess for differences in social skills and interactions among substance abusers which may be more strongly related to relapse than reports of perceived social support (Hunter-Reel et al., 2009). Studies such as those reported by Laudet et al. (2006) are promising because they examine the role of social support in relation to other factors, thus building a model of

relapse. The authors used structural equations modeling to determine if social support, spirituality, religiousness, life meaning, and 12-Step fellowship prevents stress and improves quality of life and life satisfaction as the duration of recovery increases. Results showed that these factors contributed to 22% of the variance in life satisfaction.

In summary, interpersonal factors such as social support and social conflict not only can precipitate relapse, but can buffer someone from a return to substance use. However, research suggests that a combination of factors interact to cause a relapse (Hunter-Reel et al., 2009; Laudet et al., 2006). Intrapersonal factors or qualities that exist within the individual merit consideration as they relate to the precipitation of relapse. Intrapersonal factors have been largely implicated in the relapse process (Marlatt, 1985c). Although intrapersonal and interpersonal relapse precipitants can co-occur, empirical evidence suggests that intra-individual variables contribute unique variance in accounting for a person's relapse.

Intrapersonal relapse factors refer to variables that exist within the individual that may contribute to the onset or continuation of a relapse. Several intrapersonal factors have been implicated in relapse and relapse prevention with persons with SUDs. These include relapse prevention constructs such as coping (Gossop et al., 2002; Moos & Moos, 2007; Dennis, Foss, & Scott, 2007), self-efficacy (Cheung et al., 2003; Mattoo, Chakrabarti, & Anjaiah, 2009; Powell et al., 1993), and motivation (Hiller et al., 2009; Korcha, Polcin, Bond, Lapp, & Galloway, 2011; Laudet & Stanick, 2010; Staines et al., 2003). However, research suggests that emotional factors such as mood states, craving, stress and anxiety are strongly implicated in the relapse process (Ramo & Brown, 2008).

Emotion-related relapse precipitants and research on these constructs are discussed at length in the following section.

Affective relapse precipitants refer to any emotion related causes of relapse and include sub-constructs such as mood states, craving, and stress. Several studies indicate that negative emotion commonly preceded relapse (Cummings, Gordon, & Marlatt, 1980; Marlatt & Gordon, 1980). These relapse studies, which examined both chemical and process addictions, reported that as many as 35 % of intra-individual relapses were due to experiencing unpleasant affect or mood states and 82% of relapses in the interpersonal domain were due to negative emotions elicited in social situations (Marlatt & Gordon, 1980; Cummings et al., 1980). Given the prevalence of emotion as a relapse precipitant, research regarding the influence of craving, mood states, and stress and anxiety on relapse is presented.

Craving is a desire or “urge” to use a substance (Preston et al., 2009, p. 291). However, the term is defined differentially based on the model of addiction and/or measurement used to assess the construct (Drummond, 2001). Although this relapse factor has been notoriously difficult to measure (Tiffany & Wray, 2009), several studies have found links between craving and relapse (Cummings et al., 1980; Lowman, Hunt, Litten, & Drummond, 2000; Marlatt & Gordon, 1980). For instance, Bottlender and Soyka (2004) conducted a study on the role of craving in relapse for 103 alcohol addicted research participants followed for one year of treatment and one year post-treatment. Higher craving scores at the onset of treatment predicted relapse during treatment and high craving scores at the end of treatment predicted relapse one year following

treatment. In a study of 112 opioid dependent and cocaine using participants in outpatient treatment, researchers used electronic diaries to measure daily cravings, relapse, and mood states associated with relapse. Results showed increased levels of craving 5 hours prior to cocaine relapse with a moderate effect size ($ES = .27$). Hopper et al. (2006) examined craving in 21 ecstasy users with ecological momentary assessment technology which allows craving and substance use to be measured as it occurs. Participants predominantly reported patterns of low craving, however, increases in craving were observed in the hours leading up to ecstasy use (Hopper et al., 2006). Hartz, Frederick-Osborne, and Galloway (2001) studied craving and relapse in 31 methamphetamine addicted participants. Craving intensity was assessed once per week over a 12-week period and higher reported levels of craving in a given week were associated with an increased likelihood of relapse the following week even without controlling for past week relapse (Hartz et al., 2001).

Research has also shown support for mood states as a relapse trigger. For example, Ramo and Brown (2008) studied affective components of relapse, and compared relapse precipitants between a sample of adults and adolescents receiving treatment for SUDs and/or mental health problems. Findings revealed that roughly one in three participants reported relapsing due to “a negative emotion and also urges and temptations to drink/use” (Ramo & Brown, 2008, p. 377). Persons with co-occurring disorder (mental health problems in addition to a SUD) are also more likely to have unpleasant affect as an antecedent to relapse (Tate, Brown, Unrod, & Ramo, 2004). Relapse precipitants were investigated in 556 cigarette smokers who completed smoking

cessation treatment, had set a goal to abstain from smoking, and had demonstrated a minimum of two weeks of abstinence by the conclusion of the program (Vangeli, Stapleton, & West, 2010). A minority of the 199 participants who relapsed post treatment reported feeling happy immediately before smoking relapse (16%), yet 53.8% noted “I was miserable” prior to resuming use.

Further evidence for negative affective states as relapse predictor was demonstrated using a quasi-experimental design. Cooney, Litt, Morse, Bauer, and Gaupp (1997) conducted research with 50 persons receiving inpatient treatment for alcohol dependence to examine if the experience of negative moods and the presentation of an alcohol stimulus lead to a desire to drink. Guided imagery was used to induce negative moods in the participants prior to assessing self-report and physiological craving. The presentation of an alcoholic beverage was also explored as a cue for increased craving. Main effects were found for both negative mood states and the presentation of alcohol on desire to drink. Additionally, a survival analysis found that the interaction between negative mood state and the alcoholic beverage cue predicted time to relapse in the 90 days following treatment (Cooney et al., 1997).

Another study exploring the relationship between mood states and relapse assessed the predictability of depressive symptoms on alcohol and smoking relapse in 462 alcohol and nicotine dependent participants over 18 months (Kodl et al., 2008). Participants who reported mild to severe depressive symptoms as measured by the Beck Depression Inventory II (BDI-II) relapsed at higher rates than those who reported minimal depressed symptoms at 6, 12, and 18 month follow-ups when mood and relapse

were concomitantly assessed. In other concurrent analyses, individuals with depressive symptoms reported more frequent alcohol relapses and higher quantity of alcohol use during relapses. Regression analyses showed that persons reporting mild to severe depressive symptoms were 12% more likely to relapse than individuals reporting minimal depressive symptoms (Kodl et al., 2008).

Stress is another affect related construct that has been studied in relation to relapse. Greenberg (2011) described stress “as the combination of a stressor, stress reactivity, and (physical, psychological, or behavioral) strain” (p. 12). Stress and substance use can have a negative influence on future relapse, according to Sinha (2001). For instance, Sloan, Roache, and Johnson (2003) examined the relationship between anxiety and alcohol consumption among alcohol dependent men enrolled in a 12 week treatment program. The researchers found that lower anxiety levels over the course of treatment predicted lower alcohol use even when controlling for alcohol consumption at baseline, age of initiation for drinking, and dose of ondansetron (a medication for decreasing alcohol cravings).

Research suggests that stress can predispose one to substance use and also trigger it. Sinha (2001) noted that stress from antecedent events such as childhood trauma or chronic stress, can make one vulnerable to substance use problems. Conversely, the use of substances may dull the stress response thereby increasing susceptibility to stress and craving once abstinence is achieved (Fox et al., 2008; Sinha, 2001; Wand, 2008). A study of trauma and stress among cocaine dependent versus non-cocaine dependent persons indicated the cocaine dependent participants experienced twice as much stress, reported

heightened stress sensitivity, and further, indicated that trauma prior to age 18 correlated with higher ratings of stress severity (Back et al., 2008). Participants in the stress imagery condition of a similar study showed equivalent levels of craving, negative affect, and physiological measures of stress as persons in the drug cue condition (Sinha, Fuse, Aubin, & O'Malley, 2000). Individuals in both the stress imagery and drug cue conditions scored higher on the above measures than the neutral or control condition. These studies suggest a relationship between stress, craving, and substance abuse.

Research findings on the role of stress and relapse are complex, however. For example, a study on post treatment substance dependent veterans showed that participants reporting more chronic stress were significantly more likely to relapse, yet tended to have relapses that were shorter in duration even with quick access to drugs or alcohol (Tate et al., 2006). Hence the impact of stress in the relapse process is variable since it might impact the frequency of relapse but not duration, or increase the severity and length of relapse, but not relapse frequency.

The above review indicates that numerous intrapersonal factors can trigger relapse. Research supports that several affective factors including craving, affect, and stress contribute to the likelihood of relapse. However, distal factors also figure significantly into the relapse process. Distal factors are ongoing qualities of a person that are typically unchangeable and render a person more vulnerable to returning to substance use. Research on several distal factors is presented in the following section.

Distal relapse factors are socio-demographic variables associated with the addicted person and are often permanent qualities that increase their vulnerability to

relapse (McKay, Franklin, Patapis, & Lynch, 2006; Witkiewitz & Marlatt, 2004). Distal precipitants can include characteristics such as family history of addiction or one's history of addiction. Despite studies suggesting the impact of proximal factors in the relapse process (e. g. Miller et al., 1996), long-term relapse precipitants such as demographic and sociological factors have demonstrated powerful predictive ability regarding relapse.

One type of highly replicated distal relapse factors is pre-treatment or baseline variables. Pre-treatment factors are personal characteristics of persons with SUD's that increase or decrease the likelihood of future relapse. One pre-treatment distal relapse factor supported by research is severity of addiction (Hser, Yamaguchi, Chen, & Anglin, 1995; McKay et al., 2001). Several studies have uncovered that baseline frequency, intensity, and quantity of substance use when persons enter treatment is predictive of relapse at follow-up measurements (Ahmadi et al., 2009; Hillhouse, Marinelli-Casey, Gonzales, Ang, & Rawson, 2007). For instance, Tiet, Ilgen, Byrnes, Harris, and Finney (2007) studied the impact of treatment setting and substance use severity on 1,277 persons who received either inpatient or outpatient substance abuse services. The researchers administered the Addiction Severity Index (ASI) and other measures at treatment initiation and 6 month follow up. Results showed main effects for both baseline alcohol use severity and drug use severity as predictors of substance use severity when assessed 6 months after treatment (Tiet et al., 2007).

A similar study examined baseline predictors of cocaine relapse in 164 cocaine and alcohol dependent participants entering a three month treatment program (Ahmadi et

al., 2009). *T*-tests revealed that participants who attained one relapse free month before treatment completion (abstainer group) had a higher number of alcohol treatment episodes than those who could not maintain one month of abstinence (relapse group). However, *t*-tests also showed that the relapse group had more days of cocaine use in the past 30 days and more drug treatments per lifetime compared to the abstainer group. Further, number of days of cocaine use in the past 30 days was a predictor of cocaine abstinence (Ahmadi et al., 2009).

Another study assessing the relationship between substance use severity and relapse was conducted by Hillhouse et al. (2007). The researchers examined predictors of methamphetamine relapse in 420 participants assessed at the start of treatment through one year follow up. Methamphetamine use of 15 or more days in the month prior to beginning treatment, prior attendance at substance abuse treatment, and life-time methamphetamine use of 2 or more years were among predictors of relapse at treatment completion and 6- and 12-month assessments. These three baseline variables were also among predictors of those who endorsed relapsing at every assessment time point including treatment completion, and 6 and 12 month follow ups (Hillhouse et al., 2007).

Treatment related variables comprise another category of distal factors. For instance, the duration of abstinence is a robust distal predictor of addiction relapse. A study by Dennis et al. (2007) of 1,162 participants who received substance abuse treatment showed that abstinence rates increased from 36% to 64% when duration of abstinence increased from 1 year or less to 1 to 3 years. The number of treatment episodes may also be predictive of long-term chemical dependency remission (Hser,

Longshore, et al., 2007). Persons who have engaged in one or two episodes of treatment are less likely to relapse over time than persons who have entered treatment three or more times (Dennis et al., 2005). Further, 86% of participants with 3 or more years of sobriety remained abstinent the following year (Dennis et al., 2007).

The presence of co-occurring substance use and psychiatric disorders can influence the relapse process (Bradizza, Stasiewicz, & Paas, 2006). Depression has been shown to both increase and decrease the risk of relapse in different studies. The aforementioned study by Kodl et al. (2008) demonstrated a relationship between depression and relapse given when depression and relapse were assessed at 6 months, 65% of persons with mild to severe BDI-II depression scores had relapsed versus 33% who reported minimal to no depressive symptoms. However, McKay and colleagues (1997) studied relapse among 98 male cocaine dependent veterans who had completed a one month intensive outpatient program and were then randomized to one of two aftercare programs. Chi square and t-test analyses showed that participants with a lifetime diagnosis of major depression or an anxiety disorder had lower cocaine relapse rates and a lower percentage of days of cocaine use at 6 month follow up, respectively (McKay et al., 1997). The researchers hypothesized that the presence of a mood or anxiety disorder might decrease impulsive behavior, thereby reducing relapse rates. Employment status and education level have been associated with substance use. Research results on relapse predictors in a two year follow up of 132 cocaine dependent veteran males in aftercare treatment indicated a moderate correlation between employment problems at 12 month assessment and percentage of days of cocaine use at 18 month measurement ($r = .20$, $p <$

.05) (McKay et al., 2001). Employment problems remained a significant predictor of cocaine use at this assessment interval in multiple regression analyses. Kodl and colleagues (2008) researched depressive symptoms as relapse predictors in 499 alcohol and nicotine dependent participants over 18 months. Unemployed status at the start of the study predicted both alcohol and smoking relapse ($OR = 1.53 p < .05$ and $OR = 1.73 p < .05$, respectively) and those with higher education levels were less likely to report a return to smoking at follow up assessments ($OR = .39 p < .05$) (Kodl et al., 2008).

Researchers have also found potential differences in treatment outcomes between clients who received forced treatment due to legal issues when compared to clients who enter treatment voluntarily. Burke and Gregoire (2007) examined relapse, addiction severity, and readiness to change in 141 participants upon entering substance abuse treatment and at a 6 month follow up. Participants who were required to enter treatment were 2.8 times less likely to relapse on alcohol or drugs in the month prior to the 6-month assessment than individuals who had volunteered for treatment. Also, the forced treatment group reported lower post-treatment scores on measures of addiction severity than the voluntary treatment group (Burke & Gregoire, 2007).

A multitude of constructs have been associated with substance abuse relapse including intrapersonal, interpersonal and distal factors (Cheung et al., 2003; Fox et al., 2008; Gossop et al., 2002; Preston et al., 2009; Ramo & Brown, 2008; Witkiewitz & Marlatt, 2004). Affective intrapersonal factors range from mood states to craving, interpersonal relapse antecedents entail various components of social support and strain, and distal factors range from severity of addiction to employment status. Given that affect

or emotion is a common factor in relapse to substance use, it follows that an understanding of the regulation of emotions and impulses in substance abusing persons is critical. Additionally, research on holistic wellness and lifestyle antecedents of relapse were minimally found in the literature on relapse factors. Laudet (2008) recommended “. . . a shift away from symptom-focused care and evaluation to wellness-oriented practices . . .” (p. 2011). Further, wellness may positively interact with emotion regulation, interpersonal and distal factors to reduce relapse risk and also represents a construct that can capture intrapersonal, interpersonal, and distal factors in a unified model.

Different models of relapse attempt to best explain and link the multitude of variables potentially involved in the relapse process. The Stress Vulnerability model of relapse and Marlatt’s Relapse Prevention (RP) Model and Dynamic Model of Relapse are psychological models that depict the shift from abstinence to a return to substance use. These models are presented in the following section in conjunction with empirical information regarding their efficacy and limitations at describing relapse.

An abundance of research substantiates that addiction is a chronic, relapsing disorder (Dennis et al., 2007); hence, understanding relapse and relapse prevention is a critical component in addressing substance abuse problems. A variety of relapse models exist ranging from neurobiological and craving models to psychological and social models. Two psychological models of relapse are presented in the following section. The Stress Vulnerability model of relapse links a combination of stress and vulnerability factors to relapse. Marlatt’s (1985b) Relapse Prevention (RP) model and Dynamic Model

of Relapse (DMR) utilize a social learning perspective to explain the relapse process. Both models will be described including research examining their validity, and a summary of the limitations of each in contributing to understanding relapse.

Stress Vulnerability Model

Stress has been heavily implicated in causing or exacerbating a multitude of mental and physical health problems (American Institute of Stress, 2011). Stress is “the experience of a perceived threat (real or imagined) to one’s mental, physical, or spiritual well-being, resulting from a series of physiological responses and adaptation” (Seaward, 2009, p. 3). The negative potential effects of stress on the immune system and specific organ functioning include headaches, pulmonary issues, coronary heart disease, and even cancer (Seaward, 2009). Stress can also be the precipitant of mental health and substance abuse problems (Ingram & Luxton, 2005; Wills & Shiffman, 1985). Lazarus and Folkman (1984) depict stress as environmental stimuli that require significant adaptation. Environmental stimuli range from acute (short-term) stressors to chronic (long-term) stressors.

Stress vulnerability or diathesis stress models were developed to explain the onset of psychological disorders such as psychosis or schizophrenia (Ingram & Luxton, 2005) but have also begun to be applied in the addiction field. The basic principle of these models is that a psychological disorder develops when a person’s stress level and vulnerabilities combine to reach a level at which the individual becomes overwhelmed (Ingram & Luxton, 2005). Protective factors are also considered in a person’s vulnerability profile and can help buffer a disorder from being expressed. In applying the

stress vulnerability model to substance abusing populations, Anderson et al. (2006) note that

vulnerability to relapse following negative life events is influenced by this system of risk and protective factors that either strain an individual's adaptation capacities (which increases the likelihood of using alcohol or other drugs), or reduce that risk by providing additional resources to sustain behavioral change. (p. 255)

Vulnerability factors include intrapersonal components (such as problems with emotions) and "environmental demands" ranging from interpersonal stress to access to substances (Anderson et al., 2006, p. 255).

Sinha's (2008) elaboration of the stress vulnerability model of relapse incorporated a multitude of factors that influence the stress-substance use relationship. One set of vulnerability factors includes adverse life events, the experience of trauma(s), and an overload of stressors across the lifespan. These vulnerability components impact brain physiology which in itself influences cravings and relapse as well as psychological factors such as emotional control. Exposure to a stressor can affect the whole system of the person including the psychological, behavioral, and cortical and mid-brain physiology (Sinha, 2008). In a review of the literature on stress and addiction, Goeders (2004) echoed Sinha's argument about trauma as a vulnerability factor, adding however, that it is unclear in individual cases whether the trauma preceded the substance use and vice versa. Despite the inclusion of stress and risk factors as relapse precipitants in the stress vulnerability model, several studies focus on stress-coping within the model.

Certain research studies regarding the stress vulnerability model focus on coping as a protective factor against stress related relapse. Coping responses are behaviors to sustain homeostasis between environmental stimuli and the skills the person enlists to address these stressors (Coyne & Lazarus, 1980; Wills & Shiffman, 1985). According to Wills and Shiffman (1985), “. . . substance use is one coping response (of several possible alternatives) that people could use to achieve affect management” (p. 6). Research on stress-coping reveals complex relationships between coping, stress, and substance use. For instance, Hyman et al. (2009) conducted a study comparing a control group to opiate addicted participants on perceived stress, adaptive and maladaptive coping, and social support. The opiate dependent group showed higher levels of stress and less adaptive coping, but the two groups were equivalent in rates of maladaptive coping responses and social support. Increased use of maladaptive coping predicted increased stress while higher levels of social support were associated with decreased stress.

Wills, Sandy, and Yaeger (2001) tested the stress-coping component of the stress vulnerability model in their study based on 434 adolescent substance users. Variables in this study included time perspective (tendency to foresee consequences of one's choices or to focus on moment-to-moment indicators of decision-making) as a key independent variable and constructs such as coping, proximal adverse events, and affect. The results indicated that coping and negative affect mediated the relationship between time perspective and substance use. Specifically, a future orientation was related to decreased

substance use due to a problem-solving coping style which increased confidence in using drug refusal skills (Wills, Sandy & Yeager, 2001).

One of the most rigorous investigations of the stress-coping model was a latent growth analysis conducted by Wills, Sandy, Yaeger, Cleary, and Shinar (2001) on a sample of 5,424 seventh-, eighth-, and ninth-grade students. The results showed evidence for differing effects of coping; for example, behavioral coping was associated with decreased substance use and disengaged coping style was linked to increases in substance use (Wills, Sandy, Yeager, Cleary, et al., 2001). Hussong (2003) also found a complex influence of coping on stress and substance use in her research with a sample of 83 college students. She examined coping styles as potential mediators between participant stress and substance use. Coping styles were found to impact substance use differentially depending on the stressor. Participants who used social support to cope with social stress, active coping in the face of academic stress, and avoidance and social support during general life stress showed reductions in substance use (Hussong, 2003).

Relationships between stress, coping, and other variables were examined in a survey on adolescent tobacco use (Koval & Pederson, 1999). Stress was found to have an influence on whether or not adolescent males initiate cigarette use. However, a weak association was found between coping resources and tobacco use in males.

Rebelliousness was significantly related to cigarette use in male participants which eliminated any contributions of stress in accounting for smoking behavior. However, research testing the stress-coping and temptation-coping models of addiction with a population of high school students found each model individually was highly predictive

of substance use (Wagner, Myers, & McIninch, 1999). Specifically, problem-focused stress coping and temptation coping were associated with decreased substance use while emotion-focused stress coping was predictive of increased rates of substance use.

The stress-coping research suggests that the relationships among stress, coping, and substance use is not straight-forward. For example, specific styles of coping may be more effective in reducing stress and substance use. Certain types of coping may only be effective at reducing relapse and overall stress depending on the type of stressor. Moreover, trait factors and other variables may be more significant in affecting substance use than stress and coping. It is thus important to review additional studies that more directly test the stress vulnerability model.

The following studies set out specifically to test multiple aspects of the stress vulnerability model including stress levels, vulnerability factors, and protective factors. For instance, Anderson et al. (2006) conducted a study of the stress vulnerability model with a sample of 80 adolescent participants with a co-occurring psychiatric disorder and SUD. The researchers found that while life stress was not associated with increased substance use, measures of self-reported coping were predictive of relapse. Moreover, life stress moderated the relationship between coping and substance use; the inverse relationship between coping and substance use increased as participant life stress increased (Anderson et al., 2006).

Brown, Vik, Patterson, Grant, and Schukit (1995) conducted a one year follow up study testing the stress vulnerability model of relapse in a group of alcohol dependent males who had experienced significant life stressors. The researchers found that

participants with higher composite psychosocial vulnerability scores were more likely to relapse. Further, decreases in stress vulnerability over time were predictive of relapse outcomes. Coping, self-efficacy, and social support were the strongest predictors of whether or not participants relapsed. The study is critical in that it utilized structured interviews to rule out persons from the study whose stress was directly related to alcohol use, thus enabling research results to be specific to significant life stressors rather than stress due to alcohol relapse itself.

Another study testing the validity of the stress vulnerability model examined emotion regulation, stress, depression, and substance use in 161 adolescent participants (Skitch & Abela, 2008). The longitudinal design involved measuring the above constructs over a period of four months. Results indicated that high levels of rumination as a strategy for managing stress were associated with increased levels of depression and substance use.

The above studies on the stress vulnerability model indicate validity for the role of vulnerability factors and stressors for increasing relapse risk, and the protective role of specific types of coping. Overall, research on stress and relapse suggests an unclear relationship between the two constructs (Hussong, 2003). Acute and chronic stressors seem to have variable effects on relapse. Research on the stress vulnerability model of relapse showed mixed results. Relapse risk does not conclusively increase when substance abusing persons are facing stressors. Thus the relationship between stress and relapse may involve additional moderating and mediating factors. Several variables have also been shown to moderate the effects of stress such as emotion regulation and a

balanced lifestyle (Geisler et al., 2010; Koole, 2009). Marlatt's (1985b) Relapse Prevention (RP) and Dynamic Model of Relapse (DMR) incorporate both self-control constructs and lifestyle factors and thus may be more useful for explaining the role of holistic wellness factors in relation to relapse.

Relapse Prevention (RP) Model

Marlatt's cognitive-behavioral Relapse Prevention (RP) model (1985b) incorporates many of the elements of the psychological models mentioned above as factors that explain the association between relapse and self-control. Constructs and concepts such as self-efficacy, outcome expectations, cognitive restructuring, and lifestyle balance are all components of the RP model. RP also addresses the cognitive-behavioral aspects of craving depicted by some of the psychobiological models. In this section, the components of Marlatt's original RP model are presented along with research regarding this model.

Marlatt's (1985b) RP model outlines several steps involved in the relapse process. The original RP model describes relapse as beginning with a high-risk situation. The addicted person can start along one or two routes which can affect substance use outcomes: The use of an effective coping response or an ineffective coping response. If an effective coping response is implemented, the individual's self-efficacy will increase thereby decreasing the chances of relapse given the high risk situation. However, if the person uses an ineffective coping response, a reduction in self-efficacy occurs along with the cognitive appraisal that substance use will have benefits (positive outcome expectancies). This leads to substance use initiation which could be stopped by the client

at a lapse level (brief return to use followed by immediate return to abstinence). Conversely, the abstinence violation effect (AVE) could occur. The AVE is the result of two client beliefs: The lapse is due to internal and unchangeable qualities about oneself and/or the client self-identifies as an addicted person in long-term recovery. These beliefs can result in subsequent cognitions such as, “Now that I have already lapsed, I might as well get drunk.” Exacerbating the influence of the AVE is the person starting to experience the effects of the drugs or alcohol which combine overall to increase the likelihood of a full relapse (a return to “uncontrolled substance use”) (Nordegren, 2002, p. 555).

The RP model has been investigated by researchers over the past decades. It is a popular model used in clinical settings and thus appears to have face validity for clinicians, but research shows that the verdict on RP is less clear. RP contains relapse categories within the larger domains of interpersonal and intrapersonal relapse causes. These categories include, but are not limited to, relapse precipitants such as negative mood states, social pressure to drink or drug, and urges or cravings (Marlatt, 1985c). Clinicians explore and classify past relapses with clients to prevent future ones. Reliability and validity studies have been conducted to determine if the typology has clinical and research utility.

In an exploration of construct validity of the Marlatt relapse typology by Maisto and Connors (1996), only one of the analyses resulted in evidence in favor of the accuracy of the Marlatt model (although the authors noted several limitations to the study including reliability concerns). Longabaugh and Rubin (1996) found inconsistencies in

between and within site interrater reliability using the Marlatt typology. In other words, sites displayed high interrater reliability in coding relapse episodes during one time period, but not another. Further, certain sites maintained higher reliability while others did not.

Stout and Longabaugh (1996) also examined the predictive validity of the RP model. Participants identified relapse categories that had resulted in their previous relapses such as negative mood states. These relapse categories from past relapses were anticipated to be the cause of future relapses in study participants. Additionally, concurrent validity was examined between the RP typology and similar relapse inventory measures. The Marlatt model was only supported by concurrent validity with the Inventory of Drinking Situations Scale (Maisto & Connors, 1996).

Studies have been conducted to examine the efficacy of the RP model in clinical practice. Irvin and Bowers (1999) conducted a meta-analysis of 26 studies of the RP model. Conclusions to some of the analyses were tentative due to small samples of particular types of RP research. However, results looking at effect sizes indicated that RP is effective when used in conjunction with medications (large effect size from RP with medications compared to RP alone), is more effective with alcohol and polysubstance abusing clients and less effective with tobacco and cocaine use. Results also supported positive outcomes on psychosocial functioning when substance abuse outcomes were smaller.

Cognitive-Behavioral treatment of substance abuse has been shown to be arguably the most effective of the evidence-based practices (Miller et al., 2005). For instance, in a

study by Rawson et al. (2002), CBT matched contingency management (another evidence-based treatment) in long-term reduction of cocaine use and further supported Marlatt's claim in Relapse Prevention (1985b) that RP tends to have delayed positive outcomes on relapse prevention (Witkiewitz & Marlatt, 2004). Carroll (1996) performed a literature review of research using RP. Studies of RP versus no treatment control groups reveal more positive abstinence results for RP participants at follow-up after treatment. When compared to treatment as usual, RP demonstrates superior effectiveness in half of the studies; however, "delayed emergence effects" (reductions in relapse at follow-up versus immediate post-treatment assessment) yield RP as having better outcomes in more studies than treatment as usual. Finally, RP and alternate treatments seemed to show equivalent levels of effectiveness immediately after treatment and at follow-up. It should be noted that RP showed superior relapse reductions in clients with higher levels of psychopathology in comparison to alternate treatment (Carroll, 1996).

Specific constructs from the Marlatt model have received empirical support. Greenfield and associates (2000) used survival analysis to test the hypothesis that self-efficacy has predictive ability regarding relapse. Study results confirmed that alcohol dependent inpatient clients above a certain cut score on self-efficacy tended to have longer periods of abstinence from drinking than those below the cut score. Researchers examined the coping strategies of three groups of heroin addicted clients at 12 months post-treatment (Gossop et al., 2002). The three groups consisted of a relapse group, a lapse group, and an abstinent group. The abstinent group tended to increase use of all three types of coping strategies assessed in the study (avoidant, cognitive, distraction)

compared to when they started treatment. The relapse group's use of coping skills remained at baseline level and the lapse group showed a moderate rise in use of coping skills.

The typology of the RP model has not received strong research support. However, RP has received empirical support for constructs from the model as well as its clinical efficacy. RP also includes a Covert Antecedents model of relapse that will be discussed in the following section. In this model, lifestyle imbalance plays a primary role in relapse.

Marlatt (1985b) created a model of "covert" precipitants of relapse that is based on lifestyle balance. In other words, lifestyle imbalance can lead the addicted person into a high risk situation that begins the relapse process. In the Covert Antecedents model, lifestyle imbalance is defined as when a person's "shoulds" or responsibilities significantly outweigh their "wants" or things one enjoys. A state of lifestyle imbalance results in a need for pleasure which then leads to either cravings and positive outcome expectations of substance use, or forms of denial and "apparently irrelevant decisions". Apparently irrelevant decisions refers to a stage of the relapse process in which the person makes decisions in which he or she unknowingly ends up in a high risk relapse situation (Carroll, 1998). For example, an alcohol dependent person with one year of sobriety and no direct intention of relapsing, elects to meet some of his former drinking buddies for coffee, goes with them to a restaurant afterwards, decides to join them in having one drink, and ends up on a three day alcohol binge. Cravings and positive outcome expectancies can also cause denial and apparently irrelevant decisions. Both the

craving and denial phases can result in the addicted person placing him or herself in a high risk relapse situation (Marlatt, 1985b).

