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SOCIAL ECOLOGIES AND ADDICTION RELAPSE: AN ASSESSMENT OF A NEWLY DEVELOPED SETTING RISK MEASURE

BY

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ABSTRACT

SOCIAL ECOLOGIES AND ADDICTION RELAPSE:
AN ASSESSMENT OF A NEWLY DEVELOPED SETTING RISK MEASURE

BY

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Despite addiction theorists' acknowledgement of the impact of environmental factors on relapse, these factors have not been adequately assessed in the empirical literature. Lack of addiction based environmental assessment tools may explain why environmental influences of relapse have been overlooked. The purpose of this study was to assess the validity of a newly developed setting based relapse risk measure. The measure assessed participants perceptions of risk for relapse, exposure to substances, and involvement in reinforcing activities in their home, work, and community settings. Eighty-five participants were interviewed three times over the course of six months. In addition to the setting risk measure, self-efficacy, coping, social networks, addiction problem severity, and relapse data was also collected. Results for the validity of the measure were mixed. The setting risk variable showed the most evidence for its construct, concurrent, and predictive validity. Specific setting (home, work, community) factors were differentially related to other relapse indicators offering support for the measurement approach taken. These findings demonstrate the need for further investigation into the impact of social settings on addiction recovery.

DEDICATION

To Matt

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CHAPTER 1

Introduction

Attempts to explain relapse following substance abuse treatment typically focus on individual factors such as adjustment, motivation, stress, and coping (Marlatt & Gordon, 1985; Shiffman & Wills, 1985). Yet, many addiction theorists acknowledge the importance of lifestyle changes in addiction recovery (Vaillant, 1988; Gorski, 1986; Marlatt & Gordon, 1985; Donovan & Marlatt, 1988) suggesting that environmental factors such as social networks and social settings are also important factors in relapse. Emphasis on these social or environmental aspects of relapse has been limited by the lack of environmental measurement instruments (Tucker, Vuchinich, & Gladsjo, 1991). Thus, researchers are calling for assessment tools measuring social environmental settings (Smith, Frawley, & Howard, 1991; Finney & Moos, 1984; Tucker, et al., 1991; Longabaugh, 1989). These assessments could explain multiple aspects of client functioning (Finney & Moos, 1984) as well as redirect intervention approaches (Smith et al., 1991). The purpose of this study was to: (a) develop a measure of recovering persons' involvements with social settings, and (b) examine the validity of this measurement approach.

Before describing the social setting measure developed and tested in this study, a justification is necessary for the conclusion that this measure is needed. The conclusion that a social setting measure is needed is based on theoretical and empirical grounds. Therefore, the theoretical and empirical relapse literature will be reviewed for the purpose of indicating how social ecologies might be useful in explaining addiction relapse. This is followed by a review of existing social ecology measures in order to provide a rationale for the measurement approach taken in this study. The subsequent paragraph describes how this literature was generated.

Computer searches using Medline, Psychlit, and Sociofile (1976-1993) supplied the references included in the review. The reason for choosing this time period was that the majority of articles related to relapse were not published until the early 1980's; however, a few key studies appeared in the late 1970's thus they were also included. Key words entered were: relapse, relapse prevention, alcohol abuse treatment, drug abuse treatment, environment. From the articles generated, the following guidelines determined whether an article was included. First, theoretical articles about relapse, addiction treatment outcome, and conceptualizations of human environment were included. Theoretical articles about addiction etiology were excluded. Second, due to the enormous nature of the treatment outcome literature, only articles examining

variable of interest to the proposed study were reviewed: coping, social involvements, social networks, and self-efficacy. Studies describing, or matching clients to treatment were not included unless they examined long-term outcome issues. Further, biological studies testing new drug therapies were beyond the scope of this project. Scrutiny of the reference sections of articles generated additional studies.

Organization of the Literature Review

Addiction relapse theories are presented first with particular attention to psychological and environmental influences of relapse and the implications for relapse prevention. In this regard, application of these relapse theories requires that researchers consider measuring environmental variables in addition to psychological variables. Further, the theorized relationships between psychological and environmental constructs provides the basis for hypothesizing how a social ecological measure should be related to other relapse indicators for it to be valid.

Theories of Relapse

Motivational Models

In addiction treatment and self-help settings, client motivation (e.g. denial, hasn't hit bottom) is a frequently used idea to describe why substance users do not succeed at remaining abstinent (Gorski, 1986). While motivation measures predict relapse, they are simplistic in that they

fail to point out specifically why the relapse occurred in order to provide targets for relapse prevention interventions (Wilkenson & LeBreten, 1986; Marlatt, 1977).

Motivation-Conditioning Models

In contrast to individualistic ideas of motivation, motivation-conditioning models employ social learning theory to explain addiction relapse. First, operant principles are used to explain a person's motivation for substance use or reuse. One hypothesized motivator is the idea that substances are used to experience positive effects (Stewart, de Wit, & Eikelboom, 1984); in operant conditioning terms, substances serve as positive reinforcers. Another hypothesized motivator is the idea that substances are used to avoid withdrawal symptoms (Ludwig & Wikler, 1974); this is explained by negative reinforcement as drug use is pleasant because it removes unpleasant withdrawal feelings.

Second, classical conditioning is used to explain the mechanism that triggers a person's desire to experience positive effects or avoid withdrawal. Hypothesized triggers, of either the euphoria or the withdrawal symptoms, are environmental cues. In classical conditioning terms, drug use (unconditioned stimulus) is repeatedly paired with different environmental cues (neutral stimuli) which is followed by the drug's euphoric or withdrawal effects (unconditioned response). Over time, the environmental cues alone (now the conditioned stimuli) elicit the euphoria or withdrawal (now the conditioned response). So, when

recovering substance abusers pass a place where they previously used substances, they experience craving for these substances.

Despite the importance motivation-conditioning models give to the environment, proponents of this theory emphasize relapse prevention interventions that target changing the individual's response to the environment, and not the environment itself, through cue extinction interventions (Tucker, et al. 1991; Childress, Ehrman, McLellan, & O'Brien, 1988; Childress, McLellan, & O'Brien, 1986). This focus on targeting the individual and not the environment is similar to the motivation models described earlier.

Behavioral Choice Model

The behavioral choice model also emphasizes the importance of the environment and ideas of reinforcement to explain relapse. Theories of choice behavior state that: (1) substance use is dependent upon the availability of alternative reinforcing activities; and (2) by examining the reinforcement conditions in a variety of life areas under which substance use becomes the behavior of choice, one would discover that environmental constraints exist that prevent the person from finding reinforcement by other means (Vuchinich & Tucker, 1988; Tucker et al., 1991). The underlying assumption for this theory is that a recovering person will remain abstinent if they have substance free reinforcing activities in their life.

Like the motivational-conditioning theory, the

behavioral choice theory focuses on environmental contingencies. However, instead of relapse prevention interventions attempting to change the individual's response to the environment, supporters of this theory suggest changing the environment to supply new activities that provide the desired euphoric or reinforcing state. Exactly how to assess information about such reinforcing events and how to implement such a change is not clear. Tucker et al. (1991) suggested measuring the frequency of valued life events and interruption of these events by previous substance use. Treatment focus would then be on re-establishing access to these life events. One limitation to this approach is that the reinforcement value of an activity or event varies widely according to the behavior setting in which it occurs (Wicker, 1972). Therefore, the reinforcement value of an event needs to be examined within the behavior settings in which it occurs.

Cognitive-Behavioral Models

The most popular theory regarding relapse is based on Lazarus's (1966) stress-coping model in which substance use is viewed as a coping response to a stressful or risky situation (Marlatt & Gordon, 1985; Annis & Davis, 1988; Shiffman & Wills, 1985; Shiffman, 1989; McCrady, 1989). Psychological processes (cognitions) are considered the primary influences of relapse such as: self-efficacy, positive or negative expectations, and attribution of cause (Marlatt & Gordon, 1985) or life stress, substance use cues,

and problem severity (Shiffman, 1989). Once in a high risk situation, relapse is determined by an interaction between cognition and the availability of coping responses (Marlatt & Gordon, 1985). For example, whether coping responses are used is thought to be determined by the person's self-efficacy or perceived capabilities for executing the coping response. Expectations regarding the consequences of using or not using the coping response as well as expectations surrounding substance use also influence reuse.

Once the person uses alcohol/drugs, their attributions for the cause of this initial use determine future use. Internal attributions are thought to predict reuse whereas external attributions are thought to predict a return to abstinence. Further, cognitive dissonance (e.g., I am an abstainer but I just used) and affective reactions to using (e.g., guilt) are called the "abstinence violation effect" and are hypothesized to predict continued use (Marlatt & Gordon, 1985). While the stress-coping model of the relapse process allows for some environmental impacts of stress, cue, or high risk event on relapse (Marlatt & Gordon, 1985), the environment is given secondary importance as managed through one's cognitions and coping repertoires (Tucker et at., 1991). Thus, interventions springing from these approaches are based on increasing an individual's coping repertoire (Chaney, O'Leary, & Marlatt, 1978).

Family Influence Model

Family influences are given primary attention in the

study of addiction etiology (Fitzgerald, Davies, Zucker, & Klinger, in press) but are seldom mentioned in the relapse area. McCrady (1989) offered a promising expansion of stress-coping theories by including family influences, particularly those of spouses. McCrady noted the importance that significant others have in a substance user's life and hypothesized that the user really faces two high risk situations: (1) the high risk situation itself, and (2) the spouse's reaction to the substance user's relapse or abstinence following the high risk situation. The spouse's coping reaction is thought to depend on similar variables as described under the cognitive-behavioral model. These include: attributions about why the user has quit using; outcome expectancies for the user' relapse; and their own self-efficacy for dealing with the user's relapse. The spouse's coping reaction can either facilitate or attenuate the user's recovery. The user's coping response is affected by expected reinforcement from the spouse for abstinence or expected loss of reinforcement from the spouse for relapsing. Thus, like the cognitive-behavioral model, cognitions are viewed as important and like the behavior choice model, reinforcement is viewed also as important but its source is a person and not an activity. No one to date has explicitly used this specific model as a basis for a relapse prevention intervention. This model, however, is implied in social network therapies that involve providing therapy for substance abusers and their social networks

concomitantly (Galanter, 1987).

Lifestyle Balance Model

Theories by clinicians and researchers as well as self-help ideologies assert that maintenance of sobriety requires a lifestyle change before treatment effects can be sustained (Gorski, 1986; Living Sober, 1975; Marlatt & Gordon, 1985). Substance abusers are renown to live an "addictive lifestyle" of which substance use is only one part. Furthermore, according to Alcoholics Anonymous ideology, former "people, places, and things" can exert negative influences especially on early recovery. Before abstinence can be established users must change their social networks, social activities, and social settings from substance using to primarily non-using (Living Sober, 1975).

Marlatt (1985) espoused a lifestyle balance concept which involved the substance abuser balancing out "shoulds" or obligations, and "wants" or leisure activities in their new sober life. This concept is similar to the behavior choice theory which places importance on the availability of reinforcing activities. For the substance abusers, this involves replacing negative addictions with positive addictions such as exercise or meditation so that the person still has enjoyable "wants" in their life. The emphasis of these lifestyle models is on both psychological (stress, bad habits) and environmental influences (social influences). Surprisingly, few empirically controlled studies have applied this theory. Marlatt (1985) described several case

studies in which the substance user's lifestyle was changed through altering the environment to a lifestyle of activities incompatible with substance use. For example, a person who drank large quantities of alcohol at lunch was directed to take up exercise during lunch instead of frequenting a social setting (restaurant) in which alcohol was present.

Advocacy Models

Advocacy theory has viewed relapse as a function of a shortage of various environmental resources, e.g., social support, income/employment, drug-free recreational activities, etc. (Fagan & Mauss, 1986). The mechanism by which the resources prevent relapse is not made explicit; implicit is the idea that resources buffer life stress. Relapse prevention strategies, according to these models, would include providing a case advocate to assist the person in obtaining resources and eventually empower the person to be their own advocate. As in the behavior choice and lifestyle change models, this model focuses on the environment and not psychological influences of relapse.

Outcomes Implied from Theories

Consistent in all of the above theories is the inclusion of multiples levels of outcomes following substance abuse treatment. While all of the theories described above focus on relapse as a distal treatment outcome, the theories vary according to whether they include proximal outcomes that are psychological or environmental in

nature (Martin & Wilkenson, 1989; Nathan & Skinstad, 1987; Leukefeld & Tims, 1989; Eriksen, Bjornstad, & Gotestam, 1986).

The conditioning and cognitive-behavioral models focus primarily on psychological level outcomes. Proximal outcomes according to the conditioning models are defined as changes in the person's reaction to environmental cues. According to the cognitive-behavioral models, proximal outcomes consist of measuring expectancies, attributions, and coping skills.

The behavioral choice, lifestyle, and advocacy theories focus more on social factors. Proximal outcomes, according to the behavioral choice model, are defined as decreased access to substances and increased access to drug-free pleasurable life activities. Proximal outcome measures based on the lifestyle model would consist of measuring frequency of enjoyable leisure activities, social network sobriety membership, and social setting support for abstinence. For the advocacy relapse model, proximal outcomes include availability of social support, employment, housing, and drug-free recreational activities.

Theory Guiding Present Study

The model guiding this research was a synthesis of the above theories. The central organizing theme was that human behavior, in this case substance abuse, is a product of fit between individual person factors and social environmental factors (Lewin, 1935; Bronfenbrenner, 1979; Pargament,

1986). Further, multiple levels of proximal and distal outcomes determine the relapse process. Thus, relapse following substance abuse treatment was hypothesized as a function of several of the psychological and environmental resources highlighted in the various models discussed (see Figure 1). Psychological resources influencing relapse examined included self-efficacy and coping strategies. These were drawn from the cognitive-behavioral theories. Environmental resources that were hypothesized to influence reuse were various social involvements (social problems, social settings, social networks). These were drawn from the advocacy, conditioning, behavioral choice, and lifestyle theories. Rationale for inclusion of these constructs was also based on their influence on relapse as described by the empirical relapse literature discussed below.

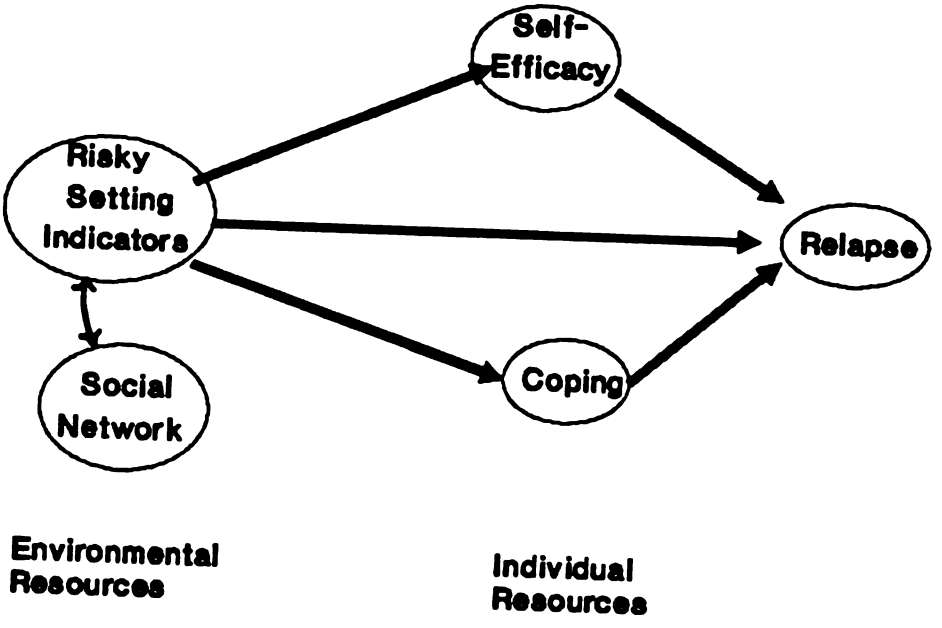

Figure 1. Conceptual model of relapse process.

