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Factors in Relapse among Physicians in Recovery from Substance Dependence Disorders

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Department of Psychology

FACTORS IN RELAPSE AMONG PHYSICIANS IN RECOVERY FROM SUBSTANCE DEPENDENCE DISORDERS

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Dissertation Approval

This is to certify that the thesis presented to us by Gregory Gable on the 28th day of March, 2006, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Abstract

This study examines factors in relapse to alcohol and drug dependence among health professionals, seeking to identify relationships between identified conditions and relapse. The subjects are 100 health professionals, 84 male and 16 female, randomly selected from a cohort of 308, who provided data in a previous study taking place between 1995 and 1998. These subjects were broken into two groups, relapse vs. no relapse at 5 years after participation in the original study, the post-marketing survey on tramadol (Knisely J, Campbell E, Dawson K, Schnoll S, 2002). Archival data from the previous study was used. Chart review and analysis of archival data were the methods of data collection. Data were analyzed using chi-square and one-way analysis of variance tests.

Presence of a comorbid personality disorder (Axis II) diagnosis was related to relapse ($\chi^2 = 21.418$, df = 1, $p<.05$), as was presence of a comorbid (Axis I) psychiatric diagnosis (secondary substance use diagnoses not included) ($\chi^2 = 9.180$, df = 1, $p<.05$). The combination of a presence of both comorbid personality disorder and psychiatric (axis I) diagnoses were related to relapse ($\chi^2 = 23.645$, df = 1, $p<.05$). Level of treatment comparing inpatient or residential and outpatient treatment did not provide a significant correlation. The sample appeared to be too homogeneous on this variable for meaningful comparison.

Additional research, empirical and qualitative, is recommended to explore the phenomenon of relapse among health professionals. Peer assistance programs are encouraged to factor psychiatric disorders including personality disorders into evaluation and treatment plans extending beyond initial treatment experience.
# Table of Contents

Dissertation Approval Signatory Page  ii  
Acknowledgments  iii  
Abstract  iv  
Table of Contents  v  
List of Tables  vi  

Chapter 1 – Introduction  1  
  Background  1  
  Models of Relapse  2  
  Comorbid Psychiatric Disorders  13  
  Length of Use  17  
  Level of Treatment  19  
  Family History of Substance Use Disorder  22  
  Eating Disorder Symptoms  24  
  History of Abuse  26  
  Living Arrangements  29  
  Other Compulsive Behavior  30  
  Use of Tobacco  31  

Chapter 2 – Methods  36  
  Subjects  36  
  Procedures  37  
  Data Analysis  39  
  Hypotheses  39
List of Tables

Table i  Summary of Medical Specialty Categories  41
Table ii  Gender  41
Table iii  Age Range at Recovery  42
Table iv  Time to First Relapse  42
Table v  Multiple Relapse  43
Table vi  Personality Disorder Diagnosis  44
Table vii  Comorbid Axis I Diagnosis  45
Table viii  Comorbid Disorder Axis I or II  45
Table ix  Summary of Treatment Modality Results  46
Table x  History of Related Conditions/Issues  48
Table xi  Opioid as Drug of Choice  49
Table xii  Age Category at Onset Summary  50
Table xiii  Summary of Smoking History  51
Table xiv  Living Arrangements  52
Factors Related to Relapse Among Physicians in Recovery from
Substance Dependence Disorders

Substance use disorders include dependence upon alcohol and other drugs. These disorders, in their more severe forms, are characterized by chronicity; relapse to active use is a common part of the course of the disorder. Substance use disorders have been compared to other chronic medical disorders such as arthritis, hypertension, asthma, and diabetes (O'Brien & McLellan, 1996). Addicting drugs produce changes in brain pathways that endure long after the person stops using the drug (O'Brien & McLellan, 1996). The adaptations made by the brain during drug use may be long term, or even permanent (Powledge, 1999). As a result, medical, social, and occupational difficulties that have developed during the course of addiction do not disappear when the person discontinues use. Because substance use disorders are chronic, successful management, rather than a cure, is the goal in treatment.

When relapse is conceptualized as a period of time during which a patient does not make choices that contribute to effective disease management, then relapse to chemical use appears to be similar to relapse in other chronic diseases. Relapse to substance use following treatment is not uncommon. Approximately 40% to 60% of patients receiving treatment for substance dependence remain abstinent for one year following treatment. The remaining patients may be considered to be in some form of relapse (McLellan, Lewis, O'Brien, & Kleber, 2000). Among patients suffering from other chronic diseases, similar relapse rates can be observed. Studies have shown that
fewer than 60% of adult patients with type 1 diabetes mellitus fully adhere to their medication schedules, and fewer than 40% of patients with hypertension or asthma adhere fully to their medication regimens. Similarly, fewer than 30% of patients with adult-onset asthma, hypertension, or diabetes adhere to prescribed diet or behavioral changes (McLellan, Lewis, O'Brien, & Kleber, 2000). The remaining 70% may be considered in relapse in the sense that they are not effectively managing the disease.

It is interesting to note, however, that for patients with diabetes, hypertension, and asthma, relapse following treatment is usually considered evidence of the success of the treatment, and is indicative of the need to reinstitute successful disease management, and to retain the patient in medical monitoring. In contrast, relapse to drug or alcohol use following discharge from addiction treatment has been considered evidence of treatment failure (McLellan, Lewis, O'Brien, & Kleber, 2000). It is important that professionals treating substance use disorders come to recognize relapse as a part of the process of recovery from substance dependence, and that the public receive help to understand this concept. It is equally important to learn to help patients manage this chronic illness more effectively on a long-term basis.

Much attention has been paid to the role of stress in relapse. Marlatt's relapse model holds that individuals utilize coping strategies successfully; however, there are certain situations that may stress the individual's resources for coping. In this model there would be times when the individual is faced with interpersonal high-risk situations, negative emotional states, and positive emotional states (Marlatt, 1996). Stressors that represent negative emotional states might range from dramatic or severe events, such as loss of a loved one or a divorce, to chronic irritants of daily life such as financial worries.
or difficulties on the job. In animal models, both the initiation and reinstatement of alcohol and other drug use (AOD use) are facilitated by exposure to stress. It is believed that stress modifies the motivational and or reinforcing effects of AOD use by increasing the activity of the dopaminergic brain systems that are involved in motivation and reward (Brady & Sonne, 1999). Serotonin has also been suggested as having a role in the relationship between AOD use and stress. Animals with low brain serotonin activity are high consumers of alcohol, and when injected with SSRI drugs, these laboratory animals dramatically reduced their alcohol intake. Similar results have yet to be documented in humans. Stress has been shown to bring about reinstatement of alcohol use in rats. In fact, a single stressful experience, such as an electric shock induced resumption of drug use in animals that had been previously taught to self-administer cocaine or heroin (Brady & Sonne, 1999).

The reinstatement of previously learned behaviors in response to stress does not generalize across all kinds of behaviors. For example, animals with a history of lever pressing for food pellets, do not, when stressed, show reinstatement of the previously learned behavior. In other words, these animals under the stress of electric shock will not “relapse” to pressing a food pellet lever (Stewart, 2000). This difference between animals with and without drug use history suggests, not only that stress is involved in relapse to AOD use, but also that the presence of a history of AOD use may increase vulnerability to stressful events. If this concept were to be generalized to humans, it would mean that people with a history of AOD use might actually experience stressful events with more subjective discomfort than a person without such a history, and be more inclined to resort to previously learned, less productive, coping behaviors.
Both acute and chronic stress appears to influence the use of alcohol in humans. Crum and colleagues (1995) found that men in high strain jobs (high demands and low control) generally had a higher risk of developing alcohol use disorders when compared with men in low strain jobs (low demand and high control) (Crum, Muntaner, Eaton, & Anthony, 1995). Researchers also have noted a high prevalence of stressful life events (e.g. divorce or loss of a loved one) in middle-aged women who developed alcohol dependence later in life. These findings suggest that stress may have a causal relationship with dependence on AOD.

Because alcohol mitigates emotional and physiological responses to stress, there may be a tendency for those who experience this dampening effect most strongly to be reinforced in alcohol use. Alcohol can result in reductions in anxiety and tension, as well as in changes in heart rate or sweating. Women with a family history of alcoholism or anxiety disorders exhibit a greater dampening effect of the stress response when using alcohol than women without such a family history. This may well reinforce alcohol use to a greater extent in such women, increasing vulnerability for alcohol dependence (Sinha, Robinson, & O’Malley, 1998).

Additional evidence for the role of stress in relapse to AOD use can be found in the research of Brown and colleagues (1990) who found that during a 3-month period following treatment, patients who relapsed had experienced twice as much severe stress before entering treatment than those patients who remained abstinent (Brown, McQuaid, Patterson, Irwin, & Grant, 1990). This relationship between relapse post-treatment and severe stress that occurred pre-treatment suggests a greater vulnerability to relapse in response to stressful situations, if a person has suffered a high degree of stress and has
used AOD to mitigate stress in the past.

There are several implications for treatment related to the effects of stress on AOD use. It is clearly important to identify patients with a history either of PTSD or severe acute or chronic stress experiences, along with the use of AOD to mitigate the effects of stress. Identifying these patients and teaching them to use and practice coping skills for different stressful situations can be an important component of treatment. Social support, problem solving skill training, and cognitive restructuring are widely used strategies in treatment programs. Research is needed to assess the direct effects of such strategies on relapse to AOD use (Stewart, 2000). Additionally, pharmacological agents such as SSRIs may play a role in helping to minimize the risk of relapse due to stress. In a study among patients with posttraumatic stress disorder, patients treated with the SSRI fluoxetine (Prozac) showed improvement on a scale designed to measure stress resilience (Stewart, 2000). Naltrexone, an opiate agonist, has also been effective in helping to avoid relapse in detoxified alcoholics. This may be due partly to the effect of this opiate agonist on the reward pathways in the brain, making it less likely that a stressful experience will trigger a set of responses leading to relapse (Bouza, Angeles, Munoz, & Amate, 2004). It is also thought to reduce craving in patients recovering from alcohol dependence.

Stress effects are usually considered in terms of negative events. Animal model research is conducted, often using electric shock or some other noxious stimulus to create a stressful situation. The Marlatt (1996) model identifies positive emotional states such as celebrations, exposure to drug-related stimuli, and non-specific cravings as factors in relapse. The notion that a particularly happy or positively exciting time could be a high
relapse risk point may have merit. In some cases, relapse in response to a positive life event could create a feeling of entitlement to use because one is on vacation or is in a pleasant, non-demanding situation. Or it might reflect a response to a positive life change such as the acquisition of a new, long sought after job that seems to offer solutions to some of life’s problems. In either case, the phenomenon might be one of ‘reduced cognitive vigilance’.