Marlatt (1985a) addressed the clinical implications of the Covert Antecedents model in his writings on “lifestyle modification.” He noted the importance of conducting a lifestyle assessment with the substance abusing client to evaluate daily stressors and positive experiences, ability to manage stress, and moderation between the “wants” and “shoulds” of daily living. Marlatt (1985a) described the purpose of a “lifestyle modification” program with recovering persons. He stated the main intention of lifestyle modification is to lessen the likelihood of relapse. However, the goal of lifestyle intervention differs from the goal of helping the client learn skills to maintain abstinence in situations that can trigger a relapse. Rather, lifestyle intervention helps the client develop a broader set of ways/competencies to handle stressors and numerous relapse risks.

Marlatt’s (1985a) lifestyle modification intervention centers on the concept of moderation. The use of novel pleasant activities produces moderation between “wants” and “shoulds” and results in feelings of accomplishment that are important during the grief process of ending one’s substance use. Self-efficacy improves as lifestyle changes are implemented and maintained which can transfer to the recovering person’s ability to abstain from substances in the face of high-risk relapse scenarios. Marlatt (1985a) stated that the client’s bio-psycho-spiritual quality of life increases and the client experiences a lifestyle of wellness rather than a lack thereof. He noted that exercise, relaxation, progressive muscle relaxation, meditation, biofeedback and self-hypnosis can be used as

lifestyle interventions, thus strengthening both general coping skills and relapse prevention skills.

Research on the efficacy of lifestyle interventions has lent support to the Covert Antecedents model of RP. For instance, research by Marlatt and Marques (1977) and Marlatt, Pagano, Rose, and Marques (1984) examined the effects of progressive muscle relaxation, meditation, and bibliotherapy on the drinking behavior of heavy drinkers with no desire to address their drinking habits. Alcohol consumption decreased by 50% in each treatment group relative to control condition subjects who received no intervention. Results also showed an increase in internal locus of control at the time of the intervention indicating a possible correlational or mediating relationship between locus of control and drinking behavior. Marlatt (1985a) noted this study demonstrates the potential of relaxation in addressing drinking behavior.

Despite research on the efficacy of lifestyle interventions, the Covert Antecedents model has yet to be tested directly. Research exploring the relationships and interactions among the model's constructs could provide further insight. The RP model (Marlatt, 1985b) has since been updated to the Dynamic Model of Relapse (DMR) (Witkiewitz & Marlatt, 2004). Notably, lifestyle factors are not included in the updated model. A description of the DMR is presented in the following section.

Dynamic Model of Relapse (DMR)

Witkiewitz and Marlatt (2004) have revised Marlatt's (1985b) Relapse Prevention (RP) model in an effort to fuse the different aspects of his previous conceptualization into a single, interactive model that illustrates the complexity of relapse. The Dynamic Model

of Relapse (DMR) portrays the influence of different relapse factors on each other including mediating and contextual factors. The (DMR) identifies several relapse factors; distal risks are pretreatment issues that make one vulnerable to relapse. Tonic processes refer to the aggregation of relapse vulnerabilities and include distal risks, cognitive processes, and physical withdrawal. “Phasic response [dotted border] incorporates situational cognitive, affective and physical states, and coping skills utilization” (Witkiewitz & Marlatt, 2004, p. 230). Tonic and phasic processes overlap graphically showing that certain constructs can be both a tonic process and phasic response.

In the Dynamic Model of Relapse, distal risks directly or indirectly affect all aspects of the model which reflects literature on the influence of pre-treatment factors such as number of times in treatment, employment, medical problems, or co-occurring mental health issues on relapse (Alemi, Stephens, Llorens, & Orris, 1995). Physical withdrawal is connected to all constructs in the model with the exception of coping behavior. Cognitive factors such as self-efficacy and motivation are shown to be directly impacted by physical withdrawal and distal risks, and to have a reciprocal relationship with substance use behavior, affective state, and coping behavior. Reciprocal relationships with emotional state exist with substance use behavior, coping behavior, and cognitive processes. Coping behavior lies in the phasic response or “turning point” portion of the model suggesting that it can mediate the occurrence of a relapse even if distal and tonic phase factors are stacked against a person. Coping is impacted by distal risks and is interrelated with affective state, cognitive processes, and substance use behavior.

The strengths of the RP and DMR are multiple. Although research on the reliability and validity of RP is mixed, use of the models in clinical practice (particularly RP) have demonstrated efficacy regarding treatment outcomes. Unlike stress models of relapse, RP specifies a process whereby deficits in holistic wellness in conjunction with other risk factors can result in relapse. The DMR also represents a comprehensive conceptualization of relapse that accounts for several empirically supported domains that impact relapse including distal, intrapersonal, and interpersonal factors. However, the RP model and DMR suffer from several potential weaknesses.

The DMR fails to directly include holistic wellness as a relapse factor. Although wellness is included in the Covert Antecedents model of the RP, the lifestyle model as a whole has not been directly tested. It also does not appear that the impact of emotion regulation was considered in development of the RP or DMR. Initial research has demonstrated that the ability to self-regulate is a significant buffer against relapse in spite of the experience of stressors, negative emotions, and other intrapersonal, interpersonal, and distal factors. Other wellness components that influence substance use such as spirituality, social support, physical health, and self-worth are absent from the DMR. For instance, Hunter-Reel et al., (2009) report that “The behavior of individuals with AUDs does not occur in a vacuum and may be understood as a result of interactions between intra-individual processes and contextual factors” (p. 1283). They add that social support and interpersonal functioning impact each of the intrapersonal aspects of the Dynamic Model of Relapse and yet are not included.

The holistic nature of wellness models allows for the incorporation of many heretofore unaddressed variables in relation to issues of substance use and relapse. This is especially important for counselors since wellness theory and models provide a foundation for strength based interventions that potentially benefit substance abusing populations. In the following section, a variety of wellness models and definitions will be discussed with an emphasis on counseling based models of wellness, wellness research, and research on wellness and substance abuse.

Wellness Theory and Models

Wellness is a concept and way of life that has been influenced by the efforts of several disciplines. Holistic wellness impacts the overall quality of life of persons whether reducing complications of existing disease processes or serving a preventative function against mental and physical problems (Ardell, 1977; Hettler, 1980). Researchers and clinicians identified that well-being and lifestyle also affects the recovery of substance abusing persons (Gorski & Miller, 1986; Marlatt & Gordon, 1985; Newport, 2004). Substance abusers engaging in wellness interventions may be less likely to relapse and additionally, report higher quality of living (Wesp et al., 2010). In this section, wellness concepts will be defined, including a description and analysis of models and research as it relates to other constructs and persons with SUDs.

The health fields have been prominent in describing the wellness construct (Myers & Sweeney, 2005a). Operationalizing this construct is important in conducting research and incorporating wellness concepts into health care and counseling practice.

The following wellness definitions illustrate both the commonalities and uniqueness of this term including a definition of wellness proposed by the counseling field.

A definition of health serves as a starting foundation to exploring the concept of wellness, given that “health” is often a component of definitions of wellness. The World Health Organization (n. d.) defined health as the following: “Health is a state of complete mental, physical, and social well-being, and not merely the absence of disease or infirmity”. This differs from earlier conceptualizations of health and represents a shift from only treating disease and symptoms while neglecting the human potential to thrive.

The Merriam Webster Dictionary (2011) defined wellness as “the quality or state of being in good health especially as an actively sought goal <lifestyles that promote wellness>.” In 1972, Travis differentiated wellness from being disease free (Wellness Associates, 2011). He developed a wellness continuum consisting of disease at one extreme of the continuum, health (the state of being disease free) in the middle of the continuum, and wellness at the opposite side of the continuum. One can strive for wellness through education, growth, and awareness. Travis, Callander, and Ryan’s (Wellness Associates, 2011) definition of wellness is comprised of several notions: A wellness lifestyle develops intentionally, changing and unfolding across the lifespan. It also involves a mutual relationship between oneself and the system in which one exists, a holistic merging of mind, body, spirit, and emotions, and validation and care for oneself.

Ng et al. (1981) also distinguished wellness from disease. The authors described wellness as a dynamic concept that persons can be educated in which occurs over the lifespan. Wellness is the combination of environmental, physical, behavioral,

psychological, and social factors. The National Wellness Institute (NWI) described wellness as a beneficial, multifaceted, and intentional. Specifically, the NWI defined wellness as “. . . an active process through which people become aware of, and make choices toward a more successful existence” (NWI, 2011a, para. 5).

The field of counseling also created a definition of wellness (Myers & Sweeney, 2005a). Myers et al. (2000) defined wellness as the following:

a way of life oriented toward optimal health and well-being, in which body, mind, and spirit are integrated by the individual to live life more fully within the human and natural community. Ideally, it is the optimum state of health and well-being that each individual is capable of achieving. (p. 252)

According to this definition, wellness is a lifelong striving towards well-being in all aspects of living (Myers & Sweeney, 2006).

The above wellness definitions indicate themes of holism and intentional lifestyles focused on a high quality of living rather than not being sick. These definitions form the basis of a variety of models of well-being arising from multiple disciplines. Each model contributes to our understanding of holistic well-being; however, some are more useful in relation to issues of substance use and relapse.

Several models of wellness have been proposed across the helping disciplines. These include models from the health and medical field as well as counseling. The most widely used models include Hettler’s six dimension model of wellness (NWI, 2011b; Hettler, 1980, 1984), Ardell’s (1977) five domain model of wellness, the Positive Psychology model of well-being (Ryff & Keyes, 1995; Seligman & Csikszentmihalyi, 2000), the Wheel of Wellness Model (Myers et al., 2000), and the Indivisible Self Model

of wellness (Myers & Sweeney, 2004). These models will be deconstructed including their component parts, assessments based on the models, and research findings on the models.

Hettler's Hexagon

The NWI, co-founded by William Hettler, uses a six dimension model of wellness with the following components: physical, spiritual, intellectual, social, emotional, and occupational (NWI, 2011b; Hettler, 1980, 1984). The components of this model are termed “interdependent” meaning that changes in any area(s) of wellness can affect the other dimensions. Holism and balance are emphasized as key pieces to a person living well. Social wellness refers to fostering relationships and support systems in which one resides. Intellectual wellness entails proactive problem-solving, satisfaction with one's cognitive life, and using one's mental capacities to help others. Physical wellness is a level of exercise, nutrition, and self-care that encourages well-being. The Spiritual dimension of wellness is living a life that aligns with one's values and striving for “meaning and purpose.” The Occupational wellness dimension pertains to fit between one's work, values, and abilities which results in a sense of fulfillment. Emotional wellness is the ability to connect with one's feelings, utilize emotions in a beneficial way, and the aptitude to experience and cope with one's feelings.

Hettler's (1980, 1984) six dimension model resulted in numerous assessments, although most of these measures have not been investigated empirically. The reliability and validity of the high school edition of the Testwell (TWI-HS) (NWI, 1994), a wellness assessment based on Hettler's model, was examined in a study of 437 high school

students. Most of the students took a three month wellness course, while the remaining students had not been exposed to the curriculum (Stewart, Rowe, & LaLance, 2000). Reliability, validity, and factor structure were not supported by the study. The six dimensions of The NWI model were also not supported by research on the Lifestyle Assessment Questionnaire (LAQ; NWI, 1983) which revealed a two factor structure involving the constructs, “cognitive wellness” and “behavioral wellness.” A study comparing results of the Lifestyle Assessment Questionnaire (LAQ) to physiological measures such as body fat and blood pressure showed a weak relationship; in other words, one’s perception of physical wellness does not necessarily equate to objective assessments of physical health (DeStefano & Richardson, 1992). However, Palombi (1992) found internal reliability of .93 for the LAQ. It appears that Hettler’s Hexagon consists of face validity, yet thus far has not been supported or thoroughly examined empirically. Further, Hettler’s professional background is from the health fields and thus his model lacks a counseling perspective. Ardell’s (1977) wellness model shares several components of Hettler’s model, but provides additional insight into this construct. Ardell’s conceptualization of wellness is presented in the following section.

Ardell’s Components of Wellness

Don Ardell is considered a pioneer in the study of wellness. His initial components of wellness include self-responsibility at the core of the circular model which is encompassed by nutritional awareness, stress management, physical fitness, and environmental sensitivity (Ardell, 1977). He posited that self-responsibility (a sense of culpability for one’s own well-being) is possibly the most critical aspect of wellness in

that it serves to drive and direct wellness behaviors. Nutritional awareness involves balancing the quantity and quality of food intake. Stress management is the ability to cope and thrive in spite of the life experiences that trigger the stress response. Physical fitness is the consistent engagement in exercise and related activities. Environmental sensitivity is an understanding of the interaction among physical, social, and personal factors; in other words, connectedness to the reciprocal relationships among oneself, one's social systems, and nature (Ardell, 1977).

One of Ardell's (2001) conceptualizations of wellness entails physical, mental, and meaning and purpose components; the physical component is comprised of exercise and nutrition, appearance, adaptations/challenges, and lifestyle habits. The mental component consists of emotional intelligence, effective decisions, stress management, factual knowledge, and mental health. The meaning and purpose factor pertains to relationships, humor, and play. Myers and Sweeney (2005a) note however, that "Ardell's models emphasized the dissemination and use of his models rather than studies to provide empirical support for the hypothesized components and their relationships" (p. 11). Similarly to Hettler, Ardell is a health professional and thus his wellness conceptualization is not from a counseling viewpoint.

Positive Psychology

Psychology has experienced a recent shift away from a focus on pathology to an emphasis on identifying and nurturing strengths, building positive emotions and experiences, and living happily rather than merely existing (Seligman & Csikszentmihalyi, 2000). The field of positive psychology, spearheaded by former APA

president Martin E. P. Seligman, has been a force in the study and fostering of strengths, happiness, and well-being (Seligman & Csikszentmihalyi, 2000). This new lens has given attention to the ability of strengths and happiness to not only improve a person's quality of life, but also to protect from psychological and physical problems. Evidence is growing that positive psychology constructs may serve a protective role against psychopathology and stressors (Seligman & Csikszentmihalyi, 2000; Sparks & Baumeister, 2008). Sparks and Baumeister (2008) noted that negative phenomena often have more effect than positive events, thus it is critical to learn to utilize strengths and experience the positive in life. Concepts from positive psychology hence, have contributed significantly to wellness study and merit further discussion.

In his seminal text *Authentic Happiness* (2002), Seligman discussed how positive emotion, engagement, and meaning are necessary for achieving a state of happiness. Positive emotions (the pleasant life) are explored from a past, present, and future framework in which domains of emotion in each time frame that nourish happiness are identified (Rashid, 2008). Engagement is a striving to involve oneself in behaviors in which "attention is completely focused on the activity" (Rashid, 2008, p. 197). Persons experiencing meaning in their lives find ways to pursue goals and activities that fulfill their values and what is most important to them. From these constructs, positive psychotherapy (PPT) has been developed with the idea that psychological disorders, particularly depression and its symptoms can be addressed via interventions focusing on the above three areas (Rashid, 2008). Empirical research on PPT shows promise for the

impact of positive psychology concepts on well-being (Duckworth, Steen, & Seligman, 2005; Seligman, Rashid, & Parks, 2006).

In two intervention studies, Seligman et al. (2006) examined the effectiveness of positive psychotherapy (PPT). The first study compared PPT recipients to a no treatment control group for undergraduate study participants with mild to moderate depression (Seligman et al., 2006). PPT was more successful at alleviating depressive symptoms and improving life satisfaction than the control group. Additionally, these effects were maintained at a one year follow up. In study two, PPT was compared against a treatment as usual and a treatment as usual with medication control groups with study participants with major depression. PPT groups scored lower than the two control groups on depression measures although no significant differences were found between treatment and control regarding life satisfaction (Seligman et al., 2006).

The Positive Psychology movement shows promise as evidenced by initial studies using PPT. The field of Positive Psychology has contributed to an increased understanding of emotional functioning which may be a key aspect of relapse prevention and overall well-being. However, the Positive Psychology model focuses on primarily one facet of wellness: emotional health. The Positive Psychology model fails to include factors such as physical health, self-care, spirituality, social support, and occupational satisfaction. Cowen and Kilmer (2002) critiqued Positive Psychology regarding “the movement’s current lack of cohesive guiding-theory” (p. 451), disconnect from prior progress in the study of wellness, problems with building a coherent empirical strategy for testing the model, and lack of attention to developmental processes.

Counseling models of wellness address several of Cowen and Kilmer's (2002) concerns about the Positive Psychology model. Wellness in counseling models are based on Adlerian theory, thorough reviews of interdisciplinary literature on well-being, a growing foundation of research, and consideration of factors across the lifespan (Myers & Sweeney, 2008). Two empirical models of wellness in counseling (Wheel of Wellness Model and Indivisible Self Model) will be presented along with research on the models and a review of the counseling literature on wellness.

Wheel of Wellness Model

The counseling field has been critical in the development of wellness research and practice (Myers, 1992). The aforementioned wellness models are foundational in establishing this concept, however, their corresponding measures and applications are geared towards the health professions and thus pose a challenge for counselors seeking to use these models with their clients (Hattie et al., 2004). In 1990, Sweeney and Witmer created the Wheel of Wellness Model, a conceptual model of wellness, based on Alfred Adler's life tasks of work, friendship, and love (Sweeney & Witmer, 1991). Sweeney and Witmer researched interdisciplinary conceptual and empirical information ranging from anthropology, psychology and human development, to behavior medicine as well as the qualities of healthy persons to establish their wellness paradigm (Myers et al., 2000; Witmer & Sweeney, 1992). Spirituality (life task 1) was placed at the center or hub of the wheel and thus represented the focal point from which all other components of wellness emanate (Witmer & Sweeney, 1992). Spirituality involves a sense of connectedness to the world and one's internal spiritual life. It consists of oneness, inner life,

purposiveness, and values. The second order wellness factor, self-regulation (life task 2), refers to one's ability to seek and attain objectives in a way that fosters well-being. The components of self-regulation include the following: Physical health, creativity, sense of control, sense of humor, sense of worth, realistic beliefs, spontaneity, emotional responsiveness, physical fitness, health habits, intellectual stimulation, problem-solving, and creativity. The role of these constructs can be likened to the function of the spokes of a wheel (Witmer & Sweeney, 1992).

The outer portion of the wheel is composed of work (life task 3), friendship (life task 4), and love (life task 5) (Witmer & Sweeney, 1992). Life forces are contextual influences that can have a systemic impact on well-being such as community, government, family, media, business/industry, religion, and education. Finally, global events lie outside of the life forces and surround the Wheel of Wellness representing the effects of worldwide events on wellness (Witmer & Sweeney, 1992).

Through the development of the Wellness Evaluation of Lifestyle (WEL) inventory, a database was gathered and the Wheel of Wellness was revised based on factor analysis (Hattie et al., 2004; Myers et al., 2000). The "work" factor was separated into two tasks; work and leisure. Analysis of WEL data and clinical experiences resulted in "self-regulation" changing the term to "self-direction" and splitting it into 12 sub-factors: (a) sense of worth, (b) sense of control, (c) realistic beliefs, (d) emotional awareness and coping, (e) problem-solving and creativity, (f) sense of humor, (g) nutrition, (h) exercise, (i) self-care, (j) stress-management, (k) gender identity, and (l) cultural identity. Further, the authors noted an interrelatedness among the wellness tasks

and subtasks so that increases or decreases in one area therein impacts other areas of well-being (Myers et al., 2000).

In a study of the psychometric properties of wellness assessments, Palombi (1992) noted the possibility of wellness as a single higher order factor across wellness models. This foreshadowed the next phase in the evolution of counseling based wellness models. Data continued to be gathered on the Wheel of Wellness Model until structural equations modeling was conducted on the Wheel of Wellness Model that sparked a revision of the model. Hattie et al. (2004) found that the factor structure of the Wheel of Wellness was not supported when subjected to exploratory and confirmatory factor analyses. Factor analysis results showed a single higher order wellness factor with five second order factors and seventeen third order factors. The Wheel of Wellness was updated to The Indivisible Self Model of Wellness (Myers & Sweeney, 2004); a research-based model.

Indivisible Self Model of Wellness

The Indivisible Self Model is a research based model of wellness formulated on the premise that all components of wellness integrate to yield a unified construct (Myers & Sweeney, 2008). Adlerian theory was used as the basis for the three level factor structure of the model including the concept of interconnectedness (Indivisibility) among the components (Myers & Sweeney, 2004). In other words, wellness does not exist without each component and, moreover, it is the relationship among the aspects of wellness that comprises the construct. Research revealed a higher order wellness factor comprised of five second order factors and 17 third order factors as well as retaining a foundation of contextual factors identified in the original Wheel of Wellness Model. The

revised wellness measure called the Five Factor Wellness Inventory (5F-Wel) and Indivisible Self Model have been used in a plethora of studies as well as counseling and treatment planning (Myers & Sweeney, 2005a).

The second order factors are Creative Self, Coping Self, Social Self, Essential Self, and Physical Self. The Creative Self “is the combination of attributes that each of us forms to make a unique place among others in our social interactions” (Myers & Sweeney, 2006, p. 10). The Creative Self is comprised of third order factors, thinking, emotions, control, work, positive humor. The Coping Self enables people to navigate challenging life experiences and includes leisure, self-worth, stress management, and realistic beliefs. Social Self consists of friendship and love (two of Adler’s life tasks). The Essential Self allows a person to make sense of life events and is derived from spirituality, gender and cultural identity, and self-care. The Social Self refers to the social supports in one’s life, related to friendship and love. Wellness in the Physical Self involves both exercise and nutrition (Myers & Sweeney, 2005a, 2006). Contextual variables of local, institutional, global, and chronometrical describe the systemic forces that can impact well-being. Local variables include the impact of family, neighborhood, and community on wellness. Institutional variables include education, religion, government, and business/industry. Global factors include politics, culture, global events, environment, and media. Chronometrical (lifespan) variables of perpetual, positive, and purposeful represent the accumulation of standards of living practices across a person’s lifetime (Myers & Sweeney, 2005a).

The WEL assessment was revised to the 5F-Wel in conjunction with the development of the wellness model. This measure has demonstrated reliability for Total Wellness (.94) (Myers & Sweeney, 2004) and a Cronbach's alpha coefficient will be calculated for the study. Internal consistency for the 5 second order factors averages to .92. The Cronbach's alpha range for the 17 third order factors is .79 to .88. The third order factors loaded onto the five second order factors ranging from .35 to .91. The second order factors loaded onto the single wellness factor ranging from .51 to .98 with Work and Realistic Beliefs showing the lowest factor loadings (.26 and .25, respectively) (Myers & Sweeney, 2004). Divergent validity was demonstrated between the Coping Self scale (which includes self-worth, realistic beliefs, leisure, and stress management) and measures of body shame (Sinclair & Myers, 2004) in a sample of 272 college women. Research by Gibson and Myers (2006) examining stress, wellness, and mattering among 234 first-year Citadel cadets showed convergent validity between 5F-Wel Total Wellness scores and General Mattering scale (Marcus, 1991) scores ($r = .394, p < .002$).

The 5F-Wel has several potential limitations. This measure has not been normed using addicted populations of persons with clinical level physical and mental health concerns (Myers & Sweeney, 2008). Additionally, DeMauro (2004) stated that the 5F-Wel over-emphasizes the person's perception of their own wellness in the absence of a behavioral measure of whether the person is actually enacting the "well" behavior that they perceive. Lonborg (2004) elaborated on this point noting, ". . . many of the 5F-Wel items appear to measure perceived satisfaction rather than wellness behaviors per se."

Another concern is the lower factor loadings on wellness subcomponents such as realistic beliefs (DeMauro, 2004).

Counseling models of wellness demonstrate a theoretical foundation and initial empirical support. It is critical to investigate research using counseling models of wellness to determine empirical support for the construct. The conceptual properties of a counseling model of wellness have evolved as research increases on the topic. Studies on the psychometric properties of wellness measures also have strengthened wellness based models. The following section will detail empirical research conducted using the Wheel of Wellness or Indivisible Self Models as conceptual foundations and the 5F-Wel as a measure of wellness. Studies will be examined that explore wellness as an outcome variable, predictor variable, and as a construct that correlates with other variables. .

Wellness Research

The Wheel of Wellness and Indivisible Self Models of wellness have been incorporated in numerous studies using designs ranging from correlational to outcome research. Wellness is often used as the dependent or outcome variable in studies (e.g., Rayle & Myers, 2004). Thus there is a growing body of information on how different phenomena affect wellness. Wellness has been used as an independent or predictor variable (e.g. Connolly & Myers, 2003) and is also frequently correlated with other variables and used as a descriptive variable so that the wellness of different groups can be compared (e.g. Gibson & Myers, 2006; Myers & Mobley, 2004).

As previously stated, research has begun to examine variables that are correlated with wellness. Sinclair and Myers (2004) examined associations between body image

perceptions and wellness among 272 college women. Results indicated that study participants scored highest on Social Self and lowest on Physical Self. The largest association occurred between body shame and Coping Self. In other words, female college students with more body shame tended to be lower in self-worth, realistic beliefs, leisure and stress management (third order factors composing Coping Self). Analysis of variance results showed that participants classified as normal weight and overweight according to Body Mass Index experience greater body shame than those that were underweight. These results support construct validity for wellness although the wellness results must be interpreted with caution due to the correlational nature of the research. Wellness differences among populations are a topic in the literature. Wellness differences were examined between 1,249 traditional and 318 non-traditional age college students as well as a norm group of non-student adults (Myers & Mobley, 2004). Statistical analyses showed that non-traditional age ethnic minority students had lower Total Wellness scores than Caucasian traditional age students. College students as a whole had lower scores than non-student adults on 11 of 23 different aspects of wellness (Myers & Mobley, 2004). Thus wellness has been compared across populations using large sample sizes. Results of such research enable the development of programming to support the research participants.

Gibson and Myers (2006) studied stress, wellness, and mattering among first-year Citadel cadets, replicating an earlier study by Myers and Bechtel (2004) with first year cadets at West Point. The 5F-Wel (Myers & Sweeney, 2004), the Perceived Stress Scale (PSS) (Cohen et al., 1983), and the General Mattering Scale (GMS) (Marcus, 1991) were

administered to 234 Citadel cadets. Results showed a negative correlation ($r = -.229, p < .002$) between nutrition and perceived stress and a positive association ($r = .141, p < .002$) between exercise and perceived stress. Total Wellness and mattering were correlated at $.394 (p < .002)$. This research had implications for curriculum and program needs for these cadets (Gibson & Myers, 2006).

Wellness has also been used as the independent or predictor variable in some studies including research on the effects of wellness and mattering on job satisfaction (Connolly & Myers, 2003). The study of 82 employees assessed wellness using the Wellness Evaluation of Lifestyle (WEL) (Myers et al., 2000), mattering using the General Mattering Scale (Marcus, 1991), and job satisfaction using the Job Descriptive Index (JDI) (Balzer et al., 1997). Multiple regressions showed that wellness above and beyond mattering contributed to the variance in job satisfaction. However, variance contributions from wellness and mattering were not significant once variables such as skill variety were included in the regression. The study may have garnered different results using the 5F-Wel (the revision of the WEL) and a larger sample size.

Another study sought to understand the predictive ability of wellness, household income, and educational level of the life satisfaction of 81 lesbian women (Degges-White & Myers, 2006). The three variables explained 29% of the variance in life satisfaction for lesbian women with only wellness making a statistically significant addition to the variance. Wellness, household income, and educational level contributed to 25% of the variance in life satisfaction for the 126 heterosexual women in the study, with wellness and household income accounting for much of the variance in life satisfaction. Similar

wellness means were found for heterosexual and lesbian women (78.45, $SD = 3.75$ and 77.24, $SD = 7.24$, respectively) (Degges-White & Myers, 2006).

In an additional study using wellness as the independent variable, the 5 life tasks of the Wheel of Wellness model were examined for their predictive ability regarding state and trait psychological well-being among 155 college students (Hermon & Hazler, 1999). Multivariate regression revealed that work, recreation/leisure, friendship, and self-regulation tasks accounted for the most variance in both state and trait psychological well-being. This study supports the construct validity of wellness and is another example of the predictive ability of wellness in regards to psychological phenomena.

Several studies have examined wellness as a dependent or outcome variable. For example, one study explored factors influencing the wellness of high school students including racial minority status, acculturation, ethnic identity, and mattering (Rayle & Myers, 2004) with a sample of 176 minority and 286 nonminority students. In this study structural equations modeling was used to determine if the above constructs relate and collectively account for variance in wellness. The path model for all students showed that the three variables accounted for a significant amount of variance in wellness although mattering explained the most variance. In the path model for minority students, ethnic identity explained the most variance in wellness whereas the three factors were not predictive of wellness for nonminority adolescents.

Dew et al. (2005) used regression to examine a model of wellness in 488 adult gay males predicted by internalized homophobia and disclosure of sexual orientation. Nearly 35% of the variance in wellness was accounted for by the two variables.

Differences in study variables were found between minority and nonminority participants, but no differences existed based on age. These two studies illustrate the use of wellness as a dependent variable in model formation using both regression and structural equations modeling. Quasi-experimental and case study designs have been used to assess the effects of wellness-based interventions.

For example, Choate and Smith (2003) found that incorporating wellness-based material in a first year college student success course with 59 students increased wellness for these participants. Moreover, study results suggested that students demonstrated wellness progress in the specific components of wellness they chose to address throughout the course. Students were successful in anticipating whether their well-being improved, declined, or stayed the same. This finding is particularly promising because it supports intentionality as a key aspect of wellness and also indicates favorable construct and face validity to wellness.

A case study used pre and posttest measures to examine improvements in well-being of a 13-year-old student with Asperger's Disorder using a wellness counseling intervention (Moorhead et al., 2008). Results showed improvements in Physical Self wellness (one of two areas of wellness targeted for intervention) but decreases in Creative Self (the second target area). A classroom guidance wellness intervention for 55 fifth-grade students yielded increases in the Creative, Social, and Physical Self second order wellness factors which were targeted in the three-session approach (Villalba & Myers, 2008). The one-third of students with the lowest pre-intervention wellness showed

significant wellness increases whereas the one-third of students with the highest pre-test wellness scores did not have increased wellness scores.

