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The Role of Self-Efficacy in the Recovery Process Among Multiple Substance Abusers in Aftercare

Louise Paré

A Thesis

in

The Department

of

Psychology

Presented in Partial Fulfillment of the Requirements

for the Degree of Doctor of Philosophy at

Concordia University

Montreal, Quebec, Canada

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ABSTRACT

The Role of Self-Efficacy in the Recovery Process
Among Multiple Substance Abusers in Aftercare

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Concordia University, 1999

In an attempt to address the consistently high relapse rate confronting substance abusers and meet the changing demands of the health care system, attention has focused on aftercare and its role in preventing relapse. There has also been increased interest in the cognitive processes underlying changes in addictive behavior, and specifically, the role of self-efficacy in substance abuse behavior change.

The present study prospectively examined the role of abstinence self-efficacy in recovery among two groups who, in addition to receiving intensive and aftercare treatment at a substance abuse treament facility, also received either a relapse prevention (RP) or a 12-step (AA) aftercare. A Reference group only received the usual care. The groups were compared on self-efficacy across three time periods (pre-aftercare, post-aftercare, and 6-month follow-up). The predictive relationship between self-efficacy and outcome was also explored.

Results demonstrated that self-efficacy increased over time in situations involving negative emotional states. No group effect was obtained, although participation in the AA group appeared to contribute the most to this effect. Analyses also showed that pre-aftercare self-efficacy scores predicted improved family and social relations, less psychological distress, and an increased number of abstinent days at follow-up. Both pre- and post-aftercare self-efficacy were significant predictors of latency-to-lapse and latency-to-relapse.

The results provide support for the multidimensionality of the self-efficacy construct, and the association between greater abstinence self-efficacy and improved functioning following substance abuse treatment.

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Rehabilitative substance abuse treatment has undergone important changes in the past several years, both in its conceptualization and in its delivery. The changes which have occurred are attempts to address the consistently high rate of relapse confronting substance abusers, and to meet the ever changing demands of our health care system (for example, more cost-effective services). Specifically, regardless of the vast resources invested in rehabilitation, the majority of substance abusers relapse in the six months following intensive treatment (Brown, Seraganian & Tremblay, 1994; Mejita, Naylor & Maslar, 1994). This has spurred over the past two decades a re-evaluation of treatment modalities, and what has emerged has been the reconceptualizing of treatment as consisting of two main phases: (a) an initial treatment phase, which seeks the initiation of change in, and the stabilization of problems typically associated with, substance use behavior; and (b) a follow-up or aftercare phase, the goal of which is to prevent relapse and ensure the long-term maintenance of gains made during the initial treatment. In view of the increased attention given to aftercare in this reconceptualization, research has increasingly focused on the development of effective aftercare programs and their evaluation.

In addition to addressing relapse from the treatment perspective, research has also begun to look at the processes underlying changes in addictive behavior, namely the processes which underlie the effects of different treatment modalities, as well as those which may operate across different modes of treatment and clinical orientations (Finney, Noyes, Coutts & Moos, 1998; Morgenstern, Labouvie, McCrady, Kahler & Frey, 1997; DiClemente, 1993). In this respect, some emphasis has been placed on the role played by cognitive processes in behavioral and psychological change. Cognitive studies have had a profound impact on the investigation of substance use and abuse, and have been used to explain why people begin to use, why they continue to use, and why some develop a dependency on drugs or alcohol (Wilson, 1980). In order to provide both a theoretical and practical framework for understanding and treating alcohol and drug abuse, it has been

suggested that Bandura's (1977, 1986) self-efficacy theory may account not only for the role of cognitions in substance abuse treatment and their effect on behavior, but also for the success or failure of all psychological therapies (Rollnick & Heather, 1982).

Self-Efficacy Theory

Self-efficacy expectations represent an individual's belief about his or her ability to carry out a behavior needed to produce a desired outcome (Bandura, 1977). It is thus a cognitive process involving the formulation of a judgment regarding personal competency. Efficacy expectations are distinguishable from outcome expectations, which refer more to one's expectations about the outcome that will result from the performance of a given behavior. Individuals can believe that a certain behavior will lead to a desired outcome, but may not feel confident in their ability to perform that behavior.

Self-efficacy is a situation-specific rather than a global, cross-situational construct. As noted by Marlatt and Gordon (1985), "self-efficacy is a state measure (specific to particular person-situation interactions) and not a trait measure (i.e., self-esteem is often described as a general trait that generalizes over many situations)" (p. 221). Efficacy expectations also vary and can be assessed along three dimensions: magnitude, strength, and generality (Bandura, 1977). Magnitude can be assessed by ordering the tasks involved in a certain behavior according to their level of difficulty, and assessing the individual's expectations regarding the ability to perform the tasks at each level. Strength refers to the individual's self-rated degree of confidence in that judgment. Generality involves the extent to which the strength of self-efficacy extends to other similar behaviors and situations. These three dimensions are often incorporated into the assessment tools used to measure self-efficacy.

Judgments about self-efficacy are posited to come from four main sources of information: one's own performance experiences, vicarious observations of the performance of others, verbal persuasion, and emotional or physiological arousal (Bandura, 1977, 1986). Personal performance experiences have the greatest influence on

self-efficacy, since they are based on personal mastery. In general, successes raise one's perception of competence and failures lower them, however, the timing of these experiences play an important role; failures that occur subsequent to the development of strong efficacy expectations will not impact as negatively on self-efficacy as if they had occurred when self-efficacy was at a lower level (Bandura, 1977). Vicarious experiences such as observational learning, modeling, and imitation, although a less powerful source of information about personal competence, can also contribute to efficacy expectations. Individuals observing a person's successful performance of a behavior may come to believe that they too can succeed, particularly if the person modeling the behavior is perceived to be similar to the observer, and if the behavior is modeled by a variety of models (Bandura, 1977). Verbal persuasion is perhaps the easiest and most readily available behavior change technique, and thus the most widely used. However, its effect on efficacy expectations does not provide information on personal experience. It also raises expectations of competency without providing the individual with the tools necessary to perform the behavior, and can thus undermine any increase in mastery expectations that occurs (Bandura, 1977, 1986). Emotional arousal constitutes a final source of information about self-efficacy. When individuals encounter a stressful situation, the physiological arousal they experience will form the basis for judgments regarding their ability to perform, or cope with that situation. High levels of arousal often lead to feelings of vulnerability and self-doubt, which can prevent the individual from attempting, or succeeding at, the performance of a specific behavior (Bandura, 1977).

Although individuals will differ with respect to the information source they attend to most, all information received will be cognitively appraised and result in a judgment about personal competence and self-efficacy. The impact of the information on efficacy expectations will be contingent on the manner in which the information is cognitively processed by the individual. For example, successes that are perceived as resulting from skill rather than from luck or special external aids are more likely to

increase efficacy expectations. Conversely, failures that are attributed to a lack of ability rather than to environmental factors are more likely to decrease efficacy expectations (Bem, 1972; Bandura, 1977). (The reader is referred to Bem (1972) for a more detailed discussion of self-attributional processes.)

How self-efficacy affects performance

In view of the impact of cognitive processing on efficacy expectations, self-efficacy can influence performance at various levels. First, it affects an individual's initiation of, and persistence in, a behavior (Bandura, 1977; Saltzer, 1982). A substance abuser may wish to stop using drugs or alcohol, but may not attempt to stop if there is doubt about the ability to do so; should an attempt to stop be initiated, a low level of perceived competence will result in low persistence in that behavior. Second, self-efficacy will influence the types of behaviors engaged in, since people tend to fear and avoid those situations or behaviors that they feel unable to deal with effectively (Bandura, 1977). Finally, self-efficacy will influence thoughts and feelings, so that feelings of diminished competency will lead more readily to negative self-perceptions that increase arousal and can hamper performance of a given behavior.

Although self-efficacy is posited as having explanatory value in behavioral functioning, it is certainly not the only mechanism involved. Individuals must possess the skills and knowledge needed to perform a given behavior, as well as adequate incentives (Bandura, 1977; Maddux & Stanley, 1986). All these factors must be considered in accounting for an individual's ability or inability to perform a behavior.

The Assessment and Measurement of Self-efficacy in the Understanding of Addictive Behaviors

Although the nature of the self-efficacy construct and its origins are viewed differently by varying theoretical perspectives, it is the application of self-efficacy from a social learning perspective which appears to be the most promising for the understanding of addictive behaviors, and the development of effective treatment interventions.

According to this perspective people who exhibit addictive behaviors demonstrate important deficiencies in their ability to cope with life stressors. This, coupled with their expectation that the addictive behavior will alleviate their distress, lead them to engage in that behavior (for example, alcohol or drug use) as a coping mechanism (Abrams & Niaura, 1987; Cooper, Russell & George, 1988). Self-efficacy is one of the factors which decreases vulnerability in stressful situations and can prevent relapse through more adaptive coping (Brown, Vik, Patterson, Grant & Schuckit, 1995). An individual will actively engage in more effective coping behaviors if he or she has confidence in the ability to do so. The assessment of self-efficacy within this perspective involves a detailed examination of perceived competence in specific stressful situations (in situations where the addictive behavior is engaged in as a coping mechanism), and the perceived ability to cope with these difficult situations.

With respect to the application of self-efficacy theory to substance abuse behaviors, self-efficacy has generally been operationalized as judgments about one's ability to remain abstinent when faced with situations that tempt use (Stephens, Wertz & Roffman, 1995). Efficacy expectations can be assessed using various treatment behaviors such as self-monitoring, recovering from a slip (recovery self-efficacy), or refraining from consuming drugs or alcohol in situations where the individual is at a high risk of using (abstinence self-efficacy; DiClemente, 1986). The latter is the type most often assessed, since abstinence constitutes the goal most often defined by substance abuse interventions as well as the outcome measure used in much of the substance abuse research. Abstinence self-efficacy is the type assessed in the present study.

The development of instruments which measure self-efficacy in the appropriate contexts and along the dimensions identified by Bandura (1977) has relied on research conducted in the past fifteen years which identifies the cues which precipitate substance abuse, threaten abstinence (or controlled drinking in the case of alcohol), and render certain situations riskier than others. Specifically, drawing on initial work done in the

area of smoking behavior, Marlatt and Gordon (1980) have identified two main categories of relapse precipitants for individuals in treatment for either alcoholism, smoking, or heroin addiction. The first category, intrapersonal or environmental determinants, consists of five subcategories; (a) coping with negative emotional states, (b) coping with negative physical/physiological states, (c) enhancement of positive emotional states, (d) testing personal control, and (e) giving in to temptations or urges. The second main category of relapse precipitants involves interpersonal determinants, and consisted of (a) coping with interpersonal conflict, (b) social pressure, and (c) enhancement of positive emotional states. These categories have led to the development of several abstinence self-efficacy scales for alcohol such as the Situational Confidence Questionnaire (Annis, 1982), and the Alcohol Self-Efficacy Questionnaire (DiClemente, Carbonari, Montgomery & Hughes, 1994)). The scales for drugs include the Drug-Taking Confidence Questionnaire (Annis & Martin, 1985), and the Drug Avoidance Self-Efficacy Scale (Martin, Wilkinson & Poulos, 1995). Although the scales may differ slightly in the number of number of categories of situations assessed and in the substance of use (tobacco or alcohol), negative affect, social pressure, and testing control have been shown to be of primary importance (Baer & Lichtenstein, 1988; DiClemente, Carbonari, Montgomery & Hughes, 1994). Because these scales consist of a variety of preselected risk situations that may not be fully relevant to the individual, recent attempts have been made to construct a scale for each individual, based on the alcohol or drug use triggers identified by the individual as being the most important (Miller, McCrady, Abrams & Labouvie, 1994).