Malhotra, Malhotra, and Basu (1999) conducted a study in which they compared beliefs about the causes of relapse to alcohol use; this was done between patients and the patients’ significant others in a population of Indian alcoholics in recovery programs. They found that the perceptions of cause of relapse were quite consistent across the comparison. The cause of relapse most frequently reported both by significant others and by patients was reduced cognitive vigilance. Three responses that fall within the category of reduced cognitive vigilance were cited; these include 1. I’ve already taken a little, I might as well go ahead; 2. I’m not really hooked on alcohol, I don’t need to avoid it; and 3. One drink won’t cause harm, I am doing so well. All three of these responses were cited frequently by significant others as well as by patients and are good descriptions of positive emotional state relapse. In fact, in this study, euphoric state relapse responses were cited more frequently than were unpleasant mood state responses, with the least common response being related to the unpleasant mood state of fear (Malhotra, Malhotra, & Basu, 1999).

Craving or urge to use is closely related to the positive mood state factor of relapse. Urge to drink refers to an emotional state characterized by the motivation to seek and use AOD (Rohsenow & Monti, 1999). The term craving is sometimes used
interchangeably with urge to drink; however, some writers use craving to mean a very intense desire to use, yet others include a broad array of states of intensity of desires. Negative emotional states, including interpersonal conflict, may precipitate coping with AOD use, but craving implies the desire to use without these negative stimuli. Craving has become a controversial topic in addiction treatment research literature. It has not been clearly demonstrated in experimental studies and has been questioned by some researchers and theorists (Tiffany & Conklin, 2000). The concept of drug craving implies that cues related to prior use may cause a use response in a number of ways. One model emphasizes drug withdrawal symptoms. In this model, the patient responds to cues that create feelings related to withdrawal, and to avoid or to stop these feelings, the patient will use.

A second model hypothesizes that drug-paired stimuli become conditioned incentives that activate a central motivational state (Tiffany & Conklin, 2000). In other words, the cue serves to create an autonomic reaction that is similar to the one caused by actual use of the drug, bringing about a state of using before use occurs. This state then brings about a relapse. Both models of craving imply use as a result of exposure to stimuli or to cues related to past use.

According to social learning theory, relapse is associated with numerous learned factors (Rohsenow & Monti, 1999). The urge to use in social learning theory is only one factor, and is not sufficient to incur relapse. Social learning theory incorporates many variables that contribute to the decision to use or not to use, including coping skills and expectancies, which can be incorporated into treatment protocols.

A fourth concept describes craving as leading to drug use as an automatic
Factors in Relapse

Information-processing phenomenon. This construct is based on the idea that many of the thoughts and actions leading to use are automatic. This means that they can happen without conscious thought or executive decision-making, similar to actions like driving a car or buttoning one’s clothing. The sets of thoughts and actions are so well learned that they are automatic, and are regulated outside of conscious awareness (Tiffany & Conklin, 2000). This cognitive processing model replaces the concept of classically conditioned responses either to withdrawal or to appetitive urges. The autonomic response model can operate independently of the processes that control self-reports of craving (Tiffany & Conklin, 2000). The treatment implications in this model would then focus not on alleviation of craving, but on enhancing the likelihood that the drinker would be able to avoid or counteract automatized use routines successfully. Cognitive-behavioral training to recognize and interrupt these routines would be important to successful treatment. Stimulus control strategies remain important, either in the form of behavioral therapy or vis a vis Alcoholics Anonymous emphasis on changing exposure to people, places, and things that are related to using drugs; however, a strategy to improve recognition of and coping with cues that trigger automatic routines may be equally important.

A key factor in relapse research literature is coping responses. In particular, Marlatt (1996) describes the factor as the ways in which an individual responds to high risk situations. The outcome is determined in part by these coping responses, so the coping responses are another group of antecedents to relapse, to the extent that the coping responses are ineffective. The concept of self-efficacy is frequently identified as an important part of an individual’s ability to cope effectively with various types of stressors. People with high self-efficacy see themselves as having the motivation and the
ability to utilize strategies that will allow them to handle high-stress situations without using AOD. These strategies can be behavioral, such as triggering a decision to leave a situation, or can be cognitive, such as employing positive self-talk. The individual’s expectation of success in employing these strategies, or confidence in one’s ability to manage the stressful situation successfully is a measure of self-efficacy. A major goal of cognitive-behavioral strategies for treating substance dependence or preventing relapse is to enhance self-efficacy through the teaching of specific intervention skills. These skills help the patient to identify high-risk situations, eliminate myths and irrational beliefs, anticipate the risk of relapse, and cope effectively with challenges to recovery. It is important to help clients identify their own risk situations as well as their own coping strategies.

In the Relapse Prevention Model (Larimer, Palmer, & Marlatt, 1999) the client is encouraged to become an objective observer of his/her own behavior, and to accept responsibility for changing the behaviors that lead to relapse. In a large study of alcoholics which included a 6-month follow-up study, the factors most related to maintaining abstinence were self-efficacy expectancy and a long, previous time in abstinence recovery. Both of these factors are related to the concept of self-efficacy (Vielva, & Iraurgi, 2001). Similarly, in a study of 60 male problem drinkers, Allsop, Saunders & Phillips (2000) found that the impact of self-efficacy, post treatment was significant and consistent, making self-efficacy a major predictor of treatment outcome. They recommended the use of a performance based relapse prevention model to enhance recovery.

When attributions of relapse are examined, the concept of self-efficacy becomes
even more important. Attribution theory is a way of looking at how people arrive at explanations for their own and others' behavior. People tend to use their attributions as a form of self-presentation or impression management. Attribution theory holds that when explaining negative actions, people are likely to attribute their own negative behavior to external factors (outside their personal control), and to unstable factors (not likely to occur again). On the other hand, when explaining the negative behavior of others, according to attribution theory, people are likely to choose internal, stable, and global factors. In studying attribution theory relative to the explanation of relapse by alcoholics, it was hypothesized that there would be actor-observer differences; that is, that the alcoholics might choose external and unstable causes to explain a relapse, but an observer might choose internal and stable ones. The results of the study showed that there were actor-observer differences when alcoholics rated their own relapses and the relapses of others. However, the researchers found, that when explaining their own relapses, respondents evoked attributions with an internal locus of causality, low external control, and low personal control. The low external control and internal locus of causality ran counter to expectations and hypothesis. In fact, these results showed that the respondents attributed their own relapses to internal rather than external causes. They did rate others' relapses as even more internally based, but the locus of control was clearly internal according to their self-ratings, which disproved the authors' hypothesis (Seneviratne & Saunders, 2000). This suggests that alcoholics tend to see relapse events as falling under their own personal control.

Although it is very important to be able to see the self as having the ability to cope successfully with stressful situations, including situations that previously may have
Factors in Relapse

contributed to drug using experiences, it is also important that the client develop a realistic understanding of the potential effects of the drug. Many AOD users assign positive effects to the drug of choice, in spite of the fact that these effects generally have not accompanied drug use. The expectation that a drug will help the individual cope with a situation or set of feelings is a significant relapse factor (Larimer, Palmer, & Marlatt, 1999). Cognitive therapy may be a valuable tool to unpack that expectancy and to form a better and more realistic set of expectations for results of drug use; it may also be an aid to offset the tendency for outcome expectancy to add to risk for relapse. Identifying the expectancy and the irrational basis for this expectation while in treatment may help the client avoid the use of this mechanism to rationalize and justify a decision to use alcohol or other drugs.

In cognitive and social-cognitive models of relapse, factors, or situations that can precipitate or contribute to relapse episodes can be identified. In the Relapse Prevention Model (RP), these factors fall into two categories: immediate determinants and covert antecedents (Larimer, Palmer, and Marlatt, 1999). The category of immediate determinants includes such factors as high-risk situations, coping skill deficits, and outcome expectancies. Factors such as lifestyle risks, urges, and cravings are classified as covert antecedents.

According to the RP model, as a person maintains a behavior change like stopping the use of alcohol, he or she becomes increasingly confident in his or her ability to maintain the change. Certain situations, however, can pose a threat to the behavior change, and can precipitate a relapse crisis. Several types of situations can be identified as threats for relapse.
1. Negative emotional states are associated with the highest rates of relapse (Marlatt, 1996). The category of negative emotional states includes such states as anger, anxiety, depression, frustration, and boredom. These states may be caused by intrapersonal perceptions of situations or they may be environmental events such as feeling angry, afraid, or sad about a possible layoff at work.

2. Interpersonal high-risk situations, such as interpersonal conflict result in negative emotions and are seen as relapse antecedents.

3. Social pressure, including direct and indirect verbal and nonverbal pressure to use, such as one might experience in spending time around people who are using chemicals, may also precipitate relapse.

4. Positive emotional states such as celebrations, exposure to drug related stimuli or cues, and nonspecific cravings may trigger a relapse.

5. The ways in which an individual responds to a high-risk situation help determine the outcome. Coping responses, then, are another group of antecedents, to the extent that some coping responses are ineffective, and may lead to relapse.

6. Outcome expectancies refer to the expectation of positive effects that the user believes about the drug. This effect can be seen readily in situations where, in the midst of a high-risk situation, a user sees the potential drug effects as a help in coping, such as a smoker’s relapsing to tobacco use during a period of anxiety over a life event. In such a case, the outcome expectancy of the smoker, the expectation that the
effect of the nicotine will help him/her to manage the anxiety, becomes a relapse factor.

7. The Abstinence Violation Effect refers to the perception on the part of the chemical user that the lapse to drug use is due to personal failure and to internal traits that cannot be changed. These kinds of perceptions lead to continued use, loss of control, and full-blown relapse. Those who attribute the lapse to a deficit in coping with a particular type of situation or to a particular coping skill deficit are less likely to progress (Larimer, Palmer & Marlatt, 1999).

Comorbid Psychiatric Disorders

Given these varied relapse threat situations, it is likely that comorbid psychiatric disorder traits or diagnoses may be important in the occurrence of relapse to active chemical use. The risk factor of negative emotional states has received quite a bit of attention in the research literature. Depression is a frequently occurring co-morbid condition with substance use disorders. Because abstinence recovery (and relapse) in severely dependent drug users is thought to be related to cognitive factors, one can easily see how depression might be an important mediator. Depressed affect can seriously affect one’s perceptions of self and the environment. There is little evidence to link depression directly with relapse to substance use, but it has been implicated in relation to relapse in conjunction with the subject’s length of substance use history (Allsop, Saunders, & Phillips, 2000). (Strowig, 2000) Allsop, Saunders, & Phillips studied the relationship between relapse risk and a number of factors including self-efficacy at the conclusion of treatment,
cognitive functioning, level of alcohol dependence, and level of alcohol consumption prior to treatment. They observed a clear relationship between continued abstinence and self-efficacy, but depression was not directly related to relapse (Allsop, Saunders, & Phillips, 2000).