A quasi-experimental study of the effects of five sessions of wellness counseling with sixty police officers showed increases in wellness scores for the treatment group as compared to the control group in Creative Self, Social Self, Coping Self, and Physical Self with no effects of self-efficacy on wellness nor any pre-test/post-test shifts in stage of change in the wellness intervention group based on self-efficacy (Tanigoshi et al., 2008). Wellness interventions show promise but have not been sufficiently researched to demonstrate conclusive efficacy.

Overall, research on wellness as an intervention, process, or outcome variable is increasing. Wellness research has incorporated some diversity in study design and analysis, however, there is a lack of data on the efficacy of wellness approaches in counseling and no research was identified exploring wellness with clinical populations (Myers & Sweeney, 2008). Much of the wellness research is with college student populations and is often examined in relation to the same constructs such as mattering. As wellness research increases, studies examining wellness in models (e.g. Rayle & Myers, 2004), interventions (Tanigoshi et al., 2008), diverse populations, large sample sizes, and meta-analyses will further the knowledge base on this construct.

Whereas the above section on wellness research offered evidence of wellness applications across several populations and counseling topics, studies on wellness and substance abuse are scarce. However, research has been conducted on the topic and additionally, many studies exist on wellness related interventions for substance abusing

persons. Wellness is also a component of several evidenced-based practices for substance abuse treatment.

Wellness and Substance Abuse

Minimal literature exists that establishes the relationship between wellness and relapse. However, numerous studies have been conducted on wellness-based interventions for addicted persons and several proven addiction approaches have utilized wellness-based interventions as relapse prevention (e.g. Newport, 2004). This information lends some support to the hypothesis that wellness is a predictor of relapse. Research on wellness and substance abuse will be presented as well as studies on wellness related interventions for substance abuse clients and treatment modalities that incorporate wellness.

Two studies examining college student drinking and wellness are among the first to explore wellness and substance use directly. Lewis and Myers (2010) administered the Five Factor Wellness Inventory (5F-Wel) and the Alcohol Use Survey to 110 college students and found that Coping Self and Essential Self were related to substance use. Within the Coping Self, the third order factor, Realistic Beliefs (ability to perceive one's experiences realistically), was inversely related to substance use. A follow up study by Lewis and Myers (in press) examining the relationship between wellness and drinking and driving in a sample of 110 college students found that Coping Self (ability to negotiate environmental demands) and Physical Self (exercise and nutrition) factors were associated with decreased drinking and driving.

Outcome studies on wellness interventions for substance abusing clients have shown promise. Wellness Management and Recovery (WMR) is a 10 session recovery program for persons with severe and persistent mental illness including those with co-occurring substance abuse and mental health concerns (Wesp et al., 2010). Participants in an efficacy study of WMR showed increases in social support, quality of life, and goal progress. Nearly 46% of participants reported increases on the mental health recovery measure at six month follow-up.

Wellness related approaches for substance abusing clients are being developed. For example, John Newport's *Wellness-Recovery Connection* (2004) is a resource for utilizing wellness interventions to enhance the recovery process and prevent relapse. Myers, Clarke, Brown, and Champion (in press) described a method for integrating Motivational Interviewing and Wellness counseling as an intervention for substance abusing clients. The Indivisible Self Model was used as a foundation for assessment, treatment planning, and intervention. A plethora of research exists on the efficacy of wellness related interventions on substance abuse outcomes. For instance, several studies examined the effects of exercise on those who use substances. Research on a 12 week exercise program with alcohol dependent persons involved in outpatient treatment yielded increases in duration of abstinence which were maintained at the 3-month follow-up (Brown et al., 2009). One study examined the effects of aerobic exercise on drinking among participants identified as heavy drinkers not seeking to change their drinking (Murphy, Pagano, & Marlatt, 1986). A control group and a meditation group were also included in this research. Only the walking/running condition demonstrated reductions in

drinking greater than the control group. Alcohol consumption reductions for the exercise group were maintained at follow-up and more than half of the participants in both the exercise and meditation conditions had sustained these activities at some level (Murphy et al., 1986).

Research on the effects of ten minutes of either moderate or light exercise on alcohol urges with alcohol dependent persons showed a decrease in urge in the moderate exercise condition during the exercise session only (Ussher, Sampuran, Doshi, West, & Drummond, 2004). Janse Van Rensburg, Taylor, Hodgson, and Benattayallah (2009) also administered a 10-minute moderate exercise intervention to 10 habitual cigarette smokers and a control condition of sitting passively. Self-reported cravings were measured before, during, and after each condition as well as an fMRI during which subjects observed cigarette cues. Results showed a reduction in cigarette craving during and after exercise compared to the control condition. This was corroborated by fMRI images indicating a lack of activation in parts of the frontal cortex after exercise which may suggest a minimization of craving (Janse Van Rensburg et al., 2009). Further, a 5-minute isometric exercise or 10-minute body scan decreased cigarette craving and withdrawal symptoms compared to a control group (Ussher, Cropley, Playle, Mohidin, & West, 2009). Symptoms lasted for up to 30 minutes following the activity in the laboratory and five minutes after the intervention in the participants' home environment (Ussher et al., 2009).

The practice of meditation has spurred recent interest regarding its potential as an addiction intervention. An investigation on the impact of a 10-day Vipassana Meditation course on primarily alcohol using short-term incarcerated persons showed reductions in

marijuana, cocaine, alcohol use, and psychiatric symptoms at three month follow-up as well as increases in optimism and locus of control (Bowen et al., 2006). A pilot study of an 8-week Mindfulness Based Relapse Prevention (MBRP) program showed substance use declines and lower levels of craving immediately after MBRP program completion and two month follow up relative to treatment as usual. However, there were minimal differences in rates of substance use at 4-month follow-up between the MBRP group and the treatment as usual group (Bowen et al., 2009).

Electroencephalogram (EEG) biofeedback is another relaxation approach that has been incorporated into addiction treatment (Marlatt, 1985a; Sokhadze et al., 2008; Trudeau, 2005). EEG biofeedback with addicted persons entails first using a protocol similar to one for persons with attention-deficit problems, then subsequently using alpha and theta brain waves to induce a hypnagogic state, directing the addicted person to visualize positive recovery images (Sokhadze et al., 2008). A study on the use of biofeedback with substance abusing persons in inpatient treatment showed lower relapse rates, longer duration of remaining in treatment, and improvements in measures of attention and the Hypochondriasis, Depression, Conversion Hysteria, Schizophrenia, and Social Introversion scales of the MMPI 2 (Scott, Kaiser, Othmer, & Sideroff, 2005). A review of research on biofeedback with substance use disorders shows positive results across several types of study design (Sokhadze et al., 2008). Addiction treatment programs vary as to the level of wellness components that are incorporated and the amount of treatment time devoted to lifestyle. Minnesota Model treatment involves a five-stage evaluation consisting of social, recreational, and spiritual evaluations and

treatment planning (Doweiko, 2002). However, Minnesota Model programs that had the advantage of a multidisciplinary team to engage these diverse aspects of treatment are not as common given the effects of managed care (Doweiko, 2002). Outpatient programs often follow the Individualized Drug Counseling (Mercer & Woody, 1999) format, a cognitive-behavioral manual for treating cocaine addiction that can be used to treat other addictions. Wellness topics become more frequent when the client has moved through early recovery into “maintaining abstinence.” Other programs have a component of Twelve Step Facilitation (TSF) in which staff help clients begin to work the twelve steps, encourage meeting attendance outside of the program, and impart information on addiction as a disease of a spiritual, psychological, and biological nature (Humphreys, 1999). Community reinforcement approaches use behavioral interventions to engage clients in treatment and prevent relapse (Budney, Higgins, Mercer, & Carpenter, 1998; Meyers et al., 2005).

Lifestyle changes in the areas of family, recreation, social support, and employment are a significant part of treatment. From a review of the literature on wellness and substance abuse, there is support for the effect of wellness on addiction relapse. Wellness programs such as WMR and wellness related interventions suggest a relationship between wellness and relapse. However, the majority of the literature presented in this section involves utilizing components of wellness in addiction treatment rather than holistic wellness. Additionally, no studies were found examining relationships between holistic wellness and relapse. Further, research has not investigated a wellness model of relapse or a model that includes wellness as a component of relapse. For

instance, Marlatt's (1985b) Covert Antecedents model, which centers on lifestyle imbalance, has not been tested. The model proposes a relationship between lifestyle or wellness factors and relapse which are mediated by emotion regulation and cognitive-behavioral variables. It is critical then, to explore additional constructs that might compose a wellness model of relapse. Part of the core of the Wheel of Wellness is self-direction without which other wellness attitudes and behaviors cannot occur (Myers et al., 2000). Self-direction is also significant to a recovering person's aptitude to prevent relapse. Thus the ability to regulate one's behaviors and emotions is imperative to well-being and relapse prevention. Emotion regulation will be examined in the next section given its impact on attitude and behavior (Koole, 2009), reciprocal relationship to wellness (Geisler et al., 2010), and potential as a primary construct in a wellness model of relapse.

Emotion Regulation

Emotion regulation or "the processes whereby people manage their own emotions" (Koole, 2009, p. 1) is an important construct in psychophysiology since our ability to control our affect in turn impacts other aspects of functioning ranging from task performance to mood and impulse management (Frijda, 2007). For example, in addiction recovery, the management of emotions such as stress, negative moods, and cravings is imperative in maintaining sobriety (Tate et al., 2006). Studies suggest that the use of conscious emotion regulation strategies such as distraction, urge surfing, cognitive-restructuring (re-appraisal) can be effective in dealing with cravings without relapse (Carroll, 1998; Mercer & Woody, 1999). In the past, interventions such as exposure

therapy teach clients how to down regulate cravings without use of the substance (Cunningham, 1998).

Emotion regulation will be further defined by elaborating on models explaining emotion management including the Ego Depletion Model, the Process Model of emotion regulation, and the Integrated Model of Emotional Intelligence. Research on each model will be presented and evaluated. The impact of emotion regulation on well-being and the relationship between emotion regulation and substance abuse relapse will be discussed with each model.

Ego Depletion Model

The psychological literature has contributed greatly to the research on emotions and their impact in daily living. The Ego Depletion Model outlines the impact of acts of self-regulation on one's overall ability to exert consequent self-control (Baumeister et al., 1998). The model thus hypothesizes that exerting self-control or executive functioning can drain the self of its limited capacity for continued self-regulation. Self-regulation, often termed volition, entails “. . . controlling the environment, controlling the self, making choices, and initiative action” (Baumeister et al., 1998, p. 1253).

During the development of the Ego Depletion model, researchers conducted a series of experiments to explore its validity. Baumeister et al. (1998) examined whether various self-regulatory acts reduced ability to self-regulate. Studies included the impact of eating radishes rather than cookies on persistence during an unsolvable task, the effect of decision-making on an unsolvable task, the effect of emotion suppression on an answerable task, and the effect of a self-regulatory task on decision-making. All

experiments provided evidence of a decrease in self-regulatory or volitional ability following acts of self-regulation or volition (Baumeister et al., 1998).

The Ego Depletion Model was further tested by examining the impact of decision-making on one's ability to exert self-control (Vohs et al., 2008). The first in the series of experiments with 30 participants compared two experimental groups. Group one engaged in a task in which they made choices about consumer items and job options while group two (the no-choice group) did not have to choose between products. The participants' persistence on a task of consuming an aversive beverage was measured with results showing less self-control by the choice group who consumed less of the unpleasant drink.

Six additional studies were conducted to demonstrate a convergence and elaboration of the data on choice and self-control (Vohs et al., 2008). For instance, the second experiment which examined differences between a choice versus no-choice group on subsequent pain tolerance in 16 participants, showed a decrease in pain tolerance in the choice group. A subsequent experiment examined a group that made choices for 12 minutes compared to a 4-minute choice group and no-choice groups. The researchers assessed whether higher participant ratings of anticipated pleasantness of the task moderated the potential depletion effects of making more choices ($N = 110$). Results showed that more choices yielded more self-control depletion and pleasantness of task only reduced self-control depletion among the participants who had to make fewer choices (Vohs et al., 2008). Altogether, this series of experiments supports the theory of self-regulation as a limited resource.

Gailliot, Baumeister, et al. (2007) conducted a panel of research to garner physiological evidence of the Ego Depletion Model. Blood glucose level has been noted as an indicator of self-control exertion (Gailliot, Baumeister, et al., 2007). It was used as an outcome variable and an independent variable in the following studies. The first six studies established that blood glucose decreases when participants complete a self-control task and moreover, negatively affects performance on subsequent self-control tasks (Gailliot, Baumeister, et al., 2007). In study seven ($n = 62$), a 2 x 2 experimental design was incorporated to compare performance on a task between participants who were given glucose (in the form of lemonade) following an initial activity involving the exertion of self-control, and those given a placebo drink (Gailliot, Baumeister, et al., 2007). The group who received a placebo drink committed more errors on the performance task than the group who received a glucose drink.

Study eight replicated the results of study seven with 73 participants, using a different self-control exertion task (mortality salience) and a different performance task (word fragments) (Gailliot, Baumeister, et al., 2007). Finally, study nine also replicated study six and seven results in a population of 18 college test takers. Because there is an inverse relationship between the order in which one finishes a test and self-control, the study showed that those who take longer to finish a test (i.e., increased self-control depletion) exhibit less helping behavior if they receive a placebo drink (no glucose). However, no decrease in helping behavior was found among slower test takers who consumed a glucose drink (Gailliot, Baumeister, et al., 2007). These results strengthen

the case for the Ego Depletion Model by providing physiological evidence that self-control resources can be depleted and also replenished.

Researchers are beginning to explore additional factors that moderate self-regulation depletion. For instance, research consisting of three studies showed that bringing to mind a person's family can increase self-control (Stillman, Tice, Fincham, & Lambert, 2009). In their first study, participants ($n = 79$) given visual primes relating to their family members fared better on a self-control performance task than those not receiving the family prime. Study two ($n = 139$) controlled for the possibility of the family prime participants scoring higher in study one due to their primes being specific to their personal lives as compared to the neutral prime condition. The results demonstrated the family prime condition scored higher than the other experimental conditions. Finally, study three ($n = 66$) controlled for motivation as a confounding factor and found that family prime participants demonstrated increased self-control as evidenced by a smaller amount of consumed cookies in the self-control task (Stillman et al., 2009).

Further evidence suggests positive emotion, motivation, and sleep as variables that increase self-control. A series of four experiments by Tice, Baumeister, Shmueli, and Muraven (2007) demonstrated that positive affect can neutralize the effects of self-control resource depletion. Baumeister and Vohs (2007) cited the construct of motivation as the fourth key ingredient to what constitutes self-regulation. In other words, a person motivated by a plan and a goal may be able to exert longer self-control on a task than someone lacking this focused motivation. Additionally it has been noted that rest may

improve aspects of self-control (Baumeister, 2003) including exhibiting honesty (Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009).

The Ego Depletion Model offers substantial support in explaining the relapse process. Baumeister (2003) noted that the limited resource model of self-regulation directly applies to self-control issues such as alcohol dependence. This model suggests that self-control is a limited resource and thus persons may be at high risk for having self-regulation difficulties after an initial exertion of the self-control resource. Marlatt's (1985b) Covert Antecedents Model of relapse depicts lifestyle imbalance resulting in a "desire for indulgence" or "immediate gratification" (p. 48). The self-regulation model further explicates the mechanisms in Marlatt's model by providing an explanation that lifestyle imbalance may result in self-control depletion thereby increasing the likelihood of pleasure seeking and/or craving. The self-regulation study on procrastination is indicative of this process. It showed that participants in a self-control depletion condition were more likely to procrastinate and engage in a pleasant alternative activity compared to those in a neutral condition (Vohs et al., 2008).

The notion of a limited resource of self-control also fits with research demonstrating that the more substance using and abusing peers a person in recovery has, the more likely he or she is to relapse. The limited resource model might suggest that these persons relapse because they are forced to exert more self-control on a daily basis due to high risk relapse situations of being around using peers. Eventually this self-control resource may become depleted making the person vulnerable to relapse. The limited resource model also fits with the notion of wellness as a predictor of relapse. For

instance, wellness components such as positive affect (Tice et al., 2007), family relationships (Stillman et al., 2009), and healthy sleep (Mead et al., 2009) are implicated in self-control. It is possible then, that increased wellness is correlated with increased self-control which could buffer someone against relapse. Similarly to the Covert Antecedents Model, decreased wellness reduces self-regulatory strengths which can result in craving and/or placing oneself in high risk relapse scenarios. Moreover, the Ego Depletion Model parallels a strength-based approach, given initial research suggesting that engaging in activities to improve self-regulation strength may be effective (Gailliot, Plant, Butz, & Baumeister, 2007).

There are several limitations, however, to the Ego Depletion Model. The majority of the studies were conducted on college, non-clinical populations, thus reducing the generalizability of findings. Few studies were found that examined issues of self-control among persons with self-regulatory problems. Additionally, the laboratory environment in many of the studies poses a threat to external validity since it is unclear how self-control processes unfold during activities of daily living. The authors of many Ego Depletion Model studies note that each experiment holds threats to internal validity given there are several alternative explanations that can be offered in lieu of results that support this model.

Another limitation of the Ego Depletion Model is that several types of self-control measures are used in studies of this model ranging from anagram tests and pain tolerance tasks to the completion of word fragments. There appears to be no agreed upon scale or measure that is consistently used to assess self-control based on the Ego Depletion

Model. Factor analyses of a developed measure(s) of self-control based on this model would improve its validity.

To conclude, the Ego Depletion Model provides a useful framework for understanding the relapse process and how a lack of wellness may contribute to resource depletion and the return to substance use. However, Gross's Process Model (1998b) may be of further use in explicating the emotion regulation process and its relationship to the loss of control characterized by relapse. For instance, a study by Tice, Bratslavsky, and Baumeister (2001) indicated that emotion regulation is the primary factor in self-control deficits. Gross's model depicts specific components that comprise emotion regulation and the emotion generation process. In contrast, the Ego Depletion Model has yet to identify the mechanisms underlying self-regulation strength, nor the process that unfolds in the exertion, depletion, and replenishment of self-control capacity. Gross's Process Model will be described including research on the model and an evaluation of its strengths and limitations.

Process Model

The Process Model of emotion regulation posits a series of smaller processes that constitute the generation and regulation of emotions (Gross, 1998b). Pioneered by Gross and colleagues, the Process Model (an extension of the Modal Model of emotion regulation) proposes that a series of steps or pulses are involved in emotion regulation. These steps involve a situation followed by attention, appraisal, and an emotional response (Gross & Thompson, 2007). However, the focus of the Modal Model is on the

experience of emotions and does not include an explanation for how emotion regulation occurs (Gross, 2008). Gross (1998b) defined emotion regulation as the following:

Emotion regulation refers to the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions. Emotion regulatory processes may be automatic or controlled, conscious or unconscious, and may have their effects at one or more points in the emotion generative process . . . (p. 275)

The Process Model elaborates on the emotion generative process and also includes a component of emotion regulation (Gross, 1998b). The five families in the Process Model include: Situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Gross, 2001). Situation selection refers to choosing environments that minimize the experience of negative emotions and increase the likelihood of experiencing positive emotions. For example, electing to talk to one's supportive parent the night before a major life event rather than a friend who makes demeaning comments pertains to Situation Selection. This first step in the emotion generation family tends to be more of an external rather than an internal decision (Gross, 2008). Situation Modification entails "setting the stage" or "adjusting the stage" that was initially selected to reduce the likelihood of negative emotions. For instance, if a person is a recovering alcoholic and continually is offered drinks, she could inform persons that she is in recovery and no longer consumes alcohol. This will reduce the anxiety and embarrassment of repeatedly having to refuse alcohol beverages.

Attentional deployment tends to reflect a more intrapersonal process in that the person selects where they wish to direct their attention (Gross & Thompson, 2007). Two

examples of attentional deployment are Distraction and Rumination. Attentional Deployment via distraction occurs when one focuses one's attention away from one emotionally eliciting stimuli to another. "Rumination' refers to a perseverative focus on thoughts and feelings associated with an emotion-eliciting event" (Gross, 2008, p. 503). Cognitive Change is another internal step prior to the manifestation of an emotion that occurs when the importance of a situation is evaluated. Appraisals are interpretations implicated in Cognitive Change in which one reframes one's cognitions regarding the Situation or one's ability to navigate its challenges (Gross, 2008). Reappraisal is a form of Cognitive Change in which one's evaluation of a situation results in a new emotional reaction to that situation (Gross, 2008).

Emotions are generated in responses in the form of behavior, intrapersonal experience, and physiological impact. The Emotion Regulation or Response Modulation component of the Process Model refers to the strategies chosen by the individual to modulate the expressed emotion (Gross, 1998b). Emotion regulation strategies can be categorized as attentional, knowledge-based, or bodily responses (Gross, 1998b; Koole, 2009). Attentional strategies include the use of mindfulness, while knowledge strategies include reappraisal. Somatic strategies range from drug use to progressive muscle relaxation (Koole, 2009).

Research has been conducted on portions of the Process Model of emotion regulation, particularly reappraisal (the Cognitive Change portion of the model) and suppression (the Response Modulation component of the model). Research by Gross (1998a) examined antecedent and response emotion regulation strategies in a sample of

120 college students. Reappraisal was the antecedent-focused approach while suppression was the response-focused method under investigation. Gross showed the students films with aversive content and instructed one group to use reappraisal skills (viewing the film from an objective viewpoint with the purpose of experiencing no feelings), the other to use suppression (masking feelings so that an observer would not be able to notice the participant was experiencing feelings due to the film), and the control group to simply view the film (Gross, 1998a).

Students in the reappraisal condition experienced less aversive affect and demonstrated lower behavioral discomfort from viewing the video than the control group (Gross, 1998a). Those in the suppression group also demonstrated less overt discomfort, reported equivalent aversive feelings as the control group, and showed increases in stress response as evidence by physiological indicators (Gross, 1998a). Gross (1998a) concluded that based on study results, emotion regulation strategy may impact physical and psychological health. He added that although reappraisal appears to have more benefits and fewer costs than suppression, “. . . inflexible or unrealistic reappraisals might lead one to deny important features of one’s environment, such as hazards at work or abusive tendencies in a partner” (Gross, 1998a, p. 232).

A series of studies on the Process Model of emotion regulation were conducted by Gross and John (2003). The first study involved the factor analysis of a measure of emotion regulation called the Emotion Regulation Questionnaire (ERQ). The ERQ was factor analyzed on a sample of 1,483 participants supporting a two-factor model with a reappraisal factor and Suppression factor. Reliability coefficients of .79 and .73 were

found for reappraisal and suppression, respectively as well as a three month test-retest reliability of .69 for each factor. Gender and ethnic differences were also examined revealing that men reported using suppression more than women and that ethnic minorities use more suppression than European Americans. Use of reappraisal was not found to be significantly different between men and women, European Americans and ethnic minorities (Gross & John, 2003).

The second study explored convergent and divergent validity of the ERQ through investigating correlations among reappraisal, suppression, and other variables in a sample of 145 college students (Gross & John, 2003). The results of regression analyses showed associations between suppression and measures of inauthenticity, rumination, mood management problems, and emotion recognition problems. Conversely, reappraisal was linked to mood management and the ability to reframe life stressors. The third study utilized 49 participants who completed self-report measures of reappraisal and suppression and were also rated by peers on dimensions of emotional expression and reappraisal and suppression. Suppressor and peer ratings converged indicating that persons who often suppress their feelings experience more negative emotion and also express less emotion than they actually experience (Gross & John, 2003).

Study four in the series used 80 target participants who self-reported and were rated by peers on their social interactions and disclosing of emotion. Reappraisers were more disclosing of positive and negative feelings and peers reported more satisfaction in their relationships with this group. Suppressors, however, disclosed less emotion than reappraisers and had more distant relationships, according to their peers and self-report.

The final study used 210 college students to examine differences in depression, life satisfaction, self-esteem, well-being, and optimism based on emotion regulation strategy. Participants using reappraisal strategies scored high on wellness measures and low on depression, whereas suppressors reported opposite results (Gross & John, 2003).

These four studies provide evidence in support of the emotion regulation components of the Process Model. Emotion regulation strategies appear to impact relationships and well-being. However, these study designs are limited to survey, correlational, and scale development research. The next set of studies to be presented builds upon this literature by incorporating experimental methodologies.

A three series set of experiments was designed to assess whether cognitive reconstruction of a self-control task would lead to greater perseverance at the task in the face of temptation or the desire for immediate gratification (Magen & Gross, 2007). The first study utilized 38 college students and assigned them the task of compressing a handgrip as long as possible. In one condition, participants were given minimal further instruction, while in the second condition, participants were informed that the handgrip task would test their “willpower.” Students in the “willpower” condition compressed the handgrip for a longer average duration than those in the control condition.

In experiment two, 62 college students were divided into a “no reconstrual” group and “with reconstrual” group (Magen & Gross, 2007). The “no reconstrual” group received the same instructions as those in condition one of the first experiment, except for two rounds of handgrip compression. The “with reconstrual” group also received minimal instructions on the first handgrip compression, but were informed that the second

handgrip task would test their willpower. As predicted, the “with construal” group demonstrated increased self-control by compressing the handgrip longer than the “no-reconstrual” group. Finally, in study three, 41 adults were given an attention task (math problems) while an amusing film clip was playing. Participants were measured on time spent viewing the film (temptation) and performance on the attention task in the first measurement of the task. In the second administration of the task, the participants in the “no reconstrual” condition repeated the same task, while participants in the “with reconstrual” condition were given instructions that the task would test their ability to focus and minimize distraction by the video clip. Those in the “with reconstrual” task showed a decrease in giving in to temptation compared to the “no reconstrual” group (Magen & Gross, 2007). These experiments demonstrate empirical support for reappraisal self-regulation strategies that comprise part of the Process Model.

Other findings from study three included that temptation duration increased with time in the “no reconstrual” group, while decreasing with time in the “with reconstrual” group (Magen & Gross, 2007). Further, upon examining correlations between positive affect and “peek time” at the film clips, a strong correlation was found in the “with reconstrual” and “no reconstrual” groups after measurement one ($r = .58, p < .02$ and $r = .62, p < .005$, respectively), before the cognitive reconstrual instructions were given. However, after the second task and the reconstrual manipulation for the “with reconstrual” condition, the correlation of positive affect and “peek time” for this group sharply declined ($r = .03, ns$). These results suggest a reduction in enjoyment from giving in to temptation due to cognitive reconstrual (Magen & Gross, 2007).

The studies reviewed above indicate that emotion regulation can be manipulated in an experimental setting. Instructing participants to reappraise their perception of a task seems to facilitate increased ability to self-regulate. Survey and experimental designs have been reviewed that focus on a specific aspect of emotion regulation. The following study evaluated several steps of the Process Model.

A study examining the relationships among the five families of constructs in Gross's (1998b) Process Model, Emotional Intelligence (EI), and well-being was conducted by Schutte et al. (2009) with a sample of 73 Australian adults. The researchers created their own 28 item measure that assessed all of the constructs in the Process Model ranging from situation selection to the three types of response modulation (experiential, behavioral, and physical). Reliability coefficients for each of the emotion regulation approaches ranged from a low of .59 (modification of situations) to a high of .96 (experiential response modulation) suggesting empirical support for the Process Model. Study results showed that antecedent emotion regulation contributed uniquely to the variance in well-being in addition to variance predicted by response modulation. Moreover, reappraisal was positively related to EI and suppression was inversely related to EI (Schutte et al., 2009).

Several studies have researched associations between emotion regulation and substance abuse. For instance, Fox et al. (2007) compared cocaine abstaining participants at the start and completion of drug treatment (week one and week three to four, respectively) with a control group using the Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004). The abstainer group showed increased problems

comprehending and regulating emotions at intake, although these issues improved by the end of treatment (Fox et al., 2007). However, ratings of perceived impulse control problems persisted in the cocaine abstinence group suggesting that persons in early recovery from cocaine dependence may be at higher risk for relapse when coping with stressors. Similar findings were reported in a study of participants receiving treatment for alcohol use disorders who completed the DERS at intake and at the completion of five weeks of treatment (Fox et al., 2008).

A study of attachment and emotion regulation with 15-25 year old individuals who were diagnosed with substance dependence or an eating disorder was conducted (Pierrehumbert et al., 2002). Participants with an SUD or eating disorder reported increased difficulties in attachment-related emotion regulation compared to a control group as evidenced by a Q-Sort task used to determine the type of self-control skills employed by the participants in interpersonal contexts (Pierrehumbert et al., 2002). Both substance dependent and eating disordered participants used less primary affect regulation approaches; in other words, they reported less use of a balanced attachment response between closeness and independence in relationships compared to the non-clinical control group. The substance dependent group incorporated more deactivating responses (which involve relational avoidance) while the eating disordered group utilized more hyper activating (dependent or enmeshed) responses (Pierrehumbert et al., 2002).

A meta-analysis of effect sizes and moderators for several emotion regulation strategies and various mental health issues was conducted (Aldao et al., 2010). Acceptance skills and re-appraisal strategies showed small effect sizes for depression,

anxiety, eating disorders, or SUDs; however, rumination, avoidance, and suppression had larger effect sizes across the four mental illness diagnoses. Further, substance abuse and eating disorder participants differed from those with depression and anxiety in demonstrating smaller effect sizes for rumination, avoidance, and re-appraisal. The authors speculated this is due to the use of over-eating and substance abuse as coping skills among persons with these disorders, thereby reducing their use of the other emotion regulation strategies (Aldao et al., 2010).

In the regulation of affect specific to “externalizing disorders” (Aldao et al., 2010) such as addiction or eating disorders, coping with craving is a critical aspect of self-control. Research using brain scanning of nicotine addicted persons instructed to use cognitive craving management strategies following cue induced craving demonstrated involvement of the pre-frontal cortex in reducing cravings (Kober et al., 2010). A similar study of PET scans of cocaine abusers who viewed videos designed to trigger cravings exhibited differences in brain activity between participants instructed to use craving reducing strategies versus those who were not told to do so. Specifically, metabolic activity in parts of the limbic brain decreased while activity in parts of the frontal cortex increased in the group that used craving management skills. This study thus offers empirical validity for the occurrence of emotion regulation processes at the neurological level (Volkow et al., 2010).