According to the model proposed, environmental resources (social networks and setting risk indicators) will be correlated. Setting risk indicators are exogenous variables predicting relapse directly and indirectly through coping and self-efficacy. Coping and self-efficacy are endogenous variables, directly predicting relapse. This model provides the conceptual basis for hypothesizing how a social setting measure might be related to other relapse indicators. This model will not be tested as a causal model of relapse since this was beyond the focus of this study which was to determine the validity of the setting risk measure. Before testing the validity of the setting measure in predicting other relapse indicators, the validity of the other indicators in predicting relapse needs to be established. The research describing the relationship between relapse indicators and relapse is grouped into three sections: psychological research, social/environmental research, and comprehensive addiction indices.

Psychological Research and Relapse

Self-Efficacy Studies

According to cognitive-behavior theories, one factor that may be critical in determining whether a person will cope with a risky situation by turning to substance use is self-efficacy (Bandura, 1977; Marlatt & Gordon, 1985). Using retrospective and prospective designs, researchers have determined: that greater self-efficacy was related to lower relapse rates (Yates & Thain, 1985; Barrios & Niehaus,

1985; Walton, 1988); that greater self-efficacy differentiated a person who has a minor lapse from one who has a major relapse (Condiotte & Lichtenstein, 1981); and that greater change in self-efficacy over the course of treatment was more predictive of abstinence following a relapse crisis than those with initial high or low self-efficacy that does not change over the course of treatment (Burling, Reilly, Moltzen, & Ziff, 1989; Brandon, Tiffany, Obremski, & Baker, 1990). Thus, self-efficacy is related to reuse as predicted by the cognitive-behavioral models.

Studies of Self-Efficacy and Coping

Theoretically, self-efficacy is thought to determine whether coping strategies are used. Timmer, Veroff, & Colten (1985) found that under conditions of high stress, persons who had high self-efficacy were less likely to use substances to cope than people with low self-efficacy. However, this study did not examine the impact of self-efficacy on use of other more positive coping strategies.

Coping Studies

Most studies of coping and relapse do not include use of drugs or alcohol as a coping mechanism. Therefore when the coping research is described below, "coping" refers to non-using strategies. A vast number of studies explored the theorized effect of coping and relapse and found that regardless of how coping is measured, it is consistently predictive of abstinence. For example, relapsers score lower on coping measures than do abstainers (Rosenberg,

1983). Other authors found the number of coping responses was predictive of abstinence following a relapse crisis (Bliss, Garvey, Heinold, & Hitchcock, 1989; Litman, Eiser, Rawson, & Oppenheim, 1979); and that perceived effectiveness of coping behaviors were predictive of reuse (Litman et al., 1979; Litman, Stapleton, Oppenheim, Peleg, & Jackson, 1984).

No single coping response was found to be consistently superior to another in preventing relapse; although, Billings and Moos (1983) found that the crucial coping strategy predictive of abstinence was avoidance strategies (along the lifestyle change model). Several authors have noted that abstinence following a potential relapse crisis is influenced by the use of <u>any</u> cognitive-behavioral coping response, regardless of type, as opposed to a specific coping response (Shiffman, 1982; Curry & Marlatt, 1985). No one coping strategy may be universally superior since a particular coping strategy may be more or less effective based on the social situation in which it occurs.

Two studies concluded that their data did not support Marlatt's relapse model in that coping responses executed <u>after</u> an initial slip (lapse) did not predict abstinence or continued use (relapse) (Baer, Kamarack, Lichtenstein, & Ransom, 1989; Brandon, Tiffany, & Baker, 1988). Thus, upon lapsing, other variables may be more potent moderators. In this regard, McCrady's (1989) theory that the user faces a second high risk situation once lapsing, the reaction of the spouse (or other social network members), may apply; the

expectation of the significant other's reaction could determine if user's lapse becomes a relapse. Thus, while evidence is fairly conclusive that coping responses are important determinants of initial lapses, it is not clear if coping determines continued use or relapse.

Studies of Coping and the Environment

Some theorists have acknowledged the importance of environmental variables on facilitating or inhibiting coping responses (Lazarus & Folkman, 1984). Thus, instead of viewing coping from a competence only standpoint, coping was proposed to be mediated by the environment which provides resources, constraints, and demands (Lazarus & Folkman, 1984; Sarason, 1977). Cronkite and Moos (1980) verified this conceptualization among alcoholics by finding the combined effects of coping and intake social resources were better at explaining relapse than coping alone.

Summary of Psychological Studies

Therefore, there is some evidence to support the cognitive-behavioral theories of relapse. Both self-efficacy and coping are predictive of relapse following a high risk situation. Yet, these psychological factors do not exist in a vacuum; they exist in a social setting. It is likely then that the environment interacts with these psychological factors as exemplified by the finding that material resources affect coping responses (Cronkite & Moos, 1980).

Social/Environmental Factors and Relapse

This section documents the theorized influence of social/environmental resources on relapse. Most of the published literature on environmental influences focuses either on social support/network factors or on social setting factors.

Social Support Studies

Research has shown that alcoholics and drug addicts tend to lack social skills and therefore are isolated from mainstream society (O'Leary & O'Leary, 1976). Their entire environment revolves around drug use (Fraser & Hawkins, 1984) so that after treatment, lack of environmental support attenuates recovery (Havassy, Hall, & Tschann, 1986; Page & Badgett, 1984; Joe & Simpson, 1983). Family involvement in treatment (Moberg, Krause, & Klien, 1982), involvement in aftercare support groups (Wallace 1989; Svanum & McAdoo, 1989), and support after treatment facilitates sobriety (Moos & Finney, 1983; Captain, 1989; Mermelstein, Lichtenstein, & McIntyre, 1983).

Most treatment programs recognize the substance user's isolation and prescribe attendance to self-help groups (eg. Alcoholics Anonymous, AA) as settings for supportive sober leisure life (Catalano & Hawkins, 1985; Marlatt & Gordon, 1980). Yet, existing data documenting the benefits of AA are difficult to understand due to sampling bias. Correlational data shows modest support for AA facilitating sobriety maintenance (Williams, Stout, & Erickson, 1986;

Sheeren, 1987; Vaillant, 1988); however several prospective studies have not found such effects (McLatchie & Lomp, 1988; Thurstin, Alfano, & Nerviano, 1987). It could be that AA's positive effects vary according to person variables such as motivation or differential setting variables such as reinforcement.

Research consistently shows that the substance abusers' social network influences relapse; although, the network factor studied varies. While some research suggests that network size is an important influence of relapse (Favazza & Jackson-Thompson, 1984), other research suggests different network factors are important such as perceived support and members' substance use (Rosenberg, 1983; Brown et al., 1989; MacDonald, 1987). For example, in a study of twelve alcoholics, Favazza & Jackson-Thompson (1984) found that those who relapsed significantly reduced their network size as compared to abstainers. This result should be interpreted with caution due to the very small sample size. In studies of larger sample sizes, abstainers retrospectively reported greater perceived support for sobriety than do relapsers although the actual number of contacts was not different (Rosenberg, 1983). Prospectively, relapsers reported associating with pretreatment drug using friends (Brown et al., 1989) or with those non-supportive of sobriety (MacDonald, 1987). Thus, this research provides a basis for concluding that social support and social networks influence relapse.

Social Setting Involvement Studies

Some tangential evidence exists for the impacts of social settings on relapse. Vaillant (1988) concluded that those who remain abstinent were those who change their entire pattern of living, particularly their social structure. Unfortunately, research documenting this conclusion is limited perhaps due to the lack of measures available to measure these lifestyle or environmental setting changes (Tucker et al., 1991).

Moos & Bromet (1977) found that marital and employment stability at intake was related to less behavioral impairment from drinking and better psychological and social functioning at follow-up; they did not examine actual reuse. This highlights the importance of marital and work resources in addiction recovery. Billings and Moos (1983) measured reuse and found that recovering alcoholics had social resources similar to controls while relapsed alcoholics had less positive work, family, and informal support networks. Other studies that have examined vocational rehabilitation (Lowe & Thomas, 1976; Towle, 1974; Page & Badgett, 1984; Wanberg & Horn, 1983), or social/marital involvement (Wanberg & Horn, 1983) have found supportive work and social involvements were consistently predictive of sobriety. These findings support the advocacy model of relapse and suggests that resources are inversely related to reuse.

When specifically examining social setting using the Family Environment Scale (FES) (Moos, 1974), Bromet and Moos

(1977) found at six months that a positive family milieux (high cohesion, low conflict, high support, recreation) at follow-up was related to better outcomes: less behavioral impairment; fewer self-rated problems; and better social and psychological functioning. The most important predictor of functioning was family involvement in active recreation (Moos, Bromet, Tsu, & Moos, 1979) with drinking persons perceiving family leisure time more negatively. Finney, Moos, and Mewborn (1980) however found that only family cohesion was related to less reuse at two year follow-up.

By examining setting using the Work Environment Scale (WES), several studies found that married alcoholics' (who resided with their families) work environments were not related to behavioral impairment, self-rated problem, and social or psychological functioning (Moos & Ingel, 1974; Bromet & Moos, 1977) or reuse (Finney, Moos, & Mewborn, 1980). Among non-married alcoholics, a more positive perception of the work environment was associated with better functioning (Moos & Ingel, 1974; Bromet & Moos, 1977). The authors concluded that location in families may buffer the negative impacts of work environments (Bromet & Moos, 1977)

Social Ecologies and Coping

Cronkite and Moos (1980) found that family environment was related indirectly to reuse through stress and coping. High coping was related to positive family environment and high stress was related to low positive family environment.

Summary of Social/Environmental Studies

These data provide some support for the lifestyle and behavioral choice theories demonstrating the importance of measuring social ecologies both at home and work in order to best explain addiction relapse. Still, social/environmental setting factors (home, work, community) have not been as extensively studied. While the FES and WES are two of the best in measuring different social ecologies they have limited utility since the items are not specific to substance abuse. They also fail to consider the social ecologies of neighborhoods in which the family is embedded and the community in which leisure activities take place.

Comprehensive Addiction Indices

Addiction researchers are calling for comprehensive outcome assessment tools (Eriksen, Bjornstad, & Gotestam, 1986; Leukefeld & Tims, 1989; Wells, Hawkins, & Catalano 1988; Nathan & Skinstad, 1987) especially those tools examining environmental variables (Maisto & Connors, 1988; Moos & Finney, 1983; Maisto & Conners; Tucker et al., 1991). Yet, very few reliable and valid environmentally based addiction measures exist.

Several early attempts at developing comprehensive measures were not successful since these measures were not related to reuse outcome; these measures did not assess environmental factors. They included the Clinical Outcome Score (Schuckit, Morrison, Gold, 1984; Schuckit, Schwei, & Gold, 1986), Background Information Form (Bromet & Moos,

1977), and the Multidimensional Index (Congdon & Holland, 1988). One of the most widely used reliable and valid comprehensive measurement tools is the Addiction Severity Index (ASI); however, the original severity ratings produced were meant as an intake addiction problem assessment, not an outcome measure (McLellan, et al., 1985) so more objective composite scores were developed.

Several studies have investigated whether the ASI composites improve over the course of treatment. Results show trends toward improvement in medical, employment, social, drug, alcohol, legal, and psychiatric status (McLellan, Luborsky, Woody, O'Brien, & Kron, 1981; McLellan, O'Brien, Woody, Luborsky, & Druley, 1982; McLellan, Luborsky, & O'Brien, 1986; Sanchez-Carbonell, Cami, & Brigos, 1988); although, inconsistencies have been found in that improvements have not always been significant (McLellan, Luborsky, & O'Brien, 1986; Lesieur & Blume, 1991; Woody, McLellan, Luborsky, & O'Brien, 1987). These findings may be related to: sample characteristics, e.g., alcoholic or drug addict; low problem composites at intake implying floor effects might limit amount of improvement available to be measured (a higher score indicates more severe problems); type of treatment experienced; follow-up period as improvements following treatment typically dissipate over time.

Improvement in follow-up composite scores is not always related to improvement in alcohol and drug use composites

(McLellan, Woody, Luborsky, O'Brien, & Druley, 1983). A few studies have interrelated the ASI functioning composites to determine if reuse is multidimensional. Using factor-analytic techniques, Kosten, Rounsaville, and Kleber (1987) found that at follow-up, the drug, alcohol, and legal composites were independent of the other four composite areas (medical, family, psychiatric, and employment, social). Alterman, Kushner, and Holahan (1990) performed canonical correlations with difference scores and found that the alcohol and drug use composites were independent of all of the other composite areas. The use of difference scores which compound the unreliability of measures makes confidence in this finding tentative. In another study, pretest alcohol and drug composites were related to the legal composite but not to other areas; at the posttest, both the alcohol and drug composites were related to the psychiatric composites but not to the other composites (McLellan, Luborsky, Woody, O'Brien, & Kron, 1981). Together, these results suggest that the addiction related problems for a group of substance abusers are generally not related and vary with each case.

Only two studies compared the ASI composites to independent measures of reuse. Kosten et al. (1987) found that using difference scores (which are notoriously unreliable) only the drug and legal composites were related to reuse. Kadden, Getter, Cooney and Litt (1989) compared only the psychiatric and employment composites with reuse of

alcohol and found that the psychiatric composite was predictive of reuse; the employment composite was not related to drinking.

In summary, the ASI problem composites typically do show improvement over the course of treatment; when the drug and alcohol composites are compared to the other composites they are generally not related to one another and are not necessarily related to relapse. The variation observed may be because many of the items used in the composite indexes are not directly related to drug or alcohol use such as "having a car available for use" or "net income". Other variables may have more consistent impact, such as the social environment and drug involvement in various work, home, and community settings (Cronkite & Moos, 1980; Moos & Finney, 1983). Alternatively, some argue that the various composites are not correlated because they represent separate dimensions of functioning (Martin & Wilkinson, 1989).

Purpose of the Present Study

The present proposal anticipates filling the gap in the measurement of social settings by producing a reliable and valid multi-setting relapse risk indicators measure. In general, validity of the measure will be determined according to whether it is: (1) related to variables that are predictors of addiction outcomes, (2) related to reuse retrospectively and prospectively, and (3) sensitive to the effects of interventions. The measure will be used as part

of a larger longitudinal study of a skills building social support relapse prevention intervention.

Measurement development

The multi-setting relapse indicator (SRI) measure developed for this study assessed individuals' perceived quality of social involvement in three social settings: work/school, home/residence, and community/leisure. These three settings were chosen to obtain maximum ecological coverage of a person's microsystems (Bronfenbrenner, 1979).