Self-Efficacy: How it Contributes to our Understanding of the Addictive Behaviors and the Rehabilitation Process

From the earliest studies which investigated the role of self-efficacy in addictive behavior, the general reasoning has been that if the self-efficacy construct is to be useful, it must be able to predict future behavior. It should also contribute uniquely to this prediction and show only a moderate relationship to other variables which predict

treatment success, such as past drinking or drug use behavior. It is this predictive relationship which has been investigated in numerous empirical studies conducted on substance use and cessation.

Self-efficacy and smoking cessation: A review of the findings

Although the present study investigated the self-efficacy construct as it relates to substance use (drugs and/or alcohol), the earliest studies on the role of self-efficacy in the addictive behaviors focused on smoking cessation. Several key studies provide a research base for subsequent studies conducted on substance abuse, and reveal the importance of self-efficacy in the initiation and maintenance of additive behavior change .

One such study is that conducted by Condiotte and Lichtenstein (1981). They assessed smoking behavior and self efficacy at pre- and post-treatment, and at a three-month follow-up in a sample consisting of 38 males and 40 females ranging in age from 16 to 70 years. Efficacy expectations were measured using the Pre-treatment Confidence Questionnaire, an instrument developed based on a list of smoking situations studied by Best and Hakstian (1978) and designed to assess the magnitude, strength, and generality of self-efficacy in various situations. Analysis of self-efficacy at both assessment periods revealed a significant and continual increase in perceived efficacy during treatment among those participants who benefited from treatment (reflected in their ability to quit smoking). Self-efficacy also predicted which participants would relapse, and how long they would remain abstinence before relapsing. Specifically, the higher the level of self-efficacy post-treatment, the greater the probability that the participant would remain abstinent throughout treatment, and the longer the time to relapse. More important was the support provided for the predictive ability of the various situations included in the self-efficacy scale, with participants relapsing in those situations where self-efficacy was the lowest, as assessed by the Pre-treatment Confidence Scale.

Based on their study of 74 male and female smokers participating in a social learning-based intervention, McIntyre, Lichtenstein and Mermelstein (1983) also found

self-efficacy to significantly predict maintenance of smoking abstinence up to three months following treatment termination. However, post-treatment self-efficacy was unrelated to smoking status at 6 and 12 months post-treatment, although the relationship at 6 months was in the right direction. This last finding was consistent with Bandura's theory that self-efficacy is a better predictor over shorter time periods.

More recent attempts to replicate the ability of end-of-treatment self-efficacy to predict post-treatment smoking status have been mixed. A consistent relationship has only been demonstrated over a relatively short (approximately three-month) follow-up period (Coelho, 1984; Baer & Lichtenstein, 1988). The usefulness of expectancy ratings appear to be greatest when assessed during the maintenance phase of treatment, after treatment has ended. For example, Baer, Holt and Lichtenstein (1986) found that self-efficacy assessed at 2 and 3 months post-treatment were the strongest predictors of outcome at 6 month follow-up. This finding regarding the ability of proximal self-efficacy measures to predict subsequent relapse has received further support (Wojcik, 1988; Gulliver, Hughes, Solomon & Dey, 1995), and is consistent with Bandura's (1986) assertion that the relation between self-efficacy and behavior is more accurately revealed when it has not been affected by intervening factors such as failures to perform the desired action. The longer the time lapse between the individual's appraisal of self-efficacy and the measurement of behavior, the greater chance that self-perceptions of competence (especially weaker ones) have been altered, thus diminishing the predictive power of earlier measures of self-efficacy on subsequent behavior.

In summary, studies on smoking cessation reveal that self-efficacy can be a useful theoretical construct for investigating smoking cessation and maintenance. Increases in self-efficacy are moderately but consistently associated with increased control over smoking. Measures of self-efficacy, especially those obtained during post-treatment or maintenance, predict subsequent outcome status as well as the length of time abstinence will be maintained following treatment termination, at least over the short-term. Pre-

treatment efficacy ratings typically have not predicted smoking outcomes (Baer, Holt & Lichtenstein, 1986; Garcia, Schmitz & Doerfler, 1990).The predictive ability of the relapse situations which comprise the self-efficacy measures is also supported, with the level of perceived competence in each type of situation predicting the situation in which relapse will occur.

Self-efficacy and alcohol abstinence

Empirical studies examining the role of self-efficacy in abstinence from alcohol have built upon the smoking cessation research in their attempt to establish the predictive value of efficacy expectations to outcome status. Although attention has been given primarily to the role of post-treatment self-efficacy in predicting subsequent substance use behavior, several studies have investigated, and found support for, the predictive value of intake efficacy expectations.

Rist and Watzl (1983) investigated the results of a behaviorally oriented, three-month inpatient treatment provided to 145 female patients with a primary diagnosis of alcoholism. The women had a mean age of 36.2 years, and reported an average of 6.7 years of self-acknowledged problem drinking (steady or binge drinking). Study participants underwent a four-hour social skills training program aimed at helping them resist drinking in social situations. Treatment outcome was assessed at 3 and 18 months after discharge. A global measure of abstinence self-efficacy was obtained at admission based on each participant's response to the question, "Do you believe that you will ever be able to stop drinking completely?" Analysis revealed that their responses were significantly related to outcome at three months, but not with outcome at 18 months, with relapsed women having rated lower confidence in their ability to become abstinent. Although these findings demonstrate the association between self-efficacy ratings and post-treatment drinking they contribute little to our understanding of the relapse process.

A study by Rychtarik, Prue, Rapp & King (1992) also supports the predictive value of intake self-efficacy. It assessed abstinence self-efficacy pre-treatment, at

discharge, and 6 and 12 months post-treatment among 87 male alcoholics who completed a 28-day in-patient cognitive-behavioral program promoting abstinence followed by aftercare sessions. These sessions were scheduled every two weeks for the first 2 months post-discharge, once every month for the next four months, and once at nine and 12 months from discharge. Efficacy expectations were measured using an adapted version of the Confidence Questionnaire (Condiotte & Lichtenstein, 1981) used in smoking research and consisted of a global unitary score. As demonstrated in smoking cessation studies, efficacy levels increased significantly from intake to discharge. Hierarchical logistic regression revealed that high self-efficacy at intake significantly predicted abstinence at 6 and 12 months post-treatment, although the effect at twelve months was much weaker. Survival analysis also revealed that intake self-efficacy predicted latency to relapse, with patients having high intake self-efficacy being at a significantly lower risk for relapse over time. It is important to note that analyses were conducted using a global measure of self-efficacy and not situation-specific measures.

A study by Kavanagh, Sitharthan & Sayer (1996) also lends support to the role played by intake self-efficacy in the prediction of outcome. Their sample consisted of 166 individuals who participated in one of two correspondence treatments for alcohol abuse--cognitive behavioral intervention, or a minimal intervention control that provided information about the effects of alcohol and encouraged self-monitoring. Self-efficacy was assessed at pre-treatment, 6 months and 12 months after entry into the study, using the Controlled Drinking Self-Efficacy Scale (CDSE; Sitharthan, Kavanagh & Sayer, 1996), a 20-item scale on which subjects rate their ability to control their drinking within potentially high-risk situations, as well as remain abstinent or control their drinking over the next 6 months. Analyses revealed that intake efficacy scores predicted consumption at both 4 months and 12 months post-treatment even after controlling for alcohol consumption at intake. With respect to the prediction of maintenance over the follow-up period (based on assessment measures obtained at 6 months), self-efficacy at 6 months no

longer significantly predicted consumption at 12 months after controlling for alcohol intake at 6 months. Interestingly, intake CDSE scores predicted participant retention in the study, with CDSE scores obtained at 6 months being a powerful predictor of retention during the maintenance phase (6 to 12 months). As noted by the authors, this may provide support for Bandura's (1982) theory that individuals with higher self-efficacy are more likely to persist in their behavior change attempts.

Other studies conducted on the relationship between efficacy expectations and outcome have shown post-treatment rather than intake self-efficacy to be a stronger predictor of outcome status among alcoholics. Solomon and Annis (1990) studied 100 male alcoholics recruited from two treatment centers in southern Ontario. The sample ranged in age from 20 to 63 years (with an average of 39 years), demonstrated a moderate level of alcohol dependence as assessed by the Alcohol Dependence Scale (Skinner & Horn, 1984), and had been drinking problematically for about 10 years. Self-efficacy was assessed at treatment intake and again at three months following treatment termination using the Situational Confidence Questionnaire (SCQ; Annis & Graham, 1988), which assesses confidence in being able to resist the urge to drink heavily in high-risk drinking situations. Consistent with previous studies, SCQ scores at follow-up were significantly improved over scores at intake. However, although intake efficacy expectations were strongly associated with the amount of alcohol consumed during drinking periods at follow-up, they did not predict abstinence or frequency of drinking occasions. Specifically, stepwise regression analyses were conducted to evaluate the ability of the self-efficacy ratings to predict three measures of alcohol use reported for the 90 days following treatment termination : (a) the total number of drinking days, (b) the total amount of alcohol consumed, and (c) the average number of drinks consumed on drinking days. Results revealed intake self-efficacy to be strongly associated with level of alcohol consumption on drinking occasions at follow-up, accounting for 16% of the variance. However, the scores did not predict the occurrence of abstinence or frequency of drinking

occasions. Therefore, although intake self-efficacy did not predict the occurrence of a relapse, it did predict the severity of the relapse when it occurred. Efficacy measures assessed at follow-up, however, were associated with all three follow-up drinking measures, accounting for 18% to 25% of their variance and providing stronger support for the predictive power of more proximal factors.

McKay, Maisto and O'Farrell (1993) recruited 53 men who were in an outpatient Veterans Administration marital therapy alcohol treatment research program, and who met DSM-IIIR criteria for alcohol abuse or dependence. Treatment consisted of 6 to 8 couple therapy sessions, followed by 10 weekly couples group sessions. Some men also participated in a one-year aftercare intervention. Self-efficacy was measured at the end of the couple therapy sessions, and every 3 months during the one-year follow-up period, using a shortened form of the SCQ (Annis, 1984). Contrary to the majority of prior studies, self-efficacy scores were not combined into a global measure, but rather, were assessed in eight categories of high-risk situations similar to those identified by Marlatt and Gordon (1980). The correlations between SCQ scores in each category and drinking behavior outcome measures were then examined. Results showed that for the study participants who did not participate in the aftercare condition, higher end-of-treatment SCQ scores were associated with more abstinent days and/or fewer heavy drinking days at both follow-up periods. The SCQ scales demonstrating the strongest correlations were Unpleasant Emotions, Urges and Temptations, and Interpersonal conflict. In contrast, SCQ scale scores of participants in the aftercare group were not significantly correlated with the outcome measures. Hierarchical regressions were also conducted to explore whether the self-efficacy scores would predict drinking behavior when other variables, such as prior drinking behavior, were first controlled for. The aftercare and no-aftercare conditions were analyzed separately. Prior drinking behavior was entered into the regression equation on the first step, followed by the SCQ scale scores. Results showed that for the no-aftercare group, higher self-efficacy predicted more abstinence in months

7-12 of the follow-up, but not in months 1-6. Higher efficacy scores also predicted fewer drinking days in months 1 to 6, and in months 7 to 12. In contrast, end-of treatment self-efficacy did not predict drinking outcome in the aftercare group. With respect to this last result, it appeared that the aftercare moderated the effects of lower self-efficacy by increasing the self-efficacy of men who had low SCQ scores at the end of treatment. These men increased their efficacy expectations by month 6 of the follow-up and, consequently, had good drinking outcomes.