To conclude, the Process Model contains several benefits and limitations regarding the explanation and study of emotion regulation. For instance, multiple studies indicated validity for two of the forms of emotion regulation: Reappraisal and

suppression (Gross & John, 2003). The Process Model also explicates the mechanisms involved in the development and management of emotion based on the five families. Neuroscience research is lending support for the Process Model including the factors of reappraisal and suppression (Goldin, McRae, Ramel, & Gross, 2008). Several studies including Gross (1998a) demonstrated correlations between emotion regulation and wellness. Multiple studies have also illustrated a link between emotion regulation strategies and substance use problems (Aldao et al., 2010). Overall, the Process Model holds significant promise in contributing to the development of a model of substance abuse relapse. Nonetheless, there are also several limitations to the Process Model. Limited empirical research has studied all five families of the model and there appears to be no current measures assessing each of these constructs. Although Schutte et al. (2009) created a 28-item scale of each of the five constructs, validity and reliability analyses have not been conducted on the scale which also used a sample size that was too small (73 participants) to effectively examine its factor structure. The Process Model also tends to refer to the regulation of emotions that are provoked by external situations rather than internal impulses (Magen & Gross, 2010). This limits the explanatory power of the model since many emotions are the result of intrapersonal triggers. Many studies on the Process Model are laboratory based and hence may lack generalizability to real-world emotion triggering situations and emotion regulation processes.

The use of self-report measures and college student samples in many of the studies may also bias their results. For instance, Lindsay and Ciarrochi (2009) sought to investigate the validity of a pattern of studies demonstrating that substance abusing

persons report high frequencies of alexithymia symptoms (problems identifying and modulating affect). Using a task completion scale in addition to a self-report measure, the researchers found that whereas substance abusing participants described experiencing high levels of alexithymia symptomology via the self-report measure, they scored comparably well to the two control groups on the task measure that assessed ability to recognize emotions in oneself and others (Lindsay & Ciarrochi, 2009). Persons with SUDs may over-report emotion regulation difficulties. It is critical to be aware of self-report bias in these types of measures when researching emotion regulation in substance abusing populations.

The strengths of the Integrated Model of Emotional Intelligence address some of the weaknesses of the Ego Depletion Model and Process Model of emotion regulation. The model is more comprehensive than the previous two, depicts multiple dimensions of the emotion regulation process, and has been examined in substance abusing populations. A description of the Integrated Model of Emotional Intelligence is presented as well as a review of research on the model.

Integrated Model of Emotional Intelligence

The term Emotional Intelligence (EI) developed out of interest in the possibility of multiple types of intelligence (Salovey & Mayer, 1990). Salovey and Mayer (1990) were among the first to name and research this construct which they defined as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (p. 189). Although several models of EI have since been researched, one of the most comprehensive and

rigorously tested models is the Four Branch Model or Integrated Model of Emotional Intelligence (Mayer & Salovey, 1997). This paradigm integrates four ability models of EI, stating that EI includes the following: The ability to correctly identify and express emotions, incorporate emotions to enhance the cognitive process, use the cognitive process to comprehend emotions, and regulate emotions (Mayer & Salovey, 1997; Mayer et al., 2008). The branches are ordered from lowest to highest based on their role as building blocks in the model (Mayer et al., 2008). The ability to regulate one's emotions has been associated with well-being (Geisler et al., 2010; Gross & John, 2003), whereas the inability to manage affect is related to mental health and substance abuse problems (Aldao et al., 2010; Pierrehumbert et al., 2002).

The Integrated Model has received empirical attention via scale development research, tests of individual branches of the model, studies that compare the Integrated Model to trait-based models, and the evaluation of EI as a construct separate from other forms of intelligence. Mayer, Caruso, and Salovey (1999) administered the Multifactor Emotional Intelligence Scale (MEIS) (Mayer et al., 1999) to 503 adults to test the factor structure, reliability, and validity of the MEIS. Results showed the existence of a general emotional intelligence factor along with three sub-factors including perception, understanding, and managing. Roberts, Zeidner, and Matthews (2001) noted that this is problematic in establishing a model of EI since MEIS creators had proposed a four factor model of EI. Further, the correlation of .26 between consensus scores and expert scores that are combined to form the total score in the MEIS reflect an issue with this measurement of emotional intelligence (Roberts et al., 2001). Predictive validity was

shown however, between the EI construct and measures of empathy, parenting style, and life activities. A newer measure, the 141-item Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) (Mayer, Salovey, & Caruso, 2002) contains a four factor structure to match the model (Mayer, Salovey, & Caruso, & Sitarenios, 2003). An examination of the reliability and factor structure of the measure was conducted on a sample of 2,112 adult participants. Confirmatory factor analysis showed the most support for a four factor model and resulted in reliabilities ranging from .76 to .91. However the researchers noted reliabilities as low as .55 on some of the tasks of the MSCEIT (Mayer et al., 2003).

Research investigating the different ability branches of the Integrated Model of EI has been conducted. The first among the four EI abilities entails recognizing one's own or another's emotions (Mayer & Geher, 1996). Research examining the ability of 321 college students to identify emotions from thought samples revealed that participants who scored higher on this performance measure also scored higher on assessments of empathy and the SAT (Mayer & Geher, 1996). Branch two (emotions facilitating thought) has received also empirical support (Izard, 2001; Storbeck & Clore, 2007). For instance, Gasper and Clore (2002) demonstrated that mood influenced focus on a drawing task. Specifically, participants endorsing positive mood had a more global focus on the task while those reporting negative mood centered on the details of the picture.

Scale development provides support for the existence of branch three and four of the Integrated Model. Branch three involves using the cognitive process to understand emotions. Gratz and Roemer (2004) developed the Difficulties in Emotion Regulation

Scale (DERS) which measures six sub factors including “Lack of Emotional Clarity.” This sub factor contains items such as “I have difficulty making sense out of my feelings” which refers to the use cognitive processes to comprehend feelings. Validity of the sub factor was established through factor analysis as well as a reliability of .84, hence lending support for the existence of branch 3 of the Integrated Model.

Branch four of the integrated model entails emotion management which has received much attention in the emotion literature. Scales such as the Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski, Kraaij, & Spinhoven, 2002) provide support for existence of emotion regulation processes. The CERQ assesses nine cognitive forms of emotion modulation ranging from self-blame to acceptance. Administration of the CERQ with a sample of 611 adults resulted in acceptable reliabilities (ranging from .75 to .87) upon two administrations of the questionnaire (Garnefski & Kraaij, 2007). Support for the nine emotion regulation factors was established via principle components analysis and confirmatory factors analysis. Tests of convergent validity revealed that the first measurement of the CERQ accounted for 44% of variance in depression scores (42% of variance in anxiety) and 28% of variance in a follow-up measurement of depression (28% of variance in anxiety) (Garnefski & Kraaij, 2007).

One standard used to establish a form of intelligence is the developmental nature of the construct (Mayer et al., 1999). In other words, abilities such as intelligence increase with age and experience. Mayer et al. (1999) compared the adult participant results on the MEIS with that of 229 adolescent participants. Adults scored higher on the

MEIS than the adolescents, providing evidence that EI meets the developmental standard for an intelligence (Mayer et al., 1999).

A study on the emotion management branch of the Integrated Model and social interaction provides support for EI as a construct separate from other forms of intelligence (Lopes et al., 2004). The researchers hypothesized that emotion management (as measured by the MSCEIT), above and beyond trait personality (as assessed by a measure of the Big Five personality traits), would be highly correlated with the quality of social interactions. In study one, for each participant who reported on the quality of their social interactions, two of their friends also completed questionnaires about interactions with that participant. The second study obtained information on interpersonal interactions via two weeks of structured diary reports. The researchers concluded the study supported distinguishing EI, a form of intelligence that develops over time, from personality, which is largely a trait-based characteristic. Study results also indicated the predictive validity of EI regarding social interactions (Lopes et al., 2004).

The above studies provide evidence for the both the construct of EI and for the Integrated Model. A review of addictions literature showed that deficits in emotion identification, emotion comprehension, and emotion management were most strongly related to substance use (Kun & Demetrovics, 2010). Several studies have been conducted examining relationships among EI and its constructs with addictions populations. Research includes quasi-experimental designs comparing EI in substance abusing persons to other populations, survey designs assessing the relationship between

EI and substance abuse, and research on factors mediating the relationship between EI and substance abuse.

A study by Hertel et al. (2009) examined EI (as measured by the MSCEIT) in three clinical groups including 35 participants receiving treatment for an SUD. The researchers found that persons with SUDs scored lower than the non-clinical control group regarding using emotion to aid cognition, emotion comprehension, emotion management, and overall EI (Hertel et al., 2009). Notably, the SUD participants had the lowest MSCEIT scores of the clinical groups in the study which included 31 persons with Major Depressive Disorder and 19 female participants with Borderline Personality Disorder.

Another study that examined EI in persons with SUDs compared to other populations was conducted by Verdejo-Garcia, Rivas-Perez, Vilar-Lopez, and Perez-Garcia (2007). The researchers investigated emotion regulation and decision-making among substance dependent persons as compared with persons with orbitofrontal cortex lesions (Verdejo-Garcia et al., 2007). The participants were 30 substance dependent individuals who had abstained from substances for between 4 months and one year and a 35 person control group who did not meet criteria for an SUD. The substance dependent group scored lower in tasks of emotional expression recognition, decision-making, and self-control and scored similarly on these neuropsychological tests to persons with orbitofrontal cortex lesions (Verdejo-Garcia et al., 2007).

Research on the relationship between EI and substance abuse has been replicated in adolescent populations. For example, a study of ability model EI and tobacco and

alcohol use in 205 adolescent participants showed inverse relationships between EI and substance use ($r = -.19, p < .05$) (Trinidad & Johnson, 2002). Further, EI explained 12% of the variance in tobacco and alcohol use ($R^2 = 0.12, p < 0.001$).

Riley and Schutte (2003) elected to examine additional aspects of the EI-substance abuse relationship by testing a mediational model of EI and substance abuse. The researchers evaluated the relationships among ability-related EI, coping, and substance use problems in a sample of 141 adults. Correlations were found between EI and coping ($r = .62, p < .01$), EI and drug and alcohol problems, respectively ($r = -.42, p < .01$ and $r = -.34, p < .01$), and drug problems and coping ($r = -.24, p < .05$). Regression analyses indicated that coping did not mediate the relationship between EI and substance use problems (Riley & Schutte, 2003).

The ability-based Integrated Model of EI has also been tested against trait models of EI in relation to substance use outcomes. For instance, Tomczak (2010) compared the explanatory power of ability models versus trait models of EI regarding substance abuse and delinquent behavior in a sample of 193 college student participants. The researcher found that both EI models accounted for variance in substance abuse (Tomczak, 2010).

The Integrated Model of EI seems to hold particular potential in that it is a comprehensive model combining four different ability models of EI detailing the regulation, comprehension, recognition of emotions, and assistance of cognition (Mayer & Salovey, 1997). The factor structure, validity and reliability of measures like the MSCEIT (Mayer et al., 2003) and the Emotional Intelligence Scale (EIS) (Schutte et al., 1998) which are based on this model have received support (Lopes et al., 2004;

Saklofske, Austin, & Minski, 2003). Studies and additional measures of EI have also provided evidence for each branch of the Integrated Model (e.g. Garnefski & Kraaij, 2006; Gasper & Clore, 2002; Gratz & Roemer, 2004; Mayer & Geher, 1996). Further, research has shown a consistent correlation between decreased EI and substance abuse (Kun & Demetrovics, 2010).

However, these results should be viewed tentatively. For instance, the factor structure for the MEIS (Mayer et al., 1999) and the EIS (Gignac, 2005; Schutte et al., 1998) do not match the four branches of the Integrated Model. Additionally, trait EI may also be a significant predictor of substance abuse as was demonstrated in research by Tomczak (2010). Although the Integrated Model is comprehensive in scope regarding EI abilities, it lacks micro-levels explanations for the mechanisms underlying each branch. For example, the Integrated Model does not specify how emotion regulation occurs or the processes involved by which emotions can be used to enhance thought. Knowledge of emotional processes is important in developing a model of EI and substance abuse so that the associations between various EI constructs and substance abuse can be empirically examined. Evaluating various emotion regulation strategies in conjunction with EI factors and substance use behaviors would represent a contribution to the literature.

Chapter Summary

A review of the literature on SUDs illustrates the prevalence and profound negative impact of addiction on individuals, families, and society. For example, nearly 18 million people meet criteria for alcohol abuse or dependence (Grant et al., 2004). SUDs occur on a diagnostic spectrum ranging from recurrent negative consequences of

substance use to psychological and physical compulsions to use a substance (Fisher & Harrison, 2005).

Identifying effective treatments for persons with SUDs is imperative. One of the largest barriers to treatment success noted in the addiction literature is relapse (Doweiko, 2002). Sources report that 40-60% of persons who enroll in addiction treatment eventually relapse (Fisher & Harrison, 2005; McLellan et al., 2000; NIDA, 2009). When an individual relapses, he or she is at risk for full return to substance use, prematurely leaving treatment, or incurring further negative consequences from the relapse (Doweiko, 2002).

The disease model (Jellinek, 1960) has been useful in the conceptualization and treatment of relapse. Disease model assumptions include that SUDs represent a chronic, progressive, and incurable disease process involving a loss of control over one's substance use (Brooks & McHenry, 2009; Fisher & Harrison, 2005). The disease paradigm has resulted in the development of effective medications, treatment approaches, and Twelve Step support groups. Biopsychosocial models assume that addiction is the result of a combination of biological, psychological, and social determinants (Miller, 2005). A review of factors involved in addiction and relapse indicates that biopsychosocial models offer a more comprehensive and holistic approach than the disease model alone.

Variables that trigger relapse tend to fall within categories of distal, proximal, intrapersonal, and interpersonal factors. Examples from these groupings include stress, craving, social strain, and family history of addiction. Relapse models based in a

biopsychosocial framework seem to most effectively account for this variety of relapse causes (Capuzzi & Stauffer, 2012). The Stress Vulnerability Model (Ingram & Luxton, 2005), RP (Marlatt, 1985b), and DMR (Witkiewitz & Marlatt, 2004) contain many of these biopsychosocial factors associated with a return to substance use.

One gap in the literature on the substance abuse and the relapse models that were reviewed is the inclusion of holistic wellness factors. The above addiction and relapse models incorporate an amalgamation of wellness-related components, but not a unified wellness construct. Myers and Sweeney (2006) describe wellness as a lifelong striving towards well-being in all aspects of living. The Indivisible Self Model (Myers & Sweeney, 2004) provides an evidence-based paradigm for examining wellness as a predictor of relapse. It is comprised of a higher order Total Wellness factor, 5 second order wellness factors, and 17 third order factors. The third order factors are constructs such as emotions, stress-management, friendship, gender identity, and exercise. According to the Indivisible Self Model, holistic wellness can be measured by the 5F-Wel (Myers & Sweeney, 2004); a scale that has demonstrated validity and reliability in scale development and wellness research. Upon review, there is a deficit of literature on holistic wellness and addiction. However, existing studies on wellness and substance abuse as well as wellness-related interventions, provides evidence of a relationship between wellness and relapse.

A critical factor in both relapse and wellness is emotion regulation. The construct is most comprehensively explained by the Integrated Model of EI which depicts emotion regulation as the highest branch of EI. According to the Integrated Model, managing

emotions is the “ability to manage emotions and emotional relationships for personal and interpersonal growth” (Mayer et al., 2001, p. 235). Emotion regulation problems are common among persons with SUDs. Examining the relationship among holistic wellness, emotion regulation, and relapse may yield critical data about relapse causes and protective factors. Hence, this topic of study merits further investigation.

CHAPTER III

METHODOLOGY

In Chapter II, a review of the literature on substance abuse theories, relapse models, wellness models, and emotion regulation models was conducted. In this chapter, the approach of the proposed dissertation which explores holistic wellness and emotion regulation as predictors of relapse in outpatient substance abusing clients in early recovery is presented. Additionally, the research questions and hypotheses for the current study are presented followed by a description of study participants and instrumentation are presented. The chapter concludes with a discussion of the procedures and data analyses for the main study and results of the pilot study.

Research Questions and Hypotheses

The five research questions and respective hypotheses of the proposed dissertation are:

Research Question 1: What are the relationships among total and second order wellness factors, difficulties in emotion regulation, emotion regulation strategies, relapse, and number of days of substance use since treatment initiation?

Hypothesis 1: Statistically significant correlations will be found among wellness, emotion regulation, and relapse variables such that (1) negative correlations will be found among wellness factors and difficulties in emotion regulation, relapse, number of days of

substance use, and emotional suppression and (2) positive correlations will be found among wellness factors and reappraisal emotion regulation.

Research Question 2: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment?

Hypothesis 2: Total Wellness and emotion reappraisal will significantly decrease the odds of at least one relapse since the beginning of treatment whereas emotion suppression and difficulties in emotion regulation will significantly increase the odds of at least one relapse since treatment initiation.

Research Question 2a: Do the 5 second order wellness factors influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment?

Hypothesis 2a: The 5 second order wellness factors will decrease the odds of at least one relapse since treatment initiation.

Research Question 3: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies predict number of days of substance use since treatment initiation while adjusting for number of days since starting treatment?

Hypothesis 3: Total Wellness, difficulties in emotion regulation, and emotion regulation strategies will predict number of days of substance use since treatment initiation. Specifically, (1) Total Wellness and reappraisal strategies will have significant, negative relationships with number of days of substance use and (2) difficulties in

emotion regulation and emotional suppression will have significant positive relationships with number of days substance use.

Research Question 3a: Do the 5 second order wellness factors predict the number of days of substance use since treatment initiation after adjusting for number of days since starting treatment?

Hypothesis 3a: The 5 second order wellness factors will each have significant, negative relationships with number of days of substance use.

Research Question 4: How do difficulties in emotion regulation mediate the relationship between Total Wellness and relapse? How do difficulties in emotion regulation mediate the relationship between Total Wellness and number of days of substance use since treatment initiation?

Hypothesis 4: Difficulties in emotion regulation will mediate the relationship between Total Wellness and relapse and the relationship between Total Wellness and number of days of substance use.

Research Question 4a: How do emotion regulation strategies mediate the relationship between Total Wellness and relapse? How do emotion regulation strategies mediate the relationship between Total Wellness and number of days of substance use since treatment initiation?

Hypothesis 4a: Emotion regulation strategies will mediate the relationship between Total Wellness and relapse and the relationship between Total Wellness and number of days of substance use since treatment initiation.

Research Question 5: Are Total Wellness, difficulties in emotion regulation, and emotion regulation strategies significantly predictive of relapse and number of days of substance use after controlling for select socio-demographic variables and number of days since starting treatment?

Hypothesis 5: Total Wellness, difficulties in emotion regulation, and emotion regulation strategies will be significantly predictive of relapse and number of days of substance use after controlling for select socio-demographic variables.

Participants

The population under study were adult clients receiving level I or level II treatment for a substance use disorder. The American Society for Addiction Medicine (ASAM) defines level I treatment as outpatient substance abuse treatment (Mee-Lee, 2001). Level II treatment, according to ASAM criteria, is intensive outpatient treatment or a partial hospitalization program. Individuals were included in the study if they met the following requirements: (a) age 18 and above and (b) were currently enrolled in Level I or Level II substance abuse treatment for less than one year. Participants were excluded from the study if they had been in treatment for longer than 12 months and if they were currently receiving Opioid Maintenance Therapy (OMT) such as methadone or suboxone medications. Persons taking medications to aid recovery from opiate addiction fall into a different ASAM category than level I and II clients, often attend separate treatment groups, and are frequently researched independently of level I and II populations (L. Quagliano, personal communication, May 13, 2011). A power analysis conducted using the Power and Precision program estimated that a sample of 130 participants would be

sufficient for the types of analyses employed in the study. However, due to the potential for missing data or other unforeseen problems that may reduce the power of the study, the researcher sought to obtain a sample of 150 participants.

Instrumentation

The instrumentation used in the study included a demographic questionnaire, the Five Factor Wellness Inventory (5F-Wel) (Myers & Sweeney, 2004), Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004), and Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003). The questionnaires were administered in random order to reduce the risk of ordering effects. This section will report the psychometric features of the aforementioned questionnaires.

Demographic Questionnaire

The 13-item demographic questionnaire obtained information related to socio-demographic variables including lifetime number of treatment episodes, co-occurring psychiatric illness, reason for obtaining treatment, and commitment to abstinence. Questions from the 5F-Wel accounted for additional demographic information. The demographic form also included questions designed to assess for relapse as an outcome variable in the study, in order to identify which participants had relapsed since beginning treatment and the total number of days in which substances were used since initiating treatment. An eligibility form was included at the beginning of the demographic questionnaire. Instructions on the form directed the participant to complete the survey if he or she had attended their current treatment for less than 12 months and were not

receiving OMT. If the individual had attended treatment currently for more than 12 months and/or was receiving OMT, he or she was instructed not to complete the survey.

Five Factor Wellness Inventory (5F-Wel)

The Five Factor Wellness Inventory (5F-Wel) (Myers & Sweeney, 2005b) is a 73-item questionnaire designed to assess holistic and component-specific wellness from a counseling perspective (Myers & Sweeney, 2005a). The 5F-Wel was developed based on structural equation modeling of a data base of 3,043 using the Wellness Evaluation of Lifestyle (WEL) (Myers et al., 1996) which was based on the Wheel of Wellness (Hattie et al., 2004). The sample consisted of one-third ($n = 1,357$) university students, 56% male and 46% female participants, 81% Caucasian and 9% African American. Exploratory and confirmatory factor analyses revealed a single higher order wellness factor, 5 second order factors, and 17 third order factors as evidenced by a root mean square error of estimation (RMSEA) of .042, ($\chi^2(2533) = 8,261$) suggesting adequate fit for this factor structure (Hattie et al., 2004). The 5 second order factors include the Creative Self, Coping Self, Social Self, Essential Self, and Physical Self.

The Creative Self refers to “the combination of attributes that each of us forms to make a unique place among others in our social interactions and to interpret our world” (Myers & Sweeney, 2005a, p. 33). The Creative Self is comprised of five third order factors; thinking, emotions, control, work, and positive humor. The Coping Self is defined as “the combination of elements that regulate our responses to life events and provide a means for transcending their negative effects” (Myers & Sweeney, 2005a, p. 33). The Coping Self is comprised of four third order factors; leisure, stress management,

self-worth, and realistic beliefs. Myers and Sweeney (2005a) defined the Social Self as a network of support consisting of friends, romantic relationships, and family. Third order factors of the Social Self are friendship and love. The Essential Self refers to a person's ability to derive meaning from life experiences and contains third order factors of spirituality, gender identity, cultural identity, and self-care. Finally, the Physical Self pertains to components of one's bodily well-being and consists of third order factors nutrition and exercise. Only the higher order wellness factor and five second order factors will be used in this study.

A sample behavioral item states, "I participate in physical activity through work or leisure at least three times a week for at least 20 minutes each time." Items are scored using a four-point Likert-type scale ranging from "strongly agree" to "strongly disagree" (Myers & Sweeney, 2005b). The inventory also includes 9 demographic items in addition to the 73 items. The questionnaire can be completed in 10-20 minutes and is written at a ninth grade reading level (Myers, 2004). Items are reverse scored such that the higher score represents higher levels of wellness; one scale, Realistic Beliefs, is reverse scored. A mean item response is calculated within each subscale and multiplied by 25 yielding scale scores spanning from 25 to 100 (Myers, Luecht, & Sweeney, 2004). The scale scores are summed in order to obtain an individual's Total Wellness score.

The 5F-Wel evidenced reliability for Total Wellness (.94) and internal consistency for the 5 second order factors averages to .92 (Myers et al., 2004). The Cronbach's alpha range for the 17 third order factors is .79 to .88. The third order factors loaded onto the five second order factors ranging from .35 to .91. The second order

factors loaded onto the single wellness factor ranging from .51 to .98 with Work and Realistic Beliefs showing the lowest factor loadings (.26 and .25, respectively) (Myers, 2004). Tests for validity of the 5FWel were conducted on a sample of 299 graduate students (Hattie et al., 2004). Concurrent validity was demonstrated via satisfactory correlations with related measures including the Testwell, Coping Resources Inventory, and Measures of Psychosocial Development. Research using the 5F-Wel provides additional support for the validity of this measure. For instance, divergent validity was demonstrated between the Coping Self scale (which includes self-worth, realistic beliefs, leisure, and stress management) and measures of body shame (Sinclair & Myers, 2004) in a sample of 272 college women. Research by Gibson and Myers (2006) examining stress, wellness, and mattering among 234 first-year Citadel cadets showed convergent validity between 5F-Wel Total Wellness scores and General Mattering scale scores ($r = .394, p < .002$). Connolly and Myers (2003) also found a positive relationship between 5F-Wel scores and job satisfaction measured by the Job Descriptive Index (JDI) (Balzer et al., 1997).

The 5F-Wel has yet to be administered in a sample of chemically dependent persons; however, it has been incorporated in a study examining wellness and college student substance abuse (Lewis & Myers, 2010). The study involved 110 college students who completed the 5FWel and Alcohol Use Survey which yielded correlations between Coping Self, Essential Self, and substance use. Specifically, Realistic Beliefs (a third order factor of Coping Self) were negatively correlated with substance use.

Difficulties in Emotion Regulation Scale (DERS)

The Difficulties in Emotion Regulation Scale (DERS) is a 36-item scale designed to assess emotion regulation problems based on a review of components of healthy emotion regulation (Gratz & Roemer, 2004). The DERS uses a 5-point Likert-type scale for test takers to rate the frequency of specific emotion regulation experiences with the following item response options: 1 = “Almost never” (0-10%); 2 = “Sometimes” (11-35%); 3 = “About half the time” (36-65%); 4 = “Most of the time” (66-90%); 5 = “Almost always” (91-100%). Items are statements describing one’s emotion regulation experiences such as “I have difficulty making sense out of my feelings” or “when I’m upset, I feel out of control.” Items are scored such that higher scores reflect more emotion regulation problems. According to Gratz and Roemer (2004),

healthy emotion regulation entails (a) awareness and understanding of emotions; (b) acceptance of emotions; (c) the ability to engage in goal-directed behavior, and refrain from impulsive behavior, when experiencing negative emotions; and (d) access to emotion regulation strategies perceived as effective” (p. 43)

Creation of the DERS was thus based on evaluating problems or a lack of ability in the components of emotion regulation mentioned above.

The original DERS scale consisted of 41 items and was administered to 357 undergraduate students ranging in age from 18 to 55 (Gratz & Roemer, 2004). The data were factor analyzed and evaluated for reliability and validity using several scales related to emotion regulation. Upon reducing the item total to 36, principal components factor analysis with oblique rotation demonstrated a 6 factor structure with scale items loading on each factor ranging from a minimum of .40 to 1.00 and explaining 55.68% of the

variance in scores measuring emotion regulation. The six factors that emerged were *non-acceptance* of emotional responses (eigenvalue = 11.10, difficulties engaging in goal-directed behavior *goals* (eigenvalue = 3.85), impulse control difficulties *impulse* (eigenvalue = 2.94), lack of emotional *awareness* (eigenvalue = 1.95), limited access to emotion regulation *strategies* (eigenvalue = 1.56), and lack of emotional *clarity* (eigenvalue = 1.13).

Nonacceptance refers to experiencing an adverse emotional reaction to an initial undesirable feeling or lack of acceptance of a negative emotional reaction. *Goals* describes items assessing problems focusing and completing tasks in the midst of unpleasant emotions. *Impulse* factor items assess problems managing one's actions when under duress. The *Awareness* factor is comprised of items measuring deficits in a person's ability to "attend to and acknowledge emotions" (Gratz & Roemer, 2004, p. 47). According to Gratz and Roemer (2004) the *strategies* factor "consists of items reflecting the belief that there is little that can be done to regulate emotions effectively, once an individual is upset" (p. 47). *Clarity* is depicted via items measuring "the extent to which individuals know (and are clear about) the emotions they are experiencing" (Gratz & Roemer, 2004, p. 47).

The DERS demonstrated acceptable internal consistency. Cronbach's alpha coefficients for the six factors are the following: *Nonacceptance* (.85), *Goals* (.89), *Impulse* (.86), *Awareness* (.80), *Strategies* (.88), and *Clarity* (.84) (Gratz & Roemer, 2004). In evaluating the test-retest reliability of the DERS, 21 participants from another study employing the DERS agreed to retake the assessment between one and two months

after first administration. Reliability scores for the six factors ranged from .57 to .89 (Gratz & Roemer, 2004). Construct validity was determined by correlating the DERS with other measures of emotion regulation including the Negative Mood Regulation scale (NMR) (Catanzaro & Mearns, 1990).

The DERS total score and each of the single factor scores showed construct validity as evidenced by moderate to high negative correlations with the NMR which measures ability to regulate emotions. Correlations ranged from $r = -.34$ between *awareness* and NMR scores to $r = -.69$. Semi-partial correlations between the DERS and assessments of experiential avoidance and emotional expressivity revealed that factors of the DERS explained unique variance in these measures not accounted for by the NMR (Gratz & Roemer, 2004). Predictive validity was established given moderate correlations between DERS scores and measures of frequency of self-harm behaviors and intimate partner violence. For example, DERS overall scores correlated ($r = .20, p < .01$) with incidence of self-harm behaviors in a sample of 260 women and ($r = .26, p < .05$) in a sample of 97 men (Gratz & Roemer, 2004).

Confirmatory factor analysis of the DERS on a sample of 870 adolescents supported the 6 factor structure (CFI = .92, TLI = .91, RMSEA = .045; 90% CI, = .043-.048) (Neumann, van Lier, Gratz, & Koot, 2010). Internal consistency for the six factors was acceptable in the adolescent sample with Cronbach's alpha coefficients ranging from .72 to .87. Further, discriminant validity was found given that specific DERS factors positively correlated with related measures of psychopathology (Neumann et al., 2010). Additional construct validity was indicated in studies of cocaine and alcohol addicted

persons (Fox et al., 2007, 2008). Both studies by Fox and colleagues similarly showed that difficulties in emotion regulation alleviate between the start and conclusion of treatment suggesting that as psychopathology such as addiction is addressed through treatment, the ability to regulate emotions improves.