There are several reasons why the measure focuses on a person's perceptions of their social environments and not observation of their behavior settings. First, several prominent theorists argue that the meaning a person gives to different aspects of the environment function is more powerful in determining that person's growth than the objective physical conditions form (Lewin, 1935; Bronfenbrenner, 1979; Perkins, Burns, Perry, & Nielson, 1988) regardless of whether these perceptions are accurate (Wicker, 1987). Further, the measure of environmental attributes requires non-intrusive observers of the physical, temporal, and behavioral aspects of a setting (Wicker, 1972). This is extremely costly and time intensive as well as impractical for substance abusers whose use may take place in private settings, e.g. home (Perkins et al., 1988). For these reasons, a self-report measure was chosen to include the substance users' perception of social setting relapse indicators.

Within each of the three settings (home, work, community) variables included in the SRI were: (1) exposure in setting to drugs or alcohol, (2) perceived risk for relapse in setting, (3) availability of reinforcing activities in the setting (see Table 1). These constructs were based on a synthesis of several ideas from social ecologists regarding the commonalities found in setting; they were then tailored to be salient for addiction recovery. Exposure to substances in a setting is based on the influence of interpersonal connections that take place in settings (Bronfenbrenner, 1979; Moos, 1973); it is also similar to the social network literature. Perceived risk for relapse relates to the stress-coping theories and also acknowledges the influence of role expectations (Bronfenbrenner, 1979). The reinforcement construct is also similar to the lifestyle balance theory, where "shoulds" are equal to "wants" and although the exact label varies, most ecologists note that personal needs, self-enhancement or satisfaction are important aspects of settings (Moos, 1973; Wicker, 1987; Insel & Moos, 1974; Barker, 1963). Setting substance use is merely a physical/behavioral aspects of the environments. The SRI variables can also be combined across setting to create summary domains.

Table 1. Settings and variable domains contained in SRI.

	Variable Domains		
Settings	Setting Risk for Relapse	Reinforcing activities	Exposure to Drugs or alcohol
Home	Home Risk	Home Reinforcing Activities	Home Exposure
Work	Work Risk	Work Reinforcing Activities	Work Exposure
Community	Community Risk	Community Reinforcing Activities	Community Exposure
All settings	Summary Risk	Summary Reinforcing Activities	Summary Exposure

Hypotheses Tested in Present Study

Once again, the purpose of this study was to determine the reliability and validity of a newly developed multi-setting relapse risk indicator measure in the context of a larger longitudinal study of a support group relapse prevention intervention. Validity was examined by analyzing the pattern of relationships with other variables. In addition, the sensitivity of the measure to distinguish change in skill level (between intervention groups) and to show change in relapse status over three and six month posttest assessments were examined. Detailed hypotheses that were tested as part of this research are as follows.

Hypothesis 1. The SRI will demonstrate convergent and discriminant validity. The correlates among the SRI variables, addiction treatment outcome measures, and relapse predictor variables will be in accordance with the expected pattern of relationships. Table 2 lists the predicted relationships between the SRI variables and the other predictor variables.

Hypothesis 2. The SRI variables, summary risk for relapse, exposure to drugs/alcohol, and summary reinforcing activities, will be retrospectively and prospectively related to relapse status. This concurrent and predictive validity relationship will be tested for data at both posttests.

Hypothesis 3. The SRI will be sensitive to the effects of an intervention by distinguishing a relapse prevention support group and a comparison group. The support group is expected to have higher scores on summary reinforcing activities and lower summary risk for relapse and exposure to drugs/alcohol than the comparison group at both posttests. Implied in this hypothesis in the notion that the intervention group will relapse less than the comparison group. This hypothesis will be tested in order to determine whether the intervention had any effect independent of the validity of the SRI.

Table 2. Predicted relationships of SRI summary variables to other relapse indicators.

SRI Variables	Reuse	Family/ Social Probs.	Psychiatric Probs.	Legal Probs.	Employment Probs.	Negative Coping	Non-user Ratio	Sobriety Support	Self-efficacy
Summary Risk	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)	(-)
Summary Exposure	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)	(-)
Summary Enjoyment	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(+)	(+)

Hypothesis 4. **The pattern of relationships suggested in the theoretical model described earlier (in Figure 1) will be supported indicating construct validity.**

CHAPTER 2

Method

Piloting Procedures

All measures, including the setting relapse indicator, were piloted among fifteen substance abusers for clarity, item content, and item distribution across response choices. Pilot subjects were recruited from a local Alano Club using snowball sampling techniques.

Participants

This study reports on the first 85 participants that were recruited from a parent study, the Addiction Relapse Prevention Project. Participants with a diagnosis of schizophrenia or treatment with methadone maintenance were excluded from participating since both of these conditions could affect treatment outcome. The majority of the participants in this sample were male and white. Table 3 provides a more detailed demographic profile of the participants. Information was also collected regarding the participants' substance use histories. Participants' lifetime regular substance use averaged fourteen years and ranged from one year to thirty-five years. Sixty-five percent of participants identified alcohol as their major problem substance; the remainder of the participants

Table 3. Demographic profile of study participants.

Demographic Variables	Participant Profile
Age	$\underline{X}$=36, $\underline{SD}$=9.2, Range=20-60
Gender	65% male
	35% female
Race	71.8% white
	21.2% African American
	7.1% Hispanic
Education	18.8% < 12 years
	51.8% 12 years
	29.6% >12 years
Employment	76% Full-time
	16.5% part-time
	16.3% unemployed
Monthly Income	15.3% $0
	48.2% <=$1000
	27.1% $2000-3000
	9.4% >$3000
Marital Status	22.4% Married
	43.5% Separated, Divorced
	34.1% Never married

identified themselves as having a problem with one or more other drugs. Most participants (55%) had been treated more than once for substance abuse with the number of treatment episodes ranging from two to twenty. Participants' abstinence periods varied: 29% had a month or less; 41% had two to six months; 25% had seven to twelve months; and 6% had thirteen to sixteen months of sobriety.

Recruitment

Most participants were recruited to this study after successfully completing a substance abuse treatment program. Programs varied and participants came from inpatient (28%), outpatient (25%), traffic (16%), and residential (25%) centers. A few participants (6%) were also recruited from Alcoholics Anonymous. Recruitment strategies used were: flyers posted at treatment centers and Alano clubs, referrals from addiction counselors, and group presentations made at treatment centers. At the time of recruitment, a "consent to be contacted" form was signed. Potential participants were contacted after completing treatment by an interviewer to arrange the pretest interview. Before beginning the pretest, an informed consent was presented explaining the study protocol, confidentiality, and all possible risks and benefits of participation. At that time, if the person agreed to participate, the first interview took place.

Design

This study employed a longitudinal quasi-experimental design. The first 40 participants were recruited between February and March of 1992 and assigned to participate in a ten week skills building social support intervention. The remaining participants were recruited in two waves (the first from March to June of 1992, the second from September to January of 1993) and were assigned to the comparison no-additional treatment condition. Attempts were made to interview participants over the course of six months (see procedures).

Procedures

All participants received an initial pretest interview which was followed by participation in the support groups if so assigned. Three months and six months after the pretest, attempts were made to re-interview participants. Each interview lasted approximately two hours. Participants were paid a base rate ($5.00 per hour) for each interview, plus a bonus of five dollars for each consecutive completed interview; the total received upon completion of all interviews was forty-five dollars. All interviews were administered either at the treatment center, the research office, or other location of mutual convenience.

Pretest. Participants were paid ten dollars for this interview. Measures included at this assessment were: addiction severity, coping, social network, self-efficacy, social ecology involvement.

Interim. At each group meeting, attendance was taken in addition to other process information not reported here. Attendance ranged from 0-10 meetings with 45% of the participants attending at least half of the meetings.

Posttest 1. This interview occurred three months after the pretest. Participants received a fifteen dollar compensation for this appointment. Variables measured were identical to the pretest with an addition of a relapse measure, the Timeline Calendar.

Posttest 2. Subjects were interviewed again six months after the pretest. (The rationale for this time period is that research shows the majority of relapses occur by six months post-discharge.) They were paid twenty dollars for completion of this interview. Variables measured were identical to the previous interview.

Tracking. Names and addresses of three significant others was requested at the pretest. In addition, participants were contacted half way between the posttest (month two) and follow-up (month five) via a letter. Additional efforts to increase compliance included: beverages provided at the interviews, postage paid change of address cards, acceptance of collect calls, and business cards stating the project phone number and the date of the next appointment. These efforts resulted in a successful interview completion rate of 92% at the three month interview and 98% at the six month interview.

Intervention Description

Support Program

Overview. The groups met on a weekly basis for two hours for ten weeks. Groups were led by a trained paraprofessional seeking their addiction counselor certification.

Meetings. Each meeting began with the reading of a confidentiality pledge. This was followed by pairs completing forms asking questions about risky situations encountered during the previous week and coping methods that were used. The pairs then shared with the total group. This was followed by an educational exercise (e.g., reading) about addiction recovery selected either by the group leaders or by the participants. Participants then broke up into pairs again and completed anticipated risky situations for the upcoming week; pairs also discussed potential coping mechanisms. This was followed by reporting to the groups. Members next exchanged sobriety support cards containing their name and telephone number. In this manner, it was hoped that the group social support would be carried back into daily living situations. The group closed with general group concerns, the confidentiality pledge, and refreshments. (A video of the group process can be obtained from Dr. Reischl at Michigan State University.)

Standard Treatment Comparison

Participants assigned to this group received any aftercare treatment that was part of the treatment program

from which they were recruited but did not receive any additional treatment from the project.

Measures

For copies of all measures see Appendices.

Descriptive Measures

Demographic information obtained included age, race, education, employment, monthly income, and marital status.

Proximal Outcome Measures

Social Networks. Social support was measured through a social network analysis similar to that of Norbeck, Lindsey, and Carrieri (1981). Social networks were delineated according to four areas: partner, family, friends, professionals, others. (The number of names in the network was not limited.) Questions were then asked of each member's frequency of contact, closeness, extent of drug or alcohol use, and support for sobriety. From these questions, two variables were computed: (1) ratio of the number of non-users to the total number of network members and, (2) mean perceived support for sobriety from network members.

Coping. Participants responded to a twenty-two item scale according to the frequency of the use of coping strategies in response to a high risk situation. This inventory was based on the constructs in the COPE inventory (Carver, Scheler, & Weintraub, 1989). The reliability and validity of the original scale has been demonstrated using test-retest/internal consistency and convergent/divergent

assessments respectively. The revised scale was examined for internal consistency via a factor analysis which yielded a four factor solution: behavioral disengagement, cognitive coping, help seeking, and active-expressive coping (Reischl, Ramanathan, & Nguyen, 1993). The behavioral disengagement factor was used in this study as it best represented "negative" or ineffective coping strategies. Items were removed, however, that included use of drugs or alcohol. The remaining four items ($\underline{a}$=.62) referred to isolation (e.g., be alone for a period of time) and withdrawal from others (e.g., give up trying to reach your goals in the situation).

Self-efficacy. Self-efficacy was measured using a shortened version (twenty-four items) of the 100 item Situational Confidence Questionnaire (Annis, 1982a). The original items were developed from Marlatt's situation categories and were reliably coded in these categories (Annis, 1982b). In order to best represent the original questionnaire, three items were retained from each of the original subscales. The original questionnaire asked clients to rate, in percentages, how confident they are they could resist the urge to use drugs/drink in various situations. For this study the response choices were simplified to a five point Likert scale ranging from "not at all" to "extremely." The revised scale was shown to be internally consistent, $\underline{a}$=.91.

Addiction Severity Index (ASI). This instrument is used to provide composite scores for six problem areas: medical, employment, family/social relationships, drug/alcohol use, legal status, and psychiatric status (McLellan et al., 1985). These composite scores have been shown to be reliable and valid using test-retest and convergent and discriminant methods (McLellan, Luborsky, Cacciola, Griffith, Evans, Barr, & O'Brien, 1985).

Multi-Setting Relapse Risk Indicators.

Social environment was assessed for the past month for three settings: home, work, and community. Within each setting, three variable domains produced were: exposure to substances in the setting, setting risk for relapse, and involvement in reinforcing activities in the setting. Thus, nine specific setting variables were produced (see Table 1). In addition, three summary domains were computed across the settings (see Table 1). Calculation of the specific setting and summary variables in described in detail below.

Home, Work, and Community Risk. Participants were asked two questions about how many days in the last month they: (1) had urges to use drugs or alcohol at (home, work, and community); and (2) felt that they were at risk for relapse when at (home, work, and community). The home risk variable was created by choosing the larger of the two numbers. (Community and work risk were also created this way.) The reason for not summing the two questions was that it was not clear if the urge or risk occurred on the same

day or different days. For this reason a conservative approach was taken by assuming the urge or risk occurred on the same day; thus, the largest number of days was used. For these risk variables, however, response distributions were highly skewed. Thus, home risk, community risk, and work risk were transformed to reduce skewness using an empirical and theoretical rationale. Three risk categories were produced: "0" was coded if no risk days occurred in the last month; "1" was coded if a week (one to seven days) or less of risk occurred; "2" was coded if more than one week (seven days) of risk occurred.

Home, Work, and Community Exposure. Participants were asked two questions about how many days in the last month they: (1) had been offered drugs or alcohol at (home, work, and community); and (2) had someone use drugs or alcohol in front of them at (home, work, and community). The home exposure variable was created by choosing the larger of the two numbers for the identical reasons as described for risk. (Community and work exposure were also created this way.) For these exposure variables, however, response distributions were also highly skewed. As with the risk variables, home exposure, community exposure, and work exposure were transformed to three categories: "0" was coded if no exposure days occurred in the last month; "1" was coded if a week (seven days) or less of exposure occurred; "2" was coded if more than one week (seven days) of exposure occurred.

Home, Work, and Community Reinforcing Activities. For the work setting, participants were asked to describe the activities they did at work in the last month. For the home and community setting, participants responded to a predetermined list of activities in the last month. For each home, work, and community activity they were involved in, participants then rated: (1) how much they enjoyed the activity on a five point Likert scale ranging from "not at all" to "extremely" and (2) how often they did that activity in the last month. Each activity was weighted by multiplying its value by the proportion of time they were involved in that activity in the last month. These weighted activity ratings were then averaged across all the activities in each setting. Thus, the home, work, and community involvement in reinforcing activities variables could range from one to five.

Summary Risk and Exposure. Summary risk and summary exposure were created by summing the specific setting variables (home, work, and community). Since the specific variables were transformed to range from zero to two, summary risk and summary exposure ranged from zero to six.

Summary Reinforcing Activities. Summary reinforcing activities was created by averaging the specific setting variables (home, work, community). Thus, this variable ranged from one to five.

Reliability of the SRI measure was assessed several ways (see Table 4). While using test-retest methods with

brief assessment intervals to assess the reliability of the SRI would have been optimal; this was not done due to practical constraints. Table 4 shows two sets of reliability indicators for the SRI variables. For the specific setting risk and exposure variables, alpha was not computed since these variables only contained one item. Instead, correlations between the two specific setting risk or exposure items were computed. For the reinforcing activities domain, alphas were not computed because each activity was not expected to make up an internally consistent scale. Instead, reinforcement was supposed to vary by activity. Finally, reliability of the risk, exposure, and reinforcing activities variables was also assessed by correlating the pretest and posttest one data (as an approximation of test-retest methods). See results section for reliability and validity data.