Similarly, depression was implicated in relapse status when the relationships between the history of drug and alcohol use, treatment intake depression levels, and relapse within a 6-month period following substance dependence treatment were studied. Here depression was related to substance use history, but not directly to relapse following treatment. Level and duration of substance use history emerged as the strongest predictors of relapse (McMahon, Malow, & Loewinger, 1999). A history of substance use was, however, found to be significantly related to levels of depression, yet across many studies, the direct relationship between depression and relapse is statistically weak. Although depression shows larger longitudinal correlation than many other variables, these correlations are still small to moderate (Brewer, Catalano, Haggerty, Gainey, & Fleming, 1998).

Additionally, positive mood was significantly related to less cocaine use at follow up, post treatment in a two-year follow up study on cocaine-dependent male veterans. In this study, positive mood predicted less cocaine use at two of three follow-up assessment points (6, 12, and 18 months), post-treatment (McKay, Merkle, Mulvaney, Weiss, & Koppenhaver, 2001). Depressive symptoms during treatment have also been shown to be related to relapse. In a study of alcohol relapse in cocaine users, high scores on the Hamilton Rating scale were associated with greater urges to use, and subjects who experienced higher levels of depressive symptoms during treatment were more likely to
relapse to alcohol use following treatment (Brown, 1998).

Time of onset of depression may be an important part of the relationship between depression and relapse. When Major Depressive Disorder (MDD) pre-exists treatment and abstinence from substance dependence, it is a significant factor related to relapse. But MDD beginning in treatment or post treatment during abstinence is not shown to be a factor (Hasin, Liu, Nunes, McCloud, Samet, & Endicott, 2002). This is an interesting differentiation, because one might expect depression to be a normal part of recovery from substance dependence, but a significant pre-existing depressive disorder, or the development of a depressive disorder during abstinence recovery may be barriers to successful recovery (Miller, 2002). In this connection, comorbidity of pre-existing MDD can be seen as a major complicating factor in treatment and recovery and should be treated differently from depressive symptoms that appear to be related to withdrawal and early abstinence. Identification of depressive disorders that are premorbid relative to the substance use disorder appears to be an important component of treatment. In fact, in some cases, the premorbid depressive disorder may be found to be a primary or equally important diagnosis. When psychiatric disorders are studied in the context of treatment for drug dependence, major depression consistently shows up as a predictor of more substance use, and of poor treatment outcomes (Compton, Cottler, Jacobs, Ben-Abdallah, & Spitznagel, 2003). Identifying and treating these depressive disorders in patients with substance use disorders may be important to maintenance of long-term recovery from substance dependence.

Another significant factor contributing to risk of relapse is the presence of a personality disorder. A personality disorder is an enduring pattern of inner experience
and behavior that deviates markedly from the expectations of the individual's culture; it is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment (APA, 2000). In particular, researchers have identified the presence of "cluster B" personality disorder diagnoses or traits as a predictor of worse outcomes for substance use disorder patients. Cluster B personality behaviors are described as dramatic, emotional, erratic, and/or self-destructive (Roozen, 2003). When substance dependent patients are evaluated for psychopathology, the identification of personality disorders is common. As many as 53% of substance abuse patients qualify for at least one personality disorder diagnosis (Ross, Dermatis, Levounis, & Galanter, 2003). The most frequently identified Axis II diagnoses in one study were borderline personality disorder and antisocial personality disorder, both falling into cluster B (Ross, Dermatis, Levounis, & Galanter, 2003). Skodol, Oldham and Gallaher (1999) found that nearly 60% of patients in inpatient and outpatient substance use disorder treatment had personality disorders, with borderline and antisocial disorders being the most frequently identified. The presence of comorbid personality disorder has also been shown to predict less successful outcomes in substance use disorder treatment; this is particularly true of males with antisocial personality disorder (Compton, Cottler, Jacobs, Ben-Abdallah, & Spitznagel, 2003).

Even with increased time in abstinence recovery, personality disorders persist. Stiles (2002) studied groups of patients with 2 months through 1 year of sobriety; 1 to 5 years of sobriety and more than 5 years of sobriety. Patients across all three groups showed either an axis I syndrome or an axis II trait or a disorder according to the Millon Clinical Multiaxial Inventory. These studies point to the need to devote more attention
Factors in Relapse to co-occurring psychopathology in treatment of substance dependent patients (Stiles, 2002).

In the Illinois study involving the programs at Rush Behavioral Health and Parkside Hospitals, comorbid psychiatric disorders were more prevalent among relapsers than among nonrelapsers. This was attributable mainly to a threefold higher percentage of relapsers with narcissistic personality disorder (Angres, Talbott, & Bettinardi-Angres, 1998). Clearly, the presence of these personality disorders may affect outcome of treatment for substance dependence disorders.

Physicians presenting for treatment for substance use disorders are presenting more comorbid psychiatric pathology now than in the past, including more frequent diagnosis of personality disorders. Angres, Delisi, Danesh, & Williams (2003) reviewed retrospective data on 101 physicians treated for substance dependence at Rush-St. Luke’s Medical Center during 1985 to 1987; they compared these to physicians in the same treatment program during 1995 to 1997. Comorbid psychiatric disorders were identified in 45% of the 1980’s cohort, but in the 1990’s cohort, 60.3% of the treated physicians had comorbid psychiatric diagnoses. Specifically, with regard to personality disorders, 25% of the 1980’s cohort carried a personality disorder diagnosis, compared to 33% of the 1990’s cohort. The authors noted a predominance of Narcissistic and Antisocial type personality disorders (Angres, McGovern, Shaw, & Rawal, 2003).

Length of Use

Much attention has been paid to the issue of the relationship between the length of time a substance-dependent patient has been using drugs and the patient’s
Factors in Relapse: Recovery/Relapse.

Age of first use has been studied as a predictor of the severity of drug dependence or the subsequent treatment outcome. Age of onset of illicit chemical use has been shown to be a strong predictor of a patient's drug use at age 20 (Labouvie, Bates, & Pandina, 2000). In studying adolescent drug use progression, Yamaguchi and Kandel (1984) found a strong association between a younger age of first use and the progression from marijuana to other illicit drug use.

Years of lifetime alcohol use has proved to be a significant predictor of relapse to cocaine use within 6 months of residential treatment for cocaine dependence (McMahon, Malow, & Loewinger, 1999). Grant, Stinson, and Harford (2001) found, through a longitudinal study, that the odds of alcohol dependence decreased by 5 to 9% per year with each decrease of one year of age at onset of drinking. These authors found significant associations between age of drinking onset and DSM-IV alcohol dependence 7 to 12 years later. A large longitudinal survey undertaken by the National Institute on Alcohol Abuse and Alcoholism showed similar, but even more striking results. In this study, the odds of dependence decreased by 14% with each increasing year of age at onset of use, and the odds of abuse decreased by 8% for each increasing year of age at onset (Grant & Dawson, 1997). Age of onset effects have been found in studies of populations of opiate addicts, and may be similar to age of onset typology in alcoholism (De, Matoo, & Basu, 2003). The time since first use as a continuous variable may have a relationship to outcome after treatment.

Length of use has been viewed as a risk factor for treatment dropout and for relapse. Age at onset is cited as one of the main risk factors for dropping out of treatment or failing to progress to the next treatment level (Callaghan, 2003). However, in a large
meta analysis of studies examining relapse to opiate use, length of use was found to be a significant, but relatively weak, predictor of relapse (Brewer, Catalano, Haggerty, Gainey, & Fleming, 1998).

In a research project conducted to explore factors in continued recovery vs. relapse, age at first daily use emerged as a primary factor. The authors stated that the age at onset of the drug user was a major factor in eventual relapse or recovery (Dekimpe, Van de Gucht, Hanssens, & Powers, 1998). A study involving adolescents who met criteria for alcohol dependence during the previous year showed similar results; age was a variable that mediated risk of relapse (Dawson, Grant, Stinson, Chou, Huang, & Ruan, 2005). It is not clear whether or not length of use can be differentiated from age at onset in either of these two studies.

Physicians were compared with nurses in a substance dependence treatment program. The hypothesis suggested that physicians had more opportunity to work alone and avoid detection; therefore, their symptoms would be more severe than the nurse population by the time they were admitted to treatment. The findings tended to support this hypothesis, but length of use was only one aspect of the difference (Shaw, McGovern, Angres, and Rawal, 2003). Length of use does not stand out as clearly important as a relapse factor, but it certainly deserves attention in research.

Level of Treatment

Another variable that could be related to relapse is level of treatment received. Physicians with a substance dependence diagnosis who become involved in formal intervention and monitoring programs are sometimes referred for residential treatment services. The rationale for residential treatment put forth by proponents of this modality
is that it removes the patient (physician) from the environment in which substance use has been occurring; it allows efforts toward abstinence to be consolidated; it provides a setting that results in patients receiving more treatment; it provides more psychiatric and medical care than outpatient settings; it provides more tangible and emotional support; and gives a strong message to the patient that the disorder is severe and that recovery activities are important (Finney & Hahn, 1996). Direct comparisons between treatment modality outcomes are not readily available in the literature. Some researchers specifically avoid such comparisons because of self selection and other factors that may influence research results as confounds (Gossop, Marsden, Stewart, Edwards, Lehmann, Wilson, & Segar, 1997). Additionally, in research on heroin dependent populations, inpatient or residential treatment is sometimes compared with outpatient methadone maintenance, which involves ongoing use of methadone. Many physician impairment or monitoring programs would exclude ongoing methadone or suboxone use as an acceptable treatment modality for a practicing physician.

Length of treatment of patients treated for substance dependence disorders in residential programs in England were compared with regard to patient outcomes. In this study, outcomes for patients who participated in residential programs of 2 to 5 weeks, 6 to 12 weeks, and 13 to 52 weeks were compared. The average time was 15 days in inpatient treatment; 42 days in short-term residential treatment and 70 days in long-term residential treatment. This study found a strong relationship between duration of treatment and outcome. Patients who spent more time in residential treatment had better outcomes (Gossop, Marsden, Sewart, & Rolfe, 1999). A major finding in the Washington State Treatment Outcome Pilot Prospective Study was that patients receiving Full
Continuum (FC) care (residential treatment) prior to outpatient treatment showed greater improvement in psychiatric severity and in legal status from baseline to 9 months than those receiving outpatient treatment only. The study also found that receiving FC care appeared to be more effective for patients with higher alcohol and drug severity at intake (French, Salome, Krupski, McKay, Donovan, McLellan, & Durell, 2000).