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ) is a 10-item scale developed by Gross and John (2003) to measure two factors of emotion regulation: *reappraisal* and *suppression*. Six of the scale items assess reappraisal and the remaining 4 items measure suppression. Gross and John (2003) defined reappraisal as an antecedent-focused, cognitive, emotion regulation construct. In other words, it is a cognitive process that proactively manages how an emotion is experienced before it is produced. Conversely, suppression is a response-focused, behavioral, emotion regulation construct. This implies that suppression is a behavioral reaction used to prevent the manifestation of unpleasant emotion. Theoretically, reappraisal is preferable because the response can be modulated before it is expressed. However, the use of emotional suppression risks dimming the experience of pleasant affect, while simultaneously being ineffective at decreasing undesirable feelings (Gross & John, 2003). The reappraisal construct is operationalized by scale item statements such as “when I want to feel more positive emotion (such as joy or amusement), I change what I’m thinking about.” A sample suppression item states, “when I am feeling positive emotions, I am careful not to express them” (Gross & John, 2003). Persons taking the ERQ rate their level of agreement with such statements using a 7-point Likert-type scale with responses ranging from 1 = “strongly disagree,” 4 =

“neutral,” and 7 = “strongly agree.” No reverse scoring is necessary when calculating scale scores for the two factors.

The scale developers submitted the ERQ to a confirmatory factor analysis with varimax rotation using a database of 1,483 completed questionnaires by undergraduate students. The reappraisal and suppression components explained approximately half of the variance in the data (Gross & John, 2003). CFA results indicated a two factor structure and an independence model rather than a general-factor model. The independence of reappraisal and suppression is evident when examining the small cross loadings which range from .12 to .23. Reliability tests demonstrated acceptable internal consistency which ranged from .75 to .82 for reappraisal and .68 to .76 for the suppression subscale across the four samples in the database. The ERQ also yielded a test-retest reliability value of .69 for each factor with 3 months between test administrations. Importantly, when reappraisal and suppression were entered into a regression as predictor variables, they demonstrated independent main effects rather than a moderation effect (Gross & John, 2003).

Tests of convergent and divergent validity were conducted on a sample of 145 undergraduate students (Gross & John, 2003). Convergent validity was supported between reappraisal and measures of regulation success ($\beta = .20, p < .05$), reinterpretation coping ($\beta = .43, p < .05$), and mood repair ($\beta = .36, p < .05$). Convergent validity was also found between suppression and measures of inauthenticity ($\beta = .47, p < .05$), and inverse associations with venting ($\beta = -.43, p < .05$) and attending to one's mood ($\beta = -.41, p < .05$). Discriminant validity was suggested via an

inverse relationship between reappraisal and neuroticism ($\beta = -.20, p < .05$). Discriminant validity was also indicated in an inverse relationship between suppression and extraversion ($\beta = -.41, p < .05$) (Gross & John, 2003). To conclude, it is noteworthy that the reappraisal factor yielded standardized beta coefficients ranging from .23 to .41 ($p < .05$) with several measures of well-being. Conversely, the suppression factor yielded negative standardized beta coefficients ranging from -.22 to -.46 ($p < .05$) with multiple measures of wellness (Gross & John, 2003).

Procedures

Several procedures were utilized in order to gather data for the current study. A convenience sample was obtained by sending an email request (see Appendix A) for participation to several clinical directors of alcohol and drug rehabilitation programs in the Southeast United States. Participants were recruited using convenience sampling from public alcohol and drug rehabilitation and hospital based substance abuse treatment sites that have Level I and II programs. The sample was obtained from drug and alcohol treatment centers in the triad region of North Carolina. The researcher first acquired letters of support and IRB approval from participating sites. Upon receiving Institutional Review Board (IRB) approval to conduct the research, the researcher sent a recruitment email to the program director of the site which contained a brief description of the study and procedures for the program director and treatment providers at the site. A flyer about the study was included in the email with a request that Level I and Level II treatment providers read and distribute the flyers to potential participants one week prior to data collection (see Appendix B).

These treatment centers were then contacted and agreed upon times for participant recruitment and data collection were established. The program director of the site forwarded the above email to the staff providing Level I and II group substance abuse treatment at the site. One week prior to data collection, the treatment providers read the brief flyer about the study to all level I and II treatment groups. The researcher came to the site at the times preferred by the treatment coordinator(s) to administer surveys to clients who elected to participate. Data collection occurred immediately prior to, during, or after treatment groups were held. The researcher administered the questionnaire packets, which included the informed consent (Appendix C) as the first item, in person to study participants. The researcher provided the verbal presentation of the informed consent followed by directions regarding finishing the inventories for those who signed the informed consent (see Appendix D). Both the informed consent and survey instructions informed participants that they could elect to have the questionnaire read aloud to them by the researcher or a site staff person. Eligibility for the study was assessed via a form attached to the demographic questionnaire containing two questions regarding the exclusionary standards for the study. Instructions on the form directed participants who were eligible to complete the study, and informed ineligible persons that they cannot participate in the study. Each participant was given a \$5 gift card upon completion of the survey in order to obtain a larger sample size. The demographic form, 5F-Wel, DERS, and ERQ were then filled out by the participants.

The confidentiality of participants was protected by coding the data thereby removing any identifying information from assessment results. Paper copies of data were

secured behind a double lock file cabinet by the researcher. Electronic information was password protected and maintained on the researcher's computer. Electronic data from the study will be erased three years following the completion of this study.

Data Analysis

Research Question 1: What are the relationships among total and second order wellness factors, difficulties in emotion regulation, emotion regulation strategies, relapse, and number of days of substance use since treatment initiation?

Pearson product moment correlations were used to determine correlations among wellness factors, difficulties in emotion regulation, emotion regulation strategies, and number of days of substance use while in treatment. Bivariate correlations between each of these constructs were calculated and compared. Point biserial correlations were calculated to evaluate correlations among the dichotomous variable of relapse and continuous variables of total and component specific wellness, difficulties in emotion regulation, emotion regulation strategies, and number of days of substance use.

Research Question 2: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment?

A logistic regression was used to determine whether Total Wellness, difficulties in emotion regulation, and emotion regulation strategies influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment.

Research Question 2a: Do the 5 second order wellness factors influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment?

A logistic regression was used to determine if the 5 second order wellness factors influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment.

Research Question 3: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies predict number of days of substance use since treatment initiation while adjusting for number of days since starting treatment?

Binomial regression was used to determine if Total Wellness, difficulties in emotion regulation, and emotion regulation strategies predict number of days of substance use since treatment initiation after controlling for number of days since starting treatment.

Research Question 3a: Do the 5 second order wellness factors predict the number of days of substance use since treatment initiation after adjusting for number of days since starting treatment?

Binomial regression was used to examine if the 5 second order wellness factors predict the number of days of substance use since treatment initiation after controlling for number of days since starting treatment.

Research Question 4: How do difficulties in emotion regulation mediate the relationship between Total Wellness and relapse? How do difficulties in emotion regulation mediate

the relationship between Total Wellness and number of days of substance use since treatment initiation?

A Sobel Test for simple mediation was used to explore if difficulties in emotion regulation mediate the relationship between Total Wellness and relapse and Total Wellness and number of days of substance use.

Research Question 4a: How do emotion regulation strategies mediate the relationship between Total Wellness and relapse? How do emotion regulation strategies mediate the relationship between Total Wellness and number of days of substance use since treatment initiation?

A Sobel Test for simple mediation was used to explore if emotion regulation strategies mediate the relationship between Total Wellness and relapse and Total Wellness and number of days of substance use.

Research Question 5: Are Total Wellness, difficulties in emotion regulation, and emotion regulation strategies significantly predictive of relapse and number of days of substance use after controlling for select socio-demographic variables and number of days since starting treatment?

A logistic regression was used to examine if Total Wellness, difficulties in emotion regulation, and emotion regulation strategies are significantly predictive of relapse after controlling for socio-demographic variables. Binomial regression was used to determine if the above independent variables are significantly predictive of the number of days of substance use after controlling for socio-demographic variables.

Pilot Study

Purpose, Research Questions, and Hypotheses

A pilot study was conducted with the purpose of testing the procedures for the main proposed dissertation study. To that end, the 22 participants were presented with a pilot study feedback form (see Appendix E) to ascertain information on duration required to complete questionnaire packet, emotional impact of the survey, clarity of questions on the demographic form, and response rate. Descriptive statistics of the pilot study participants, correlations among the constructs in the study, reliability data, and the results of initial analyses of the research questions and hypotheses will be presented from the pilot study. Implications that are discussed include possible changes in instruments and procedures for the main study.

Instrumentation

Participants first completed the 13-item demographic questionnaire with eligibility assessment form. Eligible participants then completed the survey packet which consists of the 73 item 5F-Wel (Adult version) (Myers & Sweeney, 2005b). The 5F-Wel includes 9 demographic questions. The third instrument was the 36 item Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004). The final measure in the research packet was the 10 item Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003). Pilot study participants also completed a pilot study feedback form (see Appendix E) to evaluate the efficacy of study procedures. Cronbach's alpha coefficients were calculated for the total scores of the 5F-Wel, DERS, and their corresponding subscales. Reliability analyses were also conducted for the ERQ independent scales;

reappraisal and suppression. Each measure and its subscales demonstrated acceptable levels of internal consistency of above .70 with the exception of the Essential Self subscale of the 5F-Wel with a Cronbach's alpha of .65. Reliability calculations for all instruments and their subscales are listed in Table 1.

Table 1

N of Items Per Scale and Alpha Coefficients for 5F-Wel, DERS, and ERQ

Instrument/Subscale	Number of Items	Alpha Coefficient
TOTAL WELLNESS	73	.90
Creative	21	.93
Coping	19	.87
Social	8	.81
Essential	15	.65
Physical	10	.87
TOTAL DERS	36	.96
Nonacceptance	6	.91
Goals	5	.74
Impulse	6	.88
Awareness	6	.73
Strategies	8	.88
Clarity	5	.83
ERQ: Reappraisal	6	.85
ERQ: Suppression	4	.77

Participants

Pilot study participants were recruited from two hospital-affiliated substance abuse programs and one private outpatient treatment site. Participants were age 18 and older and currently enrolled in outpatient, intensive outpatient, day treatment/partial hospitalization, or co-occurring disorders treatment (level I and II treatment). Pilot participants were excluded if they had been involved in their current treatment for longer than 12 months and/or were enrolled in Opioid Maintenance Therapy (OMT). Recruitment flyers (Appendix B) describing the study were sent to the three treatment centers whose staff read and disseminated them to potential participants approximately one week prior to data collection. The researcher administered research packets at the preferred data collection time nominated by the participating treatment site. At one site, the data were collected prior to the group session. At a second site, several participants completed their research packets prior to their group session, while other participants elected to complete the packets after their group session. At the third site, all participants completed the questionnaires during their treatment that day.

Twenty-three participants were recruited from the three treatment facilities. One person at the second site chose not to participate yielding a response rate of 22 out of 23 persons (95.7%). The majority of participants were female ($n = 13$, 59.1%), Caucasian ($n = 16$, 72.7%), between the age of 35 and 54 ($n = 15$, 68.2%), with a mean age of 43.64 ($SD = 12.87$), and not working ($n = 15$, 68.2%). However, the sample from the pilot study was demographically diverse across these and other domains. Demographic data for the pilot study participants is presented in Table 2.

Table 2*Demographics of Pilot Study Participants*

Demographic Characteristic	<i>n</i>	%
SEX		
Male	9	40.9
Female	13	59.1
TOTAL	22	100.0
ETHNICITY		
Native American	1	4.5
African American	5	22.7
Caucasian	16	72.7
TOTAL	22	100.0
MARITAL STATUS		
Married/Partnered	7	31.8
Single	7	31.8
Divorced/Separated	5	22.7
Widowed	3	13.6
TOTAL	22	100.0
EDUCATION LEVEL		
Less than high school	4	18.2
High school graduate	5	22.7
Trade/Technical/AA degree	3	13.6
Bachelor's degree	10	45.5
TOTAL	22	100.0
EMPLOYMENT		
Full-time	3	13.6
Part-time	2	9.1
Retired-not working	2	9.1
Not working	15	68.2
TOTAL	22	100.0

Table 2 (cont.)

Demographic Characteristic	<i>n</i>	%
CURRENTLY IN SCHOOL		
Yes	3	13.6
No	19	86.4
TOTAL	22	100.0
SEXUAL ORIENTATION		
Gay	2	9.1
Lesbian	1	4.5
Bisexual	1	4.5
Heterosexual	17	77.3
MISSING	1	4.5
TOTAL	22	100.0
AGE		
18-34	5	22.7
35-54	15	68.2
55-over	2	9.1
TOTAL	22	100.0

Treatment-related demographic characteristics were also calculated. Nearly equal numbers of participants had attended previous treatment ($n = 12, 54.5\%$) as those who had not ($n = 10, 45.5\%$). Most participants had been in treatment for less than one month ($n = 11, 50\%$). The majority of persons surveyed were in treatment for alcohol use disorders ($n = 17, 77.3\%$), reported a psychiatric history ($n = 13, 59.1\%$), had a treatment goal of discontinuing substance use ($n = 19, 86.4\%$), were voluntarily attending treatment ($n = 15, 68.2\%$), and had used substances for 15 or more days in the month prior to entering treatment ($n = 19, 86.4\%$). A minority of participants reported relapsing since starting treatment ($n = 5, 22.7\%$). One of the five persons who relapsed reported having relapsed on three different days since beginning treatment. One respondent who had

relapsed noted using for “several” days since treatment but did not record a specific number of days. Another relapser did not report the total number of relapse days. A complete list of treatment-related descriptive data on the pilot study participants is presented in Table 3.

Table 3

Treatment-related Demographic Information

Treatment Descriptives	<i>n</i>	%
PRIOR TREATMENT		
Yes	12	54.5
No	10	45.5
Total	22	100.0
PRIOR TREATMENT TOTAL		
1 Prior episode	4	18.2
2 Prior episodes	4	18.2
3 prior episodes	1	4.5
4 prior episodes	1	4.5
MISSING	2	9.1
TOTAL	10	54.5
TREATMENT DURATION		
Less than 1 month	11	50.0
1-2 months	6	27.3
More than 2 months	4	18.2
MISSING	1	4.5
TOTAL	22	100.0
DAYS PER WEEK IN TREATMENT		
1-2	5	22.7
3-4	10	45.5
5	7	31.8
TOTAL	22	100.0

Table 3 (cont.)

Treatment Descriptives	<i>n</i>	%
DRUG OF ADDICTION		
Alcohol	17/22	77.3
Depressants	4/22	18.2
Marijuana	4/22	18.2
Opiates	4/22	18.2
Amphetamines	4/22	18.2
Hallucinogens	2/22	9.1
PSYCHIATRIC HISTORY		
Yes	13	59.1
No	9	40.9
TOTAL	22	100.0
CO-OCCURRING DISORDER		
Anxiety	9/22	40.9
Mood disorder	7/22	31.8
Psychotic disorder	1/22	4.5
Personality disorder	3/22	13.6
Other	2/22	9.1
GOAL FOR TREATMENT		
No drug/alcohol use	19	86.4
Cut down on drug/alcohol use	3	13.6
TOTAL	22	100.0
REASON FOR TREATMENT		
Voluntary	15	68.2
Mandated	5	22.7
MISSING	2	9.1
TOTAL	22	100.0
RELAPSE SINCE STARTING TREATMENT		
Yes	5	22.7
No	17	77.3
TOTAL	22	100.0

Table 3 (cont.)

Treatment Descriptives	<i>n</i>	%
REGENCY OF RELAPSE		
1-8 days ago	3	13.6
15 days ago	1	4.5
65 days ago	1	4.5
TOTAL	5	22.6
TOTAL RELAPSE DAYS		
1 day	2	9.1
3 days	1	4.5
MISSING	2	9.1
TOTAL	5	22.7
15 + DAYS OF USE IN MONTH PRIOR TO TX		
Yes	19	86.4
No	3	13.6
TOTAL	22	100.0
DURATION OF SUBSTANCE USE		
1-10 years	7	31.8
10-20 years	7	31.8
20-30 years	4	18.2
30-40 years	3	13.6
MISSING	1	4.5
TOTAL	22	100.0
12-STEP/SUPPORT GRP		
Yes	15	68.2
No	7	31.8
TOTAL	22	100.0
LIVE ALONE		
Yes	2	9.1
No	20	90.9
TOTAL	22	100.0

Table 3 (cont.)

Treatment Descriptives	<i>n</i>	%
# OF PERSONS IN HOUSEHOLD		
1	6	27.3
2	2	9.1
3+	6	27.3
MISSING	6	27.3
TOTAL	20	91.0
HOUSEHOLD INCOME		
Less than \$10,000	5	22.7
\$10,000 to \$50,000	7	31.8
\$50,000 to \$100,000	5	22.7
More than \$100,000	4	18.2
MISSING	1	4.5
TOTAL	22	100.0

Procedures

The three participating treatment centers provided letters of support to verify permission for this researcher to collect pilot study data at their facilities. The researcher scheduled times approved by the treatment coordinator to administer research packets and disseminated the research flyer to treatment coordinators for the three sites (see Appendix B). The treatment coordinators then distributed the flyer to their clients who met eligibility criteria for the study approximately one week prior to data collection.

The researcher collected data immediately before, after, or during level I and II treatment groups based on the time requested by the treatment coordinator. The researcher administered the questionnaire packets in person to study participants which include the informed consent (see Appendix C) as the first item. The researcher provided

a verbal presentation of the informed consent and subsequently distributed questionnaires to the consenting participants along with verbal instructions for completing the packets. Research packets consisted of a Demographic Questionnaire, 5F-Wel, DERS, ERQ, and pilot study feedback form (see Appendix E). Each participant was given a \$5 gift card upon completion of the survey.

Analysis

Several analyses were conducted in an effort to tentatively answer the research questions for the study and evaluate the feasibility of this research. Bivariate Pearson Product correlations were calculated to answer research question 1: What are the relationships among total and second order wellness factors, difficulties in emotion regulation, emotion regulation strategies, relapse, and number of days of substance use since treatment initiation? A logistic regression was run in order to answer research question 2: Does total Wellness, difficulties in emotion regulation, and emotion regulation strategies influence the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment? Research question 3 states: Does Total Wellness, difficulties in emotion regulation, and emotion regulation strategies predict number of days of substance use since treatment initiation while adjusting for number of days since starting treatment? This question was not analyzed because only one participant reported relapsing on more than one day since starting treatment. Similarly, the sample size of 22 did not provide sufficient power to answer research questions 4 and 5.

Results

The 22 participants from the three different substance abuse treatment sites who were involved in the pilot study completed the 5F-Wel, DERS, and ERQ, and pilot study feedback form, although items on the demographic questionnaire were left blank by several participants.

The first hypothesis posed by the primary investigator in relation to research question 1 is that negative correlations will be found among wellness factors and difficulties in emotion regulation, relapse, number of days of substance use, and emotional suppression. Additionally, positive correlations are hypothesized to occur among wellness factors and reappraisal emotion regulation. A table of means and standard deviations as well as a correlation matrix of the predictor variables was first calculated prior to addressing research question 1. The means and standard deviations for the predictor variables which include Total Wellness, five second order wellness factors (Creative Self, Coping Self, Social Self, Essential Self, and Physical Self), difficulties in emotion regulation, and suppression and reappraisal were calculated and displayed in Table 4. The mean total wellness score for the pilot study sample of 22 participants was 73.7 (*S.D.* = 7.8). The highest second order wellness factor mean was for Social Self ($M = 87.3$, *S.D.* = 11.7) and the lowest was for Coping Self ($M = 67.6$, *S.D.* = 10.7). The average DERS and ERQ scores are also reported in Table 4.

Table 4*Descriptive Statistics for 5F-Wel, DERS, and ERQ*

Instrument/Subscale	<i>M</i>	<i>SD</i>	<i>N</i>
Total Wellness	73.7	7.82	22
Creative Self	73.31	9.45	22
Coping Self	67.62	10.67	22
Social Self	87.33	11.72	22
Essential Self	76.21	10.89	22
Physical Self	71.00	16.44	22
DERS	92.45	28.51	22
Nonacceptance	15.32	6.45	22
Goals	14.86	3.69	22
Impulse	14.91	5.72	22
Awareness	15.95	4.57	22
Strategies	19.55	7.4	22
Clarity	11.86	4.62	22
Suppression	14.36	6.01	22
Reappraisal	27.63	7.16	22

Results of the correlation matrices do not support the hypothesis of a negative relationship among wellness factors and difficulties in emotion regulation as no significant negative correlations were found among these variables. Contrary to the hypothesis, there was a positive correlation between Total Wellness and difficulties in emotion regulation ($r = .477, p < .05$), Creative Self wellness and difficulties in emotion regulation ($r = .451, p < .05$), and Social Self wellness and difficulties in emotion regulation ($r = .492, p < .05$). Four of the six DERS subscales were positively correlated

with Total Wellness. No significant correlations emerged between suppression and any of the predictor variables, nor positive correlations among wellness factors and reappraisal as hypothesized. However, a negative correlation was found between difficulties in emotion regulation and reappraisal ($r = -.510, p < .05$) as predicted. The correlation matrices are presented in Tables 5 and 6.

Table 5

Correlation Matrix of 5F-Wel and Subscales, DERS, and ERQ

	Total TotWel	Create	Cope	Social	Essent	Phys	DERS	Suppress	Reapp
Total Wel	1								
Creative	.807**	1							
Coping	.774**	.547**	1						
Social	.651**	.541**	.219	1					
Essential	.583**	.326	.246	.458*	1				
Physical	.596**	.325	.437*	.289	.011	1			
DERS	.477*	.451*	.345	.492*	.418	-.038	1		
Suppression	-.082	.212	-.035	.014	-.307	-.189	.303	1	
Reappraisal	-.319	-.263	-.245	-.280	-.219	-.096	-.510*	.049	1

Note: * $p < .05$ (2-tailed); ** $p < .01$ (2-tailed)

Table 6

Correlation Matrix of 5F-Wel, DERS and Subscales, and ERQ

	DERS	Nonacc	Goal	Imp	Aware	Strats	Clar	TotWel	Reap	Sup
DERS	1									
Nonaccept	.913**	1								
Goals	.860**	.721**	1							

Table 6 (cont.)

	DERS	Nonacc	Goal	Imp	Aware	Strats	Clar	TotWel	Reap	Sup
Impulse	.937**	.817**	.869**	1						
Awareness	.736**	.564**	.555**	.606**	1					
Strategies	.893**	.835**	.703**	.804**	.515*	1				
Clarity	.888**	.752**	.746**	.820**	.743**	.676**	1			
TotWel	.477*	.437*	.607**	.483*	.305	.297	.469*	1		
Reappraisal	-.510*	-.487*	-.485*	-.474*	-.463*	-.293	-.566**	-.319	1	
Suppression	.303	.172	.281	.366	.364	.250	.192	-.082	.049	1

Note: * $p < .05$ (2-tailed); ** $p < .01$ (2-tailed)

The hypothesis posited for research question 2 states: Total Wellness and emotion reappraisal will significantly decrease the odds of at least one relapse since the beginning of treatment whereas emotion suppression and difficulties in emotion regulation will significantly increase the odds of at least one relapse since treatment initiation. To test this hypothesis, a logistic regression was conducted. Total Wellness, DERS, and emotion suppression and reappraisal scores were entered as covariates and drug or alcohol use since treatment initiation served as the dichotomous dependent variable. Although the Wald statistic indicated that none of the predictors were significant independently, the Pseudo R Squared showed that the model predicted 27% of the variance in relapse. The classification table showed that the regression model was able to predict relapse in 72.7% of cases, however, this was a decrease from the Step 0 prediction accuracy of 77.3%. Detailed results of the logistic regression are described in Table 7.

Table 7***Logistic Regression Analysis Predicting Relapse during Substance Abuse Treatment (N = 22)***

		B	S.E.	Wald	DF	Sig.	Exp. (B)
Step 1	Total Well	.127	.108	1.388	1	.239	1.135
	DERS	-2.453	1.531	2.568	1	.109	.086
	Suppress	.064	.467	.019	1	.891	1.066
	Reapp	-1.105	.806	1.879	1	.170	.331
	Constant	3.434	8.244	.173	1	.677	30.990

Note: LR Chi Square = 6.35, ($p = .175$); Pseudo $R^2 = .269$; Log likelihood = 17.24.

Discussion

The pilot study allowed the primary investigator to tentatively test research questions, hypotheses, procedures, and the relationships among study variables in order to inform the main study. The pilot study feedback form and observations documented by the researcher provided substantial data regarding this study. All but one participant reported that the instructions for the survey were clear and easy to follow. Two of the twenty-two participants identified “hard-to-understand” questions. The first respondent noted that the wording of the DERS was difficult to comprehend. The second comment will be discussed later in this section.

Descriptive statistics showed that the average participant took approximately 30 minutes to complete the pilot study ($SD = 9.30$) and most participants spent 30 minutes or less on the pilot study questionnaires ($n = 14, 63.6\%$). It is notable that several participants included the researcher’s reading of the informed consent, distribution of questionnaires, and verbal instructions in the time they reported regarding duration of the

survey. This may have inflated the average duration of survey completion. One outlier who began responding to the wrong survey on the bubble sheet and had to start over, took 90 minutes to complete the survey. This person's survey completion time was removed when calculating the sample average.

Other participants exhibited confusion about certain aspects of the bubble sheet. For instance, a few persons expressed uncertainty about where they should fill in their birth date and exam code on the bubble sheet, and which survey to answer on the bubble sheet. A few participants did not realize the survey was on the front and back of pages. To reduce any confusion about the bubble sheet and survey instructions for the main study, the primary investigator will utilize written instructions that will be read to the participants that address (a) where and how birthdate and test code are to be entered, (b) the double-sided pages for the survey, and (c) the 5F-Wel as the only survey in which responses are recorded on the bubble sheet. Attaching the bubble sheet to the 5FWel with a paper clip may also clarify that responses to this instrument are to be marked on the bubble sheet.

The procedures and items in the Demographic Questionnaire (DQ) can be improved based on the pilot study. For example, question 2 which inquires, "How many days have passed since starting your current treatment?" is not clear in establishing when the timeline for the start of treatment begins. One participant asked this researcher for clarification about when to consider the start of current treatment. The researcher will revise this question for the main study to the following: "How many days have passed since starting your current *outpatient* treatment?" The word "outpatient" will clarify that

“current treatment” does not include any inpatient treatment, but does include the total duration of all outpatient treatment, even if a participant has stepped down from a level II intensive outpatient program to a level I outpatient program. A second DQ item that will be revised is question 12 which asks, “Do you currently live alone?” If “No,” how many people do you live with?” One participant expressed confusion over how to answer the question since the person lived in a halfway house with multiple others. Additionally, question 12 had the most missing data ($n = 6, 27.3\%$) which may be due to the wording of the question and the answer options. Hence, this item will be revised to the following for the main study:

“Do you currently live with others?” (Check one): Yes _____ No _____

If “Yes,” how many people do you live with? (Leave blank if you currently live in a halfway house) _____

Several respondents left questions blank from the DQ. For instance, one participant did not report the duration of his or her substance use, 2 participants who noted attending treatment prior to their current episode did not report their total number of treatment episodes, and two participants who relapsed did not fill in their total number of relapse days. This could be due to test fatigue, since the DQ is the last instrument in the survey, or a need for stronger prompts and instructions. The researcher will thus add the following brief instruction to the DQ: “Please read the questions carefully. A few of the questions are fill in the blank, please do not skip these questions.” On question 8 of the DQ, which inquires, “Which of the following best describes your reason for seeking treatment at this time?” (Check one), two participants marked both response options. The

researcher will highlight the words “Check one” on this question and will highlight any similar directives in any of the other questions on the DQ. One participant expressed confusion over the meaning of psychiatric disorder and mood disorder on DQ question 5. The participant commented on the feedback form, “Not sure if clinical depression is a psychiatric ‘disorder’?”

Another adjustment that will be made to the main study is to lower the reading level of items in the 5F-Wel Adult version to a sixth-grade reading level. The authors of this measure will reconstitute the 5F-Wel Adult version with corresponding items from the 5F-Wel Teen version. The researcher will also offer to read the survey aloud to any persons who want to participate in the study but cannot read or have a reading level below that of the survey. The option of having the survey read aloud by the researcher or an available staff person at the treatment site may reduce error by participants who might take the survey, but read at a lower level than the survey and also allows for inclusion of those who cannot read. Researcher bias will be avoided and participant confidentiality will be protected by having participants record their own response, limiting the researcher or staff member to only reading the question and response options to the participant. These changes are due to descriptive statistics from the pilot study showing that 4 of the 22 participants (18.2%) have less than a high school degree, whereas the highest reading level of the surveys (5F-Wel) is at a ninth-grade level. Further, several program directors have expressed that the reading level of the survey may be too high for their clientele.

Research questions 1 and 2 were tested in this pilot study as well as an examination of correlations among study variables. A correlation matrix in Table 4

displays the relationships among the predictor variables. All of the second order wellness factors are statistically significantly correlated with Total Wellness with p -values all less than .01. This is one indicator of construct validity for wellness with an addictions population and is also illustrative of the interrelatedness of the wellness factors. Creative Self wellness had the strongest relationship with total wellness ($r = .807, p < .01$) and Essential Self wellness was the least correlated with total wellness ($r = .583, p < .01$). The researcher hypothesized that negative correlations will be found among wellness factors and difficulties in emotion regulation, relapse, number of days of substance use, and emotional suppression. This hypothesis was not supported by the Pearson Product correlations. Rather, positive correlations were found between Total Wellness, Creative Self wellness, Social Self wellness, and the DERS. It is possible that these results are due to the low sample size of the pilot study. The hypothesis that positive correlations will be found among wellness factors and reappraisal emotion regulation was also not supported based on the pilot study results. These results merit further testing with a larger sample size to more thoroughly assess these relationships. The inverse association between the DERS and reappraisal suggests that persons in substance abuse treatment who utilize more reappraisal emotion regulation strategies report less difficulties in emotion regulation. This finding indicates the importance of examining emotion regulation strategies on affect management problems, wellness, and relapse in the main study.

Despite a small cell size for the dependent variable, the researcher tested research question 2 by conducting a logistic regression with simultaneous entry of the four covariates. The hypothesis that Total Wellness and emotion reappraisal will significantly

decrease the odds of at least one relapse since the beginning of treatment whereas emotion suppression and difficulties in emotion regulation will significantly increase the odds of at least one relapse since treatment initiation was not supported. The control variable of total days in treatment was not included in the analyses due to the low sample size and cell size for the analysis. The four predictor variables explained 27 % of the variance in relapse outcomes. However, the classification tables indicated that predictive accuracy regarding relapse worsened after adding the four predictors in the regression model. The main study will be critical in more accurately evaluating this regression model with an adequate sample size.