Distal Outcome Measures

Substance Use. The timeline calendar protocol was used to examine daily alcohol and drug consumption over the follow-up period using monthly calendars (Sobell, Maisto, Sobell, & Cooper, 1979). Several studies have demonstrated the reliability and validity of this method of assessing drinking behavior using test-retest and convergent methodologies (Maisto, Sobell, Cooper, & Sobell, 1979; Sobell, et al., 1980; Sobell et al., 1979; Maisto, Sobell, & Sobell, 1982; Cooper, Sobell, Sobell, & Maisto, 1981; Sobell & Sobell, 1980). For this study, 72% were abstinent at

Table 4. Correlations: reliability of the SRI variables.

Variable	Internal Consistency	Test-retest
Summary Risk	0.66	0.40**
Summary Exposure	0.49	0.56**
Summary Reinforcing Activities	0.24	0.45**
Work Exposure	0.68**	.35*
Home Exposure	0.57**	.56**
Community Exposure	0.81**	.44**
Work Risk	0.38**	.45**
Home Risk	0.27*	.33**
Community Risk	0.27*	.16
Work Reinforcing Activities	N/A	.27
Home Reinforcing Activities	N/A	.42**
Community Reinforcing Activities	N/A	.41**

* $p<.05$, ** $p<.01$

Note that internal consistency for summary variables is alpha, for the specific setting variables are correlations.

posttest one and 28% relapsed; at posttest two 64% were abstinent and 36% relapsed. Thus, the variable "number of days of substance use" was high skewed. For this reason a dichotomous abstinence/reuse variable was created and used for all analyses.

In addition, the number of days of drugs or alcohol use in each setting was obtained from the multi-setting relapse risk indicator measure. More participants reported using substances at home (17% and 19% at posttests one and two) and in the community (15% and 16% respectively) then at work (5% and 2% respectively). Due to the small number of participants who relapsed in any setting, further analyses examining factors related to reuse in a specific setting (home, work, community) could not be conducted.

Data Analysis

Hypothesis 1. The hypothesized convergent and discriminant validity of the setting relapse indicators measure was examined by generating a Pearson's r correlation matrix. A count was made of the number of times the matrix supported the hypothesized pattern of relationships.

Hypothesis 2. Because of the dichotomous dependent variable reuse, discriminant analyses were used to determine the predictive and concurrent validity of the SRI measure summary domains of risk, exposure, and enjoyment. Discriminant analyses were also computed for the setting variables by each of the domains. Concurrent validity was tested at two time points: posttest 1 and posttest two.

Predictive validity was tested two ways: (1) pretest SRI was used to predict posttest 1 reuse; (2) posttest 1 SRI was used to predict posttest two reuse.

Hypothesis 3. In order to determine whether the SRI was sensitive in change due to either receiving or not receiving the support groups, a repeated measures Multiple Analysis of Variance (MANOVA) was computed for the summary domains (risk, exposure, reinforcing activities) and for the specific setting variables over the three assessments (pretest, posttest one, posttest two). To assess the effectiveness of the support groups on preventing relapse, a Chi-square was computed for participation in the support or comparison group and abstinence or relapse at posttest one and posttest two.

Hypothesis 4. Due to the dichotomous nature of the dependent variable, discriminant analyses were conducted for overall construct validity of the model shown in Figure 1 with setting risk, setting exposure, setting reinforcing activities, coping, and self-efficacy serving as the independent variables and reuse serving as the dependent variable. This analysis was done concurrently at both posttests and prospectively for the two time intervals described in hypothesis two.

Power Analysis

Power was calculated three ways using analysis of variance tables based on sample size and number of independent variables included in the analysis (Cohen,

1992). For most of the discriminant analyses, the sample size was 80 and three independent variables were included; assuming a moderate effect size of .25 (Cohen, 1992), and $\underline{a}$=.05, power was 0.56. (Since a meta-analysis had not been published on the substance abuse treatment outcome literature, the effect size was estimated.) For analyses in which specific work setting variables were included, the sample size was about 60 since some participants were unemployed. For this sample size, three independent variables, a moderate effect size, and $\underline{a}$=.05, power was 0.43. Finally, for the construct validity analyses testing of the conceptual model, the sample size was restricted to about 60 since many participants did not experience a risky situation in which they could describe their coping strategies. For these analyses, five independent variables were entered; assuming a moderate effect size and standard alpha level as above, power was 0.31 for these analyses.

CHAPTER 3

Results

Reliability

Overall reliability results were fair (Table 4). For summary risk and exposure computed alphas were respectable since these scales were based on the three items (specific home, work, and community risk or exposure). Similarly, the test-retest correlations were moderate and significant for summary risk and summary exposure. For summary reinforcing activities, the alpha was low even with the fact that only three items made up the scale. The test-retest correlations, however, were moderate and significant for summary reinforcing activities.

Reliability analyses for the specific settings mirrored those of the summary domains. At the pretest, the two exposure items were highly and significantly correlated for the work, home, and community settings. The test-retest correlations between the pretest and posttest one were moderate and significant for the specific exposure settings. The pretest correlations between the two risk items were lower but significant for the home, work, and community settings. Test-retest correlations for risk were moderate

and significant for the work and home settings but low and non-significant for the community setting. Test-retest correlations for the specific setting reinforcing activities variables were moderate and significant for the home and community setting but were low and non-significant for the work setting.

Hypothesis 1: Construct Validity

Convergent and discriminant validity of the setting relapse indicator variables was assessed by correlating the setting indicators with other relapse indicators. Table 5 shows correlations from data obtained at the pretest between the summary SRI domains (risk, exposure, and reinforcing activities) and other psychological and social indicators of relapse. Greater summary exposure to drugs or alcohol was significantly related to less perceived support for sobriety from network members and to a smaller proportion of non-users in the network. Greater summary risk was significantly related to: relapse, less support for sobriety from network members, and lower self-efficacy. A count was made of the number of times the correlations were in the expected direction. Overall, 5 of 27 (19%) were significant and in the expected direction. Regardless of the significance of the correlation, 17 of 27 (63%) of the correlations were in the expected direction. The correlations among the summary setting risk was significant for three of nine (33%) and in the expected direction for

Table 5. Correlations between SRI summary variables and other relapse indicators.

SEI Variables	Reuse	Family/ Social Problems	Psychiatric Problems	Legal Problems	Employment Problems	Negative Coping	Non-user Ratio	Sobriety Support	Self-efficacy
Summary Risk	.43**	.05	.20	-.01	-.13	.14	-.18	-.31**	-.40**
Summary Exposure	.21	.07	-.11	.01	.05	-.12	-.37*	-.46**	-.12
Summary Reinforcing Activities	-.05	.14	.09	.04	.10	-.24	-.02	.13	-.24

seven out of nine (78%). For the exposure domain, correlations with the other variables was significant for two out of nine (22%) and as expected for seven out of nine (78%). The summary reinforcing activities domain was not significantly correlated with any of the other variables and was correlated in the expected direction for only three out of nine (33%) of the correlations.

In order to determine whether the specific settings (e.g., home) showed that different patterns of relationships with the other relapse indicators, exploratory correlations were generated between the SRI variable domains separated by settings (home, work, community) and the social and psychological variables (Table 6). Overall, the pattern of relationships showed if the summary setting domain was significantly correlated with a relapse indicator, the specific settings also tended to be significantly correlated. Some of the specific settings, however, were uniquely correlated with other relapse indicators. For example, while the summary reinforcing activities domain was not significantly correlated with any of the other variables, home reinforcing activity and work reinforcing activities were significantly correlated with some of the other relapse indicators. A larger home reinforcing activities rating was associated with more family problems and more psychiatric problems. Conversely, a larger work

Table 6. Correlations among SRI settings by domains and other relapse indicators.

Domains by Settings		Sobriety Support	Non-user Ratio	Self-Efficacy	Negative Coping	Reuse
Reinforcing Activities						
	Home	.18	-.01	.09	-.12	-.02
	Work	-.02	-.13	.17	-.43**	.01
	Comm	.07	.01	.26*	-.07	-.06
Risk						
	Home	-.14	-.05	-.38**	.12	.36**
	Work	-.33*	-.13	-.49**	.43**	.41**
	Comm	-.28**	-.20	-.29**	.03	.25**
Exposure						
	Home	-.36**	-.23*	-.22*	.00	.13
	Work	-31*	-.19	-.13	-.04	.19
	Comm	-.30**	-.32**	-.11	-.17	.09

* $p<.05$, ** $p<.01$

Table continues

Table 6 (cont.).

Domains by settings		Family Problems	Legal Problems	Psychiatric Problems	Medical Problems	Employment Problems
Reinforcing Activities						
	Home	.26*	-.10	.23*	-.03	.05
	Work	-.26	.15	-.27*	-.23	-.14
	Comm	.17	.08	.11	.12	.18
Risk						
	Home	-.01	-.04	.15	.19	-.11
	Work	.14	-.14	.34*	.38**	-.02
	Comm	.08	.05	.17	.15	-.02
Exposure						
	Home	.10	-.00	-.03	.11	.07
	Work	-.07	-.10	-.12	-.13	.14
	Comm	.13	.05	-.03	.01	-.000

* $p<.05$, ** $p<.01$

reinforcing activities rating was significantly correlated with less use of negative coping strategies and fewer psychiatric problems. The reason for the differing direction of the relationship between the reinforcing activities variable and psychiatric problem variable according to home or work setting is not clear. A greater perception of risk for relapse at work was associated with more medical problems and psychiatric problems. Greater work risk was also associated with less use of negative coping strategies. A greater perception of work, home, and community risk for relapse was associated with lower self-efficacy and relapse. Only community and work risk were associated with less support for sobriety from network members. High exposure to substances at work, home, and in the community was related to less sobriety support among network members. A low proportion of non-users in the network was related to home and community exposure to substances. A high self-efficacy was related to low home exposure to substances but not to work or community exposure.

Construct validity was also determined by intercorrelating the specific setting risk indicators. Table 7 shows the correlation matrix between the SRI settings and domains. The triangles show the correlations between the home, work, and community settings for each

Table 7. Correlations among home, work, and community settings by variable domains.

	Reinforcing Activities			Risk			Exposure		
	H	W	C	H	W	C	H	W	C
Reinforcing Activities									
Home	_								
Work	-.05	_							
Comm	.37**	-.07	_						
Risk									
Home	-.00	-.11	-.01	_					
Work	-.17	-.11	-.28*	.39**	_				
Comm	-.03	-.04	-.05	.37**	.40**	-			
Exposure									
Home	-.08	-.01	-.01	.26*	.16	.16	_		
Work	-.07	.23	-.11	.04	.29*	.05	.24	_	
Comm	.21*	.21	.01	-.07	.15	.40*	.14	.33*	_

* $p<.05$, ** $p<.01$

Note: H=Home, W=Work, C=Community

domain. The correlations among the settings for the reinforcing activities domain were low for work and home, and, work and community. Home reinforcement and community reinforcement were highly correlated. For the risk domain, all three settings (home, work, community) were highly intercorrelated. For the exposure domain, community and work exposure were significantly correlated; home and work exposure, and, home and community exposure were not significantly correlated. The diagonals in the table show the correlations between similar settings across variable domains (e.g., home risk with home exposure) which can be contrasted with the correlations for different settings on either side of the diagonals (e.g., home risk with community exposure). For the risk and exposure diagonal, each of the settings was significantly correlated with the identical setting (e.g., home risk with home exposure) as opposed to different settings (e.g., home risk with work exposure). For the diagonals correlating reinforcing activities with risk or exposure, the expected pattern of higher correlations among similar settings as opposed to different settings was not supported. For example, home reinforcing activities was more likely to be correlated with community exposure than home exposure.

As a final test of construct validity, the SRI summary variable were intercorrelated. Risk and exposure were significantly correlated (r=.34, p<.01). Reinforcing activities was not significantly correlated with risk

(r=-.19, n.s.) although a trend was observed in the expected direction. Reinforcing activities was not significantly correlated with exposure (r=.07, n.s.).

Hypothesis 2: Predictive and Concurrent Validity.

Because of the dichotomous dependent variable of reuse status (abstinent or relapsed), a series of discriminant analyses were used to test the concurrent and predictive validity of the SRI variables in determining reuse. In all analyses, the F statistic based on Hotellings t-test was used to test the significance of the independent variables in determining relapse status. In addition, standardized discriminant function coefficients and structure coefficients were produced to determine the relative influence of individual variables on relapse status. Because equality of variances is assumed in discriminant analysis, Box M's test was calculated for each analyses to verify that this assumption was met. If this assumption was violated, follow-up analyses were conducted using a procedure that accommodates a dichotomous dependent variable but does not require equal variances: logistic regression.

Concurrent validity was assessed for two time periods. For the first three months, the SRI variables at posttest one were used to distinguish reuse status (abstinent or relapsed) at posttest one. Concurrent validity was also assessed for the second three months as posttest two SRI variables were used to distinguish posttest two reuse status. Predictive validity was assessed by using the SRI

variables to differentiate reuse status prospectively: pretest SRI was used to classify posttest one reuse status (first three months); posttest one SRI was used to classify posttest two reuse status (second three months).

Dependent variables. Reuse at posttest one was simply a dichotomous coding of whether the participant relapsed during the first three month follow-up. Reuse at posttest two was defined as those who used a substance during the second three month period and was independent of relapse status during the first three months. Two participants relapsed during the first three months but were abstinent during the second three months and were classified as abstainers for the posttest two reuse variable; all other abstainers were abstinent for the entire six months. Participants classified as relapsers at posttest two consisted of those who relapsed during the first and the second follow-up periods and those who only relapsed during the second follow-up period.

Independent variables. SRI summary domains (risk, exposure, and reinforcing activities) were first used to determine reuse in the concurrent and predictive analyses. In order to determine the impact of the setting specific SRI variables, discriminant analyses were also performed for the specific setting variables. Due to power limitations, several sets of analyses were done to limit the number of independent variables included in the analyses. Three analyses were conducted to determine which setting was the

largest contributor of the domains. Independent variables were: (1) home risk, work risk, community risk; (2) home exposure, work exposure, community exposure; (3) home reinforcing activities, work reinforcing activities, and community reinforcing activities. Finally, three analyses were done to determine which domain was the largest contributor to the setting's impact. Independent variables were: (1) home risk, home expousre, home reinforcing activities; (2) work risk, work exposure, work reinforcing activities; (3) community risk, community exposure, community reinforcing activities.

Summary risk, summary exposure, summary reinforcing activities. Table 8 shows means, standard deviations, and function and structure coefficients for the discriminant analyses testing the concurrent validity of the summary SRI domains (risk, exposure, reinforcing activities) at both posttests. At posttest two, the summary domains significantly distinguished abstainers from relapsers as indicated by a significant F test; at posttest one, the F test statistic approached significance. In both examinations of concurrent validity, the risk variable had the largest discrimination coefficients. Table 9 shows results from discriminant analyses testing predictive validity of the SRI summary domains over the first three month time interval. The pretest summary domains significantly explained reuse status at posttest one (first three months). The summary risk domain variable had the

Table 8. Discriminant analyses: concurrent validity of SRI and reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Posttest One*					
Summary Risk				.90	.96
	Abstinent	1.21	1.44		
	Relapsed	2.14	1.49		
Summary Reinforcing Activities				-.27	-.39
	Abstinent	3.89	0.50		
	Relapsed	3.76	0.52		
Summary Exposure				.07	.46
	Abstinent	1.30	1.43		
	Relapsed	1.73	1.24		
Posttest Two**					
Summary Risk				.76	.93
	Abstinent	0.85	1.18		
	Relapsed	1.73	1.41		
Summary Reinforcing Activities				-.31	-.42
	Abstinent	3.83	0.50		
	Relapsed	3.65	0.64		
Summary Exposure				.31	.52
	Abstinent	1.06	1.12		
	Relapsed	1.53	1.41		

* Note: n=78: 56 abstinent, 22 relapsed. Hotellings $F(74,3)=2.25$, $p<.10$.