Angres, Talbott, & Bettinardi-Angres describe the treatment of health care professionals, including physicians, as including the need for a strong peer-group influence in treatment. Often, longer-phase treatment is indicated for the health care professional with a substance dependence diagnosis. These authors describe a four-phase treatment process; this includes one month of residential rehabilitation, residence in an independent living setting with recovering peers, a second month of day hospital attendance, and two months of mirror-image placement therapy. The mirror-image placement therapy consists of working in some area of substance abuse treatment while remaining in the independent, semi-structured living situation. This might involve helping to collect urine toxicology samples from residents, or orienting newer residents (Angres, Talbott, & Bettinardi-Angres, 1998).

There is evidence that length of treatment is a factor in abstinence vs. continued drug use. Treatment length and completion are seen as consistently and negatively related to continued use whether the associations are measured concurrently or longitudinally, indicating that subjects who remain in treatment longer and complete treatment are less likely to continue to use chemicals than those who leave treatment earlier, or who do not complete treatment (Brewer et al, 1998). When cocaine dependent patients were studied, it was clear that patients with more severe problems were likely to
enter long-term residential treatment programs; lower levels of drug use at follow up were reported by those who were treated for 90 days or longer (Simpson, Joe, Fletcher, Hubbard, & Anglin, 1999). These studies indicate that longer periods of treatment affect treatment outcomes favorably.

Other studies indicate a lack of support for residential treatment. Intensity of treatment has been shown, in some cases, to be less important than rapid entry into treatment (early intervention), and length or duration of treatment (Moos & Moos, 2003). In this case, duration, rather than intensity, was found to be important to long-term outcome. Similarly, in a study of the effectiveness of the "Minnesota Model" approach in the treatment of adolescent drug abusers, completion of treatment was a predictor of favorable outcome (measured by abstinence during the 12 months following treatment), but there were no outcome differences between subjects receiving residential vs. outpatient treatment (Winters, Stinchfield, Opland, Weller, & Latimer, 2000).

**Family History of SUD**

The role of genetics in alcoholism and drug addiction has been well-established. It has been estimated that about 40% of the risk for alcoholism is related to genetic factors (Heath, 1995). A number of studies have contributed to the body of information supporting a genetic factor, including studies on twins and on family systems. Twin studies have shown that there is a 50 to 200% greater chance for identical twins to develop alcoholism than for non identical twins (Heath, 1995). Alcoholism appears to be passed on within family lines, and individuals with a family history of alcoholism are at increased risk for developing alcoholism than are individuals without such a family history. Sons of alcoholics are 4 to 9 times more likely to become alcoholic than are the
sons of nonalcoholics (Heath, 1995). Sons of alcoholics who are adopted by nonalcoholic families early in life are still more than three times likely to become alcoholic than are adopted sons of nonalcoholic parents (Froehlich, Zink, Li, & Christian, 2000). Twin studies have been a strong indicator of genetic transmission of risk for alcohol dependence.

The heritability of specific hormonal responses to alcohol has been studied, in an effort to identify mechanisms by which risk for alcohol dependence might be transmitted from one generation to the next; it was also an attempt to identify biomarkers for people at high risk for alcohol dependence. This research has shown that some hormonal response patterns are very much linked to genetic transmission, as indicated through studies involving monozygotic and dizygotic twins (Froehlich, Zink, Li & Christian, 2000). Because genetics appear to be related to the risk of developing substance use disorders, it may also be related to risk of relapse to substance use among recovering addicts.

A recent study conducted in India utilized the Family Interview for Genetic Studies to collect data from family members of opioid-dependent men. The authors found a high correlation between opioid-dependent men and their first-degree relatives, including opioid-dependent siblings and alcohol-dependent fathers (Prasant, Mattoo, & Basu, 2006). These findings are of interest because they demonstrate evidence of genetic transmission of risk between an alcohol dependent parent and an opioid dependent son. They also indicate that evidence continues to be compiled for the genetic transmission of risk for substance use disorders. In China, a study seeking genetic markers with a longitudinal approach yielded similar findings. In that study, a particular genetic allele
Factors in Relapse 24

was identified as a possible marker through a four-year process of assessment and reassessment of aboriginal people (Cheng, Gau, Chen, Chen-Chang, & Terng-Chang, 2004).

The risk of relapse among recovering physicians with regard to family history of substance use disorder was studied in a cohort of physicians recovering from substance dependence disorders in Washington. In that study, the presence of a family history was found to be a significant factor for risk of relapse to substance use. About 73% of the subjects (case and control combined) reported a family history; this is in line with the hypothesis that genetics are an important factor in the development of substance use disorders. When relapse risk was computed, a family history of substance use disorder was found to be a significant risk factor for relapse. In fact, the authors noted that the presence of a family history approximately doubled the likelihood of relapse to alcohol and drug use (P<.001) (Domino, Hornbein, Pollisar, Renner, Ginger, Johnson, Alberti, & Hankes, 2005).

Eating Disorder Symptoms

The comorbidity of eating disorders and substance abuse has received attention in recent years. The reports about the relationship between these disorders have been mixed. A meta-analysis carried out in 1994 indicates that there is some relationship, but there was a lack of distinction in some studies between substance use and abuse. In general, it appeared that there was a greater relationship between bulimia and substance abuse than between anorexia or restricting food and substance abuse (Holderness, Brooks-Gunn, & Warren, 1994). Because eating disorders appear to be comorbid with a number of disorders, it is difficult to sort out specific comorbidity with substance abuse.
in the absence of other disorders. A marginal relationship was identified, however, between binge eating and heavy alcohol use by Piran and Robinson (2006).

Some research has indicated the possibility that eating disorders and substance dependence disorders may share some common factors in terms of psychological issues as well as in terms of brain chemistry. These authors reviewed a number of studies that provided evidence of co-occurrence/comorbidity of substance use disorders and eating disorders. They point out that co-occurrence refers to the fact that disorders occur in the same individual during the same period, while comorbidity suggests that there are factors in one disorder influencing the development of the other disorder. They suggest the use of general criteria in establishing comorbidity between disorders, indicating that this term be used only when the incidence of the combined disorders appears to be greater than base rates for either disorder in the population (Grilo, Sinha, & O’Malley, 2002).

Curtis, Jason, Olson, & Ferrari (2005) studied women in substance abuse recovery homes and found that women with substance-related disorders are likely to suffer from eating disorders, but they did not attempt to identify a relationship between the presence of an eating disorder and the outcome of a substance abuse recovery program. It does appear, however, that individuals with eating disorders are more likely to have a substance use disorder, and that people with substance use disorders are more likely to have eating disorders (Curtis, Jason, Olson, & Ferrari 2005). The relationship between the two types of disorders is, however, apparently not well-understood.

Eating disorders appear to be found commonly in college-age women. Among female college students with eating disorder symptoms, purging appears to be related to more frequent use of alcohol, as well as to more negative consequences from
alcohol use. On one measure, these authors asked students who purged and students who did not purge questions about drinking experiences. Respondents with purging behavior answered affirmatively at a rate of 84% compared to a 37.5% rate of affirmation from non purging students; the measure involved a question about doing something one later regretted. Responses included the following: 73% to 12.5% on having unprotected sex, 42% to 12.5% on physical injury, and 42% to 25% on blackout symptoms (Anderson, Martens, & Cimini, 2005). These data suggest a relationship not only between purging and increased drinking, but also between purging and problem drinking symptoms. Increases in negative consequences from drinking experiences have also been reported among college students without accompanying information indicating significantly increased amounts of drinking. Dunn, Larimer, & Neighbors (2001) used an eating disorder diagnostic scale along with assessments of drinking experience consequences to identify the relationship between eating disorder symptoms and problem drinking. They found that students with eating disorder symptoms did not report drinking more, but did report significantly more severe consequences to drinking experiences. These authors also noted that students with eating disorder symptoms also reported more illicit drug use experiences than did controls (Dunn, Larimer, & Neighbors, 2001).

History of Abuse

When risk factors for relapse are identified, history of childhood abuse of some kind arises as a possible factor. Some substance abuse treatment programs report high rates of reported childhood abuse among their clients. Much of the data available on this topic has to do with sexual abuse history, and most of that data involves female clients. The prevalence of this relationship between abuse history and female substance abuse
clients in treatment has been estimated to be as high as 48% to 64%. One program indicated that 61% of female clients reported a history of sexual abuse, compared to 18% of male clients (Burgdorf, Chen, Walker, Porowski, & Herrell, 2004). A recent study reported that up to 80% of women seeking treatment for substance abuse have a history of sexual abuse or trauma (Hien, Cohen, Miele, Caren, & Capstick, 2004). This incidence of reported sexual abuse history among patients in substance abuse treatment facilities suggests that a relationship exists between sexual abuse history and substance abuse/dependence. However, the nature of that relationship is not clear. Sexual abuse history does not appear to predict completion of treatment or recovery at follow up.

Neither is the nature of the relationship between these two entities clear. The identity of the abuser (father, sibling, uncle) for many women seems to be an important variable. Because history of sexual abuse often occurred in the context of alcoholic or actively addicted parents, the family history of substance abuse disorder also may have an effect. One disturbing discovery in this research is that higher percentages of women who were sexually abused by their fathers are reported to have had plans or had taken actions toward suicide, compared to women without such abuse histories (Burgdorf, Chen, Walker, Porowski, & Herrell, 2004). The connection between sexual abuse history and substance abuse is complex.

When outcome measures for substance abuse treatment, such as relapse at a given point in time, or completion of treatment are studied with respect to abuse history, it seems clear that many measures of psychopathology are significantly related to childhood abuse, but the outcome measures do not appear to be related in many cases (Gehrenbeck-Shim, 1998). Individuals who suffer from the effects of childhood sexual or physical
abuse seem to carry many psychological sequelae, but the effects of this history on substance abuse treatment outcome, specifically on relapse, are not clear. A specific review of outcomes of substance abuse treatment for clients with a history of abuse compared to clients without such a history indicated that clients who have a history of abuse appear to have more co-occurring psychiatric issues when in treatment, but the history of abuse did not predict failure to complete treatment, nor the status of clients at follow up one year after treatment (Pirard, Estee, Kang, Angarita, & Gastfriend, 2005).

Research data on childhood abuse is less available about males, possibly because the subject of sexual abuse of males is even more taboo than this abuse of females (Relf, 2006). One study reviewed such data in order to ascertain effects on sexual behavior with regard to HIV status, involving men who had a history of sexual abuse. Men with a history of sexual abuse were found to be much more liable to have problems with alcohol and drug use, and were more liable to have been hospitalized for alcohol or drug problems (Relf, 2006). Indeed, when data on boys and men are sought and compared to that of women on the topic of history of sexual abuse, substance abuse appears to be a major correlate for men; however, it is among many different effects for women, including affective and anxiety disorders in addition to alcohol abuse. For men, substance abuse appeared to be the main effect (Finkelhor, 1990).