Several limitations were noted related to the pilot study. Two potential procedural threats to internal validity were the variability in timing of when participants completed their questionnaires and type of treatment site (e.g. private versus hospital-based). For instance, at one site, participants completed the survey before group and at another site, surveys were completed before group by some participants and after group by others. Persons may complete their surveys differently based on whether they take them before, during, or after group counseling. Study outcomes may also differ between treatment facilities. The researcher will address these concerns in two ways: Scheduling one sequence of data collection times per site (e.g. data collection at site 1 will always occur after group, if that is the program director's preferred time). Secondly, the researcher will conduct statistical analyses to assess for inter-site differences and their impact on study results.

The sample size of 22 participants limited the analyses to correlations among the variables and a logistic regression. Further, the sample size allowed for limited power for the logistic regression which prevented the inclusion of the control variable in the regression model. Thus research questions 3-5 were unable to be answered. Several missing cases occurred on the Demographic Questionnaire potentially due to test-taking fatigue and the formatting of the questions. This made it difficult to accurately assess certain demographic variables such as number of days of relapse, number of prior treatment episodes, and number of persons in the household. These limitations will be addressed in the main study by amassing a sample size minimum in accordance with the power analysis as well as formatting changes to multiple items and wording revisions to items 2 and 12.

One potential limitation for the main study based on pilot study results are the positive correlations among Total Wellness, several second-order wellness factors, and difficulties in emotion regulation. It is thus possible that the direction of the hypotheses for the main study is incorrect. Further, the Creative Self factor contains questions about the ability to cope with emotions in a healthy way and was most highly correlated with Total Wellness. This causes some concern about the construct validity of these two measures with a substance abusing sample, since two seemingly opposing variables were found to be positively correlated.

Summary

The pilot study provided critical information regarding changes that were made in the main study. First, formatting changes were made to items to highlight and clarify

response options, and wording changes were made to items 2, 8, 8b, and 12. Steps were taken to improve study procedures including providing written instructions that will be read to the participants that address (a) where and how birthdate and test code are to be entered, (b) the double-sided pages for the survey, and (c) the 5F-Wel as the only survey in which responses are recorded on the bubble sheet.

The reading level of the 5F-Wel was lowered by the authors to sixth grade by using items from the 5F-Wel Teen. The 5F-Wel Teen utilizes the same items as the adult version, yet written at a lower reading level. Additionally, participants who wanted to participate, but who were unable to read or who read below a sixth- to eighth-grade reading level were offered the option of having the questionnaire packet read to them so that they can record their own responses.

CHAPTER IV

RESULTS

In Chapter I, the study was introduced with a focus on the purpose of the research. A review of the literature on the constructs of wellness, emotion regulation, and relapse is in Chapter II. In Chapter III, the methodology used in the current study was described including the research questions, hypotheses, and data analyses. The detailed results of the analyses conducted to test the study hypotheses are detailed in this chapter. First, a description of the sample is outlined ranging from general demographic information to treatment specific information. Descriptive statistics on the measures used for the study are discussed. Outcomes from each hypothesis test are presented along with the results of related ancillary analyses. A summary of the research findings is provided at the end of the chapter.

Description of Participants

Convenience sampling was used to obtain participants for the study. A total of 194 research packets were disseminated, and 179 were considered complete and utilized in the study; hence the response rate was 92%. Six of the 15 incomplete packets were due to ineligibility for the study. Specifically, two participants did not complete the eligibility form, and the remaining four participants were ineligible for the study due to receiving methadone treatment or attending current treatment for longer than one year. The additional 9 incomplete packets were due to participants not completing the survey. The

researcher or a treatment center staff member read the survey aloud to approximately 34 of the 194 participants (17.5%). The sample was obtained from nine different substance abuse treatment sites. Seven of the nine sites (77.8%) were public substance abuse facilities, while two of the nine sites were hospital-based addiction programs (22.2%).

Demographic characteristics were calculated for the study sample. The age of participants ranged from 19 to 67 years old. The average age of participants is 40 years old ($SD = 11.5$). There were a higher proportion of single participants (46.4%) as compared to married/partnered (23.5%) or separated, divorced, or widowed participants (29.1%). The majority of the participants were unemployed (57.5%) and not currently in school (81.6%) compared to study respondents who reported working part time or full time (31.3%). Roughly one in four participants had not completed high school and 27.4% had completed a bachelor's or technical school/A.A. degree. The study sample contained slightly more men than women (54.7%) and a nearly equal proportion of Caucasian (42.5%) and African-American participants (43.0%). The full demographic statistics of the sample are presented in Table 8.

Table 8

Demographics of Study Participants

Demographic Characteristic	<i>n</i>	%
SEX		
Male	98	54.7
Female	75	41.9
MISSING	6	3.4
TOTAL	179	100.0

Table 8 (cont.)

Demographic Characteristic	<i>n</i>	%
ETHNICITY		
Native American	11	6.1
Asian or Pacific Islander	5	2.8
African American	77	43.0
Caucasian	76	42.5
Hispanic/Latino/Latina	4	2.2
MISSING	6	3.4
TOTAL	179	100.0
MARITAL STATUS		
Married/partnered	42	23.5
Single	83	46.4
Separated	17	9.5
Divorced	31	17.3
Widowed	4	2.2
MISSING	2	1.1
TOTAL	179	100.0
EDUCATION LEVEL		
Less Than High School	44	24.6
High School Graduate	80	44.7
Trade/Technical/AA Degree	33	18.4
Bachelor's Degree	16	8.9
Advanced Degree	2	1.1
MISSING	4	2.2
TOTAL	179	100.0
EMPLOYMENT		
Full time	29	16.2
Part time	27	15.1
Retired- Not Working	12	6.7
Retired-Working Part Time	5	2.8
Not Working	103	57.5
MISSING	3	1.7
TOTAL	179	100.0

Table 8 (cont.)

Demographic Characteristic	<i>n</i>	%
CURRENTLY IN SCHOOL		
Yes	30	16.8
No	146	81.6
MISSING	3	1.7
TOTAL	179	100.0
SEXUAL ORIENTATION		
Gay	1	0.6
Lesbian	4	2.2
Bisexual	12	6.7
Heterosexual	144	80.4
MISSING	18	10.1
TOTAL	179	100.0
AGE		
18-34	54	30.2
35-54	103	57.5
55-over	14	7.8
MISSING	8	4.5
TOTAL	179	100.0

Treatment related demographic characteristics were also calculated for the research sample. Slightly over half (58.1%) of participants have been to substance abuse treatment prior to their current trip through treatment with 66.3% having attended treatment between 1 and 3 times. Half of the participants had been in their current treatment for 30 days or less (53.6%), 19.6% for 31 to 60 days, and 16.8% between 61 and 365 days of current substance abuse treatment. Most participants were seeking treatment for problems with alcohol (59.2%), marijuana (34.1%), and/or amphetamines

(35.2%). Roughly 44% of participants reported having received a psychiatric diagnosis in their lifetime, most commonly anxiety (27.9%) and/or a mood disorder (33%).

Most participants' goal for treatment was complete abstinence from alcohol or drugs (83.8%) while a minority of respondents sought to cut down their use of alcohol and illicit substances (11.7%). There was a relatively equal number of voluntary versus court mandated treatment clients who participated (49.7% and 50.3%, respectively). Nearly one in three study participants reported relapsing during their current stint in treatment, the majority of whom had relapsed for more than one day while in treatment (75.9%). A slight majority of participants (56.4%) reported that they had used substances for 15 or more days in the month prior to entering their current treatment. The mean number of years over which the participant had been using the substance(s) for which he or she was receiving treatment was 16.37 years ($SD = 11.07$). Finally, 38% of participants reported being currently involved in 12-Step support groups. A detailed list of treatment related demographic information for study participants is presented in Table 9.

Table 9

Treatment-Related Demographic Information

Treatment Descriptives	<i>n</i>	%
PRIOR TREATMENT		
Yes	104	58.1
No	75	41.9
TOTAL	179	100.0

Table 9 (cont.)

Treatment Descriptives	<i>n</i>	%
PRIOR TREATMENT TOTAL		
1 Prior episode	40	38.5
2 Prior episodes	19	18.3
3 prior episodes	10	9.6
4 + prior episodes	18	17.3
MISSING	17	16.3
TOTAL	104	100.0
TREATMENT DURATION		
30 days or less	96	53.6
31-60 days	35	19.6
61-365 days	30	16.8
MISSING	18	10.1
TOTAL	179	100.0
HOURS PER WEEK IN TREATMENT		
1-5	97	54.2
6-10	59	33.0
10+	13	7.3
MISSING	10	5.6
TOTAL	179	100.0
DRUG OF ADDICTION		
Alcohol	106/179	59.2
Depressants	18/179	10.1
Marijuana	61/179	34.1
Opiates	26/179	14.5
Amphetamines	63/179	35.2
Hallucinogens	6/179	3.4
PSYCHIATRIC HISTORY		
Yes	79	44.1
No	99	55.3
MISSING	1	0.6
TOTAL	179	100.0

Table 9 (cont.)

Treatment Descriptives	<i>n</i>	%
CO-OCCURRING DISORDER		
ADHD	15/179	8.4
Anxiety	50/179	27.9
Mood disorder	59/179	33.0
Psychotic disorder	6/179	3.4
Personality disorder	11/179	6.1
Other	0/179	0.0
GOAL FOR TREATMENT		
No drug/alcohol use	150	83.8
Cut down on drug/alcohol use	21	11.7
No change in drug/alcohol use	6	3.4
MISSING	2	1.1
TOTAL	179	100.0
REASON FOR TREATMENT		
Voluntary	89	49.7
Mandated	90	50.3
TOTAL	179	100.0
RELAPSE SINCE STARTING TREATMENT		
Yes	54	30.2
No	125	69.8
TOTAL	179	100.0
REGENCY OF RELAPSE		
1-7 days ago	31	57.4
8-14 days ago	13	24.1
15-30 days ago	2	3.7
30+ days ago	2	3.7
MISSING	6	11.1
TOTAL	54	100.0
TOTAL RELAPSE DAYS		
1 day	6	11.1
2-7 days	31	57.4
8+ days	10	18.5
MISSING	7	13
TOTAL	54	100.0

Table 9 (cont.)

Treatment Descriptives	<i>n</i>	%
15 + DAYS OF USE IN MONTH PRIOR TO TX		
Yes	101	56.4
No	78	43.6
TOTAL	179	100.0
DURATION OF SUBSTANCE USE		
0-10 years	65	36.3
11-20 years	61	34.1
21-30 years	28	15.6
31-40 years	16	8.9
41+ years	3	1.7
MISSING	6	3.4
TOTAL	179	100.0
12-STEP/SUPPORT GRP		
Yes	68	38.0
No	110	61.5
MISSING	1	0.6
TOTAL	179	100.0
LIVES WITH OTHERS		
Yes	138	77.1
No	40	22.3
MISSING	1	0.6
TOTAL	179	100.0
# OF PERSONS IN HOUSEHOLD		
1-2	78	43.6
3-4	35	19.6
5+	7	3.9
LIVES ALONE	40	22.3
MISSING	19	10.6
TOTAL	179	100.0
HOUSEHOLD INCOME		
Less than \$10,000	85	47.5
\$10,000 to \$50,000	58	32.4
\$50,000 to \$100,000	11	6.1
More than \$100,000	6	3.4
MISSING	19	10.6
TOTAL	179	100.0

Descriptive Statistics of the Instruments Used in the Study

The three measures utilized in the study included the Five Factor Wellness Inventory Adult (5F-Wel-A) (Myers & Sweeney, 2005b), Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004), and the Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003). The means and standard deviations for these scales were calculated. The mean value for the Total Wellness factor for the sample is 72.45 ($SD = 10.08$) with scores ranging from a minimum of 37.70 to a maximum of 97.40. The mean DERS total score for the sample is 86.96 ($SD = 24.67$), with scores ranging from 54 to 154. The ERQ consists of two independent factors: Reappraisal and Suppression. The mean Reappraisal score is 4.47 ($SD = 1.31$) and the mean Suppression score is 3.63 ($SD = 1.27$). Descriptive statistics for the 5 second order factors of the 5F-Wel, the 6 second order factors of the DERS, and additional statistics regarding the ERQ are presented in Table 10.

Table 10

Descriptive Statistics for Participants and Norm Group Scores

Instruments and Subscales	Norm		Sample		Possible Range	Observed Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
5F-Wel (Total)	71.63	15.87	72.45	10.08	25.00-100.00	37.69-97.39
Essential	73.38	20.07	73.48	12.00	25.00-100.00	29.69-100.00
Creative	73.18	16.15	73.95	11.64	25.00-100.00	33.75-100.00
Physical	66.56	18.13	67.07	15.37	25.00-100.00	30.00-100.00
Coping	68.73	12.73	69.66	11.29	25.00-100.00	35.53-94.74
Social	77.35	23.56	79.82	15.03	25.00-100.00	25.00-100.00
DERS (Total)	79.33	19.76	86.96	24.67	36.00-180.00	40.00-148.00

Table 10 (cont.)

Instruments and Subscales	Norm		Sample		Possible Range	Observed Range
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Nonacceptance	11.60	4.46	14.01	5.57	6.00-30.00	6.00-30.00
Goals	14.38	5.06	13.65	4.83	5.00-25.00	5.00-25.00
Impulse	11.19	4.50	13.98	5.60	6.00-30.00	6.00-30.00
Awareness	15.30	4.61	15.44	4.87	6.00-30.00	6.00-28.00
Strategies	16.20	6.23	18.41	7.10	8.00-40.00	8.00-39.00
Clarity	10.68	3.74	11.47	4.06	5.00-25.00	5.00-22.00
ERQ (Reapp Mean)	4.61	.98	4.47	1.31	1.00-7.00	1.00-7.00
ERQ (Supp Mean)	3.39	1.15	3.63	1.27	1.00-7.00	1.00-7.00

The researcher conducted one-sample *t*-tests comparing the means of each instrument and subscale to the corresponding published norm scores. Results indicated there were no mean differences between 5F-Wel Total scores and subscale scores for the sample compared to the norm except for Social Self ($t = 2.19, p = .03$). Social Self scores were higher for the sample mean than the norm score. The DERS total score for the sample mean was statistically different from the norm score ($t = 4.12, p = .00$), with the sample score being higher than the norm score. All DERS subscale means were statistically different from norm means except for the awareness subfactor. Reappraisal sample means and norm means were not statistically different; however, the suppression sample mean was higher than the norm score mean ($t = 2.56, p = .01$). Detailed results for all one-sample *t*-tests are listed in Table 11.

Table 11

One-sample t-tests Comparing 5F-Wel, DERS, and ERQ Sample Scores and Norm Scores

Instrument/Subscale	<i>t</i>	<i>df</i>	<i>Sig.</i>	<i>Mean Diff.</i>
5F-Wel (Total)	1.08	178	.28	0.82
Essential Self	0.11	178	.91	0.10
Creative Self	0.89	178	.38	0.77
Physical Self	0.44	178	.66	0.51
Coping Self	1.11	178	.27	0.93
Social Self	2.19	177	.03*	2.47
DERS (Total)	4.12	178	.00*	7.63
Nonacceptance	5.78	178	.00*	2.41
Goals	-2.03	178	.04*	-0.73
Impulse	6.67	178	.00*	2.79
Awareness	0.37	178	.71	0.14
Strategies	4.17	178	.00*	2.21
Clarity	2.60	178	.01*	0.79
ERQ (Reappraisal)	-1.46	178	.15	-0.14
ERQ (Suppression)	2.56	178	.01*	0.24

Note: * $p < .05$ (2-tailed)

Reliability Statistics for the Instruments Used in the Study

The internal consistency of each instrument used in the study was calculated and is presented in Table 12. The 5FWel demonstrated sound reliability regarding the total and second order wellness factors. The Cronbach's alpha coefficient for total wellness is .94. The reliability coefficient for the second order factors ranged from .79 to .87. The internal consistency for the DERS scale as a whole is .937. Finally, the Reappraisal factor

from the ERQ yielded a reliability coefficient of .825 and the Suppression factor showed an internal consistency of .625.

Table 12

Reliability Coefficients for Instruments Used in the Study

Instrument	# of Items	Norm Alpha	Study Alpha
5FWel (Total)	73	.98	.94
Essential	16	.95	.79
Creative	20	.96	.87
Physical	10	.90	.84
Coping	19	.89	.85
Social	8	.96	.81
DERS (Total)	36	.93	.94
Nonacceptance	6	.85	.86
Goals	5	.89	.81
Impulse	6	.86	.85
Awareness	6	.80	.76
Strategies	8	.88	.86
Clarity	5	.84	.73
ERQ (Reappraisal)	6	.79	.83
ERQ (Suppression)	4	.73	.63

Results of Hypothesis Testing

The following sections outline the statistical results of the hypothesis tests that were conducted for this study. The analyses utilized to test the five hypotheses are

Pearson Product Moment correlations, logistic regressions, binomial regressions, and Sobel tests for simple mediation.

Hypothesis One

Hypothesis one stated that negative correlations would be found among wellness factors and difficulties in emotion regulation, relapse, number of days of substance use, and emotional suppression. Pearson product moment correlations revealed a negative correlation between total wellness and difficulties in emotion regulation ($r = -.515, p < .01$). Negative correlations also were found between second order wellness factors and difficulties in emotion regulation. The hypothesis of a negative relationship between wellness factors and relapse was supported. For example, Total wellness was inversely correlated with relapse ($r = -.281, p < .01$). However, only Physical Self wellness was correlated with number of days of substance use ($r = -.203, p < .01$). The hypothesis of a negative relationship between wellness and suppression was not supported. Detailed results from the correlation analyses can be found in Tables 13-15.

Table 13

Correlation Matrix of 5F-Wel and Subscales, DERS, ERQ, Relapse, and Total Relapse Days

	Tot Wel	Create	Cope	Social	Essential	Physical
DERS	-.515**	-.470**	-.572**	-.288**	-.328**	-.322**
Reappraisal	.349**	.349**	.248**	.209**	.366**	.182*
Suppression	.002	.032	.000	-.070	.002	.017
Relapse	-.281**	-.219**	-.189*	-.217**	-.231**	-.281**
Total Relapse Days	-.108	-.033	-.102	-.037	-.067	-.203**

Note: * $p < .05$ (2-tailed); ** $p < .01$ (2-tailed)

Table 14***Correlation Matrix of DERS and Subscales, ERQ, Relapse, and Total Relapse Days***

	DERS Tot	Nonaccept	Goals	Impulse	Aware	Strategies	Clarity
Reappraisal	-.308**	-.221**	-.014	-.239**	-.422**	-.248**	-.281**
Suppression	.243**	.209**	.064	.184*	.265*	.164*	.252**
Relapse	.172*	.094	.078	.172*	.142	.152*	.149*
Total Relapse Days	.122	.065	.127	.193*	.014	.084	.073

Note: * $p < .05$ (2-tailed); ** $p < .01$ (2-tailed)

Table 15***Correlation Matrix of Reappraisal, Suppression, Relapse, and Total Relapse Days***

	Reappraisal	Suppression
Relapse	-.174*	.109
Total Relapse Days	.025	.073

Note: * $p < .05$ (2-tailed); ** $p < .01$ (2-tailed)

Hypothesis one also stated that positive correlations would be found among wellness factors and reappraisal. Positive correlations were found between all wellness factors and reappraisal including Total Wellness and reappraisal ($r = .349, p < .01$). As hypothesized, a negative correlation was found between difficulties in emotion regulation and reappraisal ($r = -.308, p < .01$) and negative correlations occurred between 5 out of 6 DERS sub-factors and reappraisal. There was a positive correlation between difficulties in emotion regulation and suppression ($r = .243, p < .01$) and positive correlations resulted between 5 out of 6 DERS sub-factors and suppression.

Difficulties in emotion regulation were positively correlated with relapse ($r = .172, p < .05$) as were impulse control ($r = .172, p < .05$), emotion regulation strategies

($r = .152, p < .05$), and emotion clarity ($r = .149, p < .05$). Impulse control was the only factor from the DERS scale to be correlated with number of days of substance use ($r = .193, p < .05$). Neither reappraisal nor suppression was correlated with number of days of substance use. The hypothesis that suppression would be positively correlated with relapse was also not supported. However, reappraisal was negatively correlated with relapse as hypothesized ($r = -.174, p < .05$).

Hypothesis Two

Hypothesis two stated that Total Wellness and emotion reappraisal will significantly decrease the odds of at least one relapse since the beginning of treatment whereas emotion suppression and difficulties in emotion regulation will significantly increase the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment. Logistic regression analyses were conducted to evaluate this hypothesis. Number of days since treatment was added to the first block of variables. Total wellness, DERS total score, reappraisal, and suppression were entered into the second block of the regression model. The model chi square indicated a statistically significant model $\chi^2 = 25.53$ ($df = 5, p < .01$). The Nagelkerke Pseudo R^2 revealed that the predictor variables accounted for 17.6% of the variance in relapse after controlling for number of days in treatment. Upon examining the individual odds ratios, Total Wellness and suppression were the only significant variables in the regression model ($OR = .934, CI = .893 -- .978, OR = 1.099, CI = 1.009 – 1.197$, respectively). The full results of the logistic regression model are shown in Table 16.

Table 16***Logistic Regression Analysis Predicting Relapse from Total Wellness, DERS, and ERQ***

	Var.	β	S.E.	Wald	Sig.	Exp.(B)	CI
Step 1	Days in Tx	0.005	0.003	2.769	0.096	1.005	[0.999, 1.011]
	Total Well	-0.068	0.023	8.545	0.003	0.934	[0.893, 0.978]
	DERS	-0.003	0.009	0.110	0.740	0.997	[0.979, 1.015]
	Reapp	-0.044	0.029	2.338	0.126	0.957	[0.905, 1.012]
	Supp	0.094	0.044	4.657	0.031	1.099	[1.009, 1.197]
	Constant	3.773	2.139	3.111	0.078	43.513	n/a

Note: $n = 161$; LR $\chi^2 = 25.530$ ($p < .01$); Pseudo $R^2 = .208$; Log likelihood = 170.656.

Hypothesis 2a stated that the 5 second order wellness factors will decrease the odds of at least one relapse since treatment initiation after controlling for the number of days since starting treatment. Logistic regression analyses were conducted to evaluate this hypothesis. The control variable of number of days since starting treatment was entered in the first block of predictor variables. Creative Self Wellness, Coping Self Wellness, Social Self Wellness, Essential Self Wellness, and Physical Wellness were entered into the second block of variables for the regression model. The model chi square indicated the model was statistically significant ($\chi^2 = 24.574$ ($df = 6$, $p < .01$)). There were no statistically significant relationships between Creative Self, Coping Self, Essential Self and relapse. However, Social Self Wellness and Physical Self Wellness were both statistically significant factors in decreasing the odds of relapse ($OR = .963$, $CI = .932-.994$, $OR = .964$, $CI = .932-.997$, respectively). The Nagelkerke Pseudo R^2 revealed that the predictor variables accounted for 16.9% of the variance in relapse after controlling for

number of days in treatment. The results of the logistic regression are presented in Table 17.

Table 17

Logistic Regression Predicting Relapse from 5 Second Order Wellness Factors

	Var.	B	S.E.	Wald	Sig.	Exp. (B)	CI
Step 1	Days in Tx	0.005	0.003	3.093	0.079	1.005	[0.999, 1.011]
	Create	0.025	0.029	0.750	0.386	1.025	[0.969, 1.084]
	Cope	-0.002	0.024	0.008	0.929	0.998	[0.952, 1.045]
	Social	-0.038	0.016	5.437	0.020	0.963	[0.932, 0.994]
	Essential	-0.014	0.022	0.424	0.515	0.986	[0.945, 1.029]
	Physical	-0.037	0.017	4.656	0.031	0.964	[0.932, 0.997]
	Constant	3.628	1.460	6.176	0.013	37.632	n/a

Note: $n = 160$; LR $\chi^2 = 24.574$ ($p < .01$.); Pseudo $R^2 = .203$; Log likelihood = 169.178.

Hypothesis Three

Hypothesis three stated that Total Wellness, difficulties in emotion regulation, and emotion regulation strategies will predict number of days of substance use since treatment initiation. Specifically, (1) Total Wellness and reappraisal strategies will have significant, negative relationships with number of days of substance use and (2) difficulties in emotion regulation and emotional suppression will have significant positive relationships with number of days of substance use. Binomial regressions were conducted to test this hypothesis. The omnibus test of the model indicated that it is statistically significant ($\chi^2 = 139.193$, $df = 4$, $p < .01$). Each variable in the predictor set was statistically significant. As hypothesized, difficulties in emotion regulation and

suppression increased the odds of multiple substance use days ($OR = 1.021$, $CI = 1.014$ – 1.028 , $OR = 1.046$, $CI = 1.019$ – 1.073 , respectively). Further, Total Wellness reduced the odds of multiple day substance use ($OR = .978$, $CI = .960$ – $.996$). The direction of the association between reappraisal and number of substance use days was contrary to the hypothesis, but reappraisal was positively related to number of substance use days ($OR = 1.089$, $CI = 1.065$ – 1.113). Detailed binomial regression results are shown in Table 18.

Table 18

Binomial Regressions Predicting Number of Substance Abuse Days from Total Wellness, DERS, and ERQ

	Var.	B	S.E.	Wald	Sig.	Exp. (B)	CI
Step 1	Total Well	-0.023	0.009	5.891	.015	0.978	[0.960, 0.996]
	DERS	0.021	0.004	35.401	.000	1.021	[1.014, 1.028]
	Reapp	0.085	0.011	57.131	.000	1.089	[1.065, 1.113]
	Supp	0.044	0.013	11.244	.001	1.046	[1.019, 1.073]
	Intercept	-6.506	0.838	60.230	.000	0.001	[0.000, 0.008]

Note: $n = 146$; Likelihood ratio $\chi^2 = 139.193$, $df = 4$, $p < .01$

A second binomial regression was conducted to test the hypothesis that the 5 second order wellness factors will each have significant, negative relationships with number of days of substance use. The model was significant as evidenced by $\chi^2 = 136.594$, $p < .01$. The Creative Self, Social Self, and Physical Self were independently associated with number of days of substance use with the Creative Self increasing the odds of multiple day relapse ($OR = 1.086$, $CI = 1.065$ – 1.107), and the Social Self and Physical Self decreasing the likelihood of multiple day relapse ($OR = .969$, $CI = .958$ –

.980, $OR = .947$, $CI = .935-.958$, respectively). Coping Self Wellness and Essential Self Wellness were not statistically significant predictors in the model. Table 19 presents the full results of the second binomial regression.

Table 19

Binomial Regression to Predict Number of Substance Use Days from 5 Second Order Wellness Factors

		B	S.E.	Wald	Sig.	Exp. (B)	CI
Step 1	Create	0.082	0.010	71.259	.000	1.086	[1.065, 1.107]
	Cope	-0.014	0.008	3.084	.079	0.986	[0.970, 1.002]
	Social	-0.032	0.006	32.214	.000	0.969	[0.958, 0.980]
	Essential	-0.002	0.008	0.046	.830	0.998	[0.983, 1.014]
	Physical	-0.055	0.006	76.917	.000	0.947	[0.935, 0.958]
	Intercept	-2.369	0.436	29.554	.000	0.094	[0.040, 0.220]

Note: $n = 146$; Likelihood ratio $\chi^2 = 136.594$, $df = 5$, $p < .01$

Hypothesis Four

Hypothesis four stated that difficulties in emotion regulation will mediate the relationship between Total Wellness and relapse and the relationship between Total Wellness and number of days of substance use. Sobel tests were conducted to assess for difficulties in emotion regulation as a mediator between Total Wellness and relapse. Multiple different regression analyses were conducted to obtain the paths from which to derive the test for mediation. First, a logistic regression was conducted with Total Wellness as the independent variable and relapse as the dependent variable. Results showed there was an association between Total Wellness and relapse ($OR = .939$, $CI =$

.907–.972). Then a linear regression predicting number of days of substance use from Total Wellness revealed a non-significant relationship. A linear regression was calculated between Total Wellness and difficulties in emotion regulation. There was an inverse relationship between Total Wellness and difficulties in emotion regulation $F(1, 178) = 63.917, p < .01, \text{adjusted } R^2 = .261$. Subsequently, a logistic regression was calculated using Total Wellness and difficulties in emotion regulation as predictors of the dependent variable of relapse. Only Total Wellness was a predictor of relapse ($OR = .943, CI = .907\text{--}.981$). The linear regression predicting number of substance use days from wellness and difficulties in emotion regulation was non-significant. The raw coefficients and standard errors were used to calculate whether or not the mediation was statistically significant. Results do not support the hypothesis for difficulties in emotion regulation as a mediator of the relationship between total wellness and relapse ($z = -.499, p = .618$) or total wellness and number of substance abuse days ($z = -.992, p = .321$). Tables 20 and 21 detail the Beta weights, t -statistics, and p -values for the mediation analyses.

Table 20

Testing DERS as a Mediator between Total Wellness and Relapse and Total Wellness and Number of Relapse Days

	Var	B	t	OR	p
Step 1	Total Well (IV) to Relapse (DV)	-0.063		0.939	.000
	Total Well (IV) to # Relapse Days	-0.060	-1.42		.158

Table 20 (cont.)

	Var	B	t	OR	p
Step 2	Tot Well (IV) to DERS (M)	-1.261	-7.995		.000
Step 3	<i>Predicting Relapse (DV)</i> Total Well (IV) DERS (M)	0.004		1.004	.658
Step 4	<i>Predicting # Relapse Days (DV)</i> Total Well (IV) DERS (M)	0.020	0.976		.331

Sobel test statistic for relapse: $z = -.499, p = .618$
Sobel test statistic for relapse days: $z = -.992, p = .321$

Table 21

Testing Reappraisal and Suppression as a Mediator between Total Wellness and Relapse and Total Wellness and Number of Relapse Days

		B	t	OR	p
Step 1	Total Well (IV) to Relapse (DV)	-0.063		0.939	.000
	Total Well (IV) to # Relapse Days	-0.060	-1.42		.158
Step 2	Total Well (IV) to Reappraisal (M)	0.272	4.949		.000
	Total Well (IV) to Suppression (M)	0.001	0.031		.975
Step 3	<i>Predicting Relapse (DV)</i> Total Well (IV) Reappraisal (M)	-0.027		0.974	.260

Table 21 (cont.)

