COPING AND SELF-EFFICACY AS PREDICTORS OF SUBSTANCE USE DURING
THE FIRST FEW CRITICAL MONTHS FOLLOWING SUBSTANCE ABUSE
TREATMENT COMPLETION

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ABSTRACT

The literature suggests that the interaction between the exposure to high-risk situations, coping skills and self-efficacy underlie the relapse process. Research has also shown that self-efficacy is related to the avoidance of alcohol use and smoking and that high self-efficacy ratings exhibited during follow-up are associated with less substance use. The present study extended the existing research in these ways. First, self-efficacy was assessed in former substance abusers who had completed out-patient treatment at four follow-up points: 30 days, 60 days, 90 days, and 120 days post-discharge. The results revealed significant inverse correlations between self-efficacy and drug use at the 30 days, 60 days, and 90 days follow-up intervals. At the 30 day follow-up, there was a significant difference in the mean total perceived self-efficacy score between those who remain abstinent and those who do not remain abstinent. Lastly, there was a significant correlation between the number of successful coping strategies endorsed and number of days of primary drug use at the 30-day interval. To investigate more thoroughly the coping successes and failures of participants during the first four months post treatment, subjects were asked to describe high-risk situations they had encountered and coping strategies they employed. Responses were analyzed qualitatively and subsequently related to post-treatment drug use.

ACKNOWLEDGEMENTS

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INTRODUCTION

Understanding the process of relapse and recovery is essential in the science and treatment of addictions (Tims, Leukefield, & Platt, 2001). Relapse in drug abuse often occurs following treatment and is a major concern to treatment providers. According to the Drug Abuse Treatment Outcome Study (DATOS) of post treatment outcomes for 1450 clients who received community treatments for cocaine and heroin dependence, about 43% of the clients who used heroin in the year after treatment were using heroin within one week after treatment termination and an additional 20% were using heroin within one month of treatment discharge. Half of the remaining clients relapsed one to three months after treatment cessation. Cocaine was being used by 32% of clients within one week of termination. At one month, half had relapsed and an additional 30% relapsed to cocaine use three months after treatment discharge (Simpson, Joe, Fletcher, Hubbard, & Anglin, 1999).

Rychtarik, Prue, Rapp and King (1992) examined relapse among a sample of male alcoholics. At a six-month follow-up, 59 subjects (76%) who met the criteria for a relapse. By the twelve-month follow-up, 68 subjects (87%) were classified as having relapsed. Stephens, Wertz and Roffman (1995) found that the percentage of those seeking treatment for marijuana cessation relapsed at one, three, six, and twelve-month follow-ups at a rate of 50%, 60%, 75%, and 80%, respectively.

Evidently, it is not unusual for substance abuse clients to relapse following treatment, nor is it uncommon for clients to relapse within one year following treatment. Since relapse is common during the process of recovery from substance abuse, it is essential that it be examined carefully. However, there are a number of methodological issues that must be considered when trying to understand relapse.

Recent research has indicated that a brief period of use after treatment does not necessarily indicate significant use or serious relapse, and a shift to less serious drug use patterns may be viewed as indicators of improvement or harm reduction rather than a true relapse (Marlatt, 1996). The lack of clarity of the term "relapse" found in the literature makes it difficult to draw conclusions about how addiction researchers understand relapse (Velicer, DiClemente, Rossi & Prochaska, 1990). Relapse rates may differ by drug and the definitional criteria used in the substance abuse literature. Tims, Leukfield, and Platt (1997) have identified a number of conceptual and methodological problems in defining both relapse and recovery. They cite the need for continuous measures of outcome, methods for assessing outcomes, the inclusion of non-drug related criteria, and the impact of compliance or attrition on outcomes. If these methodological problems are taken into consideration, then a comprehensive assessment of factors contributing to relapse for an individual client can be investigated. This line of research will lead to an understanding of non-clinical factors that may interfere with client's treatment goals. An understanding of these newly isolated factors will provide future insight into a comprehensive assessment of relapse and recovery.

Numerous models and a myriad of methods have been employed to understand the process of relapse after drug treatment and to promote change in addictive behaviors (Hubbard, Flynn, Craddock and Fletcher, 1997). Although theoretical relapse models and empirical studies have generated a significant amount of information and controversy, to date they have failed to uncover any common variable that would predict successful maintenance of addictive behavior change.

A cognitive mechanism, self-efficacy, (proposed by Albert Bandura in 1977) can assist in the prediction of relapse and in designing programs for relapse prevention (Marlatt and Gordon, 1985). Self-efficacy evaluations appear to have value in determining which subjects are likely to maintain behavioral changes and which are likely to experience relapse. It has been shown and that levels of self-efficacy may predict treatment outcome in substance abusers. (Condiotte and Lichenstein, 1981; DiClemente, 1981; Coon, Pena & Illich, 1998).

Cognitive-behavioral approaches to addictive behaviors claim that coping plays a central role in understanding the relationship between high-risk situations and relapse (Annis, Sklar, and Moser 1998). Further examination of coping and self-efficacy is warranted for the purpose of determining the roles of these variables in relapse. By gaining a more complete understanding of the impact of self-efficacy and coping on substance use behavior, treatment can focus on aspects that will better serve the client during and following treatment.

Defining Relapse

A broad definition found in the substance abuse treatment and research literature considers relapse as an outcome that follows a period of abstinence. Marlatt (1996) defined relapse as an individual's reestablishment of drinking levels prior to treatment and found that exposure to high-risk situations alone is not sufficient to predict relapse. However, an individual's perception of his or her ability to cope with these high-risk situations without using substances is predictive of relapse (Amodeo and Kurtz, 1998).

Relapse has been defined in many ways, both dichotomously and along a continuum. For example, some researchers consider relapse to be any use of a substance following treatment (e.g. a single alcoholic drink following treatment for alcohol abuse),

while others consider relapse to be a period that consists of higher frequency and intensity of use over a period of time (Marlatt and Gordon, 1985; Shiffman, 1985). Relapse involves an internal process that combines a perceived high-risk situation and perceived effectiveness of available coping strategies (i.e. self-efficacy) that make it possible to avoid use of substances (Connors, Maisto, & Donovan, 1996).

McKay et al., (2001) examined the relationship between continuous and categorical cocaine use outcome variables. Participants included 132 male veterans with a diagnosis of cocaine dependence, who were referred to one of two continuing care programs at a VA Medical Center: individualized relapse prevention or standard group addiction counseling. The continuous variables assessed were mean percent days of cocaine use when not in a controlled environment, monetary value of cocaine used during the months between follow-up, cocaine composite scores (which reflect problem severity) derived from the Addiction Severity Index, and intensity of cocaine craving in the past week. The categorical variables studied were self-reported abstinence from cocaine (none vs. any use), a three-category cocaine measure (no use, light/moderate use, up to one day per week), and heavy use (more than once a week). Cocaine abstinence was further verified by urine toxicology data. These measures of cocaine use were obtained at six, twelve, eighteen, and twenty four months following treatment.

The results demonstrated that these eight outcome variables were positively associated with one another. Furthermore, an exploratory factor analysis yielded two factors: the first consisted of the occurrence of use variables, (e.g., percent days of cocaine use, monetary value of cocaine, abstinence status, time to relapse, urine toxicology), and a second factor consisting of perceived severity of use variables (e.g.,

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drug and cocaine composites, craving). This factor solution was verified by a confirmatory factor analysis conducted at each follow-up point. It is evident that this study provides an empirical groundwork for the collection of cocaine use variables in treatment outcome studies. Further examination of the relationship between continuous and dichotomous variables of drug use is necessary to examine the effectiveness of treatment across all types of drugs.

Relapse and Coping

Most individuals experience shifts in their emotional states as a function of everyday life and deal with these shifts in a variety of ways. However, many substance abusers may experience overwhelming emotions, whether as a consequence of the effects from drugs, withdrawal, or greater contact to stressors (Tims, Leukefield and Platt, 2001). If this is the case, then the avoidance of substance abuse includes coping with emotional states and craving which can become precursors for relapse. Learning to cope with these emotional states, stressful situations and cravings is an essential part of maintaining abstinence and preventing a full-blown relapse.

Shiffman (1982) has proposed a model which regards relapse as function of temptation and coping. He postulates that while there are certain situational conditions in which relapse is likely to occur, the outcome of a relapse crisis is determined by the effort the individual exerts to cope with the crisis. According to this model, efforts to cope are initiated only when a situation is appraised as stressful. Evidence suggests that the failure to report any coping response in a high-risk situation is associated with relapse (Shiffman, 1985). Therefore, a failure to appraise threat or harm in such a situation may increase the likelihood of relapse. Furthermore, research on the use of coping skills as a

key factor in relapse is promising, in that it is possible to distinguish between relapsers and abstainers across the addictive behaviors (Curry and Marlatt, 1985).

Shiffman (1985) examined situational antecedents of relapse crises and the dynamics of coping in these situations among 264 ex-smokers who were given the option to call a Stay-Quit Line when they were placed in a high-risk temptation situation. If a subject called, then he or she was interviewed regarding the details of the relapse crisis and was asked to describe his or her attempts, if any, to cope with the temptation to smoke. The coping responses were classified globally into *cognitive responses*, which involve mental activity, or *behavioral responses*, which involve an overt action or activity to avoid substance use. Furthermore, each type of coping response was further classified into categories, which were formulated from an examination of the data.

The results revealed that the use of any coping response in the face of a tempting high-risk situation is the single best predictor of outcome in a relapse crisis. Of those who produced a coping response, 70% did not relapse compared with only 18% of those who did not perform a coping response. These results are important because coping with the temptation to use drugs appears to be a key variable to averting relapse or maintaining abstinence. All coping responses were equally effective. That is, the survival rates associated with each response were significantly higher than those subjects who did not perform a coping response, but the responses did not differ from one another, suggesting that the coping responses were not differentially effective. This may imply that it is not necessary to distinguish better coping styles from worse coping styles.

Annis, Sklar, and Moser (1998) attempted to compare male and female alcohol treatment clients, over a twelve-week period after discharge, on the nature of relapse

crisis situations that were experienced, number of coping strategies used, and the relationship of coping to drinking outcome. Clients were contacted by phone four, eight, and twelve weeks following treatment discharge. The results indicated that 31.1% of the men and 28.6% of the women reported that they failed to use a coping response in the relapse crisis situation. Those subjects who failed to attempt a coping response were significantly less likely to abstain than were clients who reported using any coping strategy.

High risk situations for relapse include interpersonal factors, hostility, negative emotional or physical states, testing personal control, urges or temptations, substance use cues, social anxiety and social pressure (Annis and Davis, 1988; Curry and Marlatt, 1985; Connors, Maisto, and Donovan, 1996). Since relapse after treatment is often the result of poor coping strategies, it appears important to develop relapse prevention programs that teach alternate coping responses to deal with the problem of relapse. In the development of such a program, it is important to understand the specific coping strategies employed by abstainers and non-abstainers following treatment completion in order to better prepare clients still in treatment for this stressful transition.

Coping skill is a concept central to the social learning theory models of relapse and its prevention. Some empirical evidence suggests that the availability and use of coping skills are related to patterns of substance use and relapse (Annis, Sklar and Moser, 1998; Shiffman 1985). To advance knowledge about the relationship between coping skills and relapse, it may be essential to indicate the circumstances under which stress, coping skills, and substance use relationship holds.

Brown et al. (1990), examined the relationship between stressful life events and drinking outcome among 129 male alcoholics who had completed a VA inpatient alcohol treatment program. Stressful life events were rated for the year before treatment and for three months following treatment. Clients who relapsed reported the same number of stressors as non-relapsers. Interestingly enough, the clients who relapsed reported that they experienced more severe stress before their relapse than those who remained abstinent during the follow-up period, which suggests that it is important to identify whether or not stressors are related to substance use, as well as to their chronicity and gravity.

Another important distinction is type of coping response. The addictions research literature indicates that several classifications of coping strategies or responses have been qualitatively analyzed. One classification system differentiates between active behavioral, active cognitive, and emotional coping (Finney and Moos, 1991; Shiffman, 1985). Behavioral coping tactics make an effort to modify the stressor directly, or it involves performing a particular behavior to avoid the stressor altogether. Cognitive coping strategies refer to contemplating about the negative consequences of using a particular drug in the past and the profit derived from staying away from them. Another aspect to consider is emotional coping, which refers to assuaging harmful emotions and temptation coping, wherein the concern is the ways to avoid substance use (Myers, Brown, and Mott, 1993). These findings suggest that the relationship between stress and the effective use of a coping strategy is dynamic and that it is important to identify parameters of both the stressor and coping strategy.