There appears to be a link between abuse history and trauma symptoms including PTSD; this has also been studied in relation to substance abuse treatment. Again, the connection appears but the effects are less clearly identifiable. Women with self-reported physical or sexual abuse histories score higher on substance use screening tests. These women also appear to have more diagnosed substance problems in adulthood, even when
the abuse occurred in childhood or adolescence, and there has been no exposure to trauma since that time (Stewart, 1996).

**Living Arrangements**

The question of the effect of one’s living arrangements on substance abuse disorder and on relapse is an interesting one. Much of the information in the literature on this topic is phrased around the cultural concept of marriage, and, as such, is likely referring to heterosexual marriage. This is unfortunate, because living with a significant other can be a factor in relapse or stability outside of the narrowly defined construct of heterosexual marriage. However, examination of this data is important. In reviewing the literature on this topic, one quickly moves from the notion that stable relationships provide protective effects in terms of relapse to substance use for individuals in abstinence recovery.

Recent studies on gender differences in substance abuse relapse have shown that for men, marriage can be a protective factor; for women, however, this status can act as an additional risk factor. In this study, marriage was protective for men up to 15 months post-treatment, but was a contributory factor to relapse in women at 3 months, post-treatment (Walitzer and Dearing, 2006). These authors also cited a study indicating that men may be more likely to relapse before a 3 month post-treatment follow up when living alone, than women living alone (Walitzer & Dearing, 2006).

There are also indications that, in general, marriage is predictive of less chance of relapse following treatment. In an analysis based on data from the 2001-02 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), being married was associated positively not only with the odds of being either in abstinence recovery or
in a form of non-abstinence recovery at follow up, but was also associated positively with better outcomes (Dawson, Grant, Stinson, Chou, Huang, & Ruan, 2005).

*Other Compulsive Behavior*

The notion of compulsive behaviors interacting with treatment for substance dependence has not been extensively explored. Compulsive gambling is one area of compulsive behavior that has attracted attention with respect to its comorbidity with substance dependence and the interaction of the two disorders. There is recognition of the likelihood of comorbid occurrence of substance abuse and compulsive gambling, and of the additional difficulty that is presented in recovery because of the interaction of the two. Substance abusing compulsive gamblers are thought to be harder to treat (Nathan, 2003), but the effects on recovery from compulsive gambling are not quantified.

When a population of compulsive gamblers in a recovery program was followed for a year, substance abuse did not emerge as a significant factor in relapse, but lifetime prevalence of alcohol dependence in the population was high, at about 77% (Hodgins & el-Guebaly, 2004). This finding suggests some connection between the two disorders. Another recent study of adolescents who were involved in compulsive gambling indicated that substance abuse was a predictor of problems with gambling (Hardoon, Gupta, & Derevensky, 2004). Thus there is evidence of a relationship between the disorders, but not that they are more than co-occurring. Evidence of an effect on addiction recovery by compulsive gambling has not been widely identified.

Kausch (2003) explored the patterns of substance abuse and compulsive gambling, and identified a number of impulsive behaviors in which gamblers tend to engage. These include compulsive shopping, compulsive spending, and compulsive
sexual behaviors. This study identified the pattern indicating that substance abuse makes all of these behaviors more likely, and that substance abuse interacts with the other compulsive behaviors, complicating the recovery picture (Kausch, 2003). One can easily see how these behaviors may interact to produce complications in substance abuse recovery or in recovery from other compulsive behaviors.

Compulsive sexuality is characterized by high risk behavior. Review of case studies of sexually compulsive women suggest a relationship between alcohol and drug use and sexual acting out; one woman described feeling that when she drank, she knew that she would likely end the evening by having sex with someone (Turner-Shults, 2002). In studies of sexually compulsive men, drinking before compulsive sexual experiences is also well-documented, suggesting that substance abuse, if not dependence, is commonly a co-occurring disorder with sexual compulsivity among gay men (Relf, 2001).

Use of Tobacco

The use of tobacco can be considered a co-occurring substance dependence disorder along with alcohol or drug dependence. Traditionally, tobacco smokers involved in 12-step recovery from alcohol and other drugs have tended to avoid the task of stopping tobacco use during early recovery, with the thought that one addiction recovery at a time is enough. In recent years, awareness has grown that tobacco use involves addiction to nicotine, and there has been more interest in addressing smoking as a co-occurring dependence. To study the effects of nicotine deprivation on people who are in treatment for alcohol dependence, a group of researchers identified 40 patients in a treatment program for alcohol dependence, and used rating instruments to help the patients identify the effects of nicotine deprivation on the urge to drink, or the craving for
alcohol. The researchers found that acute nicotine deprivation had a great effect on the urge to smoke, but did not affect the urge to drink (Cooney, Cooney, Pilkey, Kranzler, & Oncken, 2002). Based on their findings, the authors recommended that individuals in recovery from alcohol dependence can be encouraged to discontinue smoking during treatment.

In fact, there is evidence that stopping or reducing tobacco use during recovery from alcohol use disorders may enhance recovery. Project Match yielded data on cigarette consumption and drinking outcomes (Friend & Pagano, 2005). Data from Project Match was evaluated by dividing smokers into three groups according to whether or not their smoking was unchanged, had increased, or had decreased from the beginning of the study to a follow up point at 15 months. These data show that the smokers whose cigarette consumption decreased were less likely to suffer a relapse to alcohol use than smokers whose smoking behavior increased or stayed the same (Friend & Pagano, 2005). These findings suggest that reducing tobacco use may have a positive effect on recovery from alcohol dependence.

Similarly, the authors who published the Tramadol Post-Marketing Survey examined physician data on smoking as part of follow up data analysis. They found a correlation between past smoking and current smoking and relapse, comparing this data with non-smokers and rates of relapse. It did appear that smoking might represent a risk for relapse to substance use (Knisely, Schnoll, & Dawson, 2000). The relationship between smoking and substance use disorder recovery deserves additional attention in the future.

Previous studies have examined recovery and relapse issues among physicians
Factors in Relapse

with substance dependence diagnoses. The Illinois Study involved 278 health professionals (101 physicians) who successfully completed a residential treatment program at Rush Behavioral Health, and entered into an aftercare contract that called for monitoring of recovery activities. Favorable outcome in this study was defined as continuous, uninterrupted abstinence from mood altering, addictive chemicals, and involvement in all recommended aftercare activities. Relapse was defined as resumption of the use of mood-altering drugs or alcohol following a (an abstinence) recovery process (Angres, Talbott, & Bettinardi-Angres, 1998). Because physician impairment programs in the United States are, for the most part, abstinence recovery model programs, relapse is defined here as the return to active chemical use, outside of documented prescription as part of medical care, following a period of abstinence recovery. Models of relapse conceptualize the phenomenon as a transitional process, a series of events that unfold over time, with relapse beginning prior to the first post-recovery chemical use and continuing after the initial use (Larimer, Palmer, & Marlatt, 1999). Much of the available research deals with severely dependent patients who are, because of the severe level of dependence, not appropriate for a goal of moderation; therefore, much of the literature on relapse deals with abstinence models.

The use of self-help programs, including 12-step programs such as Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) have also been the subject of some attention. Project Match compared three psychosocial treatments: Cognitive Behavioral Therapy (CBT); Motivational Enhancement Therapy (MET); and Twelve-Step Facilitation Therapy (TSF). In this study, the TSF condition was not so much a therapy intervention as an aid to facilitate the client’s use of 12-step self help programs. The
counselor met with the client to discuss progress in accessing and utilizing self-help meetings and concepts. Results from project match showed that 24% of the TSF patients were abstinent throughout months 4-15; 15% of the CBT patients and 14% of the MET patients were abstinent throughout the period. This advantage for TSF endured throughout the 12 months of follow-up (NIAAA, 1988). The difference was not reported as statistically significant by the authors, but it is clear, that for a certain portion of the client population who are severely dependent and who choose to seek abstinence, the support offered by 12-step programs can be quite helpful.

The value of 12-step involvement was also demonstrated in a study of cocaine dependent veterans, in which a number of factors were evaluated in terms of the relationship of the variables to continued abstinence. Motivation, coping and mood, social support, co-morbid problem severity, treatment attendance, self-help participation and cocaine use variables were assessed at each follow up at 6-month intervals over a two-year period. Only continued self-help participation and early achievement of cocaine abstinence were seen as significant factors in the maintenance of good outcomes over extended periods (McKay, Merikle, Mulvaney, Weiss, & Koppenhaver, 2001). There is evidence in the literature to support the notion that self-help involvement can be a helpful adjunct to treatment protocols, and that continued participation in self-help programs reduces relapse.

Maintaining abstinence involves a variety of activities. In one study, authors interviewed patients over a 30-month post treatment period. They found that a 30 day or longer period of abstinence were associated with the use of “active strategies”. These included listing the benefits of sobriety, recalling problems associated with drinking, and
keeping sobriety as a first priority (McKay JR, Maisto SA, & O’Farrell, 1996). Barrick & Connors, et al. (2002) reported that the most commonly reported methods for maintaining abstinence were avoiding ‘risky’ people and places, recalling drinking-related problems, and attending self-help groups such as AA (Barrick & Connors, 2002).

To reduce continued substance use most effectively, treatment interventions should focus on multiple variables, because no single variable strongly predicts continued use and thus changes on several variables may be required (Brewer & Catalano, 1998). It will also be important to continue to develop methods of helping those who treat patients to identify the relapse factors for the particular client and to help him/her utilize strategies to cope effectively with those risk factors.

It is clear that there is no one factor that predicts relapse consistently. It becomes increasingly important to identify mediating factors on an individual basis and to look for similar patterns in groups of clients so that treatment protocols can address these risk factors. This study will explore factors in relapse to chemical use among physicians in recovery from substance dependence.
Methods

Subjects

There are 308 subjects in the data set from the original study. These subjects were broken into two groups, relapse vs. no relapse at 5 years after participation in the original study, the post-marketing survey on tramadol (Knisely J, Campbell E, Dawson K, Schnoll S, 2002). Two subject pools were created by the use of extensive chart review, during which records were reviewed in detail to determine the presence or absence of a documented relapse, relapse dates, and diagnoses. Subjects who participated in at least five years of monitoring post study were eligible for inclusion into the subject pool. Subjects who had not been followed for at least five years post original study were excluded from the subject pools. One pool contains subjects with a documented relapse at 5 years post study, and the other pool contains subjects without a documented relapse. Careful chart review was utilized to determine presence or absence of a documented relapse.

For the purpose of the present study, “relapse” is defined as including relapse behavior along with drug use at a level exceeding episodic or limited use, with reduced or little program contact. This definition was selected because this pattern most closely fit the pattern of relapse commonly observed in the monitoring program. To have selected a level of relapse with a more severe set of characteristics as a relapse definition would have excluded too great a number of significant relapse events.