		<i>B</i>	<i>t</i>	<i>OR</i>	<i>p</i>
Step 3 (cont.)	<i>Predicting Relapse (DV)</i>	0.054		1.056	.117
	Total Well (IV)				
	Suppression (M)				
	<i>Predicting # Relapse Days (DV)</i>	0.050	0.883		.379
	Total Well (IV)				
	Reappraisal (M)				
	<i>Predicting # Relapse Days (DV)</i>	0.075	0.923		.357
	Total Well (IV)				
	Suppression (M)				

Sobel Test Statistic for reappraisal and relapse: $z = -1.097, p = .27$

Sobel Test Statistic for reappraisal and relapse days: $z = .864, p = .388$

Sobel Test Statistic for suppression and relapse: $z = .026, p = .979$

Sobel Test Statistic for suppression and relapse days: $z = .026, p = .979$

The first part of hypothesis 4a stated that emotion regulation strategies will mediate the relationship between Total Wellness and relapse and the relationship between Total Wellness and number of days of substance use since treatment initiation. A mediation test was conducted using both reappraisal as a mediator in one test and suppression as a mediator in a second test. A linear regression using Total Wellness as a predictor of reappraisal was conducted yielding a statistically significant positive relationship between the two variables $F(1, 178) = 24.495, p < .01$, adjusted $R^2 = .117$. Predicting suppression from Total Wellness using linear regression yielded non-significant findings. Next, a logistic regression was calculated using Total Wellness and reappraisal as the independent variables and relapse as the dependent variable resulting in

Total Wellness having an inverse association with relapse ($OR = .946$, $CI = .912-.981$). The logistic regression predicting relapse from Total Wellness and suppression yielded an inverse relationship between Total Wellness and relapse ($OR = .938$, $CI = .906-.971$). The linear regression predicting number of substance abuse days from Total Wellness and reappraisal was non-significant. The linear regression predicting number of substance abuse days from Total Wellness and suppression was non-significant. The raw coefficients and standard errors were used to calculate whether or not the mediation was statistically significant. Results do not support the hypothesis for reappraisal as a mediator of the relationship between Total Wellness and relapse ($z = -1.097$, $p = .27$) or Total Wellness and number of substance use days ($z = .864$, $p = .388$). Similarly, results for the Sobel Test were non-significant when testing suppression as a mediator between Total Wellness and relapse ($z = .026$, $p = .979$) and Total Wellness and number of substance use days ($z = .026$, $p = .979$). The steps of the mediation analyses incorporating reappraisal and suppression are shown in Table 21.

Hypothesis Five

Hypothesis five stated that Total Wellness, difficulties in emotion regulation, and emotion regulation strategies will be significantly predictive of relapse and number of days of substance use after controlling for select socio-demographic variables. Logistic and binomial regressions were conducted to test the above hypothesis. The select socio-demographic variables included employment, psychiatric history, 15 or more days of substance use in the month prior to treatment, and prior episodes of treatment. In the logistic regression, the number of days in treatment (control variable) and socio-

demographic dichotomous variables were entered in the first block. The second block of predictors consisted of Total Wellness, difficulties in emotion regulation, reappraisal, and suppression. The model comprised of the control variable and socio-demographic variables was non-significant ($\chi^2 = 4.071, p = .539$). The second block of variables yielded a significant model ($\chi^2 = 26.235, p = .002$). The Nagelkerke Pseudo R^2 increased from .036 to .219 upon the entry of Total Wellness, difficulties in emotion regulation, reappraisal, and suppression to the model. Total Wellness was negatively associated with relapse ($OR = .941, CI = .894-.991$) and suppression was positively related to relapse ($OR = 1.118, CI = 1.023-1.222$). The full results are presented in Table 22.

Table 22

Logistic Regression Predicting Relapse from Total Wellness, DERS, and ERQ while Controlling for Socio-demographic Variables

	Var	B	S.E.	Wald	Sig.	Exp. (B)	CI
Step 1	Days Tx	.006	.003	2.519	.112	1.006	[0.999, 1.012]
	Employ	.298	.454	.430	.512	1.347	[0.553, 3.279]
	Prior Tx	.153	.413	.137	.711	1.165	[0.519, 2.616]
	Psy Hist	.576	.450	1.640	.200	1.780	[0.737, 4.299]
	15+ days	-.092	.421	.047	.828	.912	[0.400, 2.082]
	Tot Well	-.061	.026	5.377	.020	.941	[0.894, 0.991]
	DERS	.003	.011	.079	.779	1.003	[0.981, 1.026]
	Reapp	-.041	.030	1.808	.179	.960	[0.905, 1.019]
	Supp	.112	.045	6.047	.014	1.118	[1.023, 1.222]
	Constant	1.836	2.580	.506	.477	6.268	n/a

Note: $n = 158$; LR $\chi^2 = 26.235$ ($p < .01$); Pseudo $R^2 = .219$; Log likelihood = 162.556

A binomial regression was conducted to determine if the study predictors could account for variance in total relapse days above and beyond variance explained by prior treatment history, psychiatric history, employment status, and 15 or more days of substance use in the month prior to treatment. The control variables and predictor variables yielded a significant model ($\chi^2 = 210.061, p < .01$). Prior treatment ($OR = .564, CI = .426-.747$), psychiatric history ($OR = .717, CI = .530-.971$), and 15 or more days of substance use in the month prior to treatment ($OR = 2.919, CI = 2.068-4.119$), were all independently associated with total relapse days. Total Wellness ($OR = .976, CI = .957-.995$), difficulties in emotion regulation ($OR = 1.016, CI = 1.008-1.025$), reappraisal ($OR = 1.081, CI = 1.054-1.107$), and suppression ($OR = 1.055, CI = 1.026-1.084$) were independently associated with total relapse days above and beyond the variance accounted for by the socio-demographic variables. The detailed results of the binomial regression are shown in Table 23.

Table 23

Binomial Regression Analysis Predicting Total Relapse Days during Substance Abuse Treatment with Total Wellness, DERS, Reappraisal and Suppression while Controlling for Socio-demographic Variables

	Var	B	S.E.	Wald	Sig.	Exp. (B)	CI
Step 1	Employ	0.052	0.144	0.129	.719	1.053	[0.794, 1.397]
	Prior Tx	-0.573	0.144	15.907	.000	0.564	[0.426, 0.747]
	Psy Hist	-0.332	0.155	4.617	.032	0.717	[0.530, 0.971]
	15+ days	1.071	0.176	37.122	.000	2.919	[2.068, 4.119]
	Tot Well	-0.024	0.010	6.108	.013	0.976	[0.957, 0.995]
	DERS	0.016	0.004	16.077	.000	1.016	[1.008, 1.025]

Table 23 (cont.)

Var	B	S.E.	Wald	Sig.	Exp. (B)	CI
Reapp	0.077	0.013	38.203	.000	1.081	[1.054, 1.107]
Supp	0.053	0.014	14.492	.000	1.055	[1.026, 1.084]
Intercept	-6.216	0.968	41.251	.000	0.002	[0.000, 0.013]

Note: n = 144; Likelihood Ratio $\chi^2 = 210.061$, $df = 8$, $p < .01$

Summary of the Results

The primary task of this chapter was to test five hypotheses derived from the research questions presented in Chapter I. The first hypothesis, that negative correlations will be found among wellness factors and difficulties in emotion regulation, relapse, number of days of substance use, and emotional suppression, was partially supported given negative correlations were found between wellness factors and difficulties in emotion regulation, and wellness factors and relapse. Only Physical Self Wellness was negatively correlated with number of substance use days. Further, no correlations arose between wellness and suppression. Hypothesis one also stated that positive correlations would be found among wellness factors and reappraisal which was supported by the data.

Hypothesis two stated Total Wellness and emotion reappraisal would significantly decrease the odds of at least one relapse since the beginning of treatment whereas emotion suppression and difficulties in emotion regulation would significantly increase the odds of at least one relapse since treatment initiation after controlling for number of days since starting treatment. This hypothesis was also partially supported. Total Wellness and suppression were predictors of relapse in the expected directions, however, difficulties in emotion regulation and reappraisal did not account for any of the variance

in the model. Hypothesis 2a posited that the 5 second order wellness factors would decrease the odds of relapse. The hypothesis was partially supported since Social Self Wellness and Physical Self Wellness were predictors of relapse in the expected directions. The other wellness factors were not significant in the regression model. Hypothesis three tested whether Total Wellness, difficulties in emotion regulation, and emotion regulation strategies explain variance in total relapse days. All variables were statistically significant predictors of total relapse days, however, the association between reappraisal and total relapse days was not in the expected direction. Regarding hypothesis 3a, all wellness factors were related to decreased relapse except Essential Self Wellness and Coping Self Wellness which were non-significant. Further, the Creative Self was positively related to total relapse days which was not the hypothesized direction of the relationship. Hypothesis 4 and 4a which stated that difficulties in emotion regulation and emotion regulation strategies would mediate the relationship between wellness and relapse and wellness and total relapse days was not supported. Finally, hypothesis 5 which stated that Total Wellness, difficulties in emotion regulation, and emotion regulation strategies would account for variance in relapse and total relapse days was partially supported. Both models showed that several study variables explained variance in relapse and total relapse days above and beyond variance accounted for by the socio-demographic variables. In the next chapter, these results will be discussed by providing literature based interpretations of the findings, limitations of the study, and implications of the research findings.

CHAPTER V

DISCUSSION AND IMPLICATIONS

In Chapter IV, the results of hypothesis tests derived from the five research questions guiding this study were presented. In this chapter, interpretation and further explication of the analysis results are discussed. Specifically, descriptive statistics for study participants and the reliability of instrumentation for the study are reviewed along with their resultant impact on the data. Each of the five hypotheses is discussed in depth including their relevance, theoretical, and clinical implications. The results are deconstructed within the context of the three primary constructs in the study: Wellness, emotion regulation, and relapse. Finally, an integration of the various discussions from the chapter is provided. The limitations of the study are examined as well as the statistical and practical implications of this study regarding relapse models, counseling practice, and future research.

Participants

The study consisted of 194 total participants receiving outpatient, intensive outpatient, or day treatment for substance abuse, 15 of whom did not complete the survey due to ineligibility or not completing the survey packet. There was not sufficient data to analyze differences between those who completed the survey and those who did not, therefore it was not possible to determine if differences existed between those who chose to participate and those who did not. The majority of participants (77.8%) were receiving

treatment at public substance abuse/mental health facilities. Given that substance abuse facilities may differ demographically based on location and type of treatment site, this may have affected study results. Roughly 17.5% of the participants had the survey read to them by the researcher. It is possible that these participants differed in additional ways from the participants who elected to not have the survey read to them.

The sample had slightly more men than women (54.7% compared to 41.9%) and the predominant racial groups in the study were African American and Caucasian. There were notable demographic characteristics in the sample including the majority of participants being single, unemployed, not college educated, and heterosexual. Research has shown that demographic characteristics can have a significant impact on relapse and other substance abuse outcomes (e.g. Witkiewitz & Marlatt, 2004), thus limiting the generalizability of study results. Regarding treatment-specific characteristics, the majority of participants were receiving 10 hours or less per week of treatment. This statistic suggests that most participants were attending outpatient or intensive outpatient treatment rather than day treatment. Most participants also reported being in treatment for 30 days or less. Study results may thus be more applicable to short-term substance abuse clients in lower levels of treatment.

It is notable, however, that over half of the participants had been to previous treatment which suggests that much of the sample fits the literature on the chronicity of addiction and were coping with at least a moderately high level of addiction severity (McLellan et al., 2000; NIDA, 2009). Alcohol and marijuana were the most common substances for which persons were receiving treatment which matches SAMHSA's

(2010) statistics about these two substances as the most frequently abused. Nearly half of the participants reported having a co-occurring disorder, most often a mood or anxiety disorder, which is also consistent with epidemiological studies on the prevalence of co-occurring disorders (Grant et al., 2004; Stinson et al., 2005). Half or more of the participants live well below the poverty line, indicating a skewed sample regarding socioeconomic status.

Instruments

The three measures used in the study were the 5F-Wel, the Difficulties in Emotion Regulation Scale, and the Emotion Regulation Questionnaire. The 5F-Wel demonstrated solid reliability across the 5 second order wellness factors and excellent reliability for the Total Wellness factor. The reliability levels for this particular study suggest that this instrument may be appropriate for use with other clinical samples or in future studies with substance abusing clients. The 5F-Wel, however, yielded the most outliers of all of the instruments. The large majority of the outliers from the 5F-Wel fell within 3 standard deviations of the mean. An analysis of normality examining the skewness and kurtosis of the distributions from the 5F-Wel scales revealed that all scales fell within the normal range. The Social Self scale showed the widest skewness-kurtosis range, but still fell within the normal distribution. Although many participants hit the maximum score on different wellness scales, the reason for low extreme values on the 5F-Wel may be reflective of genuinely low wellness which does fit the literature on the quality of life of addicted persons (Smith & Larson, 2003).

Participants scored quite consistently with current norm scores for the 5F-Wel across the higher order and second order wellness factors. One sample *t*-tests demonstrated there were no statistically significant differences between sample and norm means on Total Wellness and all but one wellness subscale. This study was also among the first to utilize the 5F-Wel in a clinical sample. The substance abusing sample scoring comparably to the norm sample on the 5F-Wel is contrary to the literature on quality of life of recovering persons. Research has shown that persons with SUDs report a range of physical, self-care, and emotional health problems (Dennis et al., 2007; Laudet et al., 2006, 2009; Smith & Larson, 2003). There are multiple possibilities for these findings. This could be indicative of the benefit of treatment. Specifically, participating in substance abuse treatment may result in the client's perception of having increased wellness. Quality of life studies on substance abusing persons do not always utilize participants who are currently in treatment, thus their wellness levels may be lower. Additionally, wellness levels may vary based on the substance of addiction. Heroin addicted clients have been shown to have a plethora of health problems and since opiate abusers comprised a minority of this sample, wellness levels were higher (Hser, Huang, et al., 2007). There is also potential for social desirability in the survey, because it is relatively clear which responses to each question favor higher wellness compared to lower wellness. Participants may also have been concerned that treatment center staff would see the results (in spite of the informed consent noting that only the researchers had access to the data) and thus over-reported their wellness levels. However, Smith, Robinson, and Young (2007), who used the Marlowe-Crown Social Desirability Scale

with the 5F-Wel, reported that wellness and social desirability were not correlated. As a consequence, the results obtained in this study may not have been impacted by participant efforts at self-presentation.

The reliability for the reappraisal factor of the ERQ was strong and also was significantly higher than the suppression factor. This discrepancy in reliability between the two factors also occurred in research by Gross and John (2003). However, the reliability of the suppression factor is sufficiently low that study results utilizing this factor must be viewed with caution. An alpha level of .62 severely limits power and validity and could result in higher error rates for data on suppression. Internal consistency for the DERS total score was high and the 6 subfactors also yielded acceptable levels of reliability. The DERS and ERQ both fell comfortably in the normal distribution upon examining their skewness and kurtosis, and an outlier analysis found no extreme values occurring in either of these two scales. One sample *t*-tests indicated study participants scored higher on average on most components of the DERS scale, as expected. The mean suppression score for this sample was also higher than that of the norm sample, as anticipated.

Discussion of Hypotheses

Hypothesis One

Multiple relationships among study variables were tested in hypothesis one, some of which were supported, and others that were not. The negative relationship between Total Wellness and difficulties in emotion regulation was confirmed. The strong inverse correlation between these two variables matches that of other studies that show a link

between emotion regulation and wellness (Geisler et al., 2010; Gross & John, 2003). Correlations between the 5 second order wellness factors and the DERS were all negative and statistically significant as hypothesized. The wellness factor with the highest inverse correlation with difficulties in emotion regulation was the Coping Self. The Coping Self consists of scales measuring Leisure, Stress-management, Self-worth, and Realistic Beliefs (Myers & Sweeney, 2004). Each of these constructs requires emotional intelligence and regulation in order to have higher wellness, thus it is intuitive that emotion regulation problems and aspects of coping would be inversely related.

Total Wellness also showed a moderately strong positive relationship with use of reappraisal strategies. This fits both the conceptual and empirical literature on wellness and reappraisal (Garnefski & Kraaij, 2007; Haga et al., 2009). Reappraisal was highly correlated with Creative Self Wellness. Interestingly, the highest wellness factors-reappraisal relationship was with the Essential Self. Self-care, a third order factor of the Essential Self may relate strongly with reappraisal. It also is possible that one's spirituality, and support for cultural and gender identity, enhance one's energy and ability to reappraise upsetting emotions. This may factor into the success of spiritual programs such as 12-Step groups and fits with literature that correlates spiritual satisfaction with reduced substance use behaviors (Laudet et al., 2006). Suppression did not correlate with any variables except difficulties in emotion regulation. Research shows that suppression tends to cause emotional and other problems (Gross, 2008; Gross & John, 2003). The hypothesis of a negative relationship between suppression and wellness was not supported. The hypothesis was based upon literature suggesting that suppression may

deplete self-control resources (Gailliot, Plant, et al., 2007) and the quality of social interactions (Gross, 2002) which can affect well-being.

All of the wellness factors had an inverse relationship with relapse as hypothesized, with Total Wellness, Physical Self Wellness, and Essential Self Wellness having the strongest negative relationships with relapse. This supports the literature on spirituality as a buffer against relapse (Laudet et al., 2006). The results of this study indicate that it might be beneficial to further explore spiritual wellness as a relapse predictor. Study findings also converge with research that Physical Wellness interventions such as exercise may reduce relapse rates (Brown et al., 2009; Ussher et al., 2009).

Congruent with study hypotheses, several of the emotion regulation variables were associated with whether or not participants relapsed including total difficulties in emotion regulation, emotion regulation strategies, clarity, impulse control, and reappraisal. Correlations between emotion regulation factors and relapse were generally small. It is possible that these global measures of emotion regulation and emotion regulation strategies were too broad to capture any relationship with relapse. For example, if the ERQ asked about using cognitive reappraisal in different relapse situations, a relationship between self-control and relapse may have been discovered. It is notable, however, that impulse control was the only emotion regulation variable correlated with both relapse variables. The relationship between impulse control and relapse is certainly a topic for future investigation.

Hypothesis Two

The second hypothesis presented was that Total Wellness, difficulties in emotion regulation, reappraisal, and suppression would each have significant main effects contributing to the variance in whether or not participants relapsed. The hypothesis was partially supported. The predictor set accounted for an additional 17.6% of the variance beyond that of the control variable of number of days in treatment. The overall amount of variance explained by the model was statistically significant, yet the majority of the variance could be explained by factors other than the predictor variables. Difficulties in emotion regulation remained a non-significant factor in predicting relapse as was suggested by the small correlation between this variable and relapse. Total Wellness was the second strongest predictor of whether or not a study participant relapsed and was negatively associated with relapse, as hypothesized. Marlatt's (1985b) Covert Antecedents model and early research on lifestyle interventions substantiates the potential that this connection exists empirically as does other research on lifestyle interventions (Marlatt & Marques, 1977; Marlatt & George, 1984). It may be more difficult to demonstrate current wellness as a predictor of past relapse, rather than starting from evaluating wellness and relapse from the start of treatment through post-treatment. Thus the fact that wellness had any predictive ability regarding relapse indicates the importance of further study with this construct for recovering persons.

The strongest predictor of relapse was suppression, which accounted for approximately 10% of the variance in relapse. Given the low Cronbach's alpha of this scale, any conclusions about suppression must be viewed tentatively. However, this result

does lend support to the Limited Resource Model that persons suppress or avoid feelings resulting in drug or alcohol use (Baumeister, 2003). Because some research indicates that negative emotional states are significant relapse triggers (Cooney et al., 1997), suppression seems to be a likely relapse factor since addicted persons may suppress these emotions via relapse.

The second hypothesis that the 5 second order wellness factors would each have significant main effects in the logistic regression equation to predict relapse was partially supported, although independent associations were small. Only Social Self Wellness and Physical Self Wellness were statistically significant predictors of the variance in relapse outcome. Social support provides a buffer against relapse, according to several researchers (Broome et al., 2002; Laudet et al., 2006). Others have noted how negative social support can interfere with addiction recovery (Chong & Lopez, 2008). Although Social Self Wellness does not measure recovery-specific social support which has found to be an important variable (Beattie & Longabaugh, 1999), this regression outcome demonstrates the continued importance of global interpersonal wellness in reducing the odds of relapse.

Hypothesis Three

The third hypothesis stated that Total Wellness, difficulties in emotion regulation, reappraisal, and suppression will account for variance in total relapse days when controlling for number of days of substance use. This hypothesis was developed in addition to hypothesis two, to determine if the above variables would have different predictive abilities regarding multiple relapses versus a single relapse since starting

treatment. The hypothesized relationships for independent main effects of the predictor set are the same as those in hypothesis two. All predictor variables in the model were significant, but again contributed to a relatively small amount of the variance in total relapse days. The amount of variance explained by the independent variables regarding total relapse days is similar to that for the dichotomous relapse dependent variable. Thus measuring relapse differently does not appear to change the size of the impact of the predictor variables.

What did change, however, is that all variables were statistically significant. Reappraisal and suppression were the strongest predictors of total relapse days. A one unit increase in suppression resulted in a 4.6% increase in number of relapse days. Reappraisal was the variable most strongly associated with total relapse days except in the opposite direction of what was hypothesized. As reappraisal increased, the odds of multiple day relapse increased. It is possible that multiple day relapsers perceive that they use reappraisal more often, but the questionnaire items did not inquire about the success of the reappraisal strategies. As noted previously, had the questionnaire been specifically related to reappraisal and suppression in relapse situations, the results may have differed. Further, it might be the case that as relapse increases, the attempts at reappraisal increase in order to compensate and attempt to address the relapse.

It is important to consider that the endorsement of the use of various coping skills does not mean they are effective or are only used by persons who cope successfully. Reappraisal skills can be used in an unhelpful way such as cognitively avoiding, rationalizing, or denying an issue or relapse trigger. Marlatt's (1985b) Covert

Antecedents model mentions several points in the relapse process in which cognitions are involved in a negative manner including a “desire for indulgence or immediate gratification (I owe myself a drink)” (Marlatt, 1985b, p. 48). Similar to the social support construct evolving into the examination of recovery-specific social support, the reappraisal and suppression constructs may need to have measurement items that are specific to high risk relapse situations.

The hypothesis that the 5 second order wellness factors would each independently decrease the likelihood of multiple day relapse was partially supported. All variables were statistically significant predictors in the model except for the Essential Self and Coping Self, although each predictor explained only a small amount of the variance in total relapse days. Physical Self Wellness was a strong predictor amongst the other independent variables. Interestingly, and contrary to the direction of the hypothesis, Creative Self Wellness was positively associated with number of relapse days and was the strongest predictor of multiple days of relapse. This lies in contrast with its non-significance in the logistic regression model examining relapse as a dichotomous variable. The difference in outcomes between examining relapse as a dichotomous versus a continuous variable is worth noting. Miller (1996) noted that relapse outcomes may differ depending on how the variable is operationalized.

The Creative Self is comprised of the following third order factors: Thinking, Emotions, Control, Work, and Positive Humor (Myers & Sweeney, 2004). It is possible that the multiple relapse group reported higher rates of wellness in an effort to compensate for relapse. Perhaps those who relapse place a greater focus on their Creative

Self Wellness. Because half of the participants were court mandated for treatment, if they happened to relapse, they likely had to apply increased self-control, constructive thinking, and positive humor to avoid subsequent relapse and punishment from the criminal justice system. Stated differently, in the context of within treatment relapse, certain coping skills may be positively associated with relapse if clients increase these behaviors in response to a relapse because of their desire to fulfill the requirements of mandated treatment.

Hypothesis Four

Hypothesis four used Sobel tests to examine the hypothesis of emotion regulation and emotion regulation strategies as independent mediators of the relationship between wellness and relapse. Specifically, wellness was hypothesized to be predictive of relapse as well as difficulties in emotion regulation, reappraisal, and suppression. However, the researcher hypothesized that the latter three emotion regulation variables were driving the relationship between wellness and relapse such that the wellness-relapse relationship would diminish upon entering any of the three emotion regulation mediating variables. No evidence was found to support the hypothesis of this mediating relationship. This relapse model was based on Marlatt's (1985b) Covert Antecedents model which specified that lifestyle imbalance leads to a "desire for indulgence" followed by cravings and cognitive distortions favoring relapse which may eventually result in relapse (p. 48).

Because the relationship between each of these variables and relapse was small, the likelihood that the mediation hypothesis would be supported was low. The absence of a mediation may be due in part to the methodology of the study. Relapse was measured ex post facto, and this may negatively affect the validity of the model. Additionally,

measuring current wellness, difficulties in emotion regulation, and emotion regulation strategies may not reflect the actual levels of these constructs immediately leading up to a relapse. Some researchers have utilized methodological tools such as ecological momentary assessments (Hopper et al., 2006) to more clearly assess factors that affect the relapse process. Although outcomes of the predictor variables have differed when measuring relapse as a dichotomous variable versus a continuous variable, the mediation of the relationship between wellness and number of relapse days by emotion regulation also was not supported.

Hypothesis Five

Hypothesis five sought to examine whether the predictor variables for the study could explain the variance in relapse and number of days of relapse above and beyond four socio-demographic variables that have shown predictive rigor in the substance abuse literature. Hypothesis five was partially supported regarding the dichotomous relapse outcome variable. The predictor variables in this model contributed to an additional 18.3% of variance in the odds of relapse beyond the four socio-demographic variables. Further, none of the socio-demographic variables were statistically significant predictors of relapse in this model. This is a significant finding given that the other variables have demonstrated efficacy at predicting relapse. The variance accounted for by each predictor is small, but statistically significant. Only two of the predictors were significant in the model. Total wellness and suppression were both independently associated with relapse in the hypothesized direction; a one unit increase in Total Wellness decreased the odds of relapse by about 6%. A one unit increase in suppression increased the odds of relapse by

nearly 12%. This finding suggests that wellness merits further exploration along with previously investigated demographic variables such as employment, psychiatric history, and treatment history because wellness contributes uniquely to the variance in relapse. Despite concerns about the internal consistency of the suppression scale, the suppression variable has been consistent in this study in contributing to the variance in whether or not participants relapsed.

The second part of hypothesis five is that the predictor variables would be independently associated with number of relapse days above and beyond the addition of four socio-demographic variables to the model. The hypothesis was partially supported given that Total Wellness, suppression, reappraisal, and difficulties in emotion regulation were independent contributing factors to variance in the regression model. One significant finding is that unlike in the model with the dichotomous relapse variable as the outcome, the socio-demographic variables accounted for a substantial amount of variance in number of relapse days. Specifically, use for 15 or more days in the month prior to treatment increased the odds of multiple day relapse by nearly a factor of three.

Research by Ahmadi et al. (2009) and Hillhouse et al. (2007) showed that use of substances for 15 or more days in the month prior to treatment was one of the strongest predictors of future relapse. This finding was replicated in this study suggesting that indicators such as baseline frequency of use are an important measure of relapse risk. Also, participants who had received a psychiatric diagnosis and who had attended prior addictions treatment were less likely to have multiple relapse days since starting treatment. Dennis et al. (2005) found that as the number of treatment episodes increases,

so does the risk of relapse which contradicts the findings in this study. However, literature has shown that psychiatric history such as a co-occurring mood disorder can be associated with decreased relapse rates (McKay et al., 1997).

Apparently, the socio-demographic variables hold significantly more predictive power regarding multiple day- relapses as compared to single-day relapse. This is a drastic difference from the results of the logistic regression model in which these variables explained a minimal amount of variance. Thus, there seem to be critical demographic differences between those who relapse more than once and those who do not. Having attended prior treatment greatly decreases the likelihood of multiple day relapse. This is an important finding given the potential implication that treatment is generally effective. In other words, people's rate of relapse declines with each additional trip through substance abuse treatment. This converges with large scale empirical data collected by the National Institute on Drug Abuse which reports that more exposure to treatment yields better outcomes (NIDA, 2009).

In addition to these larger findings, Total Wellness, difficulties in emotion regulation, suppression, and reappraisal were also predictors of multiple day relapse. A one unit increase in Total Wellness decreased the odds of multiple day relapse by 2.4%. As suppression and difficulties in emotion regulation increase, the likelihood of multiple relapse days increases. Additionally, reappraisal was positively associated with multiple relapse days. One can conclude that Total Wellness, difficulties in emotion regulation, suppression, and reappraisal were consistent predictors of total relapse days across multiple hypotheses in the study. This suggests the importance of examining these

constructs even if their contribution to the variance on number of relapse days is much smaller than the four demographic variables. This finding also indicates that a wellness model of relapse may differ depending on how relapse is being measured, although Total Wellness and suppression were consistent predictors of relapse regardless of how the relapse construct was measured.

The hypothesis related discussion concludes here; however, the macro level implications of this research are discussed in the following sections including how the results relate to research on wellness, emotion regulation, relapse, and relapse models. Study limitations and considerations for counselors, counselor educators, and future research are also discussed.

Major Findings

Wellness

Several major results were obtained from analysis of study data that are relevant to the wellness construct. First, the wellness construct was measured in a clinical sample in this study. This meets the call for wellness research with clinical populations echoed by Myers and Sweeney (2008). The findings in this clinical sample reflect that their wellness levels are similar to the norm database of those who have completed the 5F-Wel. It will be important to explore wellness scores across various populations who have received clinical diagnoses in order to examine if higher order and second order wellness differ based on the type of mental health concern.

Understanding and furthering the research on correlates of wellness is also important. This study extends the research on additional constructs correlated with

wellness. Emotion regulation variables, particularly difficulties in emotion regulation, were highly inversely correlated with wellness. In fact, Coping Self and Creative Self were the second order wellness factors most strongly negatively correlated with difficulties in emotion regulation. This is a key finding given that one's well-being seems to be greatly associated with one's ability to understand, accept, and regulate one's emotions. These emotion regulation tasks are most related to one's ability to manage stress, self and other beliefs, leisure, emotions, and cognitions. Although suppression does not appear to be an important factor in wellness levels, cognitive reappraisal was positively related to all wellness factors. Surprisingly, reappraisal was most strongly positively correlated with Essential Self wellness.

The findings from this study suggest that the relationship between emotion regulation strategies and Essential Self Wellness merits further investigation. For instance, a sense of meaning, purpose, and spiritual wellness may serve as a resource that improves one's perspective and mood, thereby increasing the ability to regulate emotions. Conversely, persons who are able to cognitively reappraise or exert emotional self-control may feel more spiritually connected, are able to take care of themselves, and have a more positive perspective on their gender and culture.