The goal of relapse prevention programs is to teach alternate coping strategies to reduce the risk of relapse. However, it is interesting to note that even those who do not receive treatment or some form of a relapse prevention program may still have the adequate "tools" necessary to deter the future use of a particular substance of abuse. Klingemann (1992) identified certain coping mechanisms among spontaneous remitters from problem use of alcohol and heroin. *Autoremission* was defined as "a significant improvement in consumption behavior which is achieved without any treatment or self-help groups and has lasted at least one year prior to being interviewed, (p. 1361)."

Coping strategies endorsed are behavioral strategies (e.g. stuffing oneself with sugar and chocolate), diversion from the addiction (e.g. influenced by the birth of a child to stop using), and distancing (e.g. retreating to secluded farm or a parent's house to undergo withdrawal). Even without treatment, problem alcohol and heroin users were able to develop coping mechanisms to deter future use. These naturally occurring coping mechanisms may be useful to others and perhaps should be identified early on and incorporated into relapse prevention programs. However, given the exploratory nature of Klingeman's study, much more research is needed on coping mechanisms that are endorsed by autoremitters.

The research literature on addictive behaviors has accentuated the effectiveness of coping skills training interventions in the treatment of alcohol use and in the treatment of other substance use comparative to other psychosocial treatments (Maisto, Carey and Bradizza, 1999). One study compared a process-oriented, interactional group therapy to a coping skills intervention in a sample of male and female clients, who were receiving inpatient treatment for alcohol abuse (Kadden, Cooney, Getter, and Litt, 1989). The

coping skills approach used a structured intervention that focuses on relapse prevention, whereas the interactional focuses on insight and interpersonal experiences. Both the interactional therapy and coping skills training were equivalent, in that each intervention was effective in reducing heavy drinking at a six-month post-treatment follow-up. According to Cooney, Kadden, Litt, and Getter (1991), there were no advantages of the coping skills intervention on the frequency of heavy drinking days at two years post treatment.

This study suggests that coping skills interventions may not be more effective in the treatment of alcohol abuse or dependence in comparison to other psychosocial interventions. As Maisto, Carey and Bradizza (1999) indicate, there is little relationship between responses to general social situations and alcohol treatment outcome. However, responses to drug-specific and alcohol situations have predicted substance use following treatment. Therefore, Social Learning Theory needs to be more specifically applied to identify about those conditions that moderate the relationship between coping skills and substance use.

Monti et al., (1997) developed a cocaine-specific coping skills training intervention (CST). It was designed to teach coping skills by recognizing and learning anticipatory and reactive coping skills within the context of high-risk situations for cocaine use. The modules included frustration, anger, other negative feelings, assertiveness skills, social pressure to use, internal pressure from urges, and enhancing positive moods. In this model, a client describes a high-risk situation within that category; analyzes the antecedents and consequences, and learns anticipatory and reactive coping skills for the event. When possible, clients role-play practice these situations.

Clients that met criteria for cocaine abuse or dependence were 145 patients drawn from two private substance abuse treatment facilities: a residential rural-partial hospital program and an urban partial-hospital program. Each was randomly assigned to receive one of two interventions: a cocaine-specific coping skills training program or an attention placebo control intervention. A total of 108 treatment receivers, (those who received at least 50% or more of the treatment sessions), participated in a one month and a three month follow-up to examine the effectiveness of the CST intervention. The results revealed that clients who received the CST had significantly fewer cocaine use days and the length of their longest binge was significantly shorter at the three-month follow-up point compared to clients in the control condition. Roughly 45 percent of clients from each treatment condition suffered relapse, but relapsers in the CST treatment averaged only 6.2 days of cocaine use compared to 13 days or more of drug use in the control treatment.

Rohsenow et al. (2000), investigated these same patients at a three-month follow-up interval and again at one year post-treatment. During the first six months, patients in CST who relapsed had significantly fewer days of cocaine use days than did the control group. However, at the one-year follow-up, both conditions were equally effective. Clients in the CST condition who used any cocaine at the one-year follow-up point remained at a lower frequency of use for a longer time compared to the control group. These results are promising, in that CST shows potential for improving cocaine use outcomes as an element of an intensive substance abuse treatment program. If this type of coping skills training is effective in reducing the risk of relapse for cocaine users, then

implementing a similar intervention for other psychoactive substances may prove to be equally effective.

The efficacy of coping skills training has been studied in combination with other forms of treatment. Monti, Rosenhow, & Abrams (1993) administered a blending of cue exposure treatment and urge coping skills training (CET) to a sample of 22 male alcoholics. This group was compared to a group of 18 male alcoholics, who participated in a control condition. At a three- and six-month follow-up, subjects were asked to describe in detail strategies they used to cope with temptations to drink. Possible strategies included self-instruction, imagining negative consequences, substituting alternative activities, and using imagery to combat urges. The results revealed that at the six-month follow-up, those in the CET drank less frequently, were abstinent longer, and consumed fewer drinks in comparison to the control group. Furthermore, those in CET group noted greater use of coping mechanisms that involved thinking about positive outcomes of maintaining abstinence and contemplating about the negative outcomes of drinking. These strategies were related to improved drinking outcomes.

In conclusion, it is evident that coping skills training coupled with other psychosocial interventions can deter the future use of alcohol consumption. However, little is known about the effectiveness of these interventions with other substance-using populations.

Self-Efficacy and Relapse

Self-efficacy theory applied to addictive behaviors suggests that efficacy expectations determine whether coping behavior will be initiated and sustained in the face of obstacles (DiClemente, 1981). Self-efficacy is thought to play a central role as a mediating variable in human behavior. Self-efficacy refers to a person's conviction in

his/her capability to manage events that affect their lives and the effort they expend with coping behaviors in the facing of these events (Bandura, 1989). According to Bandura, a number of "contextual factors" influence self-efficacy. These include: social, situational, and temporal circumstances under which events take place. In assessing these contextual factors, "people process, weigh, and integrate diverse sources of information concerning their capability, and they regulate their choice behavior and effort expenditure accordingly (p. 1175)" (Bandura, 1989).

Within this framework, it is evident that the expectations of personal control can affect both the use and persistence of coping behavior. An individual's strength of faith in their own success is likely to affect whether they will be able to cope with a given situation. Possessing a coping skill will contribute to one's sense of personal self-efficacy.

Self-efficacy has been defined as an individual's judgment about how successfully an individual can deal with future stressful situations (Bandura, 1977), or an appraisal of an individual's ability to perform a certain behavior. Efficacy beliefs have been shown to be predictors of behavior and to play a role in the initiation and maintenance of coping behaviors in high-risk substance use situations (DiClemente, 1986; Sklar, Annis & Davis, 1988). If individuals believe they will be able to successfully perform a particular behavior, they may be more likely choose to engage in the behavior in a variety of situations. However, if an individual judges him or herself to be unable to execute a particular behavior, he or she may avoid that situation, without attempting to utilize coping skills. If beliefs about one's ability to cope with substance use are situation-specific, then a multidimensional assessment of a client's coping self-

efficacy across situations would allow counseling to focus on the management of areas of low self-efficacy to prevent relapse (Sklar, Annis & Turner, 1997).

It was not long after Bandura introduced the construct of self-efficacy in 1977 that scientists and practitioners in the addictive behaviors began to use the construct in their theorizing and research. Many clinicians and researchers believe that the self-efficacy construct provides an avenue to explore self-evaluations of specific behaviors related to the execution or control of addictive behaviors (DiClemente, 1986). There is a substantial body of evidence in the addictive behavior field that supports such a relationship between self-efficacy and treatment outcome (DiClemente, Carbonari, Montgomery, & Hughes, 1994; Marlatt & Gordon, 1985).

In their cognitive-behavioral model of relapse, Marlatt and Gordon (1985) viewed self-efficacy as an element of a complex process that includes outcome expectations, attributions, and the expected physiological effects of the substance or behavior. Self-efficacy is viewed as a moderating variable in the relapse process. An individual's higher level of perceived self-efficacy to cope with high-risk situations protects against relapsing in those situations and the first use of a substance. A high-risk situation is defined as any situation that poses a risk or threat to the individual's perception of self-control. As defined in this model, "self-efficacy is concerned with the person's perceived ability to perform a coping response to deal with the high-risk situation," (p. 133). Their early research has focused on identifying high-risk situations and developing a classification system of relapse determinants.

Marlatt and Gordon (1985) identified eight categories of relapse determinants that can occur in interpersonal and intrapersonal situations. According to these researchers,

the three categories that occur most frequently are: (1) negative emotional states, (2) interpersonal conflict, and (3) social pressure. When faced with high-risk situations like anger, anxiety, or social pressure to use drugs, individuals can perform successful or unsuccessful coping behaviors. Self-efficacy for coping with each particular situation increases with successes and decreases with the failures. When an individual finds him or herself in a high-risk situation, he or she has two options: to use, or to abstain from using a drug. If the individual has the skills that are needed to abstain, then certain skills coupled with his or her sense of self control are reinforced and strengthened. On the other hand, if the individual has a lower level of perceived self-efficacy or lacks the skills and capacity to abstain, an abstinence violation effect (AVE) is hypothesized to occur. When a period of abstinence has been violated, a person will develop feelings of guilt and shame, an internal attribution that is perceived as the reason why an individual has used and may make it more likely that a person will continue to use a particular substance. In other words, an individual's level of self-efficacy is lowered during a violation of abstinence and will make it less likely that an adequate coping response will be carried out. Therefore, the probability of relapse in a given situation will decrease if an individual possesses a high level of self-efficacy for performing a coping response.

In addictive behaviors, where the major challenge lies in maintaining change over time, a low sense of efficacy would be expected to be associated with a relapse (Sklar, Annis & Turner, 1997). In their review of the literature among alcoholics, Annis and Davis (1988) claimed that levels of self-efficacy might predict abstinence from drinking. Furthermore, they have suggested that increased self-efficacy is associated with improved performance of abstinence; whereas lower levels of self-efficacy are associated with

poorer performance and a higher risk of relapse. Condiotte and Lichenstein (1981) demonstrated that a strong relationship exists between self-efficacy ratings and smoking cessation during a five, eight and twelve week follow-up period of treatment completers. Regression analyses revealed that the higher the level of perceived self-efficacy at the completion of treatment, the greater the probability that subjects would remain abstinent through follow-up or would remain abstinent for longer periods prior to relapse.

A study conducted by DiClemente (1981) examined the relationship between self-efficacy scores and the subject's ability to maintain post-treatment abstinence at five-months. The results indicated that those who were still abstinent at the five-month follow-up point had significantly higher self-efficacy scores than those who had relapsed. Furthermore, there were significant correlations between self-efficacy and number of weeks of successful abstinence, in that those who maintained longer periods of abstinence had higher self-efficacy scores.

Coon, Pena and Illich (1998) assessed whether self-efficacy is related to the maintenance of abstinence from cocaine and other substances of abuse, and whether self-efficacy can be measured quickly and reliably through a phone interview. A total of 186 subjects (males 62% and females 38%) from an inner-city substance abuse treatment facility participated. The majority of the subjects reported crack-cocaine (61%) as their primary drug of abuse; alcohol (25%) and marijuana (8%) were the other listed drugs of abuse. Upon entering treatment the facility, patients were given the opportunity to participate in an on-going evaluation that involves assessment at various follow-up points. This study focused on those 186 subjects, who were called one month following

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discharge and were excluded if they did not receive 15 days of treatment or were not able to be contacted 28 to 60 days following discharge.

Upon admission to the facility, all subjects were randomly assigned to one of two different programs: a traditional 12-step approach (32%) or a community reinforcement approach (65%). During intake, all subjects were asked to complete the 20-item Alcohol Abstinence Self-Efficacy Questionnaire (DiClemente, Carbonari, Montgomery, & Hughes, 1994), in which, the wording of the questionnaire was modified to include drugs other than alcohol. An example from the modified AASE includes, "how confident are you that you could avoid your drug of choice when you are feeling a physical need or craving for drugs." The participants were asked to complete the 20-item AASE (1=not at all confident to 5=completely confident) upon discharge from treatment. Once a client was discharged, an experimenter attempted to contact the client within 28 to 30 days. Prior to the start of the study, an experimenter randomly selected four items from the 20-item AASE measure to be used as a part of the follow-up interview. The study paid special attention to one outcome variable: days of reported use. Clients who had at least one day of reported use of a psychoactive substance were categorized as "users," whereas those who reported no use of a substance were labeled as "abstainers".