To create the relapse group for this study, 50 subjects were randomly selected from the relapse pool. Frequencies were determined, and subjects from the non-
relapse pool were separated by match characteristics, and were randomly selected from the subset pools to match the 50 relapse subjects, forming the non-relapse group. Gender was matched first; following this a specialty category was matched. Specialty categories were defined as: Primary Care, Surgical Specialties, Anesthesiology, Psychiatry, and Diagnostics. Subjects were matched with a same gender subject from the same specialty category. All relapse subjects were matched with a control subject who had participated in monitoring through the date when the matched subject’s relapse occurred. This ensured the same opportunity for relapse for both case and control during monitoring.

Procedures

Ten dependent variables were extracted from initial interview data collected during the previous study, and from chart review:

a. age at first use of drug of choice, as reported by the subject during the intake interview.

b. treatment level received, which was identified as a nominal variable, with responses indicating the number of experiences in each level of treatment, including outpatient, intensive outpatient and inpatient/residential.

c. co morbid psychiatric diagnoses, which were identified as a nominal variable utilizing the DSM IV classification. Comorbid psychiatric diagnoses were coded only if assigned by a board certified psychiatrist. A listing of traits, features or a rule out diagnosis was coded as no diagnosis.
d. Drug of choice was identified as a nominal variable

e. Smoking history was coded to indicate current, past or never.

f. Abuse in childhood was coded according to the participant’s yes or no response on the original structured intake interview. (The interviewer asked if the individual had a history of emotional, physical, or sexual abuse in childhood or adolescence.)

g. Living arrangement was coded according to whether the individual lived with a spouse/significant other as opposed to in another living arrangement.

h. History of substance dependence in family of origin was coded according to whether or not such a history was reported in answer to a question posed during the intake interview: “Does (or did) anyone in your family of origin have a chemical dependency problem, including mother, father, sister, brother, paternal grandparents, maternal grandparents, or other. “Yes”, “No”, “NA” or “unknown” was recorded for each family member value.

i. Other compulsive behaviors reported at time of intake were identified as a nominal variable. This report was made in response to a question in the intake interview requesting a yes or no response to “gambling”, “spending”, “over-exercising”, “sexual behavior”, or “other”.

j. Eating patterns/disorder symptoms were coded by responses in the initial intake interview, acknowledging consistent overeating; purging; bingeing; and/or fasting/restricting.
Time to relapse was measured from data taken from archival records indicating time from the individual’s entry into abstinence recovery and the documented relapse.

Data Analysis

These variables were coded to afford comparison across groups. The independent variable is relapse. The author compared values on the dependent variables (listed above) of those who relapsed with those who did not. Continuous variables were analyzed using a one-way analysis of variance. Nominal variables were tested using chi-square tests. Differences in the dependent case control variables between the relapse and no relapse groups were identified, with alpha set at (p)<.05. Any effect on relapse status observed as being related to these dependent variables was considered to be indicative that the variable was associated with a greater risk of relapse.

Hypotheses

Physicians in recovery from a substance dependence disorder who:

1. have comorbid axis I or axis II psychiatric disorder will be more likely to relapse to substance use;

2. have received less intensive outpatient treatment will be more likely to relapse than those receiving more time in residential or inpatient treatment;

3. have overall greater length of use since time of onset of drug use will be more likely to relapse than physicians with shorter length of use;

4. report narcotics or opioids as a primary drug of choice will be more likely to relapse than those reporting other primary drugs of choice;

5. smoke tobacco will be more likely to relapse than those who do not smoke;
6. have a history of emotional, physical, or sexual abuse in childhood will be more likely to relapse than those without such a history;

7. live with a spouse or significant other will be less likely to relapse than those with other living arrangements;

8. have a history of substance abuse disorders in their families will be more likely to relapse than those without such a family history;

9. at the time of intake, reported other compulsive behaviors, which involve gambling, food, sex, etc. will be more likely to relapse than those who do not report such compulsive behaviors;

10. report the presence or history of eating disorder symptoms at the time of intake will be more likely to relapse than those without eating disorder symptoms.
Results

This data was collected between 1995 and 1998 from a cohort of 308 physicians by telephonic structured interview. Subjects in relapse and non-relapse groups were matched for gender and for specialty category. The specialty categories used for match purposes were Primary Care, Surgical Specialties, Anesthesia, Psychiatry, and Diagnostic Specialties. The demographics of the sample are shown below:

Table i

Summary of Medical Specialty Categories

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Table ii

Gender

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Table iii

**Age Range at Recovery**

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<th>Non-Relapse</th>
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<td>36%</td>
<td>18</td>
<td>36%</td>
</tr>
<tr>
<td>50-59</td>
<td>4</td>
<td>8%</td>
<td>6</td>
<td>12%</td>
</tr>
</tbody>
</table>

The outcome information for this sample of physicians shows that of the 308 physicians in the cohort during the previous study, 78 (25%) experienced a documented relapse to substance use. Of these 78 physicians, 55 were re-engaged in recovery and continued to maintain recovery in a documented monitoring program. Time to first relapse is shown in table iv, and the percentage of subjects with multiple relapses is shown in table v.

Table iv

**Time to First Relapse**

<table>
<thead>
<tr>
<th>Year of relapse</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>22%</td>
</tr>
<tr>
<td>2-5</td>
<td>24</td>
<td>48%</td>
</tr>
<tr>
<td>5-10</td>
<td>10</td>
<td>20%</td>
</tr>
<tr>
<td>&gt;10</td>
<td>4</td>
<td>8%</td>
</tr>
</tbody>
</table>
Hypothesis # 1: Physicians with co-occurring psychiatric diagnoses will be found more likely to relapse to substance use.

A 2 X 2 chi-square analysis was performed investigating the effects of co-occurring axis II disorders on relapse. The Ss were classified as having had a documented relapse or having none, and as having a documented axis II disorder diagnosis, or having none. The presence of an axis II disorder was strongly related to relapse ($\chi^2 = 16.071$, df = 1, p<.05) (Forty-eight percent of the relapse group had an axis II diagnosis, compared to eight percent of the non-relapse group). Comorbid personality disorder diagnoses are shown in table vi.
Table vi
Personality Disorder Diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>f</th>
<th>%</th>
<th>cum%</th>
<th>f</th>
<th>%</th>
<th>cum%</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCPD</td>
<td>4</td>
<td>8%</td>
<td>8%</td>
<td>0</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Narcissistic PD</td>
<td>2</td>
<td>4%</td>
<td>12%</td>
<td>0</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Borderline PD</td>
<td>2</td>
<td>4%</td>
<td>16%</td>
<td>0</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>PD NOS</td>
<td>15</td>
<td>30%</td>
<td>46%</td>
<td>4</td>
<td>8%</td>
<td>8%</td>
</tr>
</tbody>
</table>

The effects of co-occurring axis I disorders were also analyzed.

A 2 X 2 chi-square analysis was performed investigating the effects of co-occurring (non-substance related) axis I disorder on the outcome of relapse. Ss were classified as having a documented relapse or not, and as having a comorbid axis I (non-substance) diagnosis, or having none. The presence of a comorbid axis I diagnosis was significantly related to relapse ($\chi^2 = 9.180$, df = 1, p<.05).

The incidence of comorbid (non-substance related) axis I diagnosis is summarized in table vii.

When the presence of an axis II disorder is combined with the presence of a secondary axis I disorder (not including secondary substance use disorder diagnoses), the presence of a co-occurring psychiatric disorder on axis I or axis II was strongly related to relapse ($\chi^2 = 23.645$, df =1, p<.05).

The percentages of subjects with a comorbid axis I or axis II diagnosis are summarized in table viii.
Table vii

**Comorbid Axis I Diagnoses**

<table>
<thead>
<tr>
<th>Axis I disorder</th>
<th>f relapse</th>
<th>% relapse</th>
<th>% cum%</th>
<th>f non-relapse</th>
<th>% non-relapse</th>
<th>% cum%</th>
<th>% relapse</th>
<th>% cum%</th>
<th>% total sample</th>
<th>% cum%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bipolar</td>
<td>6</td>
<td>12%</td>
<td>12%</td>
<td>1</td>
<td>2%</td>
<td>2%</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Major Depressive</td>
<td>12</td>
<td>24%</td>
<td>36%</td>
<td>7</td>
<td>14%</td>
<td>16%</td>
<td>19%</td>
<td>26%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysthymic</td>
<td>1</td>
<td>2%</td>
<td>38%</td>
<td>2</td>
<td>4%</td>
<td>20%</td>
<td>3%</td>
<td>29%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulimia</td>
<td>3</td>
<td>6%</td>
<td>44%</td>
<td>3</td>
<td>6%</td>
<td>26%</td>
<td>6%</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTSD</td>
<td>1</td>
<td>2%</td>
<td>46%</td>
<td>1</td>
<td>2%</td>
<td>28%</td>
<td>2%</td>
<td>37%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety/Panic</td>
<td>3</td>
<td>6%</td>
<td>52%</td>
<td>0</td>
<td>0%</td>
<td>28%</td>
<td>3%</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCD</td>
<td>1</td>
<td>2%</td>
<td>54%</td>
<td>0</td>
<td>0%</td>
<td>28%</td>
<td>1%</td>
<td>41%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual</td>
<td>1</td>
<td>2%</td>
<td>56%</td>
<td>0</td>
<td>0%</td>
<td>28%</td>
<td>1%</td>
<td>42%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADHD</td>
<td>1</td>
<td>2%</td>
<td>58%</td>
<td>0</td>
<td>0%</td>
<td>28%</td>
<td>1%</td>
<td>43%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table viii

**Comorbid disorder (Axis I or II)**

<table>
<thead>
<tr>
<th>Relapse Status</th>
<th>f</th>
<th>% of relapse group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relapse</td>
<td>41</td>
<td>82%</td>
</tr>
<tr>
<td>No Relapse</td>
<td>17</td>
<td>34%</td>
</tr>
</tbody>
</table>

Comorbid psychiatric disorder was also analyzed to see if the presence of a comorbid disorder on Axis I or II would be related to the time to first relapse. A one-way analysis of variance was performed to test for significance of relationship between these
Hypothesis #2: Physicians who receive inpatient or residential treatment are less likely to relapse to substance use.

A 2 X 2 chi-square analysis was performed investigating the effects of the level of treatment received. Ss were classified as having had at least one residential treatment experience or having had none as reported at the time of the intake interview. There was no observable effect of inpatient treatment on relapse in this sample ($\chi^2 = 0.98, p > .05$). Treatment modality percentages are summarized in table ix.