Most importantly, there appears to be a statistical relationship between Total Wellness and relapse that resulted from each hypothesis test. Several of the second order wellness factors may be implicated in relapse as well. This study provided preliminary evidence that a recovering person's level of wellness may influence to some degree their likelihood of continued relapse. One overarching topic for future exploration is creating a

wellness-based model of relapse and recovery. Based on these limited results, there was not sufficient support for the model of relapse proposed in this study in which wellness is predictive of relapse while mediated by emotion regulation constructs. The model may need to be revised and/or different methodologies and analyses need to be considered to evaluate this relapse model more effectively. Additional thoughts will be elaborated upon in the section on future research.

Physical Self Wellness seemed to be a consistent predictor of relapse. It is possible that poor physical health renders a recovering person vulnerable to future relapse. Healthy lifestyle behaviors often are neglected by substance abusing persons. Further study could examine the third order factors of Physical Wellness to determine if deficits are more related to exercise or a person's diet.

Creative Self Wellness had a curious relationship with relapse in that one of the models showed that this aspect of wellness increased the likelihood of multiple days of relapse. This seems contradictory, however, because Creative Self was non-significant in predicting dichotomous relapse outcomes. It became clear though, that the relationships among the variables changed depending on how relapse was being measured. Study participants who relapse on more than one occasion within one year may strive harder in this area of their well-being in order to overcome or overcompensate for their returns to substance use. Further, the quantity of substances used was not measured, making it difficult to comprehend the impact of the substance use on study participants. Multiple within-treatment relapses may also increase the participant's level of denial and hence, might influence him or her to over-report wellness.

Emotion Regulation

The findings on emotion regulation in this study build on existing research on related constructs. Upon examining the norming data on the DERS, which employed 357 undergraduate students (Gratz & Roemer, 2004), DERS mean scores for the total score and 6 subfactors were generally higher in this study as compared to the norming study for this instrument. For instance, the mean total DERS score for the initial norming sample was 79, while the mean total DERS score in this sample is 86.96. In other words, the participants in this study on average reported having significantly more difficulties in regulating their emotions than the undergraduate students in the norming sample for the measure. There also seemed to be a difference between the norm scores for means across the subfactors compared to this study, with participants in this study scoring higher (more emotion regulation problems) on four of the six DERS subfactors. This provides initial evidence that substance abuse and co-occurring disorders populations may experience more difficulty regulating their emotions. These findings were expected given a study comparing emotion management difficulties across different clinical populations using the DERS revealed that persons with SUDs have similar emotion regulation problems to persons with other mental health diagnoses (Aldao et al., 2010). Interestingly, the analyses for this study did not reflect that emotion regulation difficulties as measured by the DERS factored into either relapse variable.

Emotion regulation as measured by the DERS was not highly related to relapse in this study. A longitudinal exploration of relapse might bear different results. Emotion regulation deficits measured by the DERS also might be more connected to recovery

related problems, addiction severity, and other substance use behaviors rather than relapse. For example, persons scoring higher on the DERS might have higher relapse rates upon leaving treatment. Moreover, persons with emotion management issues may be more likely to place themselves in high risk relapse situations, which are not strongly captured by using relapse as the primary outcome measure.

The difficulties in emotion regulation construct was highly negatively related to well-being. There are strong potential considerations given this association. Building emotion regulation strategies, accepting, and processing one's emotions may thus improve a person's overall well-being. The study also focused on two specific emotion management strategies: Reappraisal and suppression. Similar to previous studies using the ERQ (Gross & John, 2003), the reliability coefficient for suppression was low and the construct did not seem to be as strongly related to other variables as reappraisal.

Reappraisal and suppression were key variables in explaining variance in relapse. Suppression was among the strongest predictors of relapse, yielding small positive associations in most of the models in the study. Suppression was expected to influence relapse due to its inverse relationship with indicators of well-being (Gross & John, 2003). Reappraisal also was a factor in accounting for variance in the odds of relapse. However, reappraisal was positively associated with relapse in two of the models. Another reason for this occurrence may have been that because all study participants were currently in treatment, their attempts to use reappraisal skills were increased overall. Participants may thus report incorporating reappraisal skills commonly and yet still relapse. Further, participants who relapse might use reappraisal more in an effort to "get back on track."

Hence, an association may have developed between using reappraisal skills and relapsing. Future studies should examine different measures of these strategies including an addiction specific questionnaire about using emotion management skills. Finally, the ERQ does not assess for the effectiveness of the coping, only one's level of agreement regarding the use of these skills. Hence, one might frequently reappraise, but in an ineffective manner for preventing relapse or to no avail.

Relapse

This study attempted to take preliminary steps towards building a wellness-based model of relapse. In this study I elected to measure relapse as an either/or variable and as a rate (total number of relapse days since starting treatment). When examining models for the two different relapse outcomes, the significant predictors changed as a function of the relapse measurement. This provides support for the notion that studies of the same sample using different relapse measures may yield different results. Assessing the models using total relapse days as the outcome seemed to yield the most unexpected results. The dichotomous relapse variable revealed significant predictor variables in the expected directions while total relapse days models resulted in variables such as Creative Self Wellness and reappraisal increasing the odds of total relapse days. Perhaps multiple day relapsers differ from single incident relapsers in unexpected ways. Additional research using different methodologies will help to clarify the nature of the relationships among these variables. It is also worth noting that although these unexpected findings were statistically significant, the variance in relapse accounted for by most of the variables in the study was relatively small and did not reach a high level of practical significance.

Wellness and aspects of emotion regulation do appear to have an impact on relapse. Some evidence in support of building a model incorporating these variables was found. A critical finding was that wellness, suppression, and in some cases reappraisal explained the variance in relapse odds above and beyond key socio-demographic variables selected from the literature on relapse. This suggests that continued investigation of wellness, emotion regulation, and relapse is warranted. The importance of demographic factors was replicated in this study as well when using total relapse days as the dependent variable in the model. Results showed that past substance use frequency is an extremely strong indicator of relapse. Prior treatment history and psychiatric history were highly associated with decreasing the odds of total relapse days. This is promising, because the results suggest that psychiatric history did not increase multiple day relapse risk in this particular sample. Further, clients who had received more episodes of treatment were less likely to have more than one relapse day while in treatment which indicates the efficacy of treatment in reducing relapse rates. However, the results of the impact of the socio-demographic variables on relapse must be viewed with caution because they might also be an artifact of operationalizing relapse as number of relapse days since initiating treatment.

Limitations

Several limitations have been noted regarding the current study. These fall into the categories of study design limitations, sampling limitations, and measurement limitations. Utilizing the method of convenience sampling limits the generalizability of study results, because the sample was not truly obtained at random. The convenience

sampling method resulted in the majority of participants coming from public treatment sites rather than a dispersion of hospital-based, private, and other public facilities. Thus conclusions must primarily be drawn regarding clients in public treatment. An aspect of the study design that introduced increased risk of error variance is that participants took the survey at different times at different sites. For instance, some participants completed the survey at the beginning of group, while the project directors at other sites preferred the survey be administered at the midpoint of the group counseling session or at the end. Participants' moods, outlook, and energy levels might differ depending on the sequence of when they complete the survey which introduces the possibility of error. Further, 17% of the sample had the survey read to them whereas the remainder completed the survey at their own pace. There may be differences in study outcomes based on the demographic variable of reading level.

Another significant limitation of the design is that the study was cross-sectional in nature and thus I was trying to measure relapse retrospectively as it related to current levels of wellness and emotion regulation. This leaves more room for error variance, because the person is being asked to recall data such as the number of times they have relapsed. It also is more challenging methodologically to draw conclusions about past relapse from current states of being. Thus any conclusions drawn about the relationships among wellness, emotion regulation, and relapse must be viewed tentatively.

The measurements used in the study pose some potential limitations to study outcomes. For example, the 5F-Wel has not been validated with clinical populations and may contain some risk of being invalid with clinical populations (although descriptive

and reliability statistics for this particular sample do not indicate this). The reliability coefficient for the suppression factor of the ERQ was .62 which is extremely low and thus calls into question the results of any analyses utilizing this construct. There were several instances of missing data on the demographic questionnaire, which introduces error into the results. For instance, several participants reported relapsing over more days than they reported being in treatment. The researcher was thus unable to include discrepant relapse data into the analyses. The missing cases on the demographic form may have been due to test taking fatigue because this was the last form in the packet. It is possible that some of the demographic questions needed to be written more clearly to reduce the likelihood of participant misunderstanding of study questions.

The measurement of relapse in the study was another methodological limitation. Researchers have argued that measuring relapse as a dichotomous variable does not give a true picture of addiction severity (Miller, 1996) because a relapse can range from as minor as taking one sip of alcohol and then returning to abstinence to going on an alcohol binge for four days. It can be debated that measuring relapse dichotomously misses the subtlety and variability that could be captured by a more diverse measure of relapse such as the quantity, frequency, and duration of relapse. The researcher did attempt to get an indicator of relapse severity by also utilizing total relapse days since starting treatment as an additional outcome variable. However, this poses the methodological risk of further error because multiple day relapsers had to recount both how long they had been in treatment and their total number of relapse days. As previously noted, in a few cases this

data was discrepant suggesting that this recall or the content of the question led to some confusion on a small scale.

Implications

The findings from the current study on the relationship between wellness, emotion regulation, and relapse merit examination in different contexts related to the counseling profession. In the following sections, study results are de-constructed as they relate to relapse models such as the Covert Antecedents Model (Marlatt, 1985b) and Dynamic Model of Relapse (Witkiewitz & Marlatt, 2004). The utility of the current research results to both counselors and counselor educators are then discussed. Finally, possibilities for future research based on current study findings are presented.

Relapse Models

The current study holds implications for the relapse models described at length in Chapter II. The regression models in this study most closely (although indirectly) tested Marlatt's (1985b) Covert Antecedents model of relapse in which lifestyle, mediated by cognitive and emotion regulation, can lead to risk for a relapse. This study lends partial empirical support to this conceptual model. Wellness appears to be correlated with relapse and resulted in slight decreases in the odds of relapse and multiple relapse days even when including socio-demographic variables in the model. Emotion regulation strategies were more strongly related to relapse than a measure of emotion regulation deficits. This matches the cognitive model of emotion management posited by the Covert Antecedents model. However, the critical aspect of the model that was not supported was a mediating role of emotion regulation in the relationship between wellness and relapse.

The results of hypothesis five lend support for relapse models that include socio-demographic factors. There is a robust body of literature on demographic factors that consistently buffer persons from relapse or predispose persons with SUDs to relapse such as Witkiewitz and Marlatt's (2004) Dynamic Model of Relapse (a revision of the RP model). Based on the outcomes of this study, the Dynamic Model of Relapse best represents a model for future study. Total Wellness can be researched as a distal risk along with different socio-demographic variables such as severity of addiction. These constructs, in conjunction with psychological processes (including emotion regulation) and environmental variables (high-risk relapse settings), yield an overall risk composite for relapse (Witkiewitz & Marlatt, 2004).

Counseling Practices

The results of this study provide useful information for counselors working with substance abuse clients. First, correlations from this study reveal strong relationships between wellness and emotion regulation for substance abusing outpatient and intensive outpatient clients. Counselors working with substance abuse clients may find it important to attend to different aspects of their clients' wellness such as nutrition or exercise because Physical Self Wellness was a predictor of relapse in this study. Counselors can also focus on helping clients improve their ability to identify and develop insight into what they are feeling. Because suppression tended to increase the odds of relapse, counselors may want to provide psycho-education on this and facilitate ways to help clients process feelings in a safe manner. This includes awareness of and coping with cravings.

Improvements in area specific or overall wellness are likely to improve aspects of emotion regulation and vice versa. Utilizing the Indivisible Self Model of Wellness that was incorporated in this study can be helpful in this effort (Myers & Sweeney, 2006). In the realm of emotion regulation, impulse control may be an important area for counselors to address with substance abuse clients. Counselors can collaborate with clients using various techniques to enhance decision-making processes and improve wellness areas such as locus of control to increase clients' confidence in managing different impulses and cravings. Additionally, the results of this research provide counselors with important information about macro-level factors in the recovery process. Distal factors or demographic factors such as baseline severity of addiction, prior treatment history, and psychiatric history when the person begins counseling can provide useful information on relapse risk and protective factors.

Counselor Education

A primary implication of this study for counselor educators is that the results suggest that treatment works. The majority of the clients, some of whom had been in treatment for one year, had not relapsed. Thus the therapeutic and structural value of being involved in treatment seems to help clients manage cravings and high risk situations in a manner that reduces the likelihood of relapse overall. Counselor educators can provide their students with information on the utility of treatment and how to facilitate referrals for addictions treatment when faced with clients with substance abuse concerns.

Secondly, based on this study, counselor educators can be informed that self-reported wellness of outpatient substance abuse clients is consistent with wellness norms. Contrary to what has been shown in some research about the quality of life of substance abuse clients, this study indicates that clients in this particular clinical population have similar wellness related strengths and areas for growth as those in the general population. As stated in the previous section, counselor educators should emphasize the role of macro level factors in conceptualizing and developing treatment plans for substance abuse clients when educating counselors. Certain macro level factors have been found to increase risk such as baseline addiction severity (Hillhouse et al., 2007), while other factors have found to be protective, such as pursuing educational opportunities (Laudet & White, 2008).

Results of the study suggest that emotion regulation skills may be equally or more important than emotional intelligence factors such as clarity about emotions or acceptance of emotions as evidenced by the lack of support for the difficulties in emotion regulation construct regarding relapse, yet more consistent support for suppression in increasing the odds of relapse. In other words, it may be helpful to educate counselors in skill building with substance abuse clients to promote ways of expressing emotions rather than suppressing emotions and cognitive reappraisal skills. Further, when training counselors to use reappraisal skills with clients, counselors should be instructed to make sure these skills can be directly applied to high-risk relapse situations rather than simply general reappraisal. Counselor educators can use Marlatt's Covert Antecedents model, RP model, and Dynamic Model of Relapse to provide students with a conceptualization

for incorporating wellness and emotion regulation into relapse prevention with substance abuse clients.

Future Research

There are numerous avenues for further empirical exploration based on this preliminary study. A useful starting point is examining the same constructs using a different study design. A more effective design might incorporate a strategic sampling frame to obtain a random sample of clients from diverse treatment sites. A study can use longitudinal methods rather than a cross-sectional design. This would entail measuring clients' wellness, emotion regulation, and baseline substance use severity (frequency, quantity, duration of use, history of relapse) upon entering treatment and reassessing every couple weeks while the client is in treatment and continuing to assess these factors post-treatment for up to one year. This repeated measures, longitudinal design would allow researchers to predict more accurately whether current wellness and emotion regulation deficits and skills predicts future relapse while controlling for other factors including addiction severity.

A similar study could also use different data analytic procedures, incorporating analyses of variance rather than regressions to identify mean differences in wellness and emotion regulation between the relapse group from the sample and the abstainer group from the sample. A more powerful design would be to consider structural equations modeling (SEM) methods to test a wellness model of relapse or addiction severity. This SEM model can test the 5 second order wellness factors along with macro level factors such as employment and how these variables interrelate to predict relapse or level of

addiction severity. Another possibility is to conduct a similar study using addiction severity indicators as the outcome variables rather than a single relapse factor. For instance, a researcher could examine wellness and emotion regulation factors and their association with frequency and severity of cravings, relapse history, treatment history, family history of addiction, etc.

Different options for measuring and operationalizing relapse should also be considered in future research. For example, using measures that provide more detailed information about relapse including quantity of the substance use and duration of the relapse will be helpful. Further, different options for measuring emotion regulation should be considered. Physiological methods might be a more effective method for assessing self-regulation because they are less susceptible to social desirability. The construct of heart rate variability is relatively easily measured and provides an indication of wellness and self-control capacity. Addiction specific emotion regulation coping skills might be another option for measuring emotion regulation that is more specific to addiction. For instance, the researcher could consider adding relapse language to an emotion regulation inventory like the ERQ so items assess the ability to regulate emotions in high risk relapse situations.

Conclusion

The purpose of this study was to investigate the relationship between wellness, emotion regulation, and relapse in clients receiving outpatient substance abuse treatment. Analyses of results of measures of wellness, emotion regulation revealed relationships among these three constructs. Most significantly, wellness and emotion regulation factors

are statistically significant predictors of both the occurrence of a relapse event and the severity of relapse. Future research is needed to both replicate and extend the current results. The potential for counselors to provide effective services to prevent relapse is becoming increasingly clear, and using a wellness-based approach with a focus on building self-regulation skills may increase the likelihood of positive recovery outcomes.

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APPENDIX A
RECRUITMENT SCRIPT

Dear [Program Director's Name]

My name is Philip Clarke and I am currently a Ph.D student at the University of North Carolina at Greensboro working under the direction of Dr. Jane Myers in the Department of Counseling and Educational Development. I am working on my dissertation titled: *The relationship among wellness, emotion regulation, and relapse in adult outpatient substance abuse clients*. I am looking for volunteers for the study who are over the age of 18 and currently in outpatient, intensive outpatient, and day treatment/partial hospitalization substance abuse treatment. Persons receiving opioid maintenance therapy and who have been in treatment for one year or longer are excluded from the study. Volunteers will complete a paper and pencil questionnaire and a form to provide feedback on the procedures that take approximately 35-40 minutes. Participants will receive a \$5 gift card to a local store as compensation for their time. I am requesting permission for your treatment staff to read and hand out a flyer (that I will provide) about the study to all clients in your outpatient, intensive outpatient program, and day treatment/partial hospitalization groups one week prior to data collection. With your permission, I will come to your treatment center the following week before and/or after a treatment group session(s) to administer the questionnaire to clients who consent to participate in this study.

If you are willing to assist, or have questions, please contact me at 336-509-8915 or via email at pbclarke@uncg.edu.

Thank you for your consideration,

Philip Clarke
Doctoral Student
The University of North Carolina at Greensboro

APPENDIX B
RECRUITMENT FLYER

**SEEKING PERSONS IN SUBSTANCE ABUSE
TREATMENT FOR A QUESTIONNAIRE
RESEARCH STUDY**

PURPOSE OF THE STUDY: To better understand the process of early recovery in persons in outpatient substance abuse treatment.

ELIGIBILITY: Men and women 18+ years of age, currently in outpatient, intensive outpatient, or day/partial hospitalization substance abuse treatment for less than 12 months. Persons currently receiving methadone or suboxone as part of treatment are not eligible for this study.

YOU WILL BE ASKED: To complete a one-time paper and pencil questionnaire about your experience in early recovery.

TIME COMMITMENT: 35 – 40 minutes

COMPENSATION: \$5 gift card

TIME AND LOCATION OF STUDY: 1 week from today at _(scheduled time)_ at this location.

CONTACT: Philip Clarke, a doctoral student in Counseling at The University of North Carolina at Greensboro.

Phone: 336-509-8915

Email: pbclarke@uncg.edu

APPENDIX C

PILOT STUDY INFORMED CONSENT

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Project Title: The Process of Early Recovery in Substance Abuse Treatment

Principle Investigator: Dr. Jane Myers

Project Director: Philip Clarke

Participant's Name: _____

What is the study about?

This study involves research. It is designed to gather information about the process of early recovery in outpatient substance abuse treatment.

Why are you asking me?

You are being asked to be in this study because you are in substance abuse treatment. Persons can be in the study if they are age 18 and above, in outpatient treatment, and have been in their current treatment for less than 12 months. Persons cannot be in the study if they receive methadone or suboxone treatment and/or have been in their current treatment for 12 months or longer.

What will you ask me to do if I agree to be in the study?

You will be asked to complete several surveys about you and a form to provide feedback on the study which takes about 35-40 minutes to finish. Your choice of whether or not to be in this study will not affect your treatment in any way. Questions in the study require you to think about your experiences in early recovery. Because of this, you may feel negative emotions. If you should have further questions about the study, you can contact Philip Clarke at 336-509-8915 or Dr. Jane Myers at jemyers@uncg.edu.

Is there any audio/video recording?

There will be no audio or video recording in this study.

What are the dangers to me?

The Institutional Review Board at the University of North Carolina at Greensboro has determined that being in this study poses minimal risk to participants. The questions in the study ask about substance use and your experiences in early recovery. Because of this, you may feel negative emotions. If you wish to speak with someone about your emotions, you may contact your counselor. All information obtained in this study is strictly confidential unless disclosure is required by law. Your current treatment provider or anyone connected with your treatment will not have any access to any information obtained in this study, nor will any study results be discussed or shared with your treatment provider or anyone connected with your treatment. Any risks to your privacy and confidentiality by being in this study will be protected in several ways. You have the right to refuse a copy of the consent form in order to protect your privacy. Each person's research packet will receive a code so that no one's identifying information will be attached to their data. These forms will be kept in the researcher's home under double locks. Participant data that is kept on the personal computer of the researcher will be password protected. At the end of this study, all documents will be destroyed. The consent form will be shredded after 3 years whereas all other data will be shredded and deleted from the researcher's personal computer after 5 years.

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If you have any concerns about your rights, how you are being treated or if you have questions, want more information or have suggestions, please contact Eric Allen in the Office of Research Compliance at UNCG at (336) 256-1482. Questions, concerns or complaints about this project or benefits or risks associated with being in this study can be answered by Philip Clarke who may be contacted at (336) 509-8915 or Dr. Jane Myers at jemyers@uncg.edu.

Are there any benefits to me for taking part in this research study?

There are no direct benefits to being in this study. You may learn something about yourself from responding to questions about your early recovery experiences. You may have positive feelings about being in research that may help others with substance abuse problems.

Are there any benefits to society as a result of me taking part in this research?

This study may provide insight into how to better serve clients in addictions treatment which may then improve the health of individuals, families, the workplace, and society at large.

Will I get paid for being in the study? Will it cost me anything?

Persons who complete the study will receive a \$5 gift card to a local store. The gift card will not be given if the person chooses to end participation during the study. There are no costs to you for being in this study.

How will you keep my information confidential?

All information obtained in this study is strictly confidential unless disclosure is required by law. This also means that your current treatment provider or anyone connected with your treatment will not have any access to any information obtained in this study, nor will any study results be discussed or shared with your treatment provider or anyone connected with your treatment. This researcher may also have been a colleague of your treatment provider(s). Regardless of this possibility, all information in this study is strictly confidential unless disclosure is required by law. Your information will be kept private in several ways. You have the right to refuse a copy of the consent form in order to protect your privacy. Each person's research packet will receive a code so that no one's identifying information will be attached to their data. These forms will be kept in the researcher's home under double locks. Participant data that is kept on the personal computer of the researcher will be password protected. At the end of this study, all documents will be destroyed. The consent form will be shredded after 3 years whereas all other data will be shredded and deleted from the researcher's personal computer after 5 years.

What if I want to leave the study?

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you or your treatment in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. This researcher may have been a colleague of your treatment provider(s). Regardless of this possibility, your participation remains completely voluntary and you may choose to withdraw from the study at any time without penalty.

What about new information/changes in the study?

If important new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

Voluntary Consent by Participant:

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You will not be signing this consent form. However, you will receive a copy of the consent form for your records. You have the right to refuse a copy of the consent form in order to protect your privacy. By being in this study you are agreeing that you read this consent form, or it has been read to you, and you fully understand the contents of this document and are openly willing to consent to take part in this study. All of your questions concerning this study have been answered. By being in this study, you are agreeing that you are 18 years of age or older and are consenting to participate.

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APPENDIX D**PILOT STUDY SURVEY INSTRUCTIONS**

You are being asked to complete a survey that contains four different assessments: the Five-Factor Wellness Inventory, Difficulties in Emotion Regulation Scale, Emotion Regulation Questionnaire, and Demographic Questionnaire. You are also being asked to complete a form to provide feedback on the procedures. The questionnaire and feedback form will take approximately 35-40 minutes of your time. Most questions have a series of answer choices. Please answer all the questions. If there is a question you are not sure of the answer, pick the choice that is closest to how you feel. A few of the questions are fill in the blank, please do not skip these questions. At the conclusion of the survey you will receive a \$5 gift card. Thank you for your participation.

APPENDIX E

PILOT STUDY FEEDBACK FORM

Please complete this short form when you finish all of the surveys. Note any changes that you see would make the process better. Your feedback is very helpful.

1) How long did it take you to complete the surveys? _____

2) Were the instructions clear and easy to follow? If no, please explain _____

3) If any questions were hard to understand, please comment and state which survey the question was located: the Demographic Questionnaire, the Five Factor Wel Inventory (5F-Wel), the Difficulties in Emotion Regulation Scale (DERS), or the Emotion Regulation Questionnaire (ERQ).

4) Did any questions cause unpleasant feelings for you or any thoughts or cravings to use drugs or alcohol? If yes, please comment and state which survey the question was located.

5) Do you have any further thoughts on ways to improve the study? _____

APPENDIX F

MAIN STUDY INFORMED CONSENT

Version Date: 10/04/11

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Project Title: The Process of Early Recovery in Substance Abuse Treatment

Principle Investigator: Dr. Jane Myers

Project Director: Philip Clarke

Participant's Name: _____

What is the study about?

This study involves research. It is designed to gather information about the process of early recovery in outpatient substance abuse treatment.

Why are you asking me?

You are being asked to be in this study because you are in substance abuse treatment. Persons can be in the study if they are age 18 and above, in outpatient treatment, and have been in their current treatment for less than 12 months. Persons cannot be in the study if they receive methadone or suboxone treatment and/or have been in their current treatment for 12 months or longer.

What will you ask me to do if I agree to be in the study?

You will be asked to complete several surveys about you and a form to provide feedback on the study which takes about 30-35 minutes to finish. The survey instructions will be read aloud to you by the student researcher. If you prefer, you may have the survey questions read aloud to you by the student researcher or a staff member. Your choice of whether or not to be in this study will not affect your treatment in any way. Questions in the study require you to think about your experiences in early recovery. Because of this, you may feel negative emotions. If you should have further questions about the study, you can contact Philip Clarke at 336-758-6998 or Dr. Jane Myers at jemyers@uncg.edu.

Is there any audio/video recording?

There will be no audio or video recording in this study.

What are the dangers to me?

The Institutional Review Board at the University of North Carolina at Greensboro has determined that being in this study poses minimal risk to participants. The questions in the study ask about substance use and your experiences in early recovery. Because of this, you may feel negative emotions. If you wish to speak with someone about your emotions, you may contact your counselor. All information obtained in this study is strictly confidential unless disclosure is required by law. Your current treatment provider or anyone connected with your treatment will not have any access to any information obtained in this study, nor will any study results be discussed or shared with your treatment provider or anyone connected with your treatment. Any risks to your privacy and confidentiality by being in this study will be protected in several ways. You have the right to refuse a copy of the consent form in order to protect your privacy. Each person's research packet will receive a code so that no one's identifying information will be attached to their data. These forms will be kept in the researcher's home under double locks. Participant data that is kept on the personal computer of the researcher will be password protected. At the end of this study, all documents will be destroyed. The consent form will be shredded after 3 years whereas all other

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data will be shredded and deleted from the researcher's personal computer after 5 years.

If you have any concerns about your rights, how you are being treated or if you have questions, want more information or have suggestions, please contact Eric Allen in the Office of Research Compliance at UNCG at (336) 256-1482. Questions, concerns or complaints about this project or benefits or risks associated with being in this study can be answered by Philip Clarke who may be contacted at (336) 758-6998 or Dr. Jane Myers at jemyers@uncg.edu.

Are there any benefits to me for taking part in this research study?

There are no direct benefits to being in this study. You may learn something about yourself from responding to questions about your early recovery experiences. You may have positive feelings about being in research that may help others with substance abuse problems.

Are there any benefits to society as a result of me taking part in this research?

This study may provide insight into how to better serve clients in addictions treatment which may then improve the health of individuals, families, the workplace, and society at large.

Will I get paid for being in the study? Will it cost me anything?

Persons who complete the study will receive a \$5 gift card to a local store. The gift card will not be given if the person chooses to end participation during the study. There are no costs to you for being in this study.

How will you keep my information confidential?

All information obtained in this study is strictly confidential unless disclosure is required by law. This also means that your current treatment provider or anyone connected with your treatment will not have any access to any information obtained in this study, nor will any study results be discussed or shared with your treatment provider or anyone connected with your treatment. This researcher may also have been a colleague of your treatment provider(s). Regardless of this possibility, all information in this study is strictly confidential unless disclosure is required by law. Your information will be kept private in several ways. You have the right to refuse a copy of the consent form in order to protect your privacy. Each person's research packet will receive a code so that no one's identifying information will be attached to their data. These forms will be kept in the researcher's home under double locks. Participant data that is kept on the personal computer of the researcher will be password protected. At the end of this study, all documents will be destroyed. The consent form will be shredded after 3 years whereas all other data will be shredded and deleted from the researcher's personal computer after 5 years.

What if I want to leave the study?

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you or your treatment in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. This researcher may have been a colleague of your treatment provider(s). Regardless of this possibility, your participation remains completely voluntary and you may choose to withdraw from the study at any time without penalty.

What about new information/changes in the study?

If important new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

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Voluntary Consent by Participant:

You will not be signing this consent form. However, you will receive a copy of the consent form for your records. You have the right to refuse a copy of the consent form in order to protect your privacy. By being in this study you are agreeing that you read this consent form, or it has been read to you, and you fully understand the contents of this document and are openly willing to consent to take part in this study. All of your questions concerning this study have been answered. By being in this study, you are agreeing that you are 18 years of age or older and are consenting to participate.

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APPENDIX G

MAIN STUDY SURVEY INSTRUCTIONS

You are being asked to complete a survey that contains four different questionnaires: The Five-Factor Wellness Inventory (5F-Wel-A), Difficulties in Emotion Regulation Scale (DERS) Emotion Regulation Questionnaire (ERQ), and Demographic Questionnaire (DQ). If you prefer, you may have the survey questions read aloud to you by the student researcher or a staff member. Please turn to the 5F-Wel-A. This is the only questionnaire that should be answered on the bubble sheet. Enter your date of birth in the “Birthdate” column on the front of the bubble sheet, then write the 3-digit code number in the upper right corner of the 5F-Wel-A in the “Special Codes” column of the bubble sheet under columns N, O, P.

The whole survey will take about 30-35 minutes of your time. Survey questions are written on the front and back of each page. Write all your answers in the answer spaces on the survey itself except for the 5F-Wel-A. Most questions have a series of answer choices. Please answer all the questions. If you are not sure of the answer, pick the choice that is closest to how you feel. A few of the questions are fill in the blank, **please do not skip these questions**. At the end of the survey you will receive a \$5 gift card. Thank you.