Prior to treatment, subjects were less than moderately confident that they could avoid using psychoactive substances in certain drug eliciting situations, whereas upon discharge subjects reported being more confident that they could avoid using psychoactive substances. A separate analysis was performed on four of the twenty items between intake and discharge self-efficacy ratings. The findings indicated a similar increase in self-efficacy from intake to discharge. Also, the 4-item scores and the 20-

item scores on the AASE were highly correlated at intake and discharge, which suggests that the 4-item version of the AASE scale may provide a quick and reliable measure of self-efficacy.

Self-efficacy ratings on the 4-item scale at intake, upon discharge from treatment, and at one month following treatment suggest that clients reported the highest level of self-efficacy ratings one-month following treatment. The 4-item version of the AASE was also used to determine if there were any differences among self-efficacy ratings between those who abstained and those who had used during the one-month follow-up interval. Twenty-three of the 183 clients reported drug use during the one-month interval. The results demonstrate that the 160 abstainers had higher self-efficacy ratings than the 23 users one-month following treatment discharge.

The role of self-efficacy in the prediction of relapse following alcohol treatment was examined in a 12-month follow-up assessment (Rychtarik, Prue, Rapp, & King, 1992). Self-efficacy was measured at intake to inpatient treatment and again at discharge. Drinking consumption of 78 male alcoholics who had completed treatment was assessed via telephone at six intervals: two weeks, one month, two months, three months, six months and twelve months after discharge. Results indicated a significant increase in self-efficacy from intake to discharge. Lower self-efficacy ratings were associated with relapse by either six or twelve months post treatment. An analysis of the pattern of relapses across the six follow-up points was conducted using survival analysis. The analysis indicated that intake self-efficacy ratings were predictive of the follow-up interval during which a relapse occurred. Clients high in self-efficacy at intake showed

the greatest resistance to relapse across time. Self-efficacy appeared to have its strongest

effects on relapse in the first several months post treatment.

Measuring Self-Efficacy: The Development of Self-Efficacy Questionnaires

According to Skalar, Annis and Turner (1997), the Drug-Taking Confidence

Questionnaire is a 50-item self-report questionnaire that was developed to assess

situation-specific coping self-efficacy for use of any particular substance of abuse. It was

designed to assess anticipatory coping self-efficacy over eight categories of relapse crisis

situations (Unpleasant Emotions; Physical Discomfort; Pleasant Emotions; Testing

Personal Control; Urges and Temptations to Use; Conflict with Others; Social Pressure to

Use; and Pleasant Times with Others). Clients reported how confident they were that

they could resist the urge to drink heavily or to engage in any use of a particular drug in

each of 50 high-risk situations

Results from an exploratory factor analysis of the Drug-Taking Confidence

Questionnaire based on data from 713 clients seeking treatment for alcohol, cocaine,

heroin, cannabis and other drug use provided strong evidence for the situation-specificity

of efficacy beliefs. A confirmatory factor analysis yielded a 3-factor model to best fit the

data yielding these factors: Negative Situations (Unpleasant Emotions, Physical

Discomfort, Conflict With Others); Positive Situations (Pleasant Emotions, Pleasant

Time With Others); and Temptation Situations (Testing Personal Control, Urges and

Temptations, Social Pressure to Use). This evidence suggests that drug users classify

their efficacy beliefs into certain categories and that the reasons for drug use are different

for individuals, which provides promising evidence to allow researchers and clinicians to

examine those specific situations that elicit drug use.

The Self-Efficacy List for Drug Users (SELD) is intended to measure self-efficacy in 19 defined high-risk drug situations (De Weert-Van Oene, Breteler, Schippers & Schrijvers, 2000). The authors describe the development of the SELD based on a sample of heroin, methadone, cocaine, and cannabis drug users in two prisons who met criteria for DSM-III-R diagnosis of drug dependence. For this initial sample (N=146), an exploratory factor analysis was performed which yielded a three-factor solution. A confirmatory factor analysis was conducted to test the three-factor solution with an independent validation sample (n=111) of male drug users, who were admitted to an inpatient addiction clinic. The results of the confirmatory factor analysis support the three-factor solution. The three domains discerned were: environmental factors, negative moods, and positive moods. In conclusion, self-efficacy in drug users can be adequately measured by the 19-item SELD. The data suggest support for a concept of situational self-efficacy for dependent drug users.

Barber and Cooper (1991) describe the development of a 22-item Situational Confidence Questionnaire (SCQ) for measuring levels of self-efficacy of heroin users. Seventy-one male prisoners from a Drug Unit at a Melbourne Prison completed a long form of the SCQ (heroin) scale users that was adapted from the 100-item SCQ (alcohol) scale (Annis, 1982). The 100 high-risk situations comprise 8 subscales that correspond to Marlatt and Gordon's classification of high-risk situations. Intrapersonal categories include negative emotions, physical discomfort, positive emotions, testing personal control, and urges and temptations. Interpersonal factors include interpersonal conflict, social pressure and times of celebration. Each inmate rated his level of confidence that he could resist the use of heroin in each of the high-risk situations on a six-point scale

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that ranges from 0 (no confidence) to 100 (completely confident). The survey was administered individually to inmates and was part of a large self-administered test that was completed prior to an orientation interview.

In the development of a brief form of the SCQ (heroin), the authors wanted to remove as many items from each subscale and still maintain excellent subscale reliability. Furthermore, they wanted to select the items with the lowest scores from each subscale, to avoid ceiling effects within subscales. After these strategies were implemented, the brief SCQ (heroin) included 23 items. Coefficient alphas were calculated to measure the internal consistency within each subscale. The results demonstrate the each subscale (despite a small number of items for each subscale) ranged from .83 to .97.

Since there was no guarantee that the brief SCQ (heroin) was psychometrically sound, the brief SCQ (heroin) was administered to 35 male prisoners from the same prison, and 32 heroin users from a voluntary rehabilitation drug treatment program in metropolitan Sydney, Australia. The participants from the voluntary rehabilitation program were administered the questionnaire twice, two weeks apart to obtain the test-retest reliability. A factor analysis on the 23-item SCQ (heroin) scale revealed three factors: coping with enhancing arousal, casual or occasional usage, and coping with negative emotions. Furthermore, the test-retest reliabilities were equally high for each of the subscales, ranging from .45 to .74.

A study by DiClemente, Carbonari, Montgomery and Hughes (1992), describes the development and initial psychometric properties of a 20-item self-report self-efficacy measure labeled the Alcohol Abstinence Self-Efficacy Scale on a sample of subjects that included 174 male and 92 female subjects who were seeking treatment for alcohol use.

The purpose of this scale is to concentrate on an individual's efficacy or confidence to abstain from drinking in a range of situations that were derived from the Marlatt relapse categories. It can be used to assess the temptation to drink and the confidence or efficacy to abstain in each situation using subjects' ratings on separate 5-point rating scales. A factor analysis yielded a four-factor solution to best fit the data: Negative Affect, Social/Positive, Physical and Other Concerns, and Withdrawal and Urges. The results are promising, in that these scales allow for an examination of efficacy in specific types of situations that could precipitate relapse. Furthermore, the results demonstrate that the AASE can be used as a tool to measure self-efficacy with excellent reliability and validity.

If treatment-seeking clients have situation-specific efficacy beliefs, then it remains necessary for treatment centers to identify those particular situations in which a client tends to feel less confident in his ability to resist using a particular drug. Identifying these situations will help treatment centers create a classification system of situations that elicit drug use, and it may help clients become cognizant of their own personal drug eliciting situations that make them vulnerable to relapse. Once a client completes treatment and is aware of his or her own situations that may elicit drug use, he/she will have a better ability to identify these situations when they occur and may have a higher level of confidence (i.e. self-efficacy) to abstain from using illegal drugs.
Importance of Following up on Clients Following Treatment

Following substance abuse clients after treatment can serve many purposes, which include evaluating client satisfaction with the treatment facility, expressing an interest in the client who has been served, furnishing an opportunity to refer a client for future and

other services, and obtaining information that can help in assisting and altering program services to better fit the needs of clients.

Continued outcome evaluation research is necessary to improve the treatment of drug abuse. As Desmond, Maddux, Johnson, and Confer (1995) note, assessment of follow-up after treatment needs to become a standard component of treatment evaluation research and is necessary for funding considerations as well as improving the science of addictions. Therefore, gaining an understanding of how clients fare following treatment should be viewed as a necessary procedure for substance abuse treatment facilities.

Post-Treatment Follow-Up: When is Best?

According to the Drug Abuse Treatment Outcome study drug use is widespread within the first year of follow-up. About 43% of those who reported heroin use after one year following treatment were using within the first week, and another 40% resumed use after one to two months following treatment termination. Cocaine was used by 29% of the clients within the first week, and another 40% had relapsed within one to two months. Another 30% of the cocaine users did not relapse until three months following treatment discharge compared to 20% of the heroin users. As indicated by Stephens, Wertz and Roffman (1995), the percentage of those seeking treatment for marijuana cessation relapsed at one, three, six, and twelve-month follow-ups at a rate of 50%, 60%, 75%, and 80%, respectively.

According to the relapse curve by Hunt, Barnett and Branch (1971), approximately 60% of heroin, alcohol and smoking relapses occur within the first three months following treatment completion. There is a negative hastening in relapse up to six months, with a plateau reached by the 12th month. This review is perhaps one of the most widely cited within the addictive behaviors relapse research. However, this relapse

curve only shows how many survivors (abstainers) are left at a given point in time. Therefore, graphs based on group means can make individual patterns of relapse difficult to discern. In essence, a client needs to be evaluated in terms of his/her own distinctive patterns.

It is clear that the breaking point for when drug abusers are more likely to relapse following completion of treatment is early. The DATOS study indicated that heroin and cocaine users are prone to relapse within the first week. Furthermore, a large percentage (about 80%) relapsed within three months of treatment discharge. Therefore, it appears important to investigate the relapse process early on and continue efforts for a sustained period of time over multiple time points.

To understand how treatment can minimize the risk of relapse and lengthen periods of abstinence, it is important to study the multi-faceted nature of relapse and the relapse to use of specific types of drugs within the environment of multiple and changing drug use patterns that can occur following treatment completion. Efforts must be made to examine the relapse process following treatment completion early on and intensively over the first year (Hubbard, Flynn, Craddock & Fletcher, 1999).

Hansten, Downey, Rosengren, and Donovan (2000), have documented that follow-up rates of those who complete treatment range from 50% to almost 100%; however, Settle (2002) found follow-up rates of only 28.9%. Several studies of substance abusing populations have found follow-up rates reaching up to 95% (Walton, Ramanathan, & Rieschl, 1998; Ericksen, Bjornstad, & Gotestam, 1984). However, one of the main reasons for such high follow-up rates in these studies was due to grant funding, extensive time spent locating clients, and an adequate amount of staff.

Tracking substance abusers following treatment can prove to be a challenge (Perrin, 2002). It has been documented that the course of alcoholism and other drug abuse may end in premature death (Finney and Moos, 1991); therefore it is not uncommon for substance abusers to pass away due to complications that are a result of using substances as the time following treatment completion progresses. A high mortality rate of this population may be due factors such as overdoses, suicide, trauma and accidents or medical illnesses that are related to drug use (Zador & Sunjic, 2000; Rossow & Lauritzen, 1999). Another key issue involved when trying to locate substance-abusing clients is that of high rates of incarceration within this population (Desmond, Maddux, Johnson, and Confer, 1995). These authors suggest that it is highly likely that it will be difficult to track a certain percentage of clients following treatment because clients may become incarcerated as a result of engaging in illegal activities to obtain substances. It remains important that contact is made with clients following treatment completion as quickly as possible to establish concordance, which can increase the chances for contact at multiple time points in the future.