**Note: n=83: 53 abstinent, 30 relapsed. Hotellings $F(79,3)=3.49$, $p<.05$.

Table 9. Discriminant analyses: predictive validity of pretest SRI and posttest one reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Summary Risk				-.94	-.99
	Abstinent	1.40	1.45		
	Relapsed	3.00	1.71		
Summary Reinforcing Activities				-.03	.11
	Abstinent	3.89	0.50		
	Relapsed	3.84	0.41		
Summary Exposure				-.17	-.44
	Abstinent	1.20	1.23		
	Relapsed	1.83	1.61		

Note: n=83: 60 abstinent, 23 relapsed.

Hotellings $F(79,3)=6.12$, $p<.01$.

largest discrimination coefficient. F tests for posttest one summary domains predicting posttest two reuse (second three months) was not significant (F(73,3)=1.26; n.s.).

Specific domains: home, work, and community risk. Concurrent validity was assessed at posttest one and posttest two for each of the settings in the risk domains (home risk, community risk, and work risk) in classifying reuse status (Table 10). At posttest one, the F test was significant and at posttest two the F test approached significance. In both cases, the home risk variable had the largest discrimination coefficient. For posttest two, the Box M's test for homogeneity of the multivariate variance matrices was significant (Box M=25.29, F=3.93, p<.01) indicating inequality of the variance-covariance and pooled variance matrices. Thus, a follow-up analyses was conducted for the risk setting variables, logistic regression, that does not require equal variances. Results from the logistic regression analysis were identical to the discriminant analysis as the overall equation approached significance (Chi-square=6.27, p<.10) and home risk was the most powerful predictor variable. Prospective analyses, showed that pretest home, work, and community risk settings significantly differentiated posttest one reuse status (Table 11). The work risk variable had the largest discrimination coefficient. Posttest one risk settings did not significantly explain posttest two reuse status (F(54,3)=1.54, n.s.).

Table 10. Discriminant analyses: concurrent validity of risk settings and reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Posttest One*					
Work Risk				0.56	0.08
	Abstinent	0.54	0.77		
	Relapsed	0.47	0.74		
Home Risk				-0.99	-0.87
	Abstinent	0.40	0.70		
	Relapsed	1.13	0.83		
Community Risk				-0.26	-0.39
	Abstinent	0.40	0.58		
	Relapsed	0.67	0.62		
Posttest Two**					
Work Risk				0.07	-0.34
	Abstinent	0.31	0.63		
	Relapsed	0.47	0.70		
Home Risk				-0.93	-0.95
	Abstinent	0.36	0.61		
	Relapsed	0.84	0.90		
Community Risk				-0.32	-0.42
	Abstinent	0.24	0.53		
	Relapsed	0.42	0.69		

* Note: n=58: 43 abstinent, 15 relapsed. Hotellings $F(54,3)=4.84$, $p<.01$.

**Note: n=64: 45 abstinent, 19 relapsed. Hotellings $F(60,3)=2.26$, $p<.10$.

Table 11. Discriminant analyses: pretest risk settings predicting posttest one reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Work Risk				-0.74	-0.91
	Abstinent	0.36	0.63		
	Relapsed	1.06	0.90		
Home Risk				-0.39	-0.66
	Abstinent	0.72	0.79		
	Relapsed	1.29	0.85		
Community Risk				-0.14	-0.52
	Abstinent	0.54	0.68		
	Relapsed	0.94	0.83		

Note: n=56: 39 abstinent, 17 relapsed. Hotellings $F(52,3)=4.39$, $p<.01$.

Specific domains: home, work, and community exposure. Home, work, and community exposure did not significantly distinguish abstainers and relapsers in concurrent analyses (for posttest one $F(54,3)=0.67$, n.s.; for posttest two $F(60,3)=1.17$, n.s.). Non-significant results were also found for prospective discriminant analyses using pretest SRI to predict posttest one relapse ($F(52,3)=1.45$, n.s.) and using posttest one SRI to predict posttest two relapse ($F(54,3)=0.47$, n.s.).

Specific domains: home, work, and community reinforcing activities. Home, work, and community reinforcing activities did not significantly distinguish reuse status in concurrent analyses (for posttest one $F(54,3)=0.41$, n.s.; for posttest two $F(60,3)=0.70$, n.s.). Non-significant results were also found for prospective discriminant analyses using pretest SRI to predict posttest one relapse ($F(51,3)=0.19$, n.s.) and using posttest one SRI to predict posttest two relapse ($F(50,3)=1.05$, n.s.).

Specific settings: home risk, home exposure, home reinforcing activities. Home risk, exposure, and reinforcing activities significantly identified reuse status concurrently at both posttest one and posttest two (Table 12). In both cases, home risk had the largest discriminant coefficients. Prospectively, pretest home risk, exposure, and reinforcing activities significantly predicted posttest one reuse (Table 13). As in the concurrent assessments, home risk had the largest discrimination coefficients.

Table 12. Discriminant analyses: concurrent validity of home setting and reuse.

Domain	Status	X	SD	Standard Coefficent	Structure Coefficent
Posttest One*					
Home Risk				0.95	0.98
	Abstinent	0.41	0.65		
	Relapsed	1.14	0.83		
Home Reinforcing Activities				-0.14	-0.17
	Abstinent	3.99	0.53		
	Relapsed	3.89	0.55		
Home Exposure				0.15	0.33
	Abstinent	0.30	0.66		
	Relapsed	0.55	0.80		
Posttest Two**					
Home Risk				1.06	0.98
	Abstinent	0.34	0.59		
	Relapsed	1.03	0.81		
Home Reinforcing Activities				0.00	-0.28
	Abstinent	3.90	0.61		
	Relapsed	3.71	0.67		
Home Exposure				-0.23	0.16
	Abstinent	0.36	0.65		
	Relapsed	0.47	0.68		

* Note: n=78: 56 abstinent, 22 relapsed. Hotellings $F(74,3)=5.64$, $p<.01$.

**Note: n=83: 53 abstinent, 30 relapsed. Hotellings $F(79,3)=6.90$, $p<.01$.

Table 13. Discriminant analyses: pretest home setting predicting posttest one reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Home Risk				0.97	0.99
	Abstinent	0.68	0.75		
	Relapsed	1.35	0.83		
Home Reinforcing Activities				-0.05	-0.05
	Abstinent	3.96	0.61		
	Relapsed	3.93	0.56		
Home Exposure				0.09	0.33
	Abstinent	0.37	0.64		
	Relapsed	0.57	0.84		

Note: n=83: 60 abstinent, 23 relapsed. Hotellings $F(79,3)=4.06$, $p<.05$.

Similar trends were observed in prospective analyses where posttest one home variables were used to identify posttest two reuse status; F tests approached significance ($F(73,3=2.42$, $p<.10$).

Specific settings: community risk, community exposure, community reinforcing activities. Results from concurrent analyses of community variables (risk, exposure, and reinforcing activities) in classifying participants' relapse status were significant at posttest two (Table 14). The community reinforcing activities variable had the largest discrimination coefficients. At posttest one, the F test of community variables and relapse status approached significance (Table 14). Community reinforcing activities had the largest standardized function coefficient but did not have the largest structure coefficient; instead, all three community variables, risk, reinforcing activities, and exposure, were equally large. Non-significant results were also found for prospective discriminant analyses using pretest community variables to predict posttest one relapse ($F(79,3)=2.15$, n.s.) and using posttest one community variables to predict posttest two relapse ($F(72,3)=0.81$, n.s.).

Specific settings: work risk, work exposure, work reinforcing activities. Work risk, work exposure, and work reinforcing activities did not significantly differentiate abstainers and relapsers concurrently at either posttest ($F(53,3)=0.14$, n.s.; $F(60,3)=0.86$, n.s.). Since Box M's

Table 14. Discriminant analyses: concurrent validity of community setting and reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Posttest One*					
Community Risk				0.58	0.64
	Abstinent	0.42	0.57		
	Relapsed	0.68	0.65		
Comm. Reinforcing Activities				-0.66	-0.55
	Abstinent	4.11	0.58		
	Relapsed	3.85	0.85		
Community Exposure				0.42	0.63
	Abstinent	0.64	0.70		
	Relapsed	0.96	0.79		
Posttest Two**					
Community Risk				0.27	0.41
	Abstinent	0.25	0.52		
	Relapsed	0.41	0.63		
Comm. Reinforcing Activities				-0.78	-0.70
	Abstinent	4.08	0.64		
	Relapsed	3.72	0.88		
Community Exposure				0.59	0.58
	Abstinent	0.42	0.61		
	Relapsed	0.69	0.71		

* Note: n=77: 55 abstinent, 22 relapsed. Hotellings $F(73,3)=2.46$, $p<.10$

**Note: n=81: 52 abstinent, 29 relapsed. Hotellings $F(77,3)=3.11$, $p<.05$.

test for the posttest two analysis was significant, violating the assumption of equal variances, a follow-up logistic regression was conducted. Results were identical (Chi-square=4.75, n.s.). Prospectively, pretest work variables significantly categorized participants' reuse status at posttest one (Table 15). Work risk had the largest discriminant coefficients. The F test was not significant however for posttest one work variables determining posttest two reuse status ($F(50,3)=1.78$, n.s.).

Hypothesis 3: Sensitivity to Interventions

Before testing the effects of participation in the support groups on the SRI variables, analyses were conducted to determine the impact of the groups on relapse (e.g., to test the validity of the intervention). A Chi-square was computed to determine the effects of participation in the support groups on relapse. At posttest one, the support group tended to have fewer persons relapse than the comparison group (Chi-square=3.50, $p<.10$). At posttest two, the two groups were not significantly different in respect to the number of persons who relapsed (Chi-square=2.01, n.s.). Thus, the groups did not substantially influence relapse. Despite the apparent weakness of the support groups, analyses were still conducted determine if the groups effected the SRI variables.

Repeated measures analysis of variance was used to determine group, time, and interaction effects of group assignment on the SRI variables over the three assessments.

Table 15. Discriminant analyses: work setting predicting posttest one reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Work Risk				-1.03	-0.98
	Abstinent	0.37	0.63		
	Relapsed	1.06	0.90		
Work Reinforcing Activities				-0.18	-0.03
	Abstinent	3.51	1.87		
	Relapsed	3.54	0.92		
Work Exposure				0.11	-0.19
	Abstinent	0.40	0.68		
	Relapsed	0.53	0.80		

Note: n=83: 38 abstinent, 17 relapsed. Hotellings $F(51,3)=3.54$, $p<.05$.

Table 16 shows the means, standard deviations, and F tests associated with the repeated measures analysis of variance for the SRI summary domains. For summary risk domain, both the support and comparison groups' showed a significant decline in perceived risk over time as indicated by the significant F test for the time effect. For the summary reinforcing activity domain, both groups tended to decline over time but the F test associated with this effect was not significant. No other significant group, time, or interaction effects were observed for the three summary domains.

Similarly, repeated measures analysis of variance analyses were conducted for the separate settings for the risk, exposure, and reinforcing activities domains. The significant time effect for the summary risk domain described above resulted from declines in risk in the home and work settings and not the community setting (Table 17). In addition, when separating out the different settings, the comparison group had significantly greater home risk than the support group. A similar trend was observed for community risk however this was not significant. Table 18 shows similar home, work, and community exposure setting data for the two groups. Although none of the summary exposure F tests were significant, a trend towards a time effect for the work setting was evident with both groups showing a slight decline over time. A trend towards an interaction effect was also observed for exposure at home as

Table 16. Means and standard deviations for summary SRI domains for support and comparison groups across three assessments.

Outcome Variable		n	Assessment Period						F Tests		
			Pretest		3 month follow-up		6 month follow-up		Group Effect	Time Effect	Group X Time Effect
			X	SD	X	SD	X	SD			
Summary Risk	Support	37	1.49	1.57	1.24	1.46	1.14	1.25	2.65	7.01**	1.72
	Comparison	40	2.28	1.74	1.67	1.54	1.23	1.46			
Summary Exposure	Support	37	1.00	1.00	1.27	1.48	1.22	1.16	1.16	1.08	2.04
	Comparison	40	1.55	1.39	1.55	1.30	1.20	1.27			
Summary Rein. Activities	Support	37	3.87	0.44	3.84	0.48	3.80	0.52	0.03	2.84°	0.81
	Comparison	40	3.89	0.51	3.88	0.54	3.70	0.57			

° $p<.10$

*=$p<.05$, **=$p<.01$

Table 17. Means and standard deviations for risk settings for support and comparison groups across three assessments.

Outcome Variable		n	Assessment Period						F Tests		
			Pretest		3 month follow-up		6 month follow-up		Group Effect	Time Effect	Group X Time Effect
			X	SD	X	SD	X	SD			
Home Risk	Support	37	0.76	0.80	0.35	0.63	0.51	0.73	6.07*	4.59*	1.64
	Comparison	40	1.00	0.82	0.88	0.82	0.68	0.76			
Community Risk	Support	37	0.43	0.75	0.62	0.81	0.48	0.75	0.00	0.87	2.00
	Comparison	40	0.70	0.87	0.45	0.76	0.35	0.67			
Work Risk	Support	37	0.43	0.69	0.41	0.55	0.27	0.51	3.68°	6.85**	1.80
	Comparison	40	0.80	0.66	0.54	0.60	0.31	0.57			

° $p<.10$ *=$p<.05$, **=$p<.01$

Table 18. Means and standard deviations for exposure settings for support and comparison groups across three assessments.

Outcome Variable		n	Assessment Period						F Tests		
			Pretest		3 month follow-up		6 month follow-up		Group Effect	Time Effect	Group X Time Effect
			X	SD	X	SD	X	SD			
Home Exposure	Support	37	0.27	0.56	0.30	0.66	0.46	0.73	0.77	0.11	2.81*
	Comparison	40	0.55	0.78	0.45	0.75	0.35	0.58			
Community Exposure	Support	37	0.29	0.56	0.43	0.81	0.43	0.81	0.00	0.09	0.63
	Comparison	40	0.45	0.69	0.40	0.68	0.30	0.66			
Work Exposure	Support	37	0.57	0.56	0.60	0.73	0.40	0.55	2.28	2.81*	0.04
	Comparison	40	0.72	0.72	0.80	0.73	0.59	0.71			

* $p<.10$ *=$p<.05$, **=$p<.01$

the support groups' exposure increased over time and the comparison groups' exposure at home decreased over time. Finally, work reinforcing activities showed a trend toward a time effect with both groups scores declining over the follow-up period (Table 19).