The importance of post-treatment self-efficacy in the prediction of outcome status in a controlled drinking context has also been supported by Sitharthan and Kavanagh (1990). They examined self-efficacy changes in a group of 60 men and women who were recruited by media advertisement and received ten weekly sessions of a cognitive-behavioral program which provided education and skills training for controlled drinking. The goal of treatment was to have no more than 3 to 4 drinking days per week, and to consume no more than 3-4 standard drinks on any one occasion. Self-efficacy was assessed at pre- and post-treatment, and at a 6-month follow-up using a 16-item scale derived from Marlatt and Gordon's (1980) high risk situations and Annis' (1982) Situational Confidence Questionnaire. Results demonstrated that self-efficacy to resist heavy drinking increased significantly from pre- to post-treatment, and from post-treatment to the 6-month follow-up. In fact, post-treatment efficacy ratings were so high, that the self-efficacy scores were replaced by the self-efficacy levels (the number of situations in which subjects indicated 100% confidence) to avoid the possibility of a ceiling effect. A hierarchical regression was then conducted, with self-efficacy at post-treatment entered into the equation after all other predictor variables (i.e., demographic, alcohol history and severity, and prior drinking variables). Self-efficacy still accounted for a small but significant proportion of the variance in alcohol consumption during the six months following termination of a controlled drinking intervention.

Regardless of the studies reporting that post-treatment self-efficacy was a

significant predictor of outcome, several studies have failed to support these findings. Mayer and Koeningsmark (1992) examined self-efficacy and relapse in 80 inpatients (49 males and 31 females) ranging in age from 38 to 42 years, who were admitted to a substance abuse program. All participants completed a modified version of the Situational Confidence Questionnaire (Annis, 1982, 1984) which assessed self-efficacy in relation to ten categories of risk situations for alcohol consumption. To examine the relationship between self-efficacy and outcome status, correlations between these two measures were obtained. Results showed that none of the SCQ scores obtained in each risk category were significantly correlated with outcome, where outcome was defined as either abstinence-use or as abstinence-lapse-relapse (lapse was operationalized as any discrete violation of abstinence, whereas a relapse was indicated when more than 3 ounces of alcohol had been taken). However, higher post-treatment self-efficacy ratings obtained on the scales for Positive Emotional States, Interpersonal Conflict, and Interpersonal Determinants (indicative of higher self-confidence) were significantly correlated with an increased time to first alcohol use (latency to lapse). Regarding the failure of self-efficacy to predict outcome status, the authors propose that "post-treatment denial", characterized by an unrealistic over- or underestimation of one's ability to effective cope with high risk drinking situation, may distort self-efficacy assessments and their correlation with outcome. Several other authors (Langenbucher, Sulesund, Chung & Morgenstern, 1996; Rychtarik, Prue, Rapp & King, 1992; Sitharthan and Kavanagh, 1990) have also reflected upon a possible overestimation of post-treatment self-efficacy measures in an attempt to explain ceiling effects observed in post-treatment efficacy scores, and to account for the low predictive ability of post-treatment efficacy scores. In fact, Langenbucher et al. (1996) found that subjects high in self-efficacy were more likely to return to drinking quickly after treatment. To account for these findings, they suggest that subjects exhibiting high levels of confidence may be overconfident with respect to their ability to resist future substance use, and may therefore be unprepared for the sudden

demand placed on their coping resources when faced with an unplanned risk situation. The authors also point to possible limitations of the instrument they used to assess self-efficacy, a modified 16-item version of the Situational Confidence Questionnaire. First, they warn against using briefer versions of existing scales that may not adequately assess the multidimensional complexity of the self-efficacy construct. Second, they suggest that some of the risk categories queried in the SCQ may not reflect the types of situations that lead to relapse under field conditions, limiting the external validity of the scale. Miller, McCrady, Abrams & Labouvie (1994) have addressed the content and external validity of existing self-efficacy scales by taking an individualized approach to the assessment of self-efficacy. Based on each subject's identification of drinking triggers they had encountered in the previous 6 months, Miller et al. constructed a personal self-efficacy survey for each individual consisting of their 15 most important triggers. Assessment of the association between self-efficacy and outcome revealed that efficacy ratings improved from pre- to post-treatment across three types of outpatient conjoint behavioral treatment programs for alcoholics and their spouses. Clients with low post-treatment self-efficacy were also more likely to relapse than those with higher efficacy ratings (the effect was only marginally significant, probably due to the small sample size of 34 subjects). The difficulties in designing self-efficacy measures that are concise but individually valid are discussed.

In summary, the literature on alcohol abstinence demonstrates that individuals who benefit from treatment do show a significant increase in self-efficacy from intake to discharge, and efficacy expectations do appear to have predictive ability. However, results have been mixed regarding the predictive validity of both pre- and post-treatment self-efficacy ratings. Specifically, the predictive power of discharge self-efficacy ratings among cigarette smokers has not been consistently demonstrated among alcohol abusers. It has been suggested that the ability of post-treatment self-efficacy to predict outcome may be diluted by ceiling effects on discharge efficacy scores caused by an over-inflation

of efficacy estimates. Only few studies have demonstrated that intake self-efficacy is more strongly related to post-treatment status and time to relapse.

Self-efficacy and drug abuse behavior change

The extension of self-efficacy theory to changes in drug abuse behavior is relatively recent. Burling, Reilly, Moltzen and Ziff (1989) examined monthly SCQ (Annis, 1982) self-efficacy ratings, and those obtained 6 months after discharge, from 419 substance abuse (alcohol or drugs) inpatients who had undergone a treatment program based on behavioral and cognitive-behavioral techniques. Consistent with findings obtained in the smoking and alcohol literature, efficacy increased significantly during treatment and was higher at post-treatment. Abstainers showed a greater and significant absolute increase in self-efficacy ratings from intake to post-treatment compared to the insignificant change observed among relapsers. Self-efficacy was also higher at 6-month follow-up among abstainers. High self-efficacy at discharge, however, did not predict positive outcome at the six-month follow-up. Rather, self-efficacy obtained during the maintenance phase better predicted relapse. Perhaps more interesting is the finding that patients who showed the greatest increase in self-efficacy scores during treatment were those individuals who demonstrated higher abstinence rates at the six-month follow-up. Confidence change scores may thus constitute an important variable when attempting to predict treatment outcome status.

Powell, Dawe, Richards, Gossop, Marks, Strang and Gray (1993) sought to investigate the predictors of relapse among opiate addicts. Their study assessed efficacy expectations at intake, treatment discharge, and between 1 and 3 months as well as 6 months following discharge, in 43 individuals receiving in-patient detoxification in either a drug dependency unit or a psychiatric ward. Self-efficacy was measured using an 18-item subscale drawn from the SCQ (Annis, 1982). The authors found that self-efficacy score did not predict frequency of opiate use at the one- to three-month follow-up. However, at 6 months, individuals who were treated in a drug dependence unit and who

had higher intake self-efficacy scores were using greater amounts of opiates that those who reported lower intake efficacy expectations. A similar relationship was obtained between discharge efficacy and frequency of opiate use at six months for both groups of patients. As in other studies that have revealed this same paradoxical phenomenon, the authors suggest that greater feelings of personal vulnerability, as reflected by lower confidence scores, may in fact be beneficial; that is, it may indicate a more realistic awareness on the part of patients of potential threats to abstinence, and encourage them to take more protective measures to avoid high-risk situations.

Reilly and colleagues (1995) focused their study of self-efficacy on a sample of 74 (50 male, 24 female) opioid addicts who participated in a 180-day methadone detoxification treatment. Treatment proceeded in three phases: (a) a two-week induction (intake) phase, where patients began receiving methadone and were stabilized on a steady dose, (b) a 100 to 120 day stabilization (steady dose) phase, and (c) a 60 to 80 day detoxification (taper) phase where methadone was gradually decreased. Patients rated their self-efficacy every 30 days (at intake, and at the beginning, middle, and end of the stabilization and detoxification phases) using an adaptation of the Drug-Taking Confidence Questionnaire (DTCQ) (Annis & Martin, 1985), an instrument similar to the SCQ but which assesses confidence in one's ability to avoid using drugs (heroin in this case). Analyses of variance revealed that efficacy increased during the intake phase, remained stable across the stabilization phase, and gradually decreased during detoxification, coinciding with illicit use of opioid use which decreased during induction and stabilization, and increased during the taper phase. Self-efficacy ratings at intake did not predict opioid use during stabilization and detoxification. However, ratings obtained at the beginning of the stabilization phase predicted subsequent opioid use in this phase. This same phenomenon occurred in the taper phase, with initial taper DTCQ measures predicting subsequent use in this phase. These relationships remained significant after controlling statistically for demographic characteristics. Further analysis of the specific

role played by self-efficacy in outcome also revealed that self-efficacy did not mediate the pathway between previous and future drug use. Rather, self-efficacy influenced future drug use in parallel with previous drug use; that is, both accounted for a unique part of the variability in future drug use.

Rounds-Bryant, Flynn and Craighead (1997) extended the investigation of self-efficacy perceptions to cocaine use. Their study sample consisted of 294 regular cocaine users who participated in one of 25 diverse outpatient programs consisting of group and/or individual therapy. The sample was primarily male (61%), and had a mean age of 32 years. Self-efficacy was measured at 1 and 3 months during treatment using a modified 20-item version of the Situational Confidence Questionnaire (Annis & Graham, 1998). Outcome measures included the frequencies of cocaine, other drug, and alcohol use, and were obtained at intake (use in the 12 months prior to intake), at 1 month into treatment (use in the prior month), and at 3 months into treatment (use in the prior 3 months). Correlation coefficients obtained between self-efficacy ratings and outcome measures at both 1 and 3 months revealed strong negative correlations between self-efficacy and self-reported drug use. A series of logistic regressions were also conducted to examine the predictive value of efficacy expectations. Results revealed that self-efficacy at 1 and 3 months contributed to the prediction of self-reported drug-use at 1 and 3 months, respectively, over and above pre-treatment and demographic variables.