Relationship Between Self-Efficacy and Substance Use

DiClemente (1981) examined the relationship between self-efficacy and abstinence at a 5-month follow-up; however it appears this only enables researchers to only gain a brief snapshot of this relationship. Consideration of only one follow-up point does not allow researchers to understand the breaking points of when clients are more vulnerable to relapse. Therefore, former clients should be contacted at multiple time-points following treatment. Condiotte and Lichenstein (1981) demonstrated that a strong relationship exists between self-efficacy ratings and treatment outcome at five, eight, and twelve-week follow-up period following treatment completion. Stephens, Wertz, and

Roffmann (1995) investigated the relationship between marijuana cessation, self-efficacy, and treatment outcome at one, three, six, and twelve months following treatment. The results from this study found significant correlations between end of treatment self-efficacy and post treatment frequency of marijuana use, which support the predictive validity of the self-efficacy construct. Assessing marijuana use at five different follow-up points following treatment showed that self-efficacy expectations are better predictors of future marijuana use.

Therefore, it seems important to examine this period early on and continue efforts for an extended amount of time. One of the goals of the present study is to further extend the methodology of these two longitudinal studies and examine the relationship between coping skills, self-efficacy and relapse at multiple time points to gain a better understanding of what happens to clients during the recovery process following treatment. It would appear more beneficial to examine the variability of a client's potential for relapse over many time points rather than gaining only a brief snapshot.

Intensive Follow-up Program For Treatment Completers: The Coping with Relapse Situations Interview

The purpose of the follow-up interview in this present study is to gain additional information about coping behaviors and high-risk situations that may trigger relapse. A trained graduate student conducted multiple telephone interviews with clients who have completed treatment in an attempt to better understand how in their recovery process.

Former clients who had completed treatment were asked to respond to questions related to their confidence, a.k.a. *self-efficacy*, in their ability to avoid using drugs and alcohol in certain high-risk drug taking situations. Former treatment completers also discussed their reasons (thoughts, feelings, or situations) and successful or unsuccessful

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coping strategies. Treatment completers were interviewed every four to five weeks for a total of four follow-up periods and are as follows: 30-days, 60-days, 90-days, and 120-days.

Purpose of the Present Study

The purpose of the present study was to examine the relationship between self-. treatment completion. Most studies examining self-efficacy have focused on cigarette smoking and alcohol using populations. This study attempted to extend understanding of what is involved in maintaining drug treatment gains in considering populations that use illegal drugs. The study was conducted at Coastal Horizons Center. A private non-profit treatment facility not affiliated with a university or research institute. Two specific areas were examined. First the relation between perceived self-efficacy and number of days of drug use at 30 days, 60 days, 90 days, and 120 days post-treatment and the differences in self-efficacy between those who reported primary drug use compared to individuals who did not report any drug use. Finally, the relation between the number of coping strategies endorsed and number of days of drug use at each follow-up interval was examined.

Both continuous and dichotomous measures of drug use were considered in relation to self-efficacy. The utility of examining drug use dichotomously may be beneficial for Coastal Horizons Center, because they are an abstinence-based facility and this definition closely matches their theoretical orientation. However, if drug use is measured continuously, then it may be an indicator of reduced drug use, which is a common measure for treatment outcome. Although this study did not measure reduced drug use, it was still important to assess how many days during each interval a client was using his/her primary drug. This is important because it can provide valuable information for this clinic about how clients fare following completion of treatment.

Lastly, examining the relationships between continuous and dichotomous variables maybe important because there is little information on how use of these substances is related to self-efficacy scores and which variables may maximize the possibility of identifying treatment matching differences during follow-up (McKay, Alterman, Koppenhaver, Mulvaney, Bovasso & Ward, 2001).

Hypotheses

The literature suggests that a strong relationship exists between self-efficacy and treatment outcome. Specifically, those who do not report any drug use during follow-up tend to have higher self-efficacy scores, while those who do report drug use tend to have lower self-efficacy scores (Sklar, Annis & Turner, 1997; DiClemente, 1981). Based on this evidence, it was predicted that there would be significant inverse correlations between mean self-efficacy ratings and the number of days of drug use reported at 30 days, 60 days, 90 days, and 120 days post-treatment. Furthermore, it was hypothesized that there would be significant differences in the mean total perceived self-efficacy score between those who remained abstinent and those who did not remain abstinent at each of the follow-up intervals. Additionally, it has been reported that those individuals who perform a coping response when placed in a high-risk situation are more likely to not report any drug use, whereas those individuals who do not perform a coping response are more likely to report drug use. Accordingly, it was predicted that there would be a significant inverse correlation between the number of coping strategies endorsed and number of days of drug use at 30-days, 60-days, 90-days, and 120-days after completing substance abuse treatment.

Hypothesis I:

Self-Efficacy and Drug Use

There will be a significant relationship between primary drug use and self-efficacy. Specifically, those individuals who do not report any primary drug use will report higher self-efficacy scores.

Hypothesis II:

Coping and Substance Use

There will be a significant positive correlation between the number of coping strategies endorsed and number of days of reported drug use at 30-days, 60-days, 90-days, 120-days after completing substance abuse treatment. Specifically, the higher the number of coping strategies endorsed, the fewer the number of days of drug use will be reported at each follow-up point.

METHODS

Setting

This study was conducted at Coastal Horizons Center Outpatient Substance Abuse Treatment Services (CHC-OTS), a traditional mixed-gender clinic located in Wilmington, North Carolina. Coastal Horizons is an outpatient substance abuse clinic with abstinence as a primary treatment goal. The program offers services to substance abusers who are referred by the criminal justice system and those who are self-referred subjects in this study, are at least 18 years of age and have a recent DSM-IV-R (APA, 2000) diagnosis of Substance Abuse or Dependence.

The facility offers two categories of service: counseling and medical. Individual and group counseling are required of all participants in the program. Medical services include onsite physician care, AIDS testing, TB testing and Hepatitis B testing provided

for all IV drug users and at risk populations. The Opiate Treatment Program (OTP)

provides methadone maintenance therapy services for individuals with opiate

dependence. OTP admission eligibility standards require that all applicants be North

Carolina residents, at least 18 years of age, and have an active diagnosable opiate

dependence disorder. To be admitted to the OTP, clients are required to complete both

an intake interview with a counselor and a medical evaluation, which includes a health

assessment, physical exam, laboratory testing; including a pregnancy test for all women.

Physical exams are not comprehensive. Clients are urged to continue care with their own

doctor while in treatment. Individuals must test negative for all non-opiate substances in

order to be admitted to the program.

Subjects

All adults clients entering treatment at the facility were evaluated upon intake and

discharge. Discharge from treatment was based on treatment progress, staff and primary

counselor's evaluations. Only clients who were considered "treatment completers" were

included in this study. Coastal Horizons Center has developed strict criteria for

"treatment completion." Treatment completers must demonstrate a drug-free lifestyle for

the previous 30-90 days as evidenced from clean urine screens. They must have achieved

relevant goals for their treatment plan and must have completed a minimum of 32

required groups assigned by the counselor. Also, four to eight Family Education sessions

attended by a family or close friend must have been completed. Successful payment of

treatment fees is also required. Furthermore, treatment completers must have reduced

and eliminated substance abusing behaviors, improved levels of social functioning,

developed and maintained vocational/educational status, enhanced their health status or

self-care, and complied with legal requirements. After these criteria have been met, the Clinical Director must approve all discharges that have been considered "completed."

Each treatment completer/participant was 18 years of age and signed an informed consent to treatment during the intake process of treatment. The informed consent includes granting the agency permission to contact former clients by telephone following treatment completion for up to at least one year post-treatment. The consent form also allows the agency to contact two individuals, identified by the client on the, who can provide information about the client if staff are not able to locate him or her.

Follow-up Procedures

All clients at orientation to treatment were required with signing consent to treatment to provide names of at least two individuals. These individuals were related to the client (e.g. close friend or family member) and likely to assist a staff member and provide information for the client in case the staff member is not able to locate the client. Furthermore the clients who completed treatment were notified that a volunteer from CHC would be contacting them by phone about once a month to see how they are doing following treatment.

All former clients who have met the criteria for treatment completion were telephoned within thirty days after their last contact with the treatment center between 2002 and 2003. Eligible clients for the study were recruited two ways. First, a medical records administrator provided the principal investigator with a list of eligible follow-up clients that met the treatment completion criteria at the end of each month. Another recruitment procedure consisted of having the principal investigator, an unpaid staff member, ask counselors members to identify and list any possible clients who met

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treatment completion criteria at the end of each week. Both of these methods maximized the likelihood that clients would be included in the study.

After an eligible participant was identified, a trained graduate student oriented to the program orientation and limits of confidentiality at the agency attempted to contact each client by telephone. If these attempts were unsuccessful, collateral informant identified by the client during their initial orientation were contacted. Each follow-up interview lasted approximately 15 to 20 minutes. During the interview, if a client had questions or concerns that the interviewer could not answer, the interviewer arranged for another staff member to contact the client, provide a referral for other services, or otherwise addressed any issues raised.

All names and phone numbers were stored in locked cabinets in a records room at Coastal Horizons Center. To obtain demographic data, client information including age, race, past treatment history, months in treatment, number of weekly sessions, and substance use history were taken from a client's treatment records. The project was approved by the UNCW institutional review board on September 9, 2002. The author and researcher also received training in HIPAA policies and procedures conducted by the Privacy Officer at Coastal Horizons Center.

Materials

Coping With Relapse Situations Interview

The Coping with Relapse Situations Interview was developed by Brett Hagman and Dr. Sally MacKain and was derived from the existing literature. The purpose of the interview was to examine the stressful transition of the first early months following completion of substance abuse treatment. The core components of the interview were drug and alcohol use, high-risk situations and thoughts/feelings encountered, types of

coping strategies endorsed, and self-efficacy and was administered 30 days, 60 days, 90 days, and 120 days following completion of substance abuse treatment.

Drug and Alcohol Use

Drug use was assessed based on the client's self-report by answering the following questions: "How many days out of the last 30 have you used any drugs? Any other drugs that you are using and how many days out of the last 30 have you used that particular substance?" These questions were followed by "How many days out of the last 30 have you used alcohol?"

High Risk Situations and Thoughts/Feelings Encountered

Those who did reported any drug use at a particular follow-up interval were asked to respond to these questions: "What were the main reasons why you used?" "What kinds of situations were you exposed to this month that led up to using?" "What situations, thoughts, or feelings led up to your drug use?"

For those who denied any drug use, clients were asked: "What were the main strategies that helped you to stay clean this month?" "What kinds of situations were you exposed to this month?" "What thoughts, feelings or behaviors helped you to cope with urges this month?" All information was recorded for each individual at 30 days, 60 days, 90 days, 120 days follow-up.

Types of Coping Strategies Endorsed

After a client was asked to examine and report on high-risk situations encountered and thoughts/feelings experienced, he/she was asked about the types of coping strategies employed during the past month: "Did you try to employ any coping strategies during the past month?"

Self-Efficacy

The self-efficacy measure is a modified version of the Alcohol Abstinence Self-Efficacy Scale (DiClemente, Carbonari, Montgomery, and Hughes, 1994). The Alcohol Abstinence Self-Efficacy Scale (AASE) is a 20-item, self-report measure to assess Bandura's construct of self-efficacy applied to alcohol abstinence, but was modified to include the client's primary problematic drug. Self-efficacy was assessed with an individual rating on a 5-point Likert scale of confidence, 1=not at all confident to 5=completely confident, that the individual would abstain from his/her particular drug or drugs of problematic use across 20 different high-risk drug eliciting situations.

DiClemente et. al., (1994) conducted a study to describe the psychometric properties of the AASE. The sample was 174 male and 92 female subjects who came to an outpatient alcoholism treatment clinic. Abstinence efficacy was assessed with subject ratings on a 5-point Likert scale of confidence, 1=not at all confident to 5=completely confident, to abstain from alcohol across 20 different high-risk situations. The AASE demonstrated a solid subscale and strong indices of reliability and validity. Furthermore, factor analysis revealed four 5-item subscales which measure types of relapse precipitants labeled negative affect, social positive, physical and other concerns, and withdrawal and urges, which are the same high-risk situations that have been endorsed by Marlatt and Gordon (1985).

There are a variety of existing measures that attempt to examine the construct of self-efficacy and its relation to an individual's perceived ability to avoid using drugs in high-risk situations. For example, Sklar et al., (1997) developed the Drug-Taking Confidence Questionnaire, which is a measure of coping self-efficacy in high-risk alcohol and other drug use situations. The DTCQ for alcohol use measures the confidence

individuals have about their ability to abstain from use of alcohol or other addictive substances in moderation over a variety of high-risk situations. Other self-efficacy measures include the Situational Confidence Questionnaire (Heroin) (Barber and Cooper, 1991), which is a modified version of the Situational Confidence Questionnaire (Drinking) (Annis, 1982). The SCQ (heroin) was developed to assess beliefs about the ability to cope with a range of high-risk situations without recourse to heroin use.