Hypothesis 4: Conceptual Model

Because of the dichotomous dependent variable of reuse, a series of discriminant analyses were used to test the overall construct validity of the conceptual model presented in Figure 1. No attempts were made to test the indirect and direct effects hypothesized in the conceptual model since this was not the central focus of this study. Additionally, the small sample size and dichotomous dependent variable of relapse would have made this difficult. Variables that were included in the discriminant analyses were the: (1) summary SRI variable domains (risk, exposure, reinforcing activities), (2) self-efficacy, (3) negative coping. Social network variables were not included in these analyses since these network variables were not hypothesized to mediate the effects of SRI on reuse. The model was tested concurrently by using the SRI variables at posttest one to determine reuse status at posttest one and by using posttest two SRI variables to determine posttest two reuse status. The model was tested prospectively by using the: pretest SRI variable to predict posttest one reuse status (first three months); posttest one SRI to predict posttest two reuse status (second three months).

Table 19. Means and standard deviations for reinforcing activities settings for support and comparison groups across three assessments.

Outcome Variable		n	Assessment Period						F Tests		
			Pretest		3 month follow-up		6 month follow-up		Group Effect	Time Effect	Group X Time Effect
			X	SD	X	SD	X	SD			
Home Reinforcing Acitivites	Support	37	3.27	0.94	3.20	0.98	3.08	1.10	2.65	0.69	0.03
	Comparison	40	3.69	1.20	3.54	0.93	3.46	0.72			
Community Reinforcing Activities	Support	37	4.11	0.55	4.01	0.65	4.06	0.76	0.45	0.85	1.26
	Comparison	40	4.01	0.69	4.06	0.72	3.86	0.76			
Work Reinforcing Activities	Support	37	3.95	0.58	3.97	0.56	3.86	0.60	0.02	2.86*	0.31
	Comparison	40	3.99	0.59	3.97	0.52	3.78	0.68			

* $p<.10$*=$p<.05$, **=$p<.01$

Tables 20 and 21 show the concurrent discriminant analyses for posttest one and posttest two model variables distinguishing relapse status. In both analyses, F tests were significant. For posttest one, negative coping had the largest discrimination coefficients followed by self-efficacy. However, Box M's test was significant for posttest one (Chi-square=23.32, $p<.05$). Thus, a logistic regression was performed indicating similar overall significant results (Chi-square=14.73, $p<.05$). Posttest one coping and self-efficacy were the two significant variables as indicated by the Wald statistic. For posttest two, self-efficacy had the largest discriminant coefficients followed by summary risk. Prospectively, pretest model variables significantly predicted posttest one relapse status; self-efficacy and summary risk had the largest discriminant coefficients respectively (Table 22). Posttest one model variables did not significantly predict posttest two relapse status ($F(41,5)=0.89$, n.s.).

Table 20. Discriminant analyses: concurrent validity of conceptual model and reuse at posttest one.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Self-efficacy				-0.61	-0.43
	Abstinent	3.03	0.79		
	Relapsed	2.58	0.78		
Negative Coping				0.84	0.72
	Abstinent	0.56	0.66		
	Relapsed	1.28	0.92		
Risk				0.19	0.49
	Abstinent	1.55	1.56		
	Relapsed	2.53	1.36		
Reinforcing Activities				-0.23	-0.34
	Abstinent	3.94	0.54		
	Relapsed	3.70	0.52		
Exposure				-0.20	0.16
	Abstinent	1.36	1.45		
	Relapsed	1.67	1.29		

Note: n=48: 33 abstinent, 15 relapsed. Hotellings $F(42,5)=3.43$, $p<.05$

Table 21. Discriminant analyses: concurrent validity of conceptual model and reuse at posttest two.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Self-efficacy				0.74	0.85
	Abstinent	3.30	0.76		
	Relapsed	2.62	0.91		
Negative Coping				0.14	-0.17
	Abstinent	0.75	0.84		
	Relapsed	0.89	0.85		
Risk				-0.46	-0.70
	Abstinent	0.97	1.24		
	Relapsed	1.88	1.45		
Reinforcing Activities				0.05	0.31
	Abstinent	3.85	0.53		
	Relapsed	3.68	0.59		
Exposure				-0.17	-0.36
	Abstinent	1.09	1.24		
	Relapsed	1.56	1.47		

Note: n=59: 34 abstinent, 25 relapsed. Hotellings $F(53,5)=2.54$, $p<.05$

Table 22. Discriminant analyses: pretest conceptual model predicting postest one reuse.

Domain	Status	$\bar{X}$	SD	Standard Coefficent	Structure Coefficent
Self-efficacy				0.76	0.76
	Abstinent	3.06	0.72		
	Relapsed	3.37	0.66		
Negative Coping				-0.10	-0.18
	Abstinent	0.73	0.85		
	Relapsed	0.93	0.88		
Risk				-0.51	-0.67
	Abstinent	1.93	1.44		
	Relapsed	3.17	1.43		
Reinforcing Activities				-0.25	0.21
	Abstinent	3.92	0.47		
	Relapsed	3.80	0.35		
Exposure				-0.33	-0.37
	Abstinent	1.34	1.26		
	Relapsed	2.00	1.57		

Note: n=59: 41 abstinent, 18 relapsed. Hotellings $F(53,5)=3.93$, $p<.01$

CHAPTER 4

Discussion

Evidence for the validity of using social setting influences to understand relapse was mixed. This may indicate that the measurement approach taken in this study requires refinement, that social setting indicators are not consistent determinants of relapse, or that design imperfections prevented consistent detection of setting impacts on relapse. A key finding, however, was that a recovering person's perception of risk for relapse in a setting is an important determinant of abstinence or reuse of alcohol or drugs. Additionally, negative aspects of settings, such as perceived risk for relapse and exposure to substances, were more frequently related to relapse than positive setting attributes, such as providing access to reinforcing activities. Finally, home, work, and community settings were often differentially related to other relapse indicators. This finding is important in that it may suggest that settings have distinct characteristics that uniquely effect relapse. Examination of specific setting factors, therefore, could serve as a useful technique for targeting relapse prevention interventions. The following discussion of specific construct, concurrent, and predictive

validity tests provides justification for sanctioning further investigation into setting based determinants of relapse.

Reliability

Reliability of the SRI measure could not be precisely assessed in this study due to practical constraints and the types of questions asked. Some evidence exists, however, for the accuracy of the setting indicator variables. Internal consistency for setting risk and setting exposure across all settings was promising considering that these domains only contained three items and internal consistency analyses are somewhat dependent on the number of items in the scale. Results of internal consistency analyses for setting reinforcing activities was not favorable. Results from analyses for specific setting risk and exposure indicators, however, provided some evidence for their internal consistency.

Applying test-retest procedures to assess the reliability of the setting indicators became convoluted when the setting indicators may change across time in relation to relapse. This problem could have been resolved by using brief measurement intervals. Since this was not possible, an attempt was made to approximate test-retest reliability by comparing the pretest setting indicators to the first posttest. Especially due to the length of the assessment interval, three months, test-retest comparisons provided some confidence in the dependability of the specific setting

indicators. Except for risk for relapse in the community setting and involvement in reinforcing activities at work, test-retest comparisons for the remaining specific risk, exposure, and reinforcing activities setting indicators were encouraging. Future studies should provide more conclusive evidence for the reliability of the setting relapse indicators.

Construct Validity

Results of correlational analyses provided some evidence supporting the discriminant and convergent validity of SRI. When comparing the summary risk, exposure, and reinforcing activities, to other known psychological and social predictors, some evidence was found for the construct validity of setting risk and setting exposure. To illustrate, involvement in settings that were risky or that provided exposure to drugs and alcohol were related to relapse. These settings were also associated with having fewer proportions of people that did not use substances and less social support for sobriety. Similarly, involvement in risky settings or those in which substances were available was related to lower self-confidence in remaining sober. Not astonishingly, setting risk and exposure were also related. Involvement with reinforcing activities in a setting was not a robust predictor of relapse or most other indicators of relapse. Thus, reinforcing activities in settings did not tend to demonstrate construct validity. It is not surprising then that setting risk and setting

exposure to drugs or alcohol were not associated with involvement in reinforcing activities.

While exploratory, findings for specific setting attributes and other psychological and social relapse indicators and intercorrelations among setting indicators have several interesting implications. First, some indication was detected for the stability of a recovering person's lifestyle regardless of setting. For example, if a relationship was observed between setting risk or exposure across all settings and the relapse indicator (as described above), all three setting specific variables (home, work, community) and the relapse indicator tended also to be associated. Upon examination of the pattern of relationships across home, work, and community settings for risk for relapse and exposure to substances, a similar conclusion was reached as they were consistently related. Thus, the newly recovered person's settings may be risky or alcohol and drug laden as a result of their former "addictive" lifestyles (Gorski, 1986). This finding may imply that specific settings are not important to examine in lieu of more general lifestyle factors.

This conclusion is contraindicated however based on the finding that some of the specific settings factors (i.e., involvement in reinforcing activities at work) were associated with relapse indicators (i.e., less use of negative coping strategies), while the same factor in a different setting was not substantial (e.g., involvement in

reinforcing activities in the community and the use of negative coping strategies). If only general lifestyle factors were examined, this information would have been diluted and perhaps lost when setting factors are averaged across settings.

In a similar fashion, involvement with reinforcing activities in one setting was not necessarily related to involvement with reinforcing activities in another setting. For example, while involvement in reinforcing activities at home was related to involvement with reinforcing activities in the community, participation in reinforcing activities at work was not related to reinforcement in the home or community settings. Again, these data may offer support for the inclusion of setting specific data collection methods as a home lifestyle may be different than a work lifestyle.

A final implication discerned from the interrelationships among settings is that individual settings have comparable attributes. This conclusion is based on the finding that relationships between constructs within setting (e.g., home risk with home exposure, work risk with work exposure, and community risk with community exposure), tended to be more consistent than those across settings (e.g., home risk with work exposure). This result was only true for risk and exposure in a setting; it was not seen for involvement with reinforcing activities in a setting. This finding may substantiate the validity of the

measurement approach as participants appeared to be able to distinguish settings.

Concurrent Validity

Similar to results regarding the construct validity of the setting relapse indicators, evidence for concurrent validity was also mixed depending on the specific setting construct examined. Irrespective of the assessment (the three month or six month posttest), results for concurrent validity tests were nearly identical. For all concurrent analyses, hypotheses were supported in that the abstainers had lower risk and exposure scores and higher reinforcing activities scores.

More specifically, setting risk for relapse, exposure to drugs or alcohol, and involvement in reinforcing activities across settings, were highly indicative of relapse for parallel time intervals. Setting risk was the most powerful determinant of abstinence or relapse. Upon inspection of follow-up analyses for specific setting risk, specific setting exposure, and specific setting involvement in reinforcing activities, it was apparent that only setting risk was a consistent relapse determinant. Home risk best distinguished abstainers and relapsers (as compared to work risk and community risk).

An analogous theme emerged from follow-up analyses by setting. When examining setting indicators for each setting, home and community setting characteristics demonstrated concurrent validity by distinguishing relapse;

the work setting did not. In the home setting, risk was the most influential variable. In the community setting, risk, exposure, and reinforcing activities were comparably influential. In these analyses, the home and community settings emerged as the most important settings for determining relapse. It was not surprising that the home and community setting were most predictive of relapse since more people reported using substances in the home or community settings than at work.

Combined, these data suggest that the perception of risk for relapse in the home setting is the most valid predictor of abstinence or relapse during similar time periods. The only concurrent evidence for considering exposure and reinforcing activities as important for understanding relapse is suggested by the parallel impact of these constructs and risk in the community setting.

Predictive Validity

Predictive validity was differentially supported by the various setting influences depending on the variable considered, setting it occurred in, and time interval over which relapse was predicted. Overall, pretest setting indicators typically determined reuse prospectively for the first three months of the study. The setting indicators, however, did not determine relapse status for the second three months of the study. It could be that setting attributes are more important determinants of relapse early in recovery as the recovering person adjusts to old

environments with a new sober persona. Later in recovery setting attributes may not influence relapse. As the person accommodates to the surroundings, setting variables such as risk and exposure may no longer be influential; instead, other factors may become important in determining relapse. Since the sobriety time of the participants varied, this post-hoc explanation requires replication.

For the initial three month interval, the question remains as to which settings and indicators were effective in predicting relapse. When considering setting risk, exposure, and involvement in reinforcing activities simultaneously across settings, evidence for their predictive validity was observed as they dependably anticipated relapse. Once again, setting risk was the most potent determinant of relapse.

Results for the analysis including pretest home risk, work risk, and community risk were also useful in classifying abstainers and relapsers. The relative importance of specific indicators was unexpected in that work risk was the most powerful discriminating variable, followed by home risk. This finding is in contrast to the concurrent analyses in which home risk was the most powerful variable.

In follow-up analyses by setting, the social indicators measured in the work setting appropriately determined reuse at three months; work risk was clearly the most important variable. Identical results were found for setting

indicators in the home setting as they reliably determined reuse with home risk being the largest contributor. The distinction of whether home or work risk influenced relapse status may be a result of other factors not examined in these analyses. For example, research has found that an alcoholic's perception of the work environment only influenced functioning for those who were not married (Moos & Ingel, 1974; Bromet & Moos, 1977). Thus, whether a recovering person's risk perception is greater at home or at work, and whether this determines relapse, may be buffered by other influences. The community setting attributes did not appear to prospectively determine relapse.

A final implication is apparent from many of the results of the previous construct, concurrent, and predictive validity tests showing the differential importance of home, work, and community settings. Some settings may be riskier than others in precipitating relapse. This finding is consistent with Marlatt and Gordon's belief in high risk situations (Marlatt & Gordon, 1980). While situational data show that most relapses occur under negative emotional states or during social pressure (Marlatt & Gordon, 1985), in this study setting data established that overall relapse is best explained by examining qualities of the home setting.

Sensitivity to Interventions

Before examining whether participation in support groups impacted social settings, the validity of the

intervention in effecting relapse was assessed. It is not clear if the support groups influenced relapse since the number of people who relapsed was small, random assignment was not used, and attendance to the support group was varied. Despite these limitations, those who attended the support groups tended to relapse less than the comparison groups. However, this may have been due to individual differences (such as sobriety time) rather than impacts of the support group itself. For the purposes of this study, the answer to the question of whether those who participated in the support group experienced changes in their social environments is "no". Some initial differences between the support and comparison groups' settings were found. The comparison group experienced greater risk for relapse at home than the support group. Both groups' risk perceptions tended to decline over time. This may suggest that risk perception declines as sobriety time increases. This could result either from increased confidence resulting in lower perceptions of risk or of fewer social situations occurring that were risky. It is possible that more robust relapse prevention interventions could impact social settings. When assessing the sensitivity to interventions, the setting relapse indicator measure might be more effectively examined with interventions that target changing the substance users' social environments.

Conceptual Model

Results testing the conceptual model provided some final evidence for the construct validity of perceived setting risk in understanding relapse. Combined, setting risk, setting exposure, setting involvement in reinforcing activities, coping, and self-efficacy significantly explained relapse concurrently at both posttests. As hypothesized, relapsers had lower self-efficacy, lower reinforcing activities, higher use of negative coping, and greater risk and exposure ratings. Interestingly though, different constructs emerged as the largest contributors to relapse at the two posttests. At the first posttest, negative coping (e.g., isolation) was the strongest variable. This was followed by summary risk and self-efficacy as the next largest contributors. At the second posttest, self-efficacy was the largest contributor. This was followed by summary risk, and then exposure and reinforcing activities. Negative coping had very low discrimination coefficients. It may be that relapse determinants changes as sobriety time increases.