In summary, the research literature generally reveals a consistent relationship between self-efficacy and the attainment and maintenance of more positive treatment gains, and supports the application of Bandura's self-efficacy theory to changes in substance abuse behavior. Similarities in the role of self-efficacy are demonstrated across various addictions. First, patients who benefit from treatment generally show an increase in efficacy expectations from intake to discharge. However, the predictive ability of self-efficacy in substance use behavior and outcome status at various periods following treatment is not as clear as for smoking; specifically, there appears to be confusion about

which confidence measure (intake, discharge, or change score) is the better predictor. The difficulty does not appear to be conceptual; regardless of the inconsistencies across studies, self-efficacy theory, and particularly the self-efficacy construct, appears to be useful for exploring and understanding addictive behavior. The difficulty may perhaps exist more at a methodological level; that is, studies operationalize outcome differently, and rely on one of several scales to measure self-efficacy. There has also been a tendency to rely upon global rather than situation-specific measures of efficacy. Pre-treatment variables that can potentially play an important role in the prediction of treatment outcome, such as demographic patient characteristics and pre-treatment substance abuse, must also be controlled for when examining the influence of self-efficacy. All these factors may contribute to the inconsistencies observed.

Self-efficacy and behavior change among self-changers

Another area of research which has contributed to our understanding of the role played by self-efficacy in addictive behavior change are the studies done on self-changers, individuals who have succeeded in changing their behavior without undergoing any formalized treatment. This is an important area of research, since if self-efficacy is to contribute to our understanding of behavior change, it should underlie the recovery process regardless of type of treatment delivered (Bandura, 1977, 1986). Earlier research with smokers (DiClemente, 1981) has demonstrated that self-efficacy assessed at the time of quitting predicted maintenance of abstinence 5 to 7 months later. When they also compared self-changers with patients having undergone formalized treatment, the only post-treatment variable related to maintenance of smoking behavior change six months after quitting was self-efficacy. Prochaska, Crimi, Lapsanski, Martel and Reid (1982) further explored this finding by comparing efficacy expectations among 2 groups of self-changers: 38 individuals who had maintained non-smoking for at least six months, and 24 individuals who had relapsed. Consistent with previous research with individuals in

treatment, results showed that maintainers scored significantly higher on measures of self-efficacy than did the relapsers.

Clinical Implications of Self-Efficacy: Manipulating Self-Efficacy in the Design of Relapse Prevention Programs

Early studies on self-efficacy sought primarily to understand the role of self-efficacy in the behavior change process by exploring and establishing the predictive power of efficacy expectations across treatment types (which, in the area of alcohol and drug abuse, consisted mainly of in-patient treatment programs). The goal was to go beyond the black-box approach, and investigate the nature of the change process from pre- to post-treatment to follow-up.

However, the relatively strong emergence of self-efficacy as a treatment outcome predictor, and the reconceptualization of substance abuse treatment as consisting of an initial treatment and an aftercare phase, have changed the direction of substance abuse research. That is, traditional in-patient treatment strategies seem effective in initiating a change in substance use behavior, but fail to promote maintenance of change. According to Bandura (1977), this lack of continuity of success occurs because initiation of change and its maintenance each require different types of treatment strategies, and self-efficacy theory can be used to conceptualize the relapse process. Specifically, when individuals enter a situation which may have triggered their substance use in the past, a judgment is formulated, based on past experiences in that situation, about their ability to cope with that situation. This judgment will determine individual coping behavior and how long the coping behavior will be maintained in that situation, with high levels of self-efficacy (the judgment that one will be able to cope effectively in that situation) predicting the initiation and maintenance of effective coping strategies (Annis, 1986; Annis & Davis, 1988, 1989). With respect to substance abuse, treatment effects will be maintained only if the individual has developed a strong sense of confidence in the ability to cope with, and refrain from substance use in, certain high risk situations. High self-efficacy will

therefore predict more favorable and durable treatment effects. Bandura (1986, 1977) also states that the strongest self-efficacy expectations are developed through performance-based tasks (tasks where the individual actually performs the desired behavior, such as remaining abstinent, in various situations).

Based on this conceptualization of maintenance guided by self-efficacy theory, researchers have sought to design more effective relapse prevention and aftercare programs. Such programs generally use cognitive and behavioral techniques (ex. skills training) and performance-based procedures to directly manipulate and ensure the development of strong efficacy expectations.

One of the first such programs is that developed by Annis and Davis (1988). Briefly, intervention begins with a microanalysis of the client's high-risk situations for relapse over the previous year where substance use behavior and risk for relapse is assessed in the eight categories of relapse situations identified by Marlatt and Gordon (1980). Based on the results of this analysis, the client then develops a personal hierarchy of risk situations for substance use. Through the use of homework assignments, treatment then focuses on helping the client learn alternate ways of coping in these situations. In the "initiation" phase of treatment, strategies which facilitate coping and have been shown effective in initiating behavior change are promoted (eg., avoidance, reliance on friends or family). These initial successes strengthen self-efficacy. In the "maintenance" phase of treatment, initiation phase strategies are gradually withdrawn and strategies which promote generalization and maintenance are introduced. There is planned exposure to, and eventual entry into, previously high-risk situations. Successful completion of these tasks provides the client with a perception of increasing mastery. Finally, the conditions under which relapse could occur are discussed, and appropriate coping strategies are planned. Self-efficacy is monitored at the start and termination of treatment. This relapse prevention intervention also incorporates Prochaska and DiClemente's (1986) process of change model to ensure that clients do not proceed to the initiation or maintenance phases

of treatment until they are sufficiently committed to attempting a behavior change (Annis, 1988).

Several studies have been conducted to verify the effectiveness of Annis' (1986) relapse prevention intervention. A clinical trial conducted with 41 male problem drinkers revealed dramatic decreases in drinking from intake to three- and six-month follow-up, both in terms of frequency of drinking days per week and number of drinks consumed on a drinking day (Annis & Davis, 1988). Forty-seven percent and 29% of clients reported abstinence at 3 months and at 6 months, respectively. Self-efficacy ratings increased significantly from intake to 6 months post-treatment, and were associated with increased control over drinking behavior.

A recent study (Annis, 1990) has provided a more controlled evaluation of the relapse prevention intervention. Eighty-three male alcoholics who had completed a 3-week inpatient treatment were randomly assigned to either a relapse prevention intervention or to a traditional counseling program. Evaluation at 6-month follow-up revealed no differences in alcohol consumption between groups for the alcoholics whose drinking risk had been similar across the various categories of situations that were assessed. However, those whose drinking had been more situation-specific showed significantly greater reductions in daily alcohol consumption with relapse prevention. Given the lack of demonstrated superiority of any one treatment for all individuals (Miller & Hester, 1986a), these results may be a step toward the identification of a subset of clients who are best suited to particular treatment protocols.

Several other studies have been conducted to investigate whether treatment programs which incorporate self-efficacy enhancing procedures produce more favorable outcomes. Ito, Donovan and Hall (1988) evaluated self-efficacy effects in two aftercare treatments: (a) a relapse prevention aftercare based upon Marlatt and Gordon's (1980, 1985) social learning model of relapse and relapse intervention, where participants are helped in the development of cognitive and behavioral skills that can be used to prevent

future alcohol use; and (b) an interpersonal process aftercare, which does not focus specifically on drinking or abstinence, but rather, on the underlying conflicts which lead to alcohol abuse. Thirty-nine male patients who had just completed a 28-day abstinence-oriented inpatient treatment program, received eight weekly sessions of the relapse prevention or interpersonal process aftercare. Self-efficacy and outcome on alcohol consumption were assessed at pre- and post-aftercare, and at 6 months follow-up. Analyses revealed that both aftercare conditions produced comparable outcome on number of drinking days, time to first drink, and proportion of abstainers. With respect to self-efficacy measures, the relapse prevention aftercare was associated with significantly higher efficacy scores at post-aftercare, but this difference was no longer present at the 6-month follow-up.

Stephens, Roffman and Simpson (1994) also tested the efficacy of a relapse prevention model in the treatment of adult marijuana dependence. One hundred and sixty one men and 51 women were randomly assigned to either a relapse prevention or a social support group discussion intervention. Although the frequency of marijuana use decreased significantly over the 12 months posttreatment, the two treatment groups did not demonstrate significant differences on measures of days of marijuana use or abstinence rates.

More recently, Allsop, Saunders, Phillips & Carr (1997) compared a relapse prevention (RP) aftercare program with a discussion or no-additional treatment control procedure among a male sample of 60 severe problem drinkers. The aim of the RP program was to help participants identify relapse precipitants and develop performance-based strategies to cope with these precipitants. In view of Bandura's (1977) conjecture that performance-based strategies have the greatest impact on self-efficacy, it was hypothesized that subjects in Group RP, as compared to the other two treatment conditions, would show the greatest increases in pre- to post-treatment self-efficacy, and that this would be associated with a more favorable outcome at the 6- and 12-month

follow-up periods. Analyses of variance conducted on the global efficacy scores from pre- to post-treatment indicated that although the scores for each treatment condition did not increase significantly, the RP and no-additional treatment conditions demonstrated the greatest increases in self-efficacy from pre- to post-treatment. The RP group, however, did not exhibit greater increases in self-efficacy than the no-additional treatment group. The authors stated that a lack of statistical power may have accounted for the failure to detect a significant difference between these two groups. Survival analyses were also conducted to compare time to lapse (time to first drink) and time to relapse (time to first occurrence of heavy drinking, defined as 300 units of absolute alcohol or more in three days) between treatment conditions. Results showed that although the participants in Group RP 'survived' longer before lapse and relapse over the 12-month follow-up and had higher abstinent rates, the differences did not endure.

In summary, although these and other studies (see Ito & Donovan, 1986) suggest that aftercare contributes to improved treatment outcome, the superiority of aftercare programs which incorporate specific self-efficacy enhancing techniques has yet to receive strong support. The role of self-efficacy in the understanding of recovery from addictive behaviors has nonetheless been consistently supported. Increases in self-efficacy have been consistently associated with increased control over behavior, and efficacy expectations have been revealed as possible predictors of outcome status and time to relapse, although this finding varies across studies. Perhaps most important is the contribution of self-efficacy to the understanding of the process of behavior change; that is, the fluctuations in efficacy expectations during recovery and how they relate to outcome.

However, the above discussion highlights some of the important limitations that are inherent in studies examining self-efficacy and substance use behavior change. Although the multidimensionality of various scales, such as the Situational Confidence Questionnaire (Annis, 1982, 1984) and the Alcohol Abstinence Self-Efficacy Scale

(DiClemente et al., 1994) has been supported (Miller, Ross, Emmerson & Todt, 1989; DiClemente, Carbonari, Montgomery & Hughes, 1994), there is still a tendency in the research to rely on global rather than situation-specific measures of self-efficacy. As discussed above, the prediction of situations of potential relapse for each client depends on a thorough assessment of self-efficacy in each type of situation. There is also some evidence to suggest that an alternate model which integrates both these views better explains the data obtained in the research (Velicer, DiClemente, Rossi, & Prochaska, 1990).

Results are also mixed with regard to which measures of self-efficacy (change, intake, discharge, or maintenance scores) are the better predictors of outcome. In establishing this relationship, the empirical literature has shown that attention must be given to such factors as ceiling effects on self-efficacy measures, and pre-treatment differences among treatment groups.