We decided to utilize the AASE in this study for a number of reasons. It has been demonstrated that the AASE represents a brief, easy to use and psychometrically sound measure of an individual's self-efficacy to abstain from drinking and other drugs, including cocaine use (Coon et al., 1998; DiClemente et al., 1994).

One aim of this present study was to develop a measure of self-efficacy that could be administered quickly and reliably during the course of brief follow-up phone interviews over multiple time points. Many of the existing self-efficacy measures are comprised of multiple high-risk situations that an individual is to rate his/her confidence in abstaining from using any drugs. Having a large number of items on a follow-up measure administered by phone would likely consume more time and may not be practical and efficient in obtaining critical follow-up information.

Coon et al., (1998) developed an abbreviated version of the AASE to be administered over the telephone and found that the modified questionnaire was effective in detecting differences in self-efficacy between abstainers and non-abstainers during the follow-up period. Furthermore, the results suggested that the abbreviated version of the AASE can be administered quickly and reliably over the telephone and is sensitive to changes in self-efficacy after treatment for substance abuse.

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RESULTS

Number of Participants Located at Follow-Up

Follow-up data were collected over a seven-month time frame (December 2002 through July 2003). At the 30-day follow-up, 25 out of a possible of 36 treatment completers gave consent to be interviewed. During the 60-day interval, 15 out of 25 were interviewed (1 was incarcerated; 1 entered inpatient treatment; 4 refused the interview; and 4 were not located). At 90-days follow-up, 6 were interviewed (9 did not meet the criteria to be included at this interval; 1 was incarcerated; 5 refused the interview; and 4 were not located). Lastly, 4 were interviewed at the 120-days follow-up (11 did not meet the criteria to be included at this interval; 1 was incarcerated; 5 refused the interview; and 4 were not located). Self-Efficacy and Drug Use

Hypothesis I: The relationship between self-efficacy and post treatment drug use was addressed in Hypothesis I by correlating the number of days used for the previous 30 days for each client and their mean self-efficacy rating at each interval. A Pearson product-moment correlation was conducted for each of these correlations. A point-biserial correlation was conducted between the mean self-efficacy rating and the dichotomous variables: abstinence vs. non-abstinence at each interval. To compute a point biserial correlation, the dichotomous variable (abstinence vs. non-abstinence) was first converted to numerical values by assigning a value of (0) zero to one category and value of (1) one to the other category. Subsequently, the Pearson's correlation formula was used with the converted data.

As mentioned above higher self-efficacy ratings are typically associated with abstinence, and that lower self-efficacy ratings are related to significantly more drug use. In this study, abstinence was defined as reporting no days of drug use during each

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interval, whereas non-abstinence was defined as reporting as least one day of drug use during each interval. Hypothesis I addressed this by calculating an independent measures t-test between the mean self-efficacy rating between those who remain abstinent at each follow-up interval and those who do not remain abstinent during the previous thirty days prior to last contact with the client. High-risk situations and coping attempts were examined in this study. The literature indicates that there is a relationship between the use of numerous coping strategies and self-reported drug use.

Coping Strategies and Drug Use

Hypothesis II: The relationship between coping strategies and self-reported drug use was examined in Hypothesis III at 30-days, 60-days, 90-days, 120-days after completing substance abuse treatment. Pearson's product moment correlations between the number of coping strategies endorsed and number of days of reported primary drug use out of the last thirty days at each follow-up point were examined.

 Exploratory Data Analyses

        The following exploratory analyses were included to investigate relationships that may lead to future research. Repeated measures t-tests were conducted for the mean number of days used and the total mean self-efficacy ratings at the 30-days and 60-days intervals. Furthermore, Pearson's product moment correlations were conducted between participant's self-report of difficulty quitting primary drug use on a Likert scale from 1 to 5 (1=extremely difficult; 5=not difficult at all); and self-report desire to use primary drug on a similar Likert scale from 1 to 5 (1=very desirable; 5=no desire at all) with the number of days of drug use at the 30-days and 60-days intervals. Due to such a limited sample size at both the 90 and 120-days intervals, analyses were not conducted at these follow-up points.

Table 1 details the demographic data of the 25 participants who gave consent to be interviewed including age, ethnicity, gender, primary drug use, current employment status, average months in treatment, past treatment history and number of weekly treatment sessions from the participants at the 30-days interval that met criteria for the inclusion of this study.

A total of 17 Caucasians and 8 African-American (14 males and 11 females) participated in the study. Ten of the participants reported heroin as their primary drug of use, 5 indicated cocaine use, 9 self-reported marijuana use, and 1 indicated alcohol as their drug of choice. There were 18 participants who were currently employment and 7 participants who were not currently working during the time of this study. The average amount of months in treatment was 13.37 with a standard deviation of 12.1. The mean number of treatment sessions per week was 3.05 with a standard deviation of 4.1 and the average number of past treatment attempts was 1.21 with a standard deviation of 1.44.

Drug Use at Each Follow-up Interval

The number of days of primary drug use during the last thirty days was examined at each of the follow-up intervals. Table 2 presents the number of participants located at each interval, number of those who reported remaining abstinent versus those who did not remain abstinent, and the mean and standard deviations of self-reported primary drug use during the last 30 days at each of the follow-up intervals.

At the 30-day follow-up, a total of 20 participants remained abstinent and 5 did not remain abstinent. The mean number of days of primary drug use reported from those who did not remain abstinent were 15.4 (SD=8.34). At the 60-days follow-up, 12 reported being abstinent and 3 reported some drug use. A mean of 8 (SD=10.44) days of

Table 1: Demographic Characteristics of Follow-up Participants

Demographic Characteristics of Follow-up Participants

Demographic variables	N (%)	Mean	SD
Age	25 (100%)	34.6	10.5
Ethnicity			
White	17 (68%)		
Black	8 (32%)		
Gender			
Male	14 (56%)		
Female	11 (44%)		
Primary Drug			
Heroin	10 (40%)		
Cocaine	5 (20%)		
Marijuana	9 (36%)		
Alcohol	1 (4%)		
Current employment status			
Employed	18 (72%)		
Not Employed	7 (28%)		
Average months in treatment	25 (100%)	13.37	12.1
Average number of treatment sessions a week	25 (100%)	3.05	41
Average number of past treatment attempts	25 (100%)	1.21	1.44

Table 2: Drug Use at Each Follow-up Point

Drug Use at Each Follow-up Point

Self-Reported drug use during the last 30 days	N	(%)	Mean Days of Drug Use	SD
30-days follow-up				
Total	25			
Abstainers	20			
Non-abstainers	5		15.4	8.34
60-days follow-up				
Total	15			
Abstainers	12			
Non-abstainers	3		8.0	10.44
90-days follow-up				
Total	6			
Abstainers	5			
Non-abstainers	1		20.0	
120-days follow-up				
Total	4			
Abstainers	4			
Non-abstainers	0			

primary drug use during the last thirty days at the 60-day follow-up point were reported

from those who did not remain abstinent. However, by 90-days follow-up, 5 remained

abstinent and 1 did not remain abstinent. The number of days of primary drug use

reported by the one participant who did not remain abstinent was 20 days. At 120-days

follow-up, a total of 4 participants were contacted and did not report any drug use during

the previous 30 days.

Hypothesis One: Self-Efficacy and Drug Use

The first hypothesis investigated the relationship between self-efficacy and drug

use at each of the follow-up intervals. Those participants who were not located at any

particular interval were dropped from the analyses for subsequent follow-up interviews.

To examine the relationship between drug use and self-efficacy, Pearson's product

moment correlations were conducted between each subject's mean self-efficacy scores

and number of days of self-reported drug use within the last 30 days for each particular

follow-up interval. Furthermore, to examine this relationship according to an abstinence

model, point biserial correlations were conducted between the dichotomous variable

(abstainer vs. non-abstainer) and mean self-efficacy ratings at each follow-up interval.

Those who reported at least one day of primary drug use during the previous thirty days

between follow-up intervals was classified as a "non-abstainer", whereas those

individuals reported no drug use between follow-up intervals was considered an

"abstainer."

At the 30 day follow-up interval (N=25), a Pearson's product moment correlation

between mean self-efficacy ratings and number days of reported primary drug use was

statistically significant ($\underline{r}$= -.847, p<.001). This inverse relationship suggests that higher

mean self-efficacy ratings predict a fewer number of days of reported drug use at 30 day

follow-up. Furthermore, a point biserial correlation between the dichotomous variable (abstainer vs. non-abstainer) and mean self-efficacy ratings was statistically significant (r= .681, p<.001). This relationship suggests that those who remained abstinent at the 30-day interval tended to report higher self-efficacy ratings than those who did not remain abstinent.

During the 60 day follow-up interval (N=15), a Pearson's product moment correlation between mean self-efficacy ratings and number days of reported primary drug use was statistically significant (r= -.788, p<.001). This inverse relationship is consistent with the relationship found at the 30-days follow-up interval, such that, higher mean self-efficacy ratings predicted a greater number of days of reported abstinence. However, a point biserial correlation between the dichotomous variable (abstinence vs. non-abstinence) and mean self-efficacy ratings was not statistically significant at this 60 day interval (r= .3534, p>.05).

At the 90-days follow-up interval (N=6), the Pearson's product moment correlation between mean self-efficacy ratings and number days of reported primary drug use was statistically significant (r= -.8911, p<.05). This inverse relationship is also consistent with the findings from the 30 and 60 days follow-up intervals, in that higher mean self-efficacy ratings predicted a greater number of days of reported abstinence. Furthermore, a point biserial correlation between the dichotomous variable (abstainer vs. non-abstainer) and number days of reported primary drug use was statistically significant (r= .8911, p<.05). This relationship suggests that those who remained abstinent at the 90 days interval reported significantly higher self-efficacy ratings than those who did not remain abstinent. Due to such a small number of participants interviewed at the 120 days

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follow-up interval, both the Pearson's product moment and point biserial correlations were not conducted.

To investigate whether perceived self-efficacy scores differed between those who remained abstinent and those who did not remain abstinent at each follow-up interval, independent-measures t-tests were conducted at each of the follow-up intervals for the dichotomous variable (abstainers vs. non-abstainers) and the total mean perceived self-efficacy rating for each group. At the 30 day follow-up interval, the independent-measures t-test between those who remained abstinent and those who were non-abstainers was statistically significant (t(23)= 4.46, p<.01), such that there was a significant difference between the total mean self-efficacy rating for each group at the 30-days interval. This relationships suggests that those who remained abstinent reported significantly higher mean self-efficacy ratings (M=4.63; SD=.44) than those who did not remain abstinent (M=3.15; SD=1.27).

However, at 60 days follow-up, an independent measures t-test was not statistically significant (t(12)=1.31, p>.05) between the total mean self efficacy rating for those who remained abstinent (M=4.7; SD=.36) and those who did not remain abstinent (M=4.23; SD=1.08). Due to such a small sample size at the 90 (N=6) and 120-days (N=4) intervals, independent measures t-tests were not conducted. See Figure 1 for a presentation of the mean self-efficacy ratings for each group at the corresponding follow-up intervals.