The model was also validated prospectively, as pretest model variables significantly predicted posttest one relapse status. Self-efficacy was the greatest contributor to distinguishing relapse followed by setting risk, setting exposure, setting reinforcing activities, and coping respectively. As before, other prospective analyses for the

entire six month interval or, for the second three month interval, were not consequential.

These findings partially support the cognitive behavioral model of relapse and the empirical literature showing self-efficacy was an important determinant of relapse (Marlatt & Gordon, 1985; Condiotte & Lichtenstein, 1981; Yates & Thain, 1985). However, coping's effect on relapse is not clear from this data. Previous studies have not examined the effects of negative coping strategies but assume all coping to have some benefit and that no response is superior to another (Shiffman, 1982; Curry & Marlatt, 1985; Billings & Moos, 1983). The finding that setting risk was a powerful determinant of relapse may justify measuring setting variables in addition to psychological variables to better understand relapse.

Methodological Concerns

Results of this study are limited by two types of methodological concerns: design problems and measurement problems. Diversity in the sample on sobriety time, addiction treatment history, drug of choice, etc., made interpretation of the these results more difficult. Future studies are warranted that examine the psychometric properties of this measure while better controlling these within group variances. Power was low in this study possibly resulting in Type II error (missing an effect). The fact that some of the results were significant, despite

this, may indicate that the true impact of setting indicators was under-estimated.

Generalization of these findings to the population of addicted persons in recovery is compromised by the fact that the majority of persons in this sample remained abstinent. This is in direct contrast to the relapse literature which reports relapse rates of seventy-five percent (Brownell, Marlatt, Lichenstein, & Wilson, 1986; Hunt, Barnett, & Branch, 1971). The sample in this study appeared to be made up of persons having extensive psychological or environmental resources. This is further evidenced by the distribution of the setting relapse indicators as many participants had no risk or exposure situations in their environment; participants also had appeared to have access to reinforcing activities in their settings as on average they "very much enjoyed" these activities. Again, the significant results found even with the restriction in variance, increases the confidence in the these results.

Summary and Conclusions

While these results are considered a preliminary attempt at examining the influence of addiction specific setting factors on relapse, results clearly substantiate further research into setting based determinants of relapse. Unfortunately, for this study reuse in specific settings could not be examined in relation to relapse indicators. Future studies with larger samples of persons who relapse

could examine the link between a setting indicator and relapse in the setting.

While some evidence for the validity of the measurement approach used and for the validity of the risk and exposure constructs, several revisions are suggested. For the risk construct, it might be useful to ask an open-ended question about on what participants are basing their risk perceptions. For the exposure construct, questions regarding whether the persons using in front of the participant was using the participant's drug of choice are recommended. Also, whether other persons present in the setting were supportive of substance use or of abstinence should also be included.

While involvement in reinforcing activities should conceptually buffer the effects of other variables on relapse (as proposed in the lifestyle and behavioral choice theories), this construct lacked validity experimentally. This may be due to the way this construct was operationalized or it may be that positive effects do not influence relapse as strongly as negative effects such as perceived risk or exposure. These two explanations should be investigated by refining the definition of involvement in reinforcing activities in other ways to better capture how this variable might influence relapse. Revised questions might focus on changes in reinforcing activities to those that are substance free. These questions might only be asked for activities that are really important, reinforcing,

and those in which the person is invested as opposed to all the activities that take place in a setting.

Perceived risk for relapse was consistently a valid predictor of relapse both prospectively and concurrently. What is not clear is if peoples' perceptions of setting risk reflects actual setting attributes or if perception of risk becomes a self-fulfilling prophecy indicating where or why a person might relapse. Finally, specific settings were often differentially related to relapse with the home setting showing the most consistent impact. These findings for the influence of social settings on relapse are promising and warrant continued research in order to better understand and eventually prevent relapse.

APPENDICES

Consent to Contact Form

Opportunity To Participate in a Research Study on Follow-Up Treatment

With the support of this treatment agency and Michigan Department of Public Health, Office of Substance Abuse Services, a Michigan State University program and research team is offering you an opportunity to participate in a research project that is designed to increase the knowledge about preventing addiction relapse.

Persons who volunteer to participate in this project will attend weekly **Addiction Recovery Groups**, a support group program, for ten weeks. In addition, all participants will be interviewed three times. The participants will receive at least $10 for each 2-hour interview and everyone will receive cash bonuses for consecutive interviews. If you complete all three interviews, you will receive $45.

Providing Permission to Contact You

By providing my name, address, and phone number and by signing my name, I understand that I am providing permission for a Michigan State University project staff member to contact me to arrange an initial appointment. I understand that at this initial appointment, the project staff member will first inform me of (a) all procedures that involve collecting information about me, (b) my rights to refuse participation or to withdraw from the project without penalty, and (c) all procedures to protect my identity and to keep information about myself confidential. I will then indicate my voluntary decision to participate further in the project. Please provide your social security number below, so we can give you a $10 check at the time of the first interview.

By signing below, I indicate only my understanding that (a) project staff at Michigan State University will identify themselves as representatives of the MSU Health Study, (b) project staff will not reveal my identity to anyone outside the project staff and (c) this form (with my name, address and phone number) will be destroyed after the initial appointment.

Print Your Name: _____ Your Signature: _____

Print Your Address: _____ Today's Date: _____

_____ Your Social Security Number: _____

Your Phone Number: _____

Best times to reach you at this phone number: _____

When are good times for you to attend a two-hour Addiction Recovery Group? Please write all possible two-hour times you could meet. For example, you should write under **Mondays**: 9-11 am, 3-5 pm, 7-9 pm (if you are available at those times).

Mondays	**Tuesdays**	**Wednesdays**	**Thursdays**	**Fridays**	**Saturdays**
List all possible times here:					

If you have questions about this project, please call the Addiction Relapse Prevention Project office at Michigan State University at (517)-353-9936. You may reach the answering machine, but please leave your name and phone number. The project directors are Prof. Ram Ramanathan (Social Work) and Prof. Tom Reischl (Psychology). The project research coordinator is Maureen Walton.

ID:_____

SETTING RISK INDICATOR MEASURE

Say: Now, I'd like to ask you about your daily life in several different settings or places including: work or school, home, and community. All questions refer to the past MONTH.

Work/School Settings

1 Do you consider yourself mostly as a:
1 = currently working worker (continue below)
2 = temporarily non-working worker (go to pg. 3)
3 = homemaker (go to pg. 3)
4 = student (continue below)
5 = unemployed (go to pg. 3)
_____

In the last MONTH:	WORKER/STUDENT	
2	you said you went to work or school _____ days (from Economic Opportunities).	_____ (days)
3	On the typical day, how many hours per DAY did you spend at work/school?	_____ (hours)

WORKER/STUDENT

In the last MONTH you have been at work or school _____ days.

4	On how many DAYS did you use drugs or alcohol while at work/school? (include lunch time)	_____ (days)
5	On how many DAYS were you directly offered drugs or alcohol at work/school?	_____ (days)
6	On how many DAYS did someone at work/school use drugs or alcohol in front of you?	_____ (days)
7	On how many DAYS did your work/school present a situation that put you at risk for using drugs or alcohol?	_____ (days)
8	On how many DAYS did you have an urge to use drugs or drink alcohol at work/school?	_____ (days)

ID:_____

WORK/SCHOOL SETTING

In the last MONTH:

9. Please tell me all the major activities that take place as part of your work/school setting (List activities by day and by week, do not include drug or alcohol use):	10. For each of these activities, I'm going to ask you how much you enjoy doing that activity: 0= not at all 1= a little 2= somewhat 3= very much 4= extremely	11. On the AVERAGE, how much time in hours is spent doing each activity:		
		Hours per DAY	Hours per WEEK	Hours per MONTH
A1	E1			T1
A2	E2			T2
A3	E3			T3
A4	E4			T4
A5	E5			T5
A6	E6			T6
A7	E7			T7
A8	E8			T8
A9	E9			T9
A10	E10			T10

Note: Provide other examples such as lunch, smoozing with co-workers, breaks, weekly staff meetings, etc.

ID _____.

HOME SETTING

In the last MONTH:	HOME	
12	On how many DAYS did were you at home? (not on vacation or out of town)	_____ (days)
13	If a Worker/student: A. On the typical day you work or go to school, how many hours per DAY did you spend at home? (do not include sleeping time)	_____ (hours)
	B. On the typical day-off, how many hours per DAY did you spend at home? (do not include sleeping time)	_____ (hours)
14	If a Homemaker or not currently working or unemployed: A. On the typical day, how many hours per DAY did you spend at home? (do not include sleeping time)	_____ (hours)

	HOME	
In the last MONTH you have been at HOME _____ days.		
15	On how many DAYS did you use drugs or alcohol while at HOME	_____ (days)
16	On how many DAYS were you directly offered drugs or alcohol at HOME?	_____ (days)
17	On how many DAYS did someone at home use drugs or alcohol in front of you?	_____ (days)
18	On how many DAYS did your home present a situation that put you at risk for using drugs or alcohol?	_____ (days)
19	On how many DAYS did you have an urge to use drugs or drink alcohol at home?	_____ (days)

ID:_____

HOME SETTING

In the last MONTH:

20. Please tell me whether you do these activities when you are at home, please answer yes or no.	20A. Circle yes or no	21. For each of these activities, I'm going to ask you how much you enjoy doing that activity: 0= not at all 1= a little 2= somewhat 3= very much 4= extremely	22. On the AVERAGE, how much time in hours is spent doing each activity:		
			Hours per DAY	Hours per WEEK	Hours per MONTH
A1 WATCH TV	1=YES 0=NO	E1			T1
A2 PRAY/ MEDITATE/ RELAX	1=YES 0=NO	E2			T2
A3 HOBBIES (PAINTING, GARDENING)	1=YES 0=NO	E3			T3
A4 RENT MOVIES	1=YES 0=NO	E4			T4
A5 VISIT WITH FAMILY OR FRIENDS	1=YES 0=NO	E5			T5
A6 READ	1=YES 0=NO	E6			T6
A7 TALK ON THE PHONE	1=YES 0=NO	E7			T7
A8 PLAY WITH CHILDREN OR PETS	1=YES 0=NO	E8			T8
A9 TAKE WALKS/WALK DOG	1=YES 0=NO	E9			T9
A10 COOK/EATING	1=YES 0=NO	E10			T10
A11 CHORES/ CLEANING/ RUNNING ERRANDS	1=YES 0=NO	E11			T11
A12 OTHER:	1=YES 0=NO	E12			T12

ID _____

Community Setting

In the last MONTH:	COMMUNITY	
23	On how many DAYS did you go to a community or social event?	_____ (days)
24	On the typical DAY, how many hours did you spend in the community (at a some kind of social event)?	_____ (hours)

	COMMUNITY	
In the last MONTH, you went to a community or social event _____ days.		
25	On how many DAYS did you use drugs or alcohol while at a community or social event?	_____ (days)
26	On how many DAYS were you directly offered drugs or alcohol at a community or social event?	_____ (days)
27	On how many DAYS did someone at a community or social event use drugs or alcohol in front of you?	_____ (days)
28	On how many DAYS did your community or social events present a situation that put you at risk for using drugs or alcohol?	_____ (days)
29	On how many DAYS did you have an urge to use drugs or drink alcohol at a community or social event?	_____ (days)

ID_____

COMMUNITY/LEISURE SETTING

In the last MONTH:

30. Please tell me whether you do these activities when you are in the community, please answer yes or no.	30A. Circle yes or no	31. For each of these activities, how much did you enjoy doing each activity? 0 = Not at all 1 = A little 2 = Moderately 3 = Very much 4 = Extremely	32. Of those activities you participated in, how many hours did you spend doing each activity in the last month?
A1 SELF-HELP MEETINGS (AA)	1=YES 0=NO	E1	T1
A2 COUSELING/ AFTERCARE	1=YES 0=NO	E2	T2
A3 VOLUNTEER WORK	1=YES 0=NO	E3	T3
A4 SHOPPING (MALL OR SWAPMEET)	1=YES 0=NO	E4	T4
A5 PLAYING SPORTS, GYM	1=YES 0=NO	E5	T5
A6 OUTDOOR RECREATION (BBQ, HUNTING)	1=YES 0=NO	E6	T6
A7 VISITING FAMILY OR FRIENDS	1=YES 0=NO	E7	T7
A8 EATING OUT	1=YES 0=NO	E8	T8
A9 MOVIES	1=YES 0=NO	E9	T9
A10 CONCERTS/ SPORTS EVENTS	1=YES 0=NO	E10	T10
A11 DANCES/ PARTIES/ BINGO	1=YES 0=NO	E11	T11
A12 MEDICAL / LEGAL CARE	1=YES 0=NO	E12	T12
A13 RELIGION	1=YES 0=NO	E13	T13
A14 OTHER:	1=YES 0=NO	E14	T14

Participant Consent Form

Instructions to researcher: Read each section of the consent form aloud to the individual and ask if the individual understood the section before reading the next section. Do not read the next section until the individual indicates a clear understanding of the section.

Procedures and Purposes of the Study

You are invited to participate in a study that could improve addiction counselors' knowledge and skills for helping addicted persons stop using addictive substances. About half of the persons who voluntarily agree to participate in this project will be randomly chosen to participate in a 10-week support group program. The support groups will meet once a week and the emphasis will be placed on helping group members cope with situations where the urge to use addictive substances is strong. A requirement of those in the support group is that they participate in the evaluation research for this program including three 2-hour interviews so that the researchers can assess the effectiveness of the support group program. The first interview will occur before the participant begins their involvement in the support group program. The second interview will occur after the 10-week program is over. And the third interview will occur about 3 months after the second interview. The other half of the participants will be invited to participate in the three interviews, but not in the support group program. In addition to the interviews, the participants will be asked to permit the research staff to interview their primary treatment counselors (or caseworkers) about the nature and success of the participants' most recent treatment program. The chief purposes of this study are to evaluate the effectiveness of a the support group program and to learn more about the circumstances in which some recovering addicts reuse addictive substances after completing a treatment program. This information could be used to improve the current approaches for helping persons recovery from their addictions.

If you have any questions or concerns about your participation in this study, please contact either Professor Chathapuram S. Ramanathan (517-353-8616) or Professor Thomas M. Reischl (517-353-5015).

Participant Interview Procedures

The three interviews will each take about two hours. During the first interview, the interviewer will ask you about some background information such as your age, religion, marital status, and your occupation. After the background information is discussed, the interviewer will ask a series of questions about your health status, employment status, recent substance use, legal status, family's problems, and your relationships with your family and friends, use of social services, stressful life events, your expectations of using substances, your confidence in your ability to control your use of substances, your recent coping strategies, and you recent sources of psychological distress. During the second and third interviews, most of these questions will be asked again to learn how much your life has changed. These interviews will occur at a place that is convenient, private, and safe.

You will be paid for your participation in these three interviews. Since the interviews will take about 2 hours, you will receive $10 after the first interview. You will receive $10 plus a $5 bonus ($15 total) for completing the second interview. If you complete the first two interviews, you will receive $10 plus a $10 bonus ($20) for completing the third interview. As you can see, you will receive a total of $45 if you complete all three interviews.

Counselor Interview Procedures

In addition to interviewing you, the researchers are asking your permission to interview your primary counselor or caseworker from your last addiction treatment program to learn more about the types of services you received and the counselors perception of how well those services worked for you. This interview will last about 20 minutes. The researcher will only interview the agency counselor. The agency counselor will probably refer to your treatment file, but the researcher will not examine your private file.

Procedures for Contacting You For Future Interviews

Because we will want to interview two more times in the next 6 months, we are asking your to provide your address and a convenient telephone number. We are also asking for your permission to contact up to three persons who are most likely to know the best way to contact you during the next six months. The researchers will identify themselves as researchers from the MSU Health Study in order to prevent anyone besides yourself knowing that you are involved in a study about addiction recovery. Of course, you may tell other people that you are involved in an addiction recovery study, but our research staff will keep that information confidential.

Your Participation is Voluntary

Your participation in this study is voluntary. You may choose to not participate in any part of this study. For instance, you may choose to not answer an interview question if you feel uncomfortable. You may also choose to not participate in this study at all. There are no penalties for choosing not to participate in the study or for withdrawing your consent to participate in the study.

Your Participation and Information About You Will Be Confidential

The researchers will adopt procedures that will best ensure that any information about you collected in this study will never be identified with you or be used to hurt you. Here's what the researchers will do to protect your identity and the confidentiality of the information about you:

1. All information about you will be linked only with a 5-digit secret code number. Your name will never appear on your interview forms. In fact, the only form that will have your name will be this consent form and a list that has both the secret code numbers and the names of the participants. And this consent form and the code number list will be kept in a locked file box in a secure place at Michigan State University.

2. All research staff and project staff will be required to sign a confidentiality pledge which requires them to never report any information about any client or participant involved in this study.

3. The researchers will have secured a Confidentiality Certificate from the U.S. Department of Health and Human Services for the period of your involvement in this study which authorizes the researchers to protect your identity from all persons outside of the research project. This certificate authorizes the researchers to protect you identity and information gathered in this study from any Federal, State, or local civil, criminal, administrative, legislative, or other proceedings.

4. After the third interview, all information that could be used to identify you or link you with any other information about you will be destroyed.

Potential Risks and Benefits

There are very few risks to yourself for participating in this study. The interviews are two hours long, but you will be compensated for your time and if you do get tired, you can take a break. You might think that some of the questions in the interview are too personal or upsetting to talk about. If this happens, please tell the interviewer and you can either stop the interview or go on to the next part of the interview. Despite the safeguards for confidentiality, there is a minimal risk that another person outside of the research staff could learn about your participation in this study. This information could cause you social embarrassment or could be used in legal proceedings. This risk, however, is minimized by the procedures to protect the confidentiality of information about you.

The are several benefits to participating in this project. If you are randomly selected to receive one of the 10-week programs, you will have the opportunity to receive 10 weeks of additional follow-up programming at no cost to yourself. Participation in one of the programs may help the participants in their recovery from alcohol or drug addiction. There is no guarantee, however, that the programs will help in the recovery process. If you complete the research interviews, you will be paid for your time. You may also benefit from participating in the interviews because the interviews will give an opportunity to review the circumstances in your life that could help you in your recovery process.

Consent to Participate in the Interviews

By providing my name, address, telephone number, and signature below, I indicate (a) my complete understanding of the information in this consent form and (b) I am voluntarily choosing to participate in this research study.

Print Your Name: _____

Print Your Address: _____

_____

Your Telephone Number: _____ Best Times to Contact You: _____

Your Signature: _____ Date: _____

Consent to Interview Treatment Agency Counselor

By providing my signature below, I indicate (a) my complete understanding of the information in this consent form and (b) I am voluntarily choosing to allow a member of the MSU research staff interview my primary treatment agency counselor from my last treatment program.

Counselor's Name: _____

Agency: _____

Your Signature: _____ Date: _____

Consent to Contact Other Persons to Help Locate You

By providing the names, addresses, and telephone numbers of three other persons, and my signature below, I indicate (a) my complete understanding of the information in this consent form, (b) I am voluntarily choosing to allow a member of the MSU research staff contact these persons in order to locate and contact me for future interviews, and (c) I am giving permission to these contact persons to tell the MSU researcher the best way to contact me.

Contact Person A: I give my permission to the MSU research staff member to contact the following person and ask the best way to contact me for a research interview. I also give my permission to the following person to tell the MSU researcher the best way to contact me.

Print Person's Name: _____ Person's Telephone

Print Person's Address: _____ Number: _____

_____

Person's Relation to You: _____

Contact Person B: I give my permission to the MSU research staff member to contact the following person and ask the best way to contact me for a research interview. I also give my permission to the following person to tell the MSU researcher the best way to contact me.

Print Person's Name: _____ Person's Telephone

Print Person's Address: _____ Number: _____

_____

Person's Relation to You: _____

Contact Person C: I give my permission to the MSU research staff member to contact the following person and ask the best way to contact me for a research interview. I also give my permission to the following person to tell the MSU researcher the best way to contact me.

Print Person's Name: _____ Person's Telephone

Print Person's Address: _____ Number: _____

_____

Person's Relation to You: _____

Print Your Name: _____

Your Signature: _____ Date: _____

Time-line Calendar Protocol

ID:_____

Has the person used drugs or alcohol since the last interview (past three months)? Yes No

If yes, continue below. If no, skip to next instrument.

We are interested in understanding your pattern of drug and alcohol use. Using the calendar for the past three months, I'd like to help you to recall your daily drinking and drug use. We have found this is not a difficult task, especially when you use the calendar for reference. I have written on the calendar the date you completed the first interview and today's date. Also, standard holidays are marked on the calendar to help your recall. Before we begin listing your alcohol and drug use, I would like to list any special days that have occurred in the last three months such as birthdays, vacations, parties, and so on.

Record special days.

Next, do you have an appointment book or calendar that you carry with you that might help you remember your drinking or drug use?

If yes, say: *Please take it out. You may use this to assist you during this part of the interview.*
If no, continue below.

While some people have felt uncomfortable filling out the calendar at first, it is usually because they are concerned they can't give a precise day-by-day account of their drinking/drug use. If your are not sure if it was on the 8th or 9th, that is okay. Tell me your best guess. Obviously 8th or 9th is quite different than if you said 29th or 30th drinks. Again, try to be as accurate as possible however if you can't recall whether you consumed an drink/drugs on Monday or Tuesday, give it your best shot. We do not need to know the amount you used.

Okay, I think we are ready to begin.

Sometimes people have certain patterns to their drinking or drug use and this can help them in filling out the calendar. For example, if you usually go out with friends on Friday and Saturday nights, you might recall that you would have had a certain number of drinks on those evenings, or you may have a weekend/weekday change in you drinking or drug use perhaps based on work schedules, summer breaks, business trips, etc. Can you think of any pattern to your drinking or drug use?

If yes, first talk briefly of the general pattern. Then, begin recording the pattern of days that is easiest to recall. (Not easily remembered days can be completed later although it is best to complete a week, and then month at a time before continuing on to the next one.)

If no, then begin with the day of the post test interview.

General questions to ask client: *Did you drink of use drugs on_____?, or during the week of_____, or during the month of _____?*

If yes, ask: *What type of alcohol/drugs did you consume?* (record response on calendar).

If no, continue on to next day/week/month.

When every day of the calendar is completed, continue on to next section.

Timeline Code Sheet

ID:_____

	Date	Alcohol	Cocaine	Amphet-amine	Heroin	Mari-juana	Opiate	Hallu-cinogen	Hyp-notic	Barbit-urate	Other
1											
2											
3											
4.											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											

TOTAL # DAYS: ☐

RELAPSE LEVEL: ☐

Timeline Code Sheet

ID:_____

	Date	Alcohol	Cocaine	Amphet-amine	Heroin	Mari-juana	Opiate	Hallu-cinogen	Hyp-notic	Barbit-urate	Other
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											

Timeline Code Sheet

ID:_____

	Date	Alcohol	Cocaine	Amphet -amine	Heroin	Mari-juana	Opiate	Hallu-cinogen	Hyp-notic	Barbit-urate	Other
45											
46											
47											
48											
49											
50											
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											
61											
62											
63											
64											
65											
66											

Timeline Code Sheet

ID:_____

	Date	Alcohol	Cocaine	Amphet-amine	Heroin	Mari-juana	Opiate	Hallu-cinogen	Hyp-notic	Barbit-urate	Other
67											
68											
69											
70											
71											
72											
73											
74											
75											
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83											
84											
85											
86											
87											
88											

Coping with Urges

ID:_____

I. Generate List of Recent Urge Situations

Ask: Can you tell me about the times during the past MONTH when the urge to use drugs or alcohol was the strongest? These could be situations where you actually did use drugs or alcohol.

Today is: ***So one month ago was:***

Quickly generate a list of urge situations. Be sure to have the participant tell you when the event occurred–do not record the event if they cannot specify a time. Then ask the participant to rate each situation with the Strength of Urge Rating Card.

Risky Situ.	Date MM/DD/YY	Brief Urge Situation Description	Strength of Urge
1.	__/__/__ $_{MON1}$	B1_____	_____U1
2.	__/__/__ $_{MON2}$	B2_____	_____U2
3.	__/__/__ $_{MON3}$	B3_____	_____U3
4.	__/__/__ $_{MON4}$	B4_____	_____U4
5.	__/__/__ $_{MON5}$	B5_____	_____U5
6.	__/__/__ $_{MON6}$	B6_____	_____U6

II. Description of STONGEST URGE Situation

Ask: Could you tell me more about the time when...(insert situation with highest urge strength)***? Can you tell me more about what was happening before the urge came on and when the urge was the strongest? I would also like to know where this happened, who else was there, and why you think this situation happened.***

Write in situation number, urge strength rating of the event with the highest strength rating. Ask follow-up questions if necessary to obtain details of the event's history. Write a brief summary of the event and use the checklist to be sure all questions are answered.

Sit. #: _____$_{S1}$ Urge Strength: _____$_{US1}$ Sit. code (office use only): _____$_{SC1SC1}$

Circumstances: _____

_____

Checklist _____

___ When? _____

___ What?

___ Where? _____

___ Who?

___ Why?

Modified from Carver et al.

III. Coping Responses to STRONGEST URGE Situation ID:_____

Ask: I would like to know what types of responses you tried in this situation. For each response, please tell me how often you tried the response: never, one to two times, three to four times, more than five times.

In response to this situation, did you try to...		Never	1-2 Times	3-4 Times	5 Times or More
1.	Let your feelings out by crying or yelling?	0	1	2	3
2.	Think about the situation in a more positive way, like "it could be worse"?	0	1	2	3
3.	Accept that this happened and that it can't be changed?	0	1	2	3
4.	Find something funny about the situation?	0	1	2	3
5.	Give up trying to reach your goals in the situation?	0	1	2	3
6.	Hold back or restrain yourself until the time was right to do something?	0	1	2	3
7.	Make a plan about the best way to deal with the situation?	0	1	2	3
8.	Put aside other activities so you could deal with this situation?	0	1	2	3
9.	Take action to get rid of the problems in the situation?	0	1	2	3
10.	Seek spiritual comfort by praying or meditating?	0	1	2	3
11.	Take your mind off the situation by doing other things?	0	1	2	3
12.	Tell someone your feelings about the situation to get some support?	0	1	2	3
13.	Get some advice from someone about what to do?	0	1	2	3
14.	Be alone for a period of time?	0	1	2	3
15.	Help yourself feel better by using addictive drugs or alcohol?	0	1	2	3
16.	Express your emotions by trying to destroy something or hurt someone?	0	1	2	3
17.	Think about the situation as a chance to learn or grow as a person?	0	1	2	3
18.	Decide to learn to live with the situation?	0	1	2	3
19.	Make jokes about the situation?	0	1	2	3
20.	Stop your attempts to deal with the situation?	0	1	2	3
21.	Avoid making matters worse by acting too soon?	0	1	2	3
22.	Think hard to come up with a strategy for the situation?	0	1	2	3
23.	Focus on the situation and let other things slide a little?	0	1	2	3
24.	Take direct action to get around the situation?	0	1	2	3
25.	Seek God's help or put your trust in God?	0	1	2	3
26.	Think about other things so you could forget about the situation?	0	1	2	3
27.	Get some understanding or sympathy from someone?	0	1	2	3
28.	Talk to someone who could do something to help you?	0	1	2	3
29.	Get away from everything and everyone so you could deal with this alone?	0	1	2	3
30.	Think about the situation less by drinking alcohol or taking drugs?	0	1	2	3

Modified from Carver et al.

ID:_____

Self-Efficacy Questionnaire

Say: I will read a number of situations or events in which some people experience a drinking or drug problem. Imagine yourself as you are right NOW in each of these situations. Indicate on the scale provided how confident you are that you will be able to resist the urge to drink alcohol and/or use drugs in that situation.

	Ask: How sure are you that you would be able to resist the urge to drink or use drugs:	Not at All	A Little	Moderately	Very Much	Extremely
2	When your stomach felt like it was tied in knots.	0	1	2	3	4
3	When something good would happen and you would feel like celebrating.	0	1	2	3	4
4	When you would start to think that just one drink or drug use wouldn't hurt.	0	1	2	3	4
5	When you would suddenly have an urge to drink/use drugs.	0	1	2	3	4
6	When you had an argument with a friend or family member.	0	1	2	3	4
7	When you would be at a party and other people would be drinking or using drugs.	0	1	2	3	4
8	When you wanted to heighten your sexual enjoyment.	0	1	2	3	4
9	When you felt you had let yourself down.	0	1	2	3	4
10	When you felt nauseous.	0	1	2	3	4
12	When you wanted to prove to yourself you could control your drinking or drug use.	0	1	2	3	4
14	When pressure would build up at work/school.	0	1	2	3	4
16	When you wanted to celebrate with friends.	0	1	2	3	4
17	When you were afraid that things weren't going to work out.	0	1	2	3	4
19	When you felt satisfied with something you had done.	0	1	2	3	4
21	When you would pass a liquor store or ran into your dealer.	0	1	2	3	4
23	When you would meet an old friend who suggested that you drink or use drugs together.	0	1	2	3	4

Modified from Annis 1982

Social Network

ID:_____

Now, I will ask you about people who have been important to you in your life druing the last THREE MONTHS. These are people who you have been in contact with (by phone, letter, or in person) in the last THREE MONTHS.

Today is: **So, three months ago was:**

First name, last initial	Relationship to respondent (Enter 2 digit code)	How frequently do you have contact with this person (visit, phone, letter) 0 yearly 1 few times a year 2 monthly 3 weekly 4 daily	How long have you known this person?		How close/special is this person to you? 0 Not at all 1 A little 2 Moderately 3 Very Much 4 Extremely	How many days on a typical week does this person use drugs or drink alcohol?	How much does this person support your efforts to recover? 0 Not at all 1 A little 2 Moderately 3 Very much 4 Extremely
			Years	Mons.			
Live-in spouse/partner (3 months)							
1.							
Family/relative (3 months)							
1.							
2.							
3.							
4.							
5.							
Friends (3 months)							
1.							
2.							
3.							
4.							
5.							
Professionals (e.g., doctor, social worker, psychologist, clergy, and so on.) 3 months							
1.							
2.							
3.							
Others (e.g., member, co-worker, neighbor, etc.) 3 months							
1.							
2.							
3.							

NOTE: You should not limit the number of important persons they list. If necessary, use additional sheets.

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