The Present Study

The primary purpose of the present study was to prospectively examine the process of recovery from substance abuse behavior, with an emphasis on the role of self-efficacy, among three groups of individuals who had undergone intensive treatment at a facility for alcohol and drug abuse: (a) Group RP consisted of participants in a relapse prevention (RP) aftercare program which was added to the usual aftercare provided by the respective treatment center; (b) Group AA consisted of participants in an AA-oriented (AA) aftercare program which was added to the usual treatment center aftercare; and (c) Group Reference consisted of participants in the usual aftercare offered by the treatment center and served as a reference for the above two groups. Groups RP and AA participants were randomly selected, while participants in Group Reference were self-selected. The recovery process was investigated from pre-aftercare, to post-aftercare, to a 6-month follow-up.

The selection of a relapse prevention program and an AA-based intervention as

the additional aftercare conditions was deliberate. Specifically, both intervention presently occupy center stage in the empirical literature. Relapse prevention interventions which incorporate self-efficacy enhancing techniques have been gaining increasing appeal due to their potential for improving posttreatment maintenance. AA-based interventions have a long history, but until recently have received little empirical study. The opportunity to evaluate the impact of each intervention on outcome, explore their underlying processes, and compare their efficacy as aftercare programs was thus seen as an important contribution to the existing research.

Several goals were established in the present study:

1. The first goal was to investigate whether changes in self-efficacy occurred in Groups RP, AA and Reference from pre- to post-aftercare to the 6-month follow-up, with a specific focus on group differences in the changes demonstrated. Because the RP aftercare program was developed based on Bandura's (1977) self-efficacy theory and incorporates specific program components to increases self-efficacy, it was hypothesized that Group RP participants would show a greater increase in self-efficacy, at least during their participation in the RP aftercare, compared to Groups AA and Reference. It was also hypothesized that Group Reference, which did not receive an experimenter-orchestrated aftercare, would show the lowest increase.

By focusing on self-efficacy, the present study focuses on a change process variable that has been shown to be implicated in the rehabilitation from substance abuse (Finney et al., 1998). Specifically, it is increasingly recognized that black box experimental designs which examine only pre- and post-treatment effects reveal little about the process of recovery (Patton, 1979; Hubbard, 1992).

2. The second goal of the present study was to examine how level of self-efficacy related to functioning at the 6-month follow-up. Specifically, the ability of various self-efficacy measures (pre-aftercare, post-aftercare, or change scores) to predict various measures of outcome was investigated. In view of the inconsistencies in the substance

abuse literature regarding which measure constitutes the better predictor of outcome, specific predictions were not made in this regard. However, given the strong asssociation between generally greater self-efficacy and improved functioning, it was hypothesized that higher self-efficacy levels (as measured by absolute efficacy scores obtained at pre- or post-aftercare), or greater increases in self-efficacy (as measured by self-efficacy change scores) would be associated globally with improved functioning at the 6-month follow-up.

To explore the association between self-efficacy and outcome, the present study employed multiple measures of outcome. Specifically, there appears to be general consensus in the literature that outcome evaluation should address more than just quantity and frequency indices of substance use behavior (Babor, Dolinsky, Rounsaville & Jaffe, 1988; Longabaugh, 1991; Goldstein, Surber & Wilner, 1984). Treatment outcome was therefore assessed in various areas of life functioning and health.

3. The third goal was to explore the multidimensionality of the self-efficacy construct. Specifically, although self-efficacy is posited to be situation-specific (Bandura, 1977),the majority of studies investigating self-efficacy rely on global measures of the construct, a conceptual factor which may have contributed to the inconsistency in the findings regarding the role of self-efficacy in recovery. The present study assessed self-efficacy in specific categories of high-risk situations. It was hypothesized that the various domains of self-efficacy would differentially predict the various outcome measures, with self-efficacy in situations involving negative affect (the category which constitutes the highest relapse risk; Marlatt et al, 1980) playing the greatest predictive role.

In order to better explore the above three goals, conceptual and methodological features were included in the design of the present study. The first was the inclusion of both alcohol and/or drug abusers. Specifically, to maximize internal validity, most studies conducted in this area of substance abuse limit their sample to abusers of a single substance, usually alcohol, with the expectation that it will contribute more to the clear

understanding of treatment impact and effect. Although such a design may promote sample homogeneity and simplify or strengthen the interpretation of results obtained, external validity is sacrificed, as the use of multiple substances by individuals in treatment is on the increase (Weisner, 1992a; Caetano & Weisner, 1995). Restricting research to alcoholics may therefore be a high price to pay in an area of research where the ultimate goal is the generalization of findings to clinical milieu where such programs are likely to be implemented. The second design feature was the availability of a minimal-treatment (usual care only) reference group. Although self-selected, the inclusion of a group that had also participated in the usual aftercare without exposure to either aftercare regime, allows a comparison to be drawn with the participants who represent the usual-care condition.

Method

Participants

The final group of study participants consisted of 102 adult, male and female clients who were undergoing substance abuse treatment at three residential treatment centers for alcohol and drug abusers in the Montreal region: (a) Pavillon Foster (n=44), (b) Le Virage (n=18), and (c) la Maison Jean Lapointe (n=40).

Pavillon Foster, a publicly-funded center serving English-speaking clients, consists of a 20-bed inpatient facility located in St. Philippe de Laprairie, Quebec, and a 12-outpatient facility located in Montreal, Quebec. Numerous services are provided to clients including group therapy, individual counseling, family consultation, and special workshops focusing on a variety of issues such as stress management and conflict resolution. Participation in self-help and support organizations such as Alcoholics Anonymous is strongly encouraged, and play a vital role in helping clients work toward changing their substance abuse behavior. On site meetings and discussion groups based on the 12-Step approach are provided to clients during the 4- to 5-week inpatient, or 6-week (4 days weekly) outpatient treatment. Aftercare, consisting of once weekly group

therapy sessions, is also offered for three months after completion of intensive inpatient or outpatient treatment.

Le Virage, a provincially-funded 30 inpatient and outpatient rehabilitation facility located in St. Hubert, Quebec, serves French-speaking clients residing in the Montérégie region on Montreal's south shore. The center adheres to a biopsychosocial approach and offers activities which meet the physical, psychological, and social needs of each individual. Rehabilitation proceeds in four distinct phases: (a) evaluation and orientation; (b) engagement (commitment to change is explored, goals are established, and a plan of action is constructed); (c) change (significant changes in substance use are carried out through such strategies as improved communication, increased self-esteem, problem solving and social support); and (d) maintenance of gains made. This treatment approach is of 4 weeks duration on an inpatient basis, or can extend from 26 to 35 weeks for outpatients. Although not an explicit treatment component, participation in self-help groups based on the 12-Step (e.g., Alcoholics Anonymous) philosophy is not discouraged, and is perceived to constitute a potentially important source of social support.

La Maison Jean Lapointe, a private, non-profit, 42-bed inpatient facility in Old Montreal serving French-speaking clients, provides services similar to the facilities described above. Its treatment program, based on the 12-Step approach of Alcoholics Anonymous, focuses on an understanding of the AA principles and their daily and lifelong application. Clients also work toward the development of control mechanisms and a strong social support network. Treatment proceeds in four stages: (a) detoxification (either in the drug and alcohol treatment center or a hospital setting, if required); (b) inpatient treatment of 21 to 28 days duration (an individualized treatment plan is developed, clients devise strategies that can help them maintain treatment gains when they leave the center); (c) weekly outpatient sessions (1 evening a week for 12 weeks);

and (d) monthly outpatient sessions (one half-day a month for 9 months). A family therapy program is also available on weekends.

All treatment centers adhere to the goal of abstinence from alcohol and drug use, and offer both individual and group activities. Intensive treatment at each facility is also complemented by various other services provided by a multidisciplinary team of professionals (doctor or nurse, dietitian, psychologist, social worker, etc). As indicated above, all sites also provide aftercare programs of several weeks' duration which seek to reinforce the objectives of intensive treatment.

Materials

Data for this study were collected using structured interviews, self-report measures, and clinical tests. In addition to gathering information on each study participant's sociodemographic, psychological, neuropsychological, and substance use status, various process measures are included to provide an assessment and understanding of factors implicated in substance use behavior change.

I. Measures of sociodemographic, psychological, and substance use status (See Appendix A).

Structured Clinical Interview for DSM III-R: Patient Version (SCID-P)

The SCID (Spitzer, Williams, Gibbon, & First, 1990) consists of items which correspond to and reflect the major psychiatric, diagnostic features contained in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM III-R, 1987) for diagnosis of Psychoactive Substance Use Disorders. This 25-minute interview determines whether the exhibited maladaptive behavior patterns of substance users are indicative of substance abuse or dependence, and provides a recognized screening criterion that study participants must meet (or characterizes the sample in terms of current and past substance abuse or dependence). Information obtained indicates lifetime dependence or abuse, as well as dependence in the past five years, and the severity of dependence over the past month. The structured interview protocol has been

well standardized (Jacobson, 1989), and yields data which are both valid and reliable if subjects answer candidly and the protocol is administered by a trained and qualified interviewers. A validated French version is available. This measure was used as a screening criterion for inclusion in the present study.

Addiction Severity Index (ASI)

The structured, 180-item ASI (McLellan, Luborsky, Woody & O'Brien, 1980) provides a multifaceted index of substance abuse and its behavioral and psychological sequelae. Objective measures of functioning are obtained in six domains: medical, employment/support, drug or alcohol use, legal status, family or social relations, and psychological status. The ASI permits a recording of respondent's own subjective evaluations of problem severity and need for services, thus optimizing both objective and subjective evaluation, a feature not found in similar instruments (Boivin, 1990). Other strengths include its high reliability, good validity, and suitability for clinical applications within the substance abuse field (McLellan, Luborsky, Woody & O'Brien, 1980; McLellan, Luborsky, O'Brien, Woody & Druley, 1982; Kosten, Rounsaville &Kleber, 1983; McLellan, Luborsky, Cacciola, Griffity, Evans, Harriet & O'Brien, 1985). The ASI has also proven to be a good outcome measure for drug treatment outcome (Wells, Hawkins & Catalans, 1988), and was used in the present study to obtain a measurement of outcome in various domains of functioning, as suggested by various outcome evaluation studies (Longabaugh, 1991; Goldstein, Surber & Wilner, 1984; Babor et al, 1988). Limitations of the ASI include its short window of evaluation, namely the previous 30 days, and the inability of the composite score to distinguish individuals who use softer drugs (e.g., marijuana) from those who use more serious drugs (e.g., heroin) if the both the quantity of other drugs consumed and the self-perception of problem severity is equal. Other measurement instruments included in this study should compensate for these shortcomings (see the Cross Study Shared Data Base described below). The global index of substance use is sensitive enough, however, to distinguish polyusers from single drug

users (Boivin, 1990). The ASI is also used in this study to gather demographic data, and can be completed in 30 to 40 minutes. A translated and validated version for use in the Quebec population is available (Gosselin & Bergeron, 1992).

Cross Study Shared Data Base-Intake, Demographic and Follow-up Versions (CSS-I,D & F)

Developed at the Addiction Research Foundation in Toronto, the Cross Study Shared Data Base (Sanchez-Craig, Annis, Bornet & MacDonald, 1984) supplements the ASI and provides a more detailed account of individual substance use behavior. In addition to gathering important demographic information, the CSS-I, D and F provide an in-depth continuous index of quantity and quality of substance use (e.g. over the preceding 30, 60 and 360 days, as well as lifelong use). The follow-up version also permits an evaluation of treatment outcome, and can be valuable in treatment planning and management. The intake and demographic subscales can be completed in 15 minutes, while the follow-up requires 10 minutes.