Hypothesis Two: Coping Strategies and Drug Use

The second hypothesis addresses the relationship between the number of coping responses endorsed by each participant and number of days of reported primary drug use at each follow-up interval. A Pearson's product moment correlation was conducted

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Figure 1. Comparison of overall mean self-efficacy ratings between abstainers and non-abstainers at each follow-up interval.
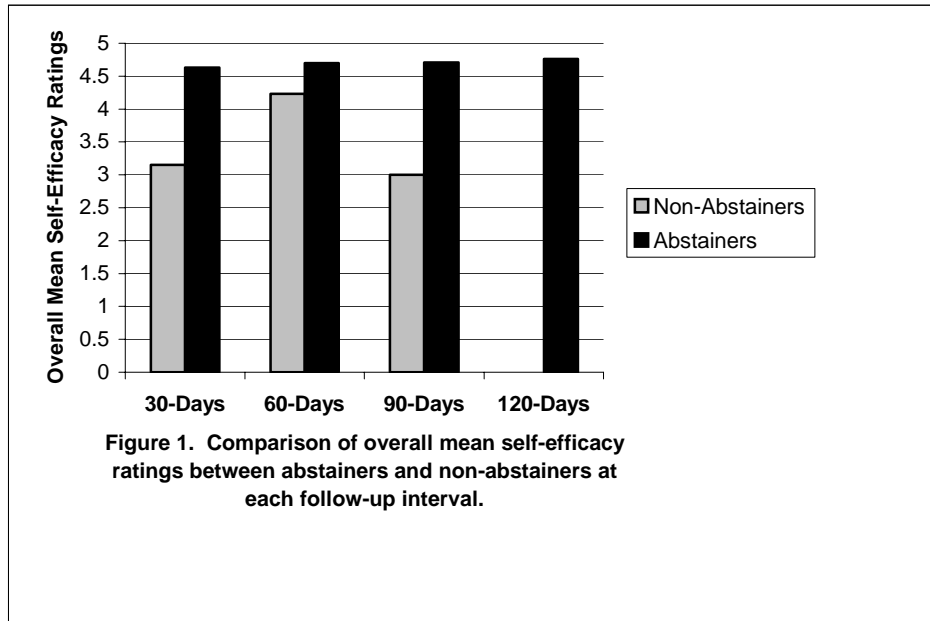
Figure 1: Comparison of Overall Mean Self-Efficacy Ratings Between Abstainers and Non-Abstainers at Each Follow Up Interval.

between the number of coping responses endorsed and number of days of reported

primary drug use at each follow-up interval to examine this relationship.

At the 30 day follow-up interval, there was a statistically significant inverse

correlation ($\underline{r}$= -.581, p<.001) between the number of coping responses endorsed

($\underline{M}$=2.04; SD=.89) and the number of days of reported drug use ($\underline{M}$=3.08; SD=8.64),

such that, a greater number of coping strategies reported was associated with fewer days

of self-reported drug use. At the 60 days follow-up interval, the correlation between the

number of coping strategies endorsed (M=2.29; SD=1.27) and number of days of

reported primary drug use ($\underline{M}$=1.71; SD=5.33) was not statistically significant ($\underline{r}$= -.272,

p>.05). At 90 days follow-up, the correlation between the number of coping strategies

endorsed ($\underline{M}$=2.00; SD=1.26) and number of days of reported drug use ($\underline{M}$=3.33;

SD=8.16) was not statistically significant ($\underline{r}$= -.775, p>.05).

Descriptive Analysis of Successful Coping Strategies and High-Risk Situations Endorsed
By Abstainers

For participants who remained abstinent, frequencies for endorsed successful

coping strategies were pooled across the follow-up intervals. The participants mentioned

19 different types of coping behaviors on verbatim inquiry. The most commonly used

strategies were "Staying preoccupied with work and other activities" (f=14), "Going to an

NA, AA or church meeting" (f=13), "Avoiding people, places, and things associated with

past drug use" (f=8), "Thinking about not wanting to violate probation" (f=8), and

"Receiving support from family and friends" (f=8). See Table 3 for a presentation of the

frequencies of the most successful coping strategies endorsed. Participants were asked to

recollect all of the high-risk situations under which they were able to perform a

successful coping strategy to deter drug use. Frequencies of

Table 3: Successful Coping Strategies Pooled and Summed Across All Follow-up Intervals

Successful coping strategies pooled and summed across all follow-up intervals

Frequencies of successful coping strategies	Frequencies
Staying occupied with work and hobbies	14
Going to an NA, AA, or church meeting	13
Not wanting to violate probation	8
Avoid people, places and things associated with drug use	8
Received support from family and friends	8
Thinking about not hurting other family members	4
Taking proper medication	4
Keep custody of children	3
Taking a different attitude	3
Developing a spiritual bond with a higher power and praying	3
Tired of using	3
Being high on life	3
Having a strong sense of willpower	2
Went to back to receive an education	2
Think about the positives of a situation	2
Started exercising	2
Thought about the negative and health consequences of using again	2
Retrained one's way of thinking	2
Wait for the urge to dissipate	1

high-risk situations were pooled across the follow-up intervals. There were 10 different

high-risk situations mentioned. The most frequently reported high-risk situations were

"Proximity to others using" (f=10), "Having an argument with a close friend or family

member" (f=2), "Being stressed out" (f=2), and "Loss of a loved one or family member

being sick" (f=2). See Table 4 for a presentation of the frequencies of the most common

high-risk situations faced across the follow-up intervals.

Descriptive Analysis of High-Risk Situations and Reasons for Drug Use Endorsed By
Non-abstainers

Frequencies for reported high-risk situations were pooled across the follow-up

intervals for participants reporting drug use at any interval. The participants mentioned

10 different types of high-risk situations. The most common high-risk situations were

"Everyone in the environment was using" (f=4), "Wanted to have a good time" (f=2),

"Being in physical pain" (f=2), "Having financial difficulties" (f=1), "Experiencing

cravings all day long" (f=1), and "Being tired" (f=1). See   Table 5 for a list of high-

risk situations that lead to primary drug use.

Those participants who did not remain abstinent at each follow-up interval were

asked about the reasons why they used their primary drug during each interval. The

participants reported 8 different reasons for primary drug use. These included "Being

unable to break the cycle of using," "Using helps to relax," "Using gives oneself energy,"

"Enjoys the taste of alcohol," "Just got off probation," and "Using with others." See

Table 6 for a list of reasons by participants for self-reported drug use at follow-up.

Table 4: High-Risk Situations Pooled and Summed Across All Follow-up Intervals

High-risk situations pooled and summed across all follow-up intervals

Frequencies of high-risk situations	Frequencies
Proximity to others using	10
Having difficulties with the law	3
Started a new job	2
Being stressed out	2
Argument with family member or friend	2
Loss of a loved one	2
Feeling depressed	1
Having cravings associated with using	1
Being in an unstable environment	1
Dreaming about drug use	1

Table 5: High-risk Situations Endorsed By Those Who Did Not Remain Abstinent

High-risk situations endorsed by those who did not remain abstinent

Frequencies of high-risk situations	Frequencies
Everyone in the environment was using	4
Wanted to have a good time	2
Being in physical pain	2
Having financial difficulties	1
Being stressed out	1
Being tired	1
Having cravings all day long	1
Does not want to feel sick	1
Did not have the willpower to say no	1
Did not have any transportation	1

Table 6: Reasons for Primary Drug Use

Reasons for primary drug use
Not being able to break the cycle of using
Using helps to relax
Using gave one's self energy
Enjoys the taste of alcohol
Just got off probation
Using with others
Wanted to relieve pain
Using for social reasons

Exploratory Data Analysis

Certain relationships were examined for ideas for future research, a repeated-measures t-test was conducted between the number of days of drug use and mean self-efficacy ratings at the 30 day and 60 days follow-up intervals. At the 30 day and 60 days follow-up intervals, there was not a statistically significant difference between the number of days drug use (t(10)= -1.094, p>.05). Furthermore, a repeated-measures t-test did not indicate a statistically significant difference between mean self-efficacy ratings at the 30 day and 60 days intervals (t(10)= -.3801, p>.05).

Pearson's product moment correlations were conducted between self-reported ratings of desire to use their primary drug and the number of days of drug use at the 30-days and 60-days intervals. At the 30-days follow-up interval, the Pearson's product moment correlation between number of days of drug use and desire to use their primary drug was not statistically significant (r= -.3354, p>.05). Furthermore, the relationship between the number of days of drug use and desire to use their primary drug was not statistically significant (r= -.2238, p>.05) at the 60-days follow-up interval.

Last, Pearson's product moment correlations were performed between number of days of drug use and difficulty quitting primary drug use at the 30 day and 60 days intervals. At the 30 day follow-up interval, the Pearson's product moment correlation between the number of days of drug use and difficulty quitting primary drug use was statistically significant (r= -.9407, p<.01). This finding suggests that those individuals who did not have a difficult time quitting their primary drug indicated fewer or no days of drug use at the 30 day follow-up interval. At the 60 days interval, there was not a

statistically significant correlation between the number of days of drug use and difficulty

quitting primary drug use ($\underline{r}$= -.3586, p>. 05).

Each of these exploratory analyses was conducted for the 30 and 60 days follow-

up intervals. However, due to a limited sample size these analyses were not performed at

the 90 and 120 days subsequent follow-up.

DISCUSSION

The majority of follow-up studies in the substance abuse literature have yet to

focus on the examination of self-efficacy and coping as predictors of substance use

during the early recovery process following treatment. Typically, most follow-up studies

have examined these relationships at varied time points during the first few years of

treatment discharge (McKay et al., 2001; Stephens et al., 1995); however, there is a

paucity of research that closely scrutinizes the transition following substance abuse

treatment completion.

It is important to analyze the first few weeks and months following treatment 1) to

better understand the breaking points for relapse; 2) to understand the successes and

failures during a stressful transition post-discharge, and 3) to use that information to tailor

clinical interventions that will prevent relapse. It is important for substance abuse

treatment professionals to understand the early recovery process so they may improve

treatment services. This study attempted to examine these aspects during the early

recovery process.

Hypothesis One: Self-Efficacy and Drug Use

The first hypothesis suggested that a relationship exists between primary

substance use and self-efficacy. This study attempted to explore primary substance use

both continuously and dichotomously as it relates to self-efficacy. Self-efficacy and

primary substance use were assessed at 30-days, 60-days, 90-days and 120-days following substance abuse treatment completion. When defining primary substance use continuously (number of days used out of the last 30 days), self-efficacy and drug use were related at 30-days, 60-days and 90-days following treatment, such that higher self-efficacy ratings were associated with few to no days of drug use.

When primary substance use was defined dichotomously (abstainer vs. non-abstainer), self-efficacy and substance use were also related at 30-days and 90-days following treatment, such that higher self-efficacy ratings were associated with individuals who abstained from using at those particular follow-up intervals. Furthermore, at the 30-day interval, those individuals who remained abstinent had significantly higher self-efficacy ratings than those who were not abstinent. The significant relationships and differences between self-efficacy and primary substance use is consistent with findings obtained from other studies in the substance abuse treatment literature (Coon et al., 1998; Rychtarik et al., 1992; Condiotte & Lichenstein, 1981; DiClemente, 1981).

One of the core components of substance abuse treatment consists of the maintenance phase of the recovery process (Prochaska & DiClemente, 1992). Marlatt and Gordon's (1985) model of relapse prevention emphasizes the relevance of an individual's perceived self-efficacy to avoid drug use in certain high-risk situations. The central point of this model is that individuals with higher self-efficacy are less likely to return to drug use compared to individuals with lower self-efficacy when placed in certain high-risk situations.

The clinical relevance of this study is centered on the notion that the training in and maintenance of self-efficacy provides a client with the strategies and tools that are necessary to maintain a successful recovery following substance abuse treatment services. To a clinician, self-efficacy may be indicative for a client's progress towards recovery. Therefore, obtaining measurements of self-efficacy after treatment can help a clinician tailor a therapeutic intervention to increase a client's self-efficacy in avoiding drug use during and after treatment.

Another aim of this study was to develop a measurement of self-efficacy that could be administered quickly and reliably over the telephone. The development of a concise assessment of self-efficacy may be useful for treatment staff at CHC-OTS attempting to provide appropriate aftercare services. However, it can also help counselors and clinicians design relapse prevention strategies by utilizing self-efficacy ratings obtained from the AASE from clients that are using drugs at CHC-OTS.

Furthermore, the structure of the AASE includes subscales that capture the high-risk relapse precipitants that have been studied extensively by Marlatt and Gordon (1985). These scales allow for an evaluation of abstinence efficacy in specific types of situations that could precipitate relapse as well as allowing an individual to give an overall efficacy evaluation across all high-risk situations. Therefore, according to DiClemente et al., (1994), "the AASE can help promote research and enhance clinical practice by utilizing efficacy judgments as a means to evaluate current status, treatment outcome, relapse potential and possibly treatment matching. The sound composition of the AASE supports its use for future research and practice, (p. 149)".

Hypothesis Two

The second hypothesis suggested that a relationship exists between the number of copings strategies endorsed and primary drug use. Only at the 30-day follow-up was this relationship supported such that, those who endorsed one or more coping strategies also reported few to no days of primary drug use. These findings are consistent with other studies that have demonstrated that individuals who endorse one or more coping responses are less likely to relapse (Annis, Sklar & Moses, 1998; Shiffman, 1985). These data at the 30-day follow-up are encouraging because it emphasizes the importance of coping processes in the control of primary substance use.