Table ix
Summary of Treatment Modality Results

<table>
<thead>
<tr>
<th>Treatment Modality</th>
<th>f</th>
<th>%</th>
<th>f</th>
<th>%</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>42</td>
<td>84%</td>
<td>40</td>
<td>80%</td>
<td>82</td>
<td>82%</td>
</tr>
<tr>
<td>No Residential</td>
<td>8</td>
<td>16%</td>
<td>9</td>
<td>18%</td>
<td>17</td>
<td>17%</td>
</tr>
</tbody>
</table>

Note: One subject did not answer this question.

Hypothesis #3: Physicians who report a history of a family member with a substance use disorder (Family SUD History) will be more likely to relapse than those with no such family history.

A 2 X 2 chi-square analysis was performed investigating the effects of family history on relapse. Ss were rated according to whether or not they self-reported a family member with a substance use disorder. Family history of substance use disorder was not related to relapse ($\chi^2 = 2.312, P > .05$). In fact, a slightly greater portion of those reporting a family history of abuse were non-relapse group subjects. Percentages of subjects reporting a
family history of substance use disorder are summarized in table x.

Hypothesis # 4: Physicians with a history of abuse in childhood will be more likely to relapse to substance use.

A 2 X 2 chi-square analysis was performed investigating the effects of a history of childhood abuse on the outcome of relapse. Three types of abuse, sexual, physical, and verbal, were collapsed to provide a rating for each S as the presence or absence of a self-report of one or more of the three abuse types. This measure was not related to relapse ($\chi^2 = .523$, $p > .05$).

History of abuse was also measured against time to relapse to see if an abuse history would be related to the amount of time between recovery and first relapse. Abuse history did not predict time to relapse in this sample ($F = .014$, $df = 1$, $p > .05$).

Percentages of subjects reporting a history of abuse are summarized in table x.

Hypothesis # 5: Physicians who report a history of eating disorder symptoms will be more likely to relapse than physicians without such a history.

Ss were asked at intake to state whether they or not had a history of several different eating disorder symptoms, including bingeing, purging, overeating, and restricting or fasting. These data were collapsed to represent the presence or absence of at least one eating disorder symptom. A 2 X 2 chi-square analysis was performed to investigate the relationship between eating disorder symptoms and a relapse outcome. There was no relationship between these variables observed in this sample ($\chi^2 = .042$, $p > .05$).

Percentages of subjects reporting a eating disorder symptoms are summarized in table x.
Hypothesis #6: Physicians who report a history of compulsive behaviors other than substance use will have a greater likelihood of relapse than physicians without such a history. Ss were asked at the time of intake to report whether or not they had a history of compulsive behaviors, including gambling, eating, sexual behavior, over-exercising, spending, or other compulsive behavior. These data were collapsed into presence or absence of a reported compulsive behavior. A 2 X 2 chi-square analysis was performed to investigate the relationship between histories of compulsive behavior and relapse outcome. No relationship between these variables was evident in this sample of physicians ($\chi^2 = .1.362, p>.05$).

Percentages of subjects reporting other compulsive behaviors are summarized in table x.

Table x

<table>
<thead>
<tr>
<th>History of Related Conditions/Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Family SUD History</td>
</tr>
<tr>
<td>Abuse History</td>
</tr>
<tr>
<td>Eating Disorder</td>
</tr>
<tr>
<td>Compulsive Behavior</td>
</tr>
</tbody>
</table>

Hypothesis #7: Physicians with opiates as the drug of choice will be more likely to relapse than physicians with other drug preferences. Drug of choice data was collapsed opioid drug of choice vs. non-opiate. A 2 X 2 chi-square analysis was performed to investigate the relationship between opioid use and relapse outcome. There was no
relationship demonstrated in this sample of physicians between opioid use and relapse outcome ($\chi^2 = .040, p > .05$).

Percentages of physicians reporting opioids as their drug of choice are summarized in table xi.

Table xi
Opioid as Drug of Choice

<table>
<thead>
<tr>
<th>Drug of Choice</th>
<th>f relapse</th>
<th>%</th>
<th>f non-relapse</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioid</td>
<td>23</td>
<td>46%</td>
<td>22</td>
<td>44%</td>
</tr>
<tr>
<td>Non Opioid</td>
<td>27</td>
<td>54%</td>
<td>28</td>
<td>56%</td>
</tr>
</tbody>
</table>

Self-reported use of opioids as a drug of choice was checked against DSM IV-TR diagnosis code 304.00, to see if assigned diagnosis of opiate dependence would correlate with relapse. There was no significant relationship in this sample between opiate dependence diagnosis and relapse ($\chi^2 = .770, p > .05$).

Hypothesis #8: Physicians with an overall greater length of use since onset of drug use will be more likely to relapse than physicians with a shorter length of use. Physicians were asked to provide information about their ages at the time of onset of use of their drug of choice. A one-way analysis of variance was used to test for the strength of relationship between age at first use and outcome of relapse vs. non-relapse. Because age at first use was distributed evenly across both groups, age at first use did not show a significant correlation with relapse outcomes ($F = .008, df = 1, p > .05$).

Age at first use was also collapsed into age ranges to see if onset during a particular period of life would be related to relapse. Age ranges were defined as 0 to 19, 20 to 30, and >30. A 3 x 2 chi-square analysis was performed to investigate the relationship
between age ranges of first use and the relapse outcomes. There was no relationship demonstrated in this sample between age range of first use and relapse outcome ($\chi^2 = .132, df = 2, p > .05$).

Age categories at onset of use of the drug of choice are summarized in table xii.

<table>
<thead>
<tr>
<th>Age at Onset</th>
<th>f (relapse)</th>
<th>% (relapse)</th>
<th>cum% (relapse)</th>
<th>f (non-relapse)</th>
<th>% (non-relapse)</th>
<th>cum% (non-relapse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;19 years</td>
<td>17</td>
<td>34%</td>
<td>34%</td>
<td>17</td>
<td>34%</td>
<td>34%</td>
</tr>
<tr>
<td>20-30 years</td>
<td>20</td>
<td>40%</td>
<td>74%</td>
<td>18</td>
<td>36%</td>
<td>70%</td>
</tr>
<tr>
<td>≥30 years</td>
<td>13</td>
<td>26%</td>
<td>100%</td>
<td>14</td>
<td>28%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Hypothesis #9: Physicians with a history of smoking tobacco will be more likely to relapse than physicians who have never smoked. Smoking data was collected at the time of entry into the original study; the subject was asked to respond with past, with current or with never concerning smoking history. The data were collapsed for this analysis, into smoking history (including subjects who reported past or current smoking at the time of intake) or no smoking history (including subjects who reported never smoking). A 2 X 2 chi-square analysis was performed to investigate the relationship between smoking history and relapse. There was no observed correlation between smoking history and relapse in this sample ($\chi^2 = 2.52, P > .05$). In fact, a greater proportion of non-relapsers (58%) reported a smoking history than did relapsers (52%). Percentages of subjects reporting a smoking history are summarized in table xiii.
Table xiii
Summary of Smoking History

<table>
<thead>
<tr>
<th>Smoking History</th>
<th>f relapse</th>
<th>% relapse</th>
<th>f non-relapse</th>
<th>% non-relapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking Hx</td>
<td>26</td>
<td>52%</td>
<td>29</td>
<td>58%</td>
</tr>
<tr>
<td>No Smoking Hx</td>
<td>21</td>
<td>42%</td>
<td>21</td>
<td>36%</td>
</tr>
</tbody>
</table>

Smoking history was also compared to the time to relapse to see if a history of smoking tobacco would be related to the amount of time between recovery and first relapse. Smoking history did not predict the time to relapse in this sample ($F = 0.00$, df = 1, $p > .05$).

Hypothesis #10: Physicians who live with a significant other will be less likely to relapse than those who do not.

Data relating to living situations was collapsed to represent living with a spouse or significant other vs. other living arrangements, including living alone, living with children or parents, or living with roommates. A 2 X 2 chi-square analysis was performed to investigate the effects of living arrangements on the outcome of relapse vs. non-relapse. There was no demonstrated relationship between the variable of living arrangements and relapses ($\chi^2 = .082$, df = 1, $p > .05$).

Subjects reporting living with a spouse or significant other are summarized in table xiv.
<table>
<thead>
<tr>
<th>Living Arrangements</th>
<th>relapse</th>
<th>%</th>
<th>non-relapse</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live with sig. other</td>
<td>37</td>
<td>74%</td>
<td>35</td>
<td>71%</td>
</tr>
<tr>
<td>No sig. other</td>
<td>13</td>
<td>26%</td>
<td>14</td>
<td>29%</td>
</tr>
</tbody>
</table>
Discussion

The outcome data shown in the results section indicate that approximately 25% of the 308-physician cohort in the study suffered a documented relapse to substance use. It is interesting to note that this is the same relapse percentage as reported by the Washington Physician Health Program (Domino, Hornbein, Polissar, Renner, Johnson, Alberti, & Hankes, 2005) when studying data from the same time period on a Washington State cohort of physicians who were involved in the same data collection study between 1995 and 1998 (Knisely, Campbell, Dawson, & Schnoll, 2002). It is important to note that 55 of the 78 physicians who relapsed in the Pennsylvania study were successfully re-engaged in monitored recovery. This represents a long-term rate of engagement in recovery of 92% over a period of 10 years since the onset of the initial study. These findings underscore the value of monitored recovery for physicians and other professionals. As noted, 28% of these relapses occurred beyond the fifth year of monitoring, and 8% occurred beyond the 10th year (see table iv). The incidence of relapse beyond the fifth year of monitored recovery demonstrates the need for long term monitoring.

The variable showing the strongest relationship to relapse is the presence of a co-occurring psychiatric disorder. When the presence of an axis II disorder is cross-tabulated with relapse, 48% of the relapse group has a documented axis II diagnosis compared to only 8% of the non-relapse group. When co-occurring axis I diagnoses are added (with secondary substance use disorder diagnoses not counted), 74% of the relapse group had a co-occurring psychiatric diagnosis, compared to 26% of the non-relapse group. No subjects with only a notation of "traits" or "features" of personality disorders
were included in the axis II diagnosis data. Only cases in which a diagnosis had been made by a board-certified psychiatrist were coded as such. Still, the presence of an axis II disorder or a co-occurring axis I psychiatric disorder was significantly related to relapse. However, the presence of a co-occurring psychiatric disorder did not predict the time to relapse in this sample.

A residential or inpatient treatment experience was hypothesized to make relapse less likely than an outpatient treatment experience. This sample did not demonstrate a relationship between the levels of treatment received and relapse. However, the data must be viewed in the context of this particular sample. 82% of the sample, including both relapse and non-relapse groups reported having received a residential or inpatient treatment experience at the time of intake. The high percentage of subjects received residential treatment the dominant treatment model in addiction medicine. The data available from this cohort do not appear to be mixed enough to test this hypothesis adequately.

There is much information in the literature suggesting that a family history of substance abuse appears to make a substance use disorder more likely (Hasselbrock, 1995). This data set supports the presence of such a relationship between family history and substance abuse. In this sample, 61% of the subjects in the relapse group, and 75% of those in the non-relapse group reported a family history of substance abuse. Clearly, the data from this sample of recovering physicians seem to support the conclusion that a family history of substance use disorder may be a risk factor in the development of such a disorder. However, within this cohort of recovering addicted physicians, there was no significant difference in risk for relapse between those reporting a family history of
substance use disorder and those reporting no (known) family history of such a disorder. The data from the Washington study indicate that the presence of a family history is strongly related to relapse. In fact, in that sample, the presence of a family history doubled the risk of relapse (Domino, Hornbein, Pollisar, Renner, Ginger, Johnson, Alberti, & Hankes, 2005).

Subjects reporting a history of abuse (physical, verbal or sexual abuse during their childhood) were evenly distributed across both groups. The percentage of the overall sample, comprising both case and control groups report a substantial history of abuse. Nearly half of the entire sample reported a history of abuse, with 45% of the non-relapse group reporting an abuse history compared to 52% of the relapse group. A significant risk for relapse was not noted. When the history of eating disorder symptoms is examined, 20% of the overall cohort reported a history of eating disorder symptoms. Subjects reporting eating disorder symptoms were evenly distributed across the case and control groups (21% of non-relapse vs. 20% of relapse). There is no significant difference between the case and control groups on this variable, and no observable effect of eating disorder symptoms on the relapse outcomes. These data may have been underreported, suggesting that it will be important in the future to collect such data in a manner that might enhance accuracy, increasing the probability that such disclosure would be made.

A history of other compulsive behaviors has been shown to be related to substance use disorders (Kausch, 2003; Schmitz, 2005; Ladd & Petry, 2003). In this sample, across both case and control groups, nearly 26% of the total number of participants reported a history of other compulsive behaviors. The difference between
Factors in Relapse 56

case and control, however, was not significant. Approximately 30% of the relapse group compared with 21% of the non-relapse group reported other compulsive behaviors.

In the study carried out by the Washington State Physician Health Program, use of narcotics appeared as a risk factor for relapse, but only when combined with a comorbid psychiatric disorder. (Domino, Hornbein, Polissar, Renner, Johnson, Alberti, & Hankes, 2005). In a study published by researchers at Rush Behavioral Health, it was noted that psychiatric comorbidity was more likely in the opiate (as drug of choice) category than in other categories, suggesting that this relationship between comorbid diagnosis, relapse, and choice of opiates is complex (Angres, McGovern, Rawal, Purva, & Shaw, 2002). In the present study cohort, the self-reported drug of choice as opiates was evenly distributed across both groups (46% both for relapse and non-relapse). This variable was cross-checked by reviewing diagnoses assigned by treatment professionals. When the diagnosis of opiate dependence, DSMIV TR code 304.00, is tracked in this sample, there are more relapse subjects (46%) carrying this diagnosis than non-relapse subjects (38%). The difference does not, however, approach statistical significance ($\chi^2 = .770, p>.05$).

Length of use is a variable that appears in the literature to be related to risk of relapse. In this sample, age at first use as reported by the subject at intake was recorded as the age of first use of the drug of choice. Therefore, for physicians who entered treatment because of narcotic addiction, early onset of alcohol and drug abuse of substances other than narcotics would not appear as a factor. A more careful interview technique, gathering information approximating the onset of drug/alcohol abuse in general, rather than age of onset of use of the drug of choice at intervention, may provide a more meaningful comparison. Such a method of gathering data would reveal, for
example, if a physician who began to abuse alcohol and marijuana as an adolescent, but began to use opiates only several years prior to intervention, he or she is more at risk for relapse than a counterpart who began using opiates at approximately the same time but had no history of polysubstance abuse. On the basis of the self-reported age of first use of the drug of choice at the time of intake, there was no significant difference in age at first use between the case and control groups.

Smoking history was shown to be a factor related to relapse in the 4-state cohort studied by Knisely et al in the Tramadol post-marketing study (Knisely, Campbell, Dawson, & Schnoll, 2002). In this sample, relapsers were only slightly more likely (59%) than non-relapsers (55%) to have reported a history of smoking. When only current smoking was reported, the percentages shift to 26% of relapsers reporting current smoking, compared to 41% of non-relapsers. This difference does not reach the level of statistical significance and cannot quite be called a trend, but it is an interesting characteristic of the cohort. There was no significant relationship observed between smoking and relapse in this sample.

Living situations are commonly held to be important factors in recovery from substance use disorders. The living arrangements of the patient are factored into the level of treatment placement criteria of the American Society of Addiction Medicine as an important aspect in differentiating intensity of care needed (ASAM, 2001). At the time of intake interview, subjects in this sample were asked about their living arrangements. Those responses were reviewed for this study, and the data collapsed to show the variable of living with a spouse/significant other or living in another type of arrangement such as living alone, living with children, etc. The results indicate no observable relationship
between this variable and relapse; 74% of the relapse group reporting living with a
significant other, compared to 71% of the non-relapse group.

In addition to the results, there are several limitations in this study that should be
considered. This research was carried out using archival data that was gathered for a
previous study. This retrospective study evaluated responses given by subjects to
questions asked of them upon their entering the previous study. Subjects with a known
documented relapse are compared to subjects without a documented relapse. The
subjects’ responses which were given 7 to 10 years prior provide much of the data
concerning the variables explored in this study.

The data represent the subjects’ responses to questions contained in a structured
interview, and are thus self-reported data. Because these responses are self-reported,
internal validity is threatened to the extent that data may not have been reported
accurately. There are potential differences in the ways in which people self-report data
such as these, and these differences could affect the results of the data analyses.
Because information about factors regarding personal history is very sensitive, physicians
may not have been comfortable disclosing such information in this structured interview
format, especially because these data were gathered by telephone. Data on family history
of substance abuse or dependence, eating disorder symptoms, history of abuse, and other
compulsive behaviors might be more accessible if it is gathered in person.

A second threat to internal validity in this study is the chance of diagnosis being
assigned to a given subject. A subject who relapses and reenters a treatment program has
a greater likelihood of receiving a comorbid psychiatric diagnosis than his or her
counterpart in the non-relapse group. With respect to Axis II disorder diagnoses, because
these disorders are durable, long-term conditions, the assignment of the diagnosis at any time implies that the diagnosis has been present for a long time. The presence of an Axis II diagnosis was included whether assigned at a first or a second treatment experience. Axis I disorders were handled in a similar fashion. If an Axis I comorbid psychiatric disorder was diagnosed just after a relapse occurred, there is great likelihood that the condition affected the relapse. Rather than losing this data, diagnoses were collected from both initial and subsequent treatment experiences. But the choice to include this data can also be seen to expose the relapse group to greater chance of diagnosis because of an additional exposure to an evaluation process.

A second threat to internal validity of this the lack of randomness which is inherent in a case control design. There may be other factors affecting relapse that were not accounted for in the design. This study was designed to control for some potential differences by matching relapse and non relapse physicians by gender and specialty type.

A third limitation of this study is that its design limits the use to which the data analyses can be put. Because it is a retrospective case control design looking back from a point of known outcome and comparing variables between the groups, causality cannot be inferred. The variables were not controlled in an experimental way. Instead, the study evaluates the strength of relationship between certain variables and the outcome of relapse, as well as the relationship between some of the variables. One cannot draw conclusions of causality from these data analyses. One can, however, measure the relationships between variables and known outcomes and the strength of those relationships within the sample.

The use of matched control groups strengthened the current study design.
Because relapse and non-relapse subjects were matched according to gender and specialty type, internal validity was strengthened. Other variables for matching might be identified in the future.

**Recommendations**

Additional research should be considered in the future to review some of the variables that did not show significance here, particularly family history of substance use disorder, history of abuse, and history of eating disorder symptoms, and other compulsive behaviors. It is possible that a more personalized data collection method would encourage accurate reporting of such data.

Virtually all of the subjects in the study approached recovery through a 12-step abstinence recovery model. Because the recovery rate, including those who experienced relapse but successfully re-entered recovery, is high (approximately 92%), it is clear that this recovery model is indeed effective. The findings on co-occurring disorders, which include primary psychiatric disorders such as bi-polar disorder and Axis II or personality disorders, appear to present barriers to physicians in utilizing their 12-step recovery tools and support systems; this makes those physicians more prone to relapse. These findings, along with data from the Washington State PHP study, indicate that more attention is needed to co-occurring disorders in physicians who experience more difficulty in using Alcoholics Anonymous, Narcotics Anonymous, and similar 12-step programs and recovery tools effectively. It may be appropriate to encourage these individuals to obtain help to address co-occurring psychiatric disorders specifically, in order to enhance their ability to utilize recovery tools.
Diagnosis of Axis II disorders can be difficult, especially early in recovery. Treatment providers hesitate to assign a personality disorder diagnosis when early recovery toxicity or other issues might be affecting the patient. Axis I disorders are more visible and more readily diagnosed. In addition, the assignment of a comorbid psychiatric diagnosis can divert the patients’ attention from their need to address their substance dependence disorders, which in turn could hamper the patients’ ability to recover, rather than enhance their possibility of recovery.

Data from studies conducted at Rush Behavioral suggest several important points with regard to physicians in treatment for substance use disorders, who also have comorbid psychiatric disorders:

1. They have a different course of treatment experience; they seem to need to make more appreciable gains to reach comparable status with their counterparts, and may stay in treatment longer to make these gains;

2. They tend to leave treatment having made progress in recovery that is comparable to their counterparts;

3. They seem to have similar substance abuse outcomes at follow up, but report higher levels of emotional distress than their counterparts.

The average follow up period in this study was 2.5 years. These results suggest that physicians with comorbid psychiatric disorders get as much or more out of treatment than their counterparts, and are able to utilize recovery tools effectively. These results, together with the data from the current study, suggest that an important time period for
concern about the physician in recovery from a substance dependence disorder with a comorbid psychiatric disorder may be beyond the two to three year point. It may be that such physicians are able to utilize AA, NA and other 12-step programs effectively, and utilize recovery skills learned in treatment, but could have difficulty over the longer term in continuing to use these strategies effectively, in part complicated by their comorbid disorder.

Given these issues, it appears to be important for professional peer-assistance and monitoring programs to attempt to collect information concerning comorbid disorders, using this information to inform long-term aftercare and outpatient treatment planning and monitoring arrangements. Aftercare therapists could be made aware of these issues, and monitoring arrangements could be set up to afford adequate attention to treatment of comorbid disorders. It is important to safeguard the patient's confidentiality in this process. It would be potentially valuable to gather qualitative or case study information in order to view this issue from the point of view of the recovering participant. This information may provide more direction on future experimental inquiries, as well as on program improvement efforts.
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