Timeline Followback Method (TLFB)

Along with the instruments described above, the Timeline Followback (Sobell & Sobell, 1994) helps to further document pre- and post-assessment substance use behavior. The technique involves asking respondents to retrospectively estimate their actual daily alcohol and drug consumption over a specific time period as they remember it. To enhance recall, subjects are provided with a blank calendar covering the time interval which is to be reconstructed. Other memory aids such as key dates (e.g., birthdays, holidays) and discrete events (e.g., illnesses, employment) are also used. The TLFB method has been shown to have good psychometric characteristics (Sobell, Sobell, Leo & Cancilla, 1988). Specifically, test-retest reliability correlation coefficients in populations of alcohol abusers exceed .85 (Maisto, Sobell, Cooper & Sobell, 1979). High correlations have also been found between TLFB self-reports and official reports of arrests and hospitalizations (Cooper, Sobell, Sobell & Maisto, 1981), and with corroborating reports

of the subject's drinking behavior (Connors, Tarbox & Faillace, 1992). Developed for the assessment of alcohol consumption, the use of the TLFB method in the present study has been extended to include the measurement of both drug and alcohol use over intervals ranging from 90 to 120 days.

II. Measures of psychological status (see Appendix B).

Symptoms Checklist-90 Revised (SCL-90R)

A deeper insight into the psychological impact of substance abuse treatment as well as the ability to screen for individuals with severe psychiatric disorders likely to powerfully and independently influence outcome was achieved by employing the SCL-90R (Derogatis, 1983). This instrument is increasingly employed as a simple and effective screening device for detecting psychological disturbance, and has been employed in previous treatment outcome studies of alcohol and drug abusers (McLellan, Luborsky, O'Brien & Druley, 1983). It provides nine clinical scale (somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoia ideation and psychoticism) and three global indices of symptom severity. The aggregate of scales, which yields the Global Severity Index (GSI), was used in the present investigation as an indication of general psychological distress. The SCL-90R has been shown to be a reliable and valid measure. Specifically, internal consistency of the clinical subscales is quite satisfactory, with coefficient alphas ranging between a low of .77 for Psychoticism to a high of .90 for Depression. Test-retest reliability measures vary between .80 and .90 (Derogatis, Rickels & Rock, 1976). Various validation studies (e.g., Weissman, Slobetz, Prusoff, Mezritz & Howard, 1976; Prusoff, Weissman, Klerman & Rounsaville, 1980) have supported a high degree of convergent and concurrent validity and have shown the SCL-90R to be particularly useful in documenting the psychological status of substance abusers. This 90-question instrument can also be computer-scored and requires approximately 15 minutes for completion. A validated French version is available (Gosselin & Bergeron, 1992).

III. Measures of neuropsychological functioning.

Wechsler Adult Intelligence Scale - Revised (WAIS-R): Block Design (BD), Digit Symbol (DSy), and Digit Span (DSp) subscales

Three subscales of the WAIS-R (Wechsler, 1981) have been selected to asses cognitive functioning in study participants: Block Design, Digit Symbol and Digit Span. Studies (e.g., Malloy, Noel, Rogers, Longabaugh & Beattie, 1989) have demonstrated the sensitivity of these subscales to the effects of chronic alcohol and drug usage. Block Design requires examinees to copy patterns using a number of blocks. This subscale assesses visuospatial perception, constructional ability, nonverbal concept ability, and abstract reasoning, processes which are often impaired in alcoholics (Leber, Parsons & Nichols, 1985). In Digit Symbol, testees are shown a set of number-symbol pairs. The testee is then presented with a series of numbers and asked to pair them with the appropriate symbols. This subscale measures visual-motor speed and coordination, and kinesthetic learning (also information encoding, visual perception for abstract stimuli, visual sequencing, learning ability). Alcoholics have been shown to exhibit impaired performance on this test (DeFranco, Tarbox & McLaughlin, 1985). Digit Span involves the repetition of digits in the same order as they are spoken by the examiner, and repetition of digits in the reverse order. It assesses attention, mental alertness, immediate recall, shown to be related to duration of problem drinking (DeFranco et al., 1985), and was used as a screening criterion in the present study. Test-retest and split-half reliabilities of the subscales range from .82 to .87.

IV. Process measures (see Appendix C).

Alcohol and Drug Use Self-Efficacy Scale (ADUSE)

The ADUSE (DiClemente, Carbonari, Montgomery & Hughes, 1994) is a 20-item self-report questionnaire designed to assess Bandura's (1977) construct of self-efficacy as it applies to alcohol and drug abstinence, and was used in the present study to measure efficacy expectations at different points in the treatment process. It is identical in item

content to DiClemente et al.'s (1994) Alcohol Abstinence Self-Efficacy Scale (AASE) but has been extended for the purpose of this study to include the assessment of abstinence self-efficacy in drug abusers. The items present subjects with four particular categories of high-risk situations for substance use as studied by Marlatt and Gordon (1980): (a) negative affect, (b) social interactions and positive states, (c) physical and other concerns, and (d) withdrawal and urges. For each item, respondents are requested to respond how "tempted" they would be to drink or use drugs in each situation on a 5-point Likert scale (1=not at all; 2=a little bit; 3=moderately; 4=quite a bit; 5=extremely). Subject are presented a second time with the same 20 items but this time are requested to indicate how "confident" they are that they would not drink or use drugs in that situation (abstinence self-efficacy). Scores are summed separately for temptation and self-efficacy.

In preliminary analyses, this measure has demonstrated a solid subscale structure and strong indices of reliability and validity (DiClemente et al., 1994). No substantial gender differences have been revealed. The scale can be completed in approximately 15 minutes and constitutes a process measure in this study, allowing an assessment of change in self-efficacy in four specific domains during treatment follow-up.

V. Miscellaneous measures.

Several other measures were included in this study to complement the information provided by the questionnaires described above:

Corroborators Report (See Appendix D).

The validity of self-reports in applied research on addictive behaviors is an issue which has received much attention. The general conclusion of the numerous studies conducted is that verbal reports obtained from substance abusers are generally reliable and valid, as long as they are provided in the context of a clinical or research setting, and when clients are drug and alcohol free and have been assured confidentiality of the information provided (Babor, Stephens & Marlatt, 1987; Aiken, 1986). And as noted by Martin and Wilkinson (1989), "self-report data are virtually indispensible because of the

time intervals over which behavior is to be assessed and the relative unintrusiveness of the method" (p. 137). Nevertheless, for the small proportion of cases where self-report may be inaccurate, several methods are available to increase veridicality (Sobell & Sobell, 1990). The corroborators report is one such procedure whose aim is to minimize bias and improve the accuracy of the self-report data obtained. It is a flexible and inexpensive research tool that can cover a wide range of substance use variables (Maisto, McKay & Connors, 1990). Upon obtaining their informed consent, study participants were asked to nominate two individuals who could serve to corroborate self-report of substance use.

California Psychological Inventory-Socialization Scale (CPI-So; See Appendix D).

The CPI-So (Gough, 1987) is used in this study to assess sociopathy. Numerous studies have been carried out to examine the association between sociopathy and substance abuse (particularly alcoholism). Results have suggested that the presence or level of sociopathy in substance abusers may not only influence the response to treatment (Rounsaville, Dolinsky, Babor & Meyer, 1987; Woody, McLellan, Luborsky & O'Brien, 1985), but may also be related to the effectiveness of different forms of treatment (Kadden, Cooney, Getter & Litt, 1989; Cooney, Kadden, Litt & Getter, 1991).

This 53-item socialization subscale measures a range of norm-observing and prosocial behavior. Low scores on the So scale indicate socialization problems such as deceitfulness and a tendency toward excess, that are indicative of high sociopathy (Gough, 1994). The self-administered CPI-So has also demonstrated reliability and validity with alcoholic patients and constitutes an easy and time-efficient measure of sociopathy (Cooney, Kadden & Litt, 1990).

Peabody Picture Vocabulary Test-Revised (PPVT-R)

One important component of the present study was the administration of various interview and self-report measures both pre- and post-treatment. Subjects wishing to

participate in the study therefore required sufficient mastery of the languages in which these measures were administered, namely English and French. The Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981) was used as a screening tool to provide a quick estimate of potential subjects' receptive vocabulary and comprehension. The examiner presented the testee with a test plate depicting several drawings, read a word to the testee who, in turn, was required to select the corresponding drawing. Total scores indicated age- and grade-equivalent abilities. Study participants had to demonstrate a comprehension level of grade 5 or higher to participate in the present study.

The PPVT-R has good psychometric characteristics, correlating highly with other measures of vocabulary (Dunn & Dunn, 1981). Administration is quick and does not require extensive specialized training.

Latency-to-lapse, latency-to-relapse, and number of abstinent days in the prior 30 days

In addition to the ASI and the SCL-90R, three other variables were developed to evaluate outcome: latency-to-lapse, latency-to-relapse, and number of days of abstinence in the prior 30 days. Specifically, the characterisation of treatment outcome has changed in recent years, with an increasing tendency to perceive alcohol and drug use as a multidimensional rather than a unitary phenomenon (Wanberg & Horn, 1983; Babor et al., 1988). The practice of evaluating the effects of substance use solely on abstinence rates is thus being questioned. In the monitoring of treatment outcome, it has been suggested (Longabaugh, 1991) that outcome status be based not only on various areas of life functioning and health, but also on specific indicators of substance use behavior. Coupled with this is the assertion that although the number of days of continuous abstinence following discharge from treatment may be interesting, the process of recovery may actually involve alternating patterns of substance use frequency and quantity (Connors, Longabaugh & Miller, 1996). To capture this complexity in the process of substance use behavior change, the information provided by several of the

measures described above (e.g., the TLFB and the CSS) were used to derive additional measures to further quantify substance use. One measure was latency-to-lapse, defined as the time to first use of alcohol or drugs following discharge from intensive treatment. The second measure was latency-to-relapse, defined as the time to the first 3 days of use in a 7 day period following discharge from intensive treatment. The third measure was the number of abstinent days in the prior 30 days. Given the complexity of multiple drug use, substance use in this study was measured as frequency of use rather than in quantity-frequency terms.

Procedure

The present study, which focused on the process of recovery from substance abuse treatment, and more specifically on the role of self-efficacy in substance use behavior, was part of a large-scale project which sought primarily to explore whether certain individuals, as a function of their presenting characteristics, benefit more from a particular aftercare regime. Prior to soliciting the participation of drug treatment centers, a proposal describing this larger study was approved by the Ethics Committee of Concordia University. Although the present study was conceptualized subsequent to committee approval, its procedure and methodology were identical to those of the larger study, except for the introduction of the Alcohol and Drug Use Self-Efficacy Scale. The ethics committee was provided a letter informing them of this addition.

Following ethics approval of the larger study, three drug treatment centers (Pavillon Foster, Maison Jean Lapointe, Le Virage) who had demonstrated interest in participating in the study were briefed on the objectives of the project, and their commitment to project participation was obtained. Information sessions were scheduled at each center during which treatment staff were provided with a detailed description of the study, and an opportunity to discuss its integration into their treatment program. A pilot study identical in protocol to the main study proposed (see below) but with a shorter follow-up assessment period was then conducted at each treatment site to evaluate the

feasibility of the established study protocol, and to highlight any unanticipated difficulties. After a few minor adjustments to the protocol, the main study began.

Recruitment of study participants was conducted in a similar manner at each treatment site. Specifically, within several days following admission to treatment at Pavillon Foster, Maison Jean Lapointe, or Le Virage, patients were approached by a designated member of the treatment staff and informed as to the existence of the study. Information pamphlets (see Appendix E) which describe the goal of the study, its protocol, and the implications for participation, were distributed. The pamphlets controlled for the variability in information provided by treatment staff at each site by ensuring that all potential participants were provided with the same study details. Those individuals indicating a willingness to participate were then asked to read and sign an informed consent (Appendix E) which again reviewed the study protocol, briefly described the nature of the questionnaires that were to be administered, and guaranteed confidentiality of the data obtained as well as the option of withdrawing from the study at any time. Participants were also asked to name two individuals who could serve to corroborate self-report of substance use. The signed consent forms and names of corroborators were then forwarded by the staff member to the project coordinator at Concordia University who was responsible for contacting participants and scheduling appointments for the various assessments that were part of the study protocol.

As depicted in Figure 1, the present study can be conceptualized as consisting of two main components: (a) assessment, and (b) aftercare. Although participation in both components was encouraged, interested subjects were given the option to participate in both the assessment and aftercare components of the study protocol (full participation), or only in the assessments (partial participation). Partial participants constituted the reference group (the self-selected condition) for this study, allowing a comparison of individuals who underwent the standard intensive and follow-up treatments normally provided at each center, with individuals who underwent both standard treatment as well

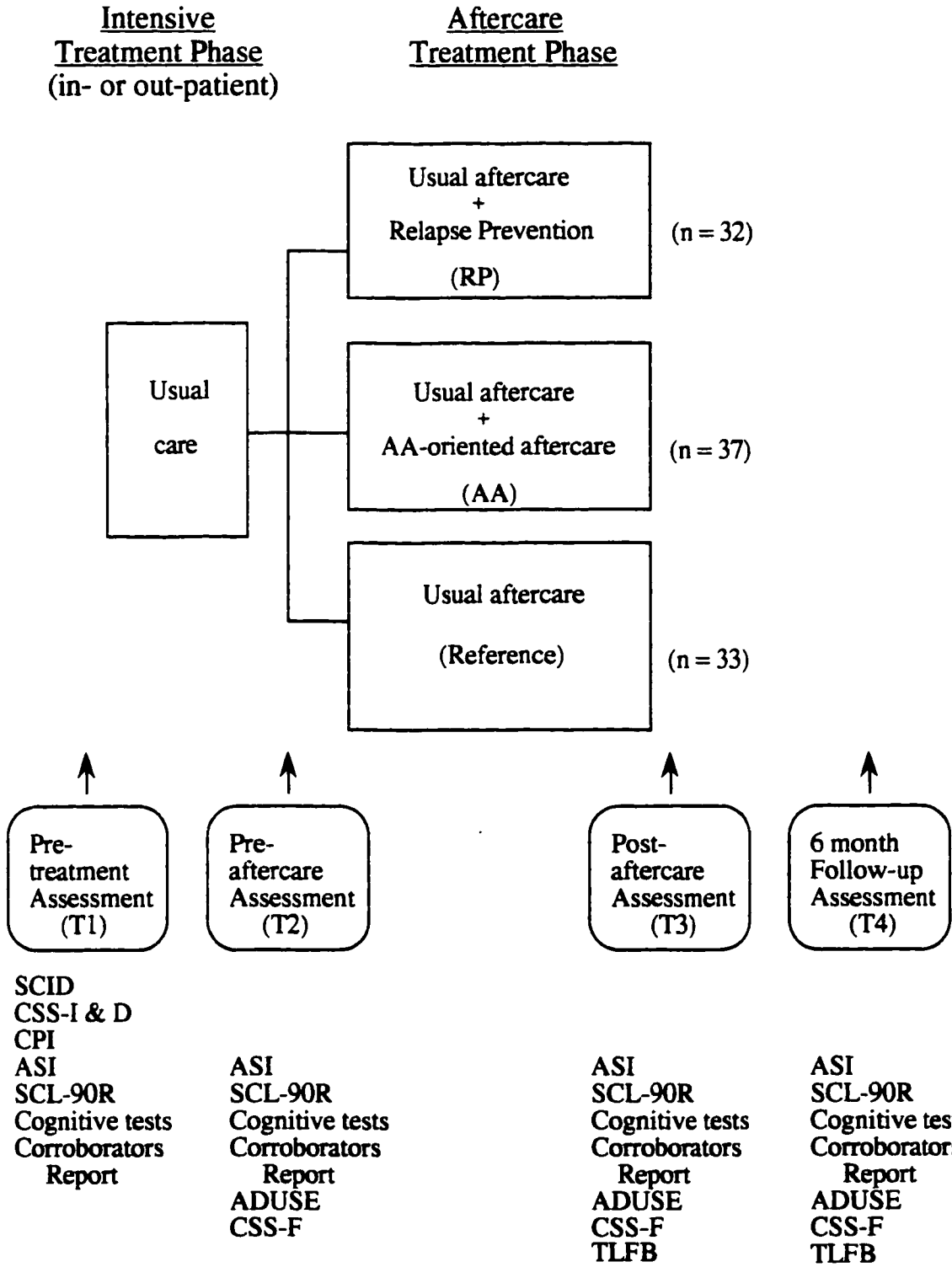


Figure 1: Study Design and Schedule of Interview and Questionnaire Administration

as the aftercare provided by Concordia University.

The Assessment Component

Four assessments, or test sessions, were conducted throughout the present study. They took place at designated locales provided by the treatment centers, or at our Concordia University laboratory, as per the subject's preference. The first test session, of two to three hours duration, was conducted upon the subject's admission to intensive treatment at one of the three participating centers. A trained psychometrician interviewed subjects and administered various questionnaires which assessed such variables as past and present substance use, psychological status, and neuropsychological functioning. Demographic data was also collected. Based on the information obtained, each subject's eligibility for the present study was determined according to the following inclusion criteria: (a) aged 18 years or older; (b) met DSM-III-R diagnostic criteria for Psychoactive Substance Dependence or Abuse, as classified by the SCID; (c) did not exhibit current opioid dependence, severe organic brain syndrome or symptoms of acute psychosis; (d) were able to read and write in either French or English at the fifth grade level or above, as determined by the PPVT-R; and (e) had transportation or resided within fifty miles of Montreal or St. Hubert (south shore Montreal).

Following intensive treatment, a second, one-hour pre-aftercare assessment was scheduled with the subject. Several of the aspects of client functioning evaluated in the first test session were reassessed, along with process variables such as self-efficacy (ADUSE). Corroborators were also interviewed.

The third and fourth assessments, similar in content and length to the second, were conducted post-aftercare, and at 6-month follow-up. Although partial participants did not undergo the aftercare component, they were evaluated at these same time intervals. Figure 1 summarizes the four test sessions and the instruments employed in each session.

The Aftercare Component

In addition to undergoing the assessment component of the study, subjects who

had indicated a willingness to also participate in the aftercare groups were assigned, at test session two (pre-aftercare), to one of the two aftercare programs provided using an urn randomization procedure (Wei, 1978). Developed specifically for use in controlled clinical trials, this procedure allows for each subject's immediate random assignment to treatment conditions, while minimizing the over- or under-representation of certain subject characteristics in each condition. In the present study, the urn process maximized the likelihood that the composition of the two aftercare groups at each treatment site were comparable with respect to eight variables which could influence outcome--age, sex, primary substance of abuse, psychological symptomatology (measured using the SCL-90R), inpatient versus outpatient intensive treatment, cognitive status (measured using Block Design, Digit Span, and Digit Symbol), verbal ability (measured using the PPVT-R) and sociopathy (measured by the CPI-So). The computer algorithm used was that developed by the Project MATCH Research Group (1997), and was adapted to the randomization parameters indicated above. Urn randomization was conducted separately for each of the three treatment sites, and when a sufficient number of participants had been recruited to form two aftercare groups.

When group composition was determined, names of potential group participants were then provided to the interveners (one AA-oriented and one RP intervener at each of the three treatment locations) who were to conduct the aftercare groups. All interveners had been previously trained by the Addiction Research Foundation (Toronto, Ontario), and by the Psychiatry Department of Yale University (New Haven, Connecticut) in the RP and AA-oriented counseling procedures, respectively. Every attempt was made to select interveners whose treatment assumptions and beliefs were consistent with the aftercare program they were delivering (generally, graduate psychology students having a cognitive-behavioral background were chosen to lead RP groups, while individuals with experience in the AA ideology led the AA-oriented groups). Interveners then contacted all participants to inform them of the date, time and location of the aftercare groups.

Upon request, bus or metro tickets were provided free of charge to individuals who wished to attend group sessions but did not have the financial means to provide their own transportation.

Both aftercare programs consisted of 10 weekly sessions. Each session lasted 90 to 120 minutes depending on the number of group participants. Throughout the study, interveners were closely supervised by clinical psychologists, and regular meetings ensured program compliance as well as an opportunity to discuss any difficulties that arose. Training manuals describing the application of each regime in a group format were provided to each intervener. To ensure consistency in the delivery of each regime, interveners were encouraged to follow the program structure provided in the training manuals as closely as possible, while at the same time adapting each regime to the needs of the group participants. Consistent with treatment objectives of the participating treatment sites, both aftercare regimes adhered to a goal of abstinence.

a) Relapse Prevention Aftercare Program

The RP counseling procedures used in this study were modeled after the Structured Relapse Prevention Program (Annis, 1986) for the treatment of alcoholics. Briefly, the first two group sessions of the intervention begin with an analysis of each subject's high-risk situations for relapse over the previous year, using the Inventory of Drug-Taking Situations (Annis & Martin, 1992). This questionnaire assesses drinking and drug-use behavior within, and the potential threat to abstinence posed by, the eight categories of relapse situations identified by Marlatt and Gordon (1980): (a) unpleasant emotions, (b) physical discomfort, (c) pleasant emotions, (d) testing personal control, (e) urges and temptations, (f) conflict with others, (g) social pressure, and (h) pleasant times with others. Based on the results of this analysis, group participants develop a personal hierarchy of risk situations for substance use. Through the use of homework assignments, treatment then focuses on helping the participant learn to cope successfully with these situations through the performance of alternate coping strategies.

Specifically, in the initiation phase of treatment (sessions 2 to 5 inclusively), the likelihood of abstinence is maximized by promoting the use of strategies, such as avoidance of risk situations and reliance on a responsible collateral, which facilitate successful coping and have been shown effective in initiating behavior change. Homework assignments, including goal setting and daily monitoring, are used to indicate what risk situations are pertinent to each subject, and to aid in the development of an individualized treatment plan. Subjects' coping in various situations (both cognitive and behavioral) is examined, and the specific areas in which alternative strategies could be expanded are worked on in the groups (e.g. role playing, rehearsal) or at home (e.g., homework assignments).

In the maintenance phase of treatment, the intervener plays a less directive role, with the subject assuming greater responsibility for anticipating risk situations and initiating alternative coping strategies. With the development of new coping skills, Phase 1 strategies are gradually withdrawn, with the realization that the avoidance of risk situations or reliance on responsible collaterals may not always be desirable or possible. There is also planned exposure to and gradual entry into situations which were described as formerly problematic. Finally, the conditions under which relapse could occur are discussed, and appropriate and effective coping strategies are planned.

In order to benefit maximally from the above program, subjects must have made an explicit decision to change their substance use behavior. Commitment to change (motivation) is therefore closely monitored throughout both phases, and feelings of ambivalence that arise are readily addressed.

b) AA-Oriented Aftercare Program

The AA-oriented aftercare regime provided in this study is based on the principles described in the 12-Step Facilitation Manual (Nowinski, Baker, Carroll & Rounsaville, 1991) prepared for use in the National Institute of Alcoholism and Alcohol Abuse's (NIAAA) Project MATCH. It adheres to the concepts set forth in the "12 Steps and 12

Traditions" of AA, and is grounded in the conception of alcoholism as a chronic and progressive illness that affects the body, mind and spirit for which the only effective remedy is abstinence. Active involvement in the AA fellowship is regarded as the primary factor responsibly for sustained sobriety. The main goal of the AA aftercare program was therefore to educate subjects regarding the AA view of alcohol (and drug) use, and to facilitate their active participation in AA.

As with the RP program described above, the 10-week AA facilitation program is structured, with each session having a specific agenda and following a prescribed pattern. Emphasis is given to the first 4 of the 12 Steps, namely, admitting one's powerlessness over alcohol (or drugs), belief in a greater Power, the decision to turn one's life over to God, and the elaboration of a moral inventory. Sessions focus on the above four core topics as well as other elective topics tailored to the needs of the group participants. Between sessions, subjects are also strongly encouraged to attend several AA or NA meetings per week and to read AA publications, as well as engage in various other recovery tasks (e.g., AA meetings to be attended, suggested readings). They are also asked to maintain a personal journal and record such information as meetings attended, personal reactions to meetings or readings, and cravings to use that may have arisen and what was done about them.

Data Analysis

Preliminary data screening

The analyses in this study consisted primarily of repeated measures analyses of variance (ANOVA) and multiple regression analyses. Prior to performing these analyses, a preliminary screening of the data was carried out. Missing data was negligible as those subjects who had not completed each of the assessment sessions were not included in the final analysis. Univariate outliers were also identified (only four were revealed; one each for age and years of education , and one each on the SCL-90R and WAIS-R scales), and brought to within three standard deviations of the mean for the group as recommended by

Tabachnick and Fidell (1989). This procedure reduced the potential influence of these outliers but still preserved the fact that they were the most extreme cases in the distributions.

Repeated measures ANOVA was used to compare the change in self-efficacy from pre- to post-aftercare to 6-month follow-up between the three treatment groups (RP, AA, and Reference). The assumptions of normality, homogeneity of variance and sphericity required for the repeated measures ANOVA were verified. The values for self-efficacy (the dependent process variable) in each of the four domains assessed (situations involving negative emotions, positive social states, physical and other concerns, and withdrawal and urges) were moderately positively skewed for each of the three treatment groups. Because the skewness was comparable in both groups, transformations were not undertaken since these would not have appreciably affected the results of ANOVA (Tabachnik and Fidell, 1989, p. 84). The assumption of homogeneity of variance was met in the large majority of cases.

Multiple regression analyses were used to examine the predictive relationship between the changes in self-efficacy, and the changes in outcome (assessed by the ASI subscales, the SCL-90R, and various measures of substance use). Only those outcome measures having significant pairwise correlations with the self-efficacy measures were retained for these analyses. Pre- and post-aftercare self-efficacy, as well as efficacy change scores for the pre- to post-aftercare period and the pre-aftercare to 6-month follow-up were all considered as potential predictors of outcome. The statistical assumptions underlying multiple regression analyses (linearity, homoscedasticity and normality of residuals) were examined and met.

Cox's (1972) proportional hazards regression model was also used to examine the contribution of self-efficacy to two outcome variables: (a) latency-to-lapse (defined as latency to first use of drugs or alcohol following termination of intensive treatment), and

(b) latency-to-relapse (defined as latency to 3 days of drug or alcohol use in a 7-day period). Here again, assumptions were verified and met.

Subject Attrition and Data Reduction

Two hundred and forty-five individuals initially responded to the information pamphlets distributed, and indicated a willingness to participate in the present study. As indicated above, initial recruitment was carried within several days following admission to intensive treatment at one of the three treatment centers. Of the individuals initially recruited, 108 withdrew their participation at various stages in the study, and were therefore not included in the final analyses. The reasons for drop-out are provided in Table 1. These individuals comprised 44% of the total sample initially recruited.

Several cases were also deleted from the data set due to missing data. Specifically, thirty-five of the 137 subjects who chose to remain in the study could not be contacted, or were not available, to complete one of four assessment sessions. In view of the large quantity of data assessed at each assessment session, a decision was made to delete these cases rather than attempt mean substitution. The number of subjects having full data who were retained at each assessment session during the study is summarized in Figure 2. Analyses were carried out, however, to compare the group of individuals who were dropped from the study (due to drop-out or missing data) with the group who chose to participate in each phase of the study. (Means and standard deviations for each group on selected variables are available in Tables 1 and 2 of Appendix F.) The chi-square statistic revealed no differences between the groups on recruitment site ($X^2(2, \underline{N}=245) = 2.71$, N.S.), in- or out-patient status ($X (1, \underline{N}= 245)=0.01$, N.S.), race ($X^2 (1, \underline{N} = 245) =0.90$, N.S.), religion ($X^2(1, \underline{N}= 245) =0.40$, N.S.) or primary substance of use ($X^2 (2, \underline{N} = 245) = .39$, N.S.). The group retained for final analysis, however, contained a lower percentage of women than did the group deleted from the final sample. Independent t-tests were also used to compare both groups on psychological symptomatology (as measured by the global severity index of the SCL-90R), cognitive

Table 1

Percentage of Subjects who Dropped Out at Various Stages of the Study (n=108)

Variables	Drop-out Period					
	T1 to T2		T2 to T3		T3 to T4	
	%	n	%	n	%	n
Reasons for dropping						
Too busy to participate	12.96	(14)	9.26	(10)	0	(0)
No longer interested	11.11	(12)	18.52	(20)	.93	(1)
Moved away	1.85	(2)	3.70	(4)	0	(0)
Never returned phone calls	5.56	(6)	0	(0)	0	(0)
Could not be contacted	14.81	(16)	11.11	(12)	0	(0)
Other	5.56	(6)	4.63	(5)	0	(0)
Total	51.85	(56)	47.22	(51)	.93	(1)

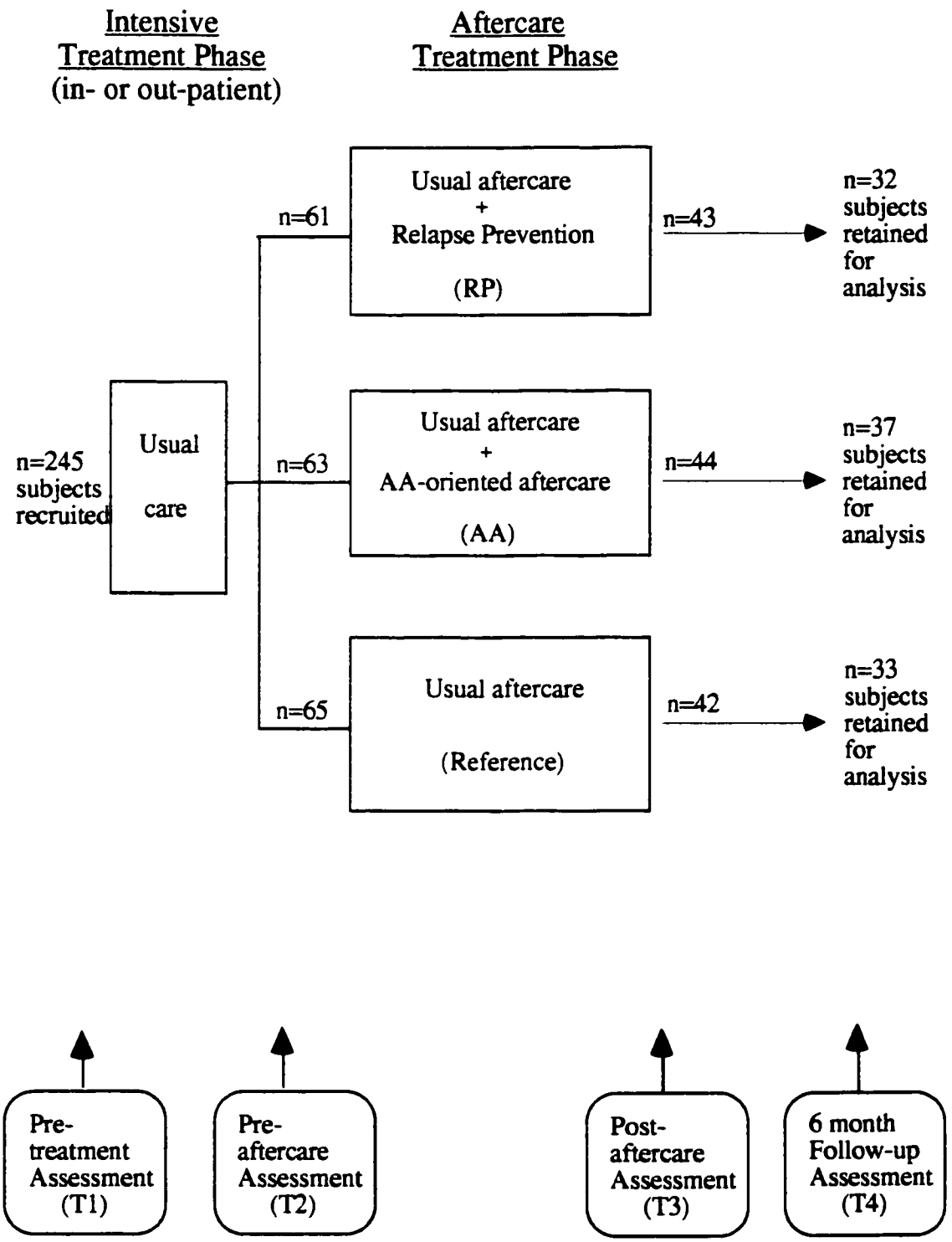


Figure 2: Summary of Subject Attrition and Missing Data

functioning (as measured by the subscales of the WAIS-R), age, years of education, verbal ability (as assessed by the PPVT), and sociopathy (as measured by the Socialization scale of the CPI). No differences were found on psychological symptomatology (t (243)=-0.97, N.S.), cognitive functioning (t (243)=-0.23, N.S.), or years of education (t (243)=-1.96, N.S). However, individuals who chose to drop out of the study or had missing data exhibited a lower level of sociopathy (t (243) =-2.10; p =.04), although both groups obtained