The development of coping skills is central to the social learning theory model of relapse (Marlatt & Gordon, 1985). This model places an emphasis on the importance of engaging in alternate coping strategies to deter future primary drug use. Therefore, the goal of relapse prevention programs is to teach alternate coping strategies to deal with the risk of relapse following substance abuse treatment. Developing coping strategies is considered essential to coping with emotional states, stressful situations, and cravings that occur following the transition of substance abuse treatment completion (Shiffman, 1982).

Since this study is consistent with a social learning model of maintaining abstinence, these findings also support the continued development of cognitive-behavioral interventions. As Curry & Marlatt (1985) state, if the ability to use coping strategies is an important component of maintenance from primary drug use, it is predicted that skill-training approaches can result in improved abilities to cope. Continuing to investigate the skills necessary to discourage primary drug use following

treatment will promote the ability to develop effective interventions in order to better prepare for the challenges they face following the completion of treatment.

Qualitative Analyses of Coping Strategies

Part of this exploratory and descriptive study was to evaluate the different coping behaviors used by former substance abuse treatment completers among those who met criteria for primary drug or alcohol abuse/dependence DSM-IV diagnosis at 30 day, 60 days, 90 days, and 120 days following treatment.

According to those individuals who reported no drug use at each of the follow-up intervals, the most common coping behaviors used were going to a social support group meeting, avoiding cues associated with using, thinking about not violating probation, and receiving support from family and friends. These coping behaviors have been reported in earlier studies (Maulik, Tripathi, & Pal, 2002; McKee, Hinson, Wall, & Spriel, 1998; Shiffman, 1985).

Amodeo and Kurtz (1998) found that positive thinking (e.g., stopping to examine motives), negative thinking (e.g., feeling shameful), distraction (e.g., work), and avoidance were the main coping behaviors observed in a group of alcoholics. Pal and Chavan (1996) also found staying away from where drugs are sold, working, and considering the effects of drug use on the family as important coping behaviors among a sample of opioid dependent patients. Interestingly enough, these coping behaviors were cited as being effective for deterring primary drug use in this current sample.

Proximity to others using was the most frequent high-risk situation that clients faced. Others included difficulties with the law, starting a new job, having an argument with a family member or friend, loss of a loved one, being around others who were using included, being in physical pain, wanting to have a good time, having cravings all day

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long, feeling depressed and being physically tired. Past research has documented similar findings. For example, Maulik et al., (2002) found that interpersonal factors like family tension, social pressure, withdrawal effects, having a physical craving, and negative emotional states like boredom and anger were the most common high-risk situations among a sample of opioid dependent individuals. Furthermore, the high-risk situations reported in this study were similar to the categories that have been well established from the work of Marlatt and Gordon (1985) and other studies (Connors & Maisto, 1996; Annis & Davis, 1988).

As mentioned previously, coping is an important determinant in the social learning theory model of relapse. Therefore, it is necessary to develop relapse preventions programs that teach alternate coping strategies to deal with the possibility of relapsing following treatment. In the development of a program of relapse prevention, it is important to understand the specific coping strategies endorsed by abstainers. This study can help clinicians and researchers understand more about the successful coping strategies that have been employed following substance abuse treatment. Furthermore, by identifying those high-risk situations that were endorsed between abstainers and non-abstainers following treatment, relapse prevention programs will gain valuable information that will help clients maximize the chances that they will be successful during the critical months following treatment.

Finally, the clinical utility of this study will help Coastal Horizon's clinical staff gain useful information about the transition following substance treatment completion. By identifying the successful coping strategies and most common high-risk situations during this transitional period, Coastal Horizons Center clinical staff can help teach

clients how to be better prepared after receiving treatment services. Identifying these post-treatment coping strategies and high-risk situations will also be useful in the design of a classification system that could be incorporated into their relapse prevention component of treatment.

Limitations of Study

Although the present study demonstrated some support for self-efficacy and coping as predictors of drug use following substance abuse treatment, a number of limitations should be noted. First, this study is limited by a small sample size. At each follow-up interval, the number of clients contacted dropped significantly. Therefore, the findings should be interpreted with caution. Increasing the sample size in this study would be essential to gaining a better understanding of the relationship between self-efficacy, coping and substance use. Despite the small size and relatively low statistical power, the findings of this study still provide some interesting information.

Typically, in most follow-up studies, subject attrition is considered a serious problem (Desmond et al., 1995). Due to subject attrition in this study, it is important to recognize that the data taken from this sample may be biased. At this point, the clients who were contacted owned a phone, maintained residential stability, and have certain motivators, such as probation, that keep them in the area of the facility. Future research should consider examining other barriers and characteristics that may prevent clients from being located, even with reasonable effort.

Another limitation is that there was inadequate time in the clinic to make follow-up calls, which may have affected response rates. Typically, the clinic is open from 6:00 in the morning to 8:30 in the evening, which made it difficult to contact clients who can

only be located during late night hours and the weekends. Furthermore, the phone calls were only conducted in the evenings; therefore those individuals available during the mornings and afternoons were not contacted. Past research has suggested that it is necessary to have a full-time staff locating and interviewing clients for follow-up (Moos & Bliss, 1978). Only one trained researcher (author) made the follow-up phone calls for this particular study, which may have also affected the response rates obtained. It is clear that more staff is necessary to help improve response rates.

The use of the Coastal Horizons Center criteria for "treatment completers" is another limitation. Although the utility of this definition is beneficial for obtaining information within the agency, it does not allow this definition to be generalized to other substance abuse treatment facilities. Also, this stringent definition does not consider clients who have met a certain number of the treatment completion criteria; therefore individuals who may have benefited from treatment were not included in this study. For example, clients who have not paid their treatment fees were not included in this study, but could be considered successful "treatment completers." This may be one of the reasons for the small sample size that were included in this study. Future research should consider evaluating the agency's treatment completion criteria and developing a definition that could be better standardized across treatment facilities.

Treatment completion has been defined in many different ways within the substance abuse treatment literature. Budney, Bickel, & Amass (1998), suggest that a continuous variable – the number of weeks in treatment – should be used to examine treatment effectiveness. Other researchers disagree with this definition and state that treatment completion should be defined as having attended at least 50% of the treatment

sessions scheduled (Schmitz, Oswald, Jacks, Rustin, Rhoades, & Grabbowski, 1997).

Other treatment agencies suggest that treatment completion varies by the client. Knight

Logan, and Simpson (2001), criteria for completion included "sufficient length of stay"

(i.e., six months of continuous treatment), "personal progress toward treatment goals"

(i.e., achieving relevant treatment goals outlined in the treatment plan), and being in good

standing with the program (i.e., no major infraction of agency rules).

Each substance abuse agency may define treatment completion in different ways,

based on the type, amount, and frequency of services offered. Conducting research

within an agency, which has developed its own pre-established criteria, can present some

difficulties as a researcher because one must work within those boundaries. However,

using a particular agency's definition of treatment completion can be practical for both

the researcher and agency, because the study (including the present study) can speak to

the quality of that particular program.

This study was conducted in a setting in which a control group was not available.

It still remains unclear whether self-efficacy ratings were due to treatment received or

other experiences that clients encountered. To better comprehend the factors underlying

changes affecting self-efficacy and coping, it remains important to develop more

controlled studies to examine this relationship (Coon et al., 1998). Furthermore, this

study assessed self-efficacy at 30 day, 60 days, 90 days, and 120 days following

completion of substance abuse treatment. If self-efficacy can be shown to be a predictor

of treatment outcome, then taking baselines measures of self-efficacy ratings during

treatment may provide a measure of treatment success. Also, it will be important to

determine if the relationship between self-efficacy and drug use holds at more distant

points following treatment completion. Future research should examine this relationship for at least up to one year post-treatment.

Lastly, the data in the present study were based on self-report, which can be regarded as being useful and informative. However, the reliability and validity of self-reports have often been questioned within the substance abuse literature (Brown, Krantzler, & Del Boca, 1992). Certain factors that may affect the reliability and validity of self-reports include, level of cognitive functioning at the time of the interview, inaccuracy of recall, concerns about confidentiality, physiological effects of being under the influence of a drug at the time of an interview, and the tendency to provide socially desirable responses (Nelson & Kotranski, 1998). It is possible that any one of these factors could have influenced inaccurate recall of self-report information, such as current drug use in this study. As Carey & Simons (2000) suggest, corroborative information, such as collateral informants, institutional records, urine and blood samples, and other biochemical measures have been utilized to compare these variable sources of validity with self-report data to provide more accurate substance use information. This study was not able to provide corroborative information, such as, collateral informants, in order to provide more accurate self-reports. Therefore, it is recommended that future research provide some form of external criteria along with self-reports to provide more accurate information.

Concluding Remarks

Overall, the present study attempted to understand the types of high-risk situations, coping strategies, and self-efficacy ratings at various follow-up points immediately following successful completion of the treatment program. The aim was to investigate these relationships at follow-up in order to utilize this information to develop

and teach clinical staff about the stressful transition immediately following treatment. By

identifying successful coping strategies, high-risk situations, and focusing on self-

efficacy as important variables in the maintenance of abstinence, treatment centers can

tailor clinical interventions to help clients become better prepared for this transition.

Although there are a number of limitations, the findings of this study lends are consistent

with Marlatt and Gordon's cognitive-behavioral model of relapse and provide a good

starting point for future studies.

REFERENCES

Annis, H. M. (1982). *Inventory of Drinking Situations.* Toronto: Addiction Research Foundation of Ontario.

Amodeo, M., & Kurtz, N. R. (1998). Coping methods and reasons for not drinking. *Substance Use and Misuse*, *33*, 1591-1610.

Annis, H. M. (1986). A relapse prevention model for treatment of alcoholics. In W. R. Miller & N. Heather (Eds.), *Treating addictive behaviors: Processes of change* (pp. 407-421). New York, NY: Plenum Press.

Annis, H. M., & Davis, M. (1988). Assessment of expectancies. In D. M. Donovan & G. A. Marlatt (Eds.), *Assessment of Addictive Behaviors* (pp. 84-111). New York: Guilford.

Annis, H. M., Sklar, S. M., & Moses, A. E. (1998). Gender in relation to relapse crisis situations, coping, and outcome among treated alcoholics. *Addictive Behaviors, 23*, 127-131.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*, 191-215.

Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive Therapy and Research, 1*, 287-310.

Bandura, A. (1986). *Social foundations of thought an action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*, 1175-1184.

Barber, J. G., & Cooper, B. K. (1991). The situational confidence questionnaire (heroin). *The International Journal of the Addictions, 26*, 565-575.

Brown, J., Krantzler, H. R., & Del Boca, F. K. (1992). Self-reports by alcohol and drug abuse inpatients: factors affecting reliability and validity. *British Journal of Addictions, 87*, 1013-1024.

Brown, S. A., Vik, P. W., McQuaid, J. R., Patterson, T. L., Irwin, M. R., & Grant, Igor. (1990). Severity of psychosocial stress and outcome of alcoholism treatment. *Journal of Studies on Alcohol, 99*, 344-348.

Budney, A., Bickel, B., & Amass, L. (1998). Marijuana use and treatment outcome among opioid-dependent patients. *Addiction*, *93*, 493-503.

Carey, K. B., & Simons, J. (2000). Utility of collateral information in assessing substance use among psychiatric outpatients. *Journal of Substance Abuse, 11*, 139-147.

Condiotte, M. M., & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. *Journal of Consulting and Clinical Psychology, 49*, 648-658.

Connors, G. J., Maisto, S. A., & Donovan, D. M. (1996). Conceptualizations of relapse. A summary of psychological and psychobiological models, *Addictions, 91*, 5-13.

Coon, G. M., Pena, D., & Illich, P. A. (1998). Self-efficacy and substance abuse: Assessment using a brief phone interview. *Journal of Substance Abuse Treatment, 15*, 385-391.

Cooney, N. L., Kadden, R. M., Litt, M. D., & Getter, H. (1991). Matching alcoholics to coping skills or interactional therapies: Two-Year follow-up results. *Journal of Consulting and Clinical Psychology, 59*, 598-601.

Curry S. G., & Marlatt, G. A. (1985). Unaided quitters' strategies for coping with the temptations to smoke. In S. Shiffman and T. A. Wills (eds.) *Coping and Substance Use* (pp.243-265). Academic Press: Florida.

Desmond, D. P., Maddux, J. F., Johnson, T. H., & Confer, B. A. (1995). Obtaining follow-up interviews for treatment evaluation. *Journal of Substance Abuse Treatment, 12*, 95-102.

De Weert-Van Oene, G., Breteler, M., Schippers, G. M., & Schrijvers, A. (2000). The validity of the self-efficacy list for drug users (SELD). *Addictive Behaviors, 25*, 599-605.

DiClemente, C. C. (1981). Self-efficacy and smoking cessation maintenance: A preliminary report. Cognitive Therapy and Research, 5, 175-187.

DiClemente, C. C. (1986). Self-efficacy and the addictive behaviors. *Journal of Social and Clinical Psychology*, *4*, 302-315.

DiClemente, C. C., Carbonari, J. P., Montgomery, R., & Hughes, S. (1994). The Alcohol Abstinence Self-Efficacy Scale. *Journal of Studies on Alcohol, 55,* 141-148.

Ericksen, L., Bjornstad, S., & Gotesman, K. G. (1984). A lottery procedure to obtain alcoholics' self-reports after discharge. *Journal of Behavior Therapy and Experimental Psychiatry, 145*, 147-151.

Finney, J. W., & Moos, R. H. (1991). The long-term course of treated alcoholism: I. Mortality, relapse and remission rates and comparisons with community controls. *Journal of Studies on Alcohol, 52*, 44-54.

Hansten, M., Downey, L., Rosengren, D. B., & Donovan, D. M. (2000). Relationship between follow-up rates and treatment outcomes in substance abuse research: more is better but when is 'enough' enough. *Addiction, 95*, 1403-1417.

Hubbard, R. L., Flynn, P.M., Craddock, S. G., & Fletcher, B. W. (1997). Relapse after drug abuse treatment. In J.A. Egerston and A. I. Lechner (eds.), *Treating Drug Abusers Effectively* (pp.79-113). Malden: Mass.: Ballinger.

Hunt, W. A., Barnett, L. W., & Branch, L. G. (1971). Relapse rates in addiction programs. *Journal of Clinical Psychology, 27*, 455-456.

Kadden, R. M., Cooney, N. L., Getter, H., & Litt, M. D. (1989). Matching alcoholics to coping skills training or interactional therapies: Posttreatment results. *Journal of Consulting and Clinical Psychology, 57*, 698-704.

Klingemann, H. K. (1992). Coping and maintenance strategies of spontaneous remitters from problem use of alcohol and heroin in Switzerland. *The International Journal of the Addictions, 27*, 1359-1388.

Knight, D., Logan, S., & Simpson, D. (2001). Predictors of program completion for women in residential substance abuse treatment. *American Journal of Drug and Alcohol Abuse, 27*, 1-18.

Maulik, P. K., Tripathi, M. D., & Hem, R. P. (2002). Coping behaviors and relapse precipitants in opioid dependence: a study from North India. *Journal of Substance Treatment*, *22*, 135-140.

Marlatt, G. A. & Gordon, J. R. (Eds.) (1985). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors*. New York: Guilford Press.

Marlatt, G. A. (1996). Taxonomy of high-risk situations for alcohol relapse, *Addiction, 91,* 37-50.

McKay, J. R., Alterman, A I., Koppenhaver, J. M., Mulvaney, F. D., Bovasso, G. B., & Ward, K. (2001). Continuous, categorical, and time to event cocaine use outcome

variables: Degree of intercorrelation and sensitivity to treatment group differences. *Drug and Alcohol Dependence, 62*, 19-30.

McKee, S. A., Hinson, R. E., Wall, A., & Spriel, P. (1998). Alcohol outcome expectancies and coping styles as predictors of alcohol use in young adults. *Addictive Behaviors, 22*, 135-140.

Monti, P.M., Rohsenow, D. J., Abrams, D. B., Zwick, W. R., Binkoff, J. A., Munroe, S. M., et al. (1993). Development of a behavior analytically derived alcohol-specific role-play assessment instrument. *Journal of Studies on Alcohol, 54*, 710-721.

Monti, P.M., Rohsenow, D. J., Michalec, E., Martin, R. A., & Abrams, D. B. (1997). Brief coping skills training for cocaine abuse: Substance use outcomes at three months. *Addiction, 92*, 1717-1728.

Moos, R. F., & Bliss, F. (1978). Difficulty of follow-up and outcome of alcholism treatment. *Journal of Studies on Alcohol*, *39*, 473-490.

Moser, A. E., & Annis, H. M. (1996). The role of coping in relapse crisis outcome: A prospective study of treated alcoholics. *Addictions, 91*, 1101-1113.

Myers, M. G., Brown, S. A., & Mott, M. A. (1993). Coping as a predictor of adolescent substance abuse treatment outcome. *Journal of Substance Abuse, 5*, 15-29.

Nelson, D. B., & Kotranski, L. (1998). The validity of self-reported opiate and cocaine use by out of treatment users. *Journal of Drug Use, 28*, 355-367.

Pal, H., & Chavan, B. S. (1996). Coping behaviors in recent abstinence attempt in opioid dependent subjects. *Indian Journal of Psychiatry, 38*, 30-33.

Perrin, S. (2002). Do those who complete treatment fare better? An analysis of follow-up to susbtance abuse treatment. *Unpublished master's thesis, University of North Carolina at Wilmington.*

Prochaska, J. O., DiClemente, C. C., & Norcross, J. C. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist, 47*, 1102-1114.

Rohsenow, D. J., Monti, P. M., Martin, R. A., Michalec, E., & Abrams, D. B. (2000). Brief coping skills training for cocaine abuse: 12-month substance use outcomes. *Journal of Consulting and Clinical Psychology, 68*, 515-520.

Rossow, I. & Lauritzen, G. (1999). Balancing on the edge of death: Suicide attempts and life-threatening overdoses among drug addicts. *Addiction, 94,* 209-219.

Rychtarik, R. G., Prue, D. M., Rapp, S. R., & King, A. C. (1992). Self-Efficacy, aftercare and relapse in a treatment program for alcoholics. *Journal of Studies on Alcohol, 53*, 435-440.

Schmitz, J.M., Oswald, L.M., Jacks, S.D., Rustin, T., Rhoades, H.M., & Grabowski, J. (1997). Relapse prevention treatment for cocaine dependence: group versus individual format. *Addictive Behaviors, 22*, 405-418.

Settle, R. (2002). Study of attrition in substance abuse follow-up programs: Who is lost and what can be done to increase response rates. *Unpublished master's thesis, University of North Carolina at Wilmington.*

Shiffman, S. (1982). Relapse following smoking cessation: A situational analysis. *Journal of Consulting and Clinical Psychology, 50*, 71-86.

Shiffman, S. (1985). Coping with temptations to smoke. In S. Shiffman and T. A. Wills (eds.) *Coping and Substance Use* (pp.223-240). Academic Press: Florida.

Simpson, D., Joe, G. W., Fletcher, B. W., Hubbard, B. L., & Douglas, A. (1999). A national evaluation of treatment outcomes for cocaine dependence. *Archives of General Psychiatry, 56*, 507-514.

Sklar, S. M., Annis, H. M., & Turner, N. E. (1997). Development and validation of the drug-taking confidence questionnaire: A measure of coping self-efficacy. *Addictive Behaviors, 22*, 655-670.

Stephens, R. S., Wertz, J. S., & Roffman, R. A. (1995). Self-efficacy and marijuana cessation: A construct validity analysis. *Journal of Consulting and Clinical Psychology, 63*, 1022-1031.

Tims, A., Lukefield, M., & Platt. (1997). Effectiveness of drug abuse treatment: A review of research from field settings. In J.A. Egerston and A. I. Lechner (eds.), *Treating Drug Abusers Effectively* (pp.41-73). Malden: Mass.: Ballinger.

Velicer, W. F., DiClemente, C. C., Rossi, J. S., & Prochaska, J. O. (1990). Relapse situations and self-efficacy: An integrative model. *Addictive Behaviors, 15*, 271-283.

Walton, M. A., Ramanathan, C. S., & Reischl, T. M. (1998). Tracking substance abusers in longitudinal research: Understanding follow-up contact difficulty. *American Journal of Community Psychology, 26*, 233-253.

Zador, D. & Sunjic, S. (2000). Deaths in Methadone maintenance treatment in New South Wales, Australia 1990-1995. *Addiction, 95*, 219-224.

APPENDIX

Appendix A: Coping With Relapse Crisis Situations Interview

Name:
OTS Number:
Primary Drug:
Date of Interview:
Interviewer:
Gender:
Ethnicity:
Age:

<div align="center">COPING WITH RELAPSE SITUATIONS</div>

As part of your treatment at Coastal Horizon's Center we make sure to keep in touch with our clients—particularly those who have been in our program for more than four months. I want to ask a few questions about how you have been since you have been receiving treatment services. This should only take five to ten minutes to answer. All information you give us will remain completely confidential, and you have the right not to answer any questions you don't feel comfortable answering. If you like to stop this interview at any time feel free to do so. It is best if you can be as open as honest as possible in your answers. If you have any questions, just stop me at any time.

Tell me a little about your current support system: (AA, NA, or seeking other treatment)

We know that the road to recovery is very challenging. I see the main problems you had were with _____ (drug or drugs).

How many days out of the last thirty have you used any drugs, starting with _____ (primary drug)

Any other drugs? How many days out of the last thirty?

_____ _____
 (Drug)   (Days)

_____ _____
 (Drug)   (Days)

_____ _____
 (Drug)   (Days)

How many days out of the last thirty days have you used alcohol? _____

So you have used _____ (type/types of drugs) this month? (If No Drug Use In the Past Thirty Days, then please proceed to the next page)

What are the main reasons why?

What kinds of situations were you exposed to this month that led up to it?

What are some thoughts or feelings that triggered you to use this month?

Did you try to employ any type of coping strategies?

(If you have not used any drug in the past thirty days, then please answer the following questions).

So you were able to stay away from _____ (type of drug) this month.

What are the main things that helped you do this?

What kinds of situations were exposed to this month?

What thoughts, feelings, or behaviors helped you cope with not using in these particular situations? Tell me how you were able to do it this month.

Here are some situations in which a lot of people might use drugs. How confident are you that you could keep from using _____ (primary drug) in each of these situations.
1=not at all confident
2=not very confident
3=moderately confident
4=fairly confident
5=extremely confident
Remember to give us your best evaluation of each situation

NEGATIVE AFFECT
When I feel angry inside   1 2 3 4 5
When I sense everything is going wrong for me   1 2 3 4 5
When I am feeling depressed   1 2 3 4 5
When I feel like blowing up because of frustration   1 2 3 4 5
When I am very worried   1 2 3 4 5

SOCIAL/POSITIVE
When I see others at a bar or a party   1 2 3 4 5
When I am excited or celebrating with others   1 2 3 4 5
When I am on vacation and want to relax   1 2 3 4 5
When people I used to take drugs with encourage me to use   1 2 3 4 5
When I am being offered drug/drugs in a social situation   1 2 3 4 5

PHYSICAL AND OTHER CONCERNS
When I have a headache   1 2 3 4 5
When I am physically tired   1 2 3 4 5
When I am concerned about someone   1 2 3 4 5
When I am experiencing some physical pain or injury   1 2 3 4 5
When I dream about using a drug   1 2 3 4 5

WITHDRAWAL AND URGES
When I am in agony because of stopping or withdrawing
from substance use   1 2 3 4 5
When I have the urge to try a drug to see what happens   1 2 3 4 5
When I am feeling a physical need or craving for a drug   1 2 3 4 5
When I want to test my willpower over a doing a drug   1 2 3 4 5
When I experience an urge or impulse to take a drug that
Catches me off guard   1 2 3 4 5

Here are just a few questions about any difficulties you might be having

One a five point scale
1=extremely difficult
2=fairly difficult
3=moderately difficult
4=not very difficult
5=not difficult

How difficult is it for you to abstain from using
_____ (type of drug/drugs)?   1 2 3 4 5

On a five point scale
1=very desirable
2=somewhat desirable
3=moderately desirable
4=not very desirable
5=not desirable at all

What is your current desire to use
_____ (type of primary drug/drugs)?   1 2 3 4 5

Once again, Coastal Horizons would like to thank-you for participating. Your answers
will help the staff at Coastal Horizons know how to best help our clients who are
currently in treatment. A staff member will be contacting you in about a month to ask
you some more questions. Have a good day and once again, thank you very much for
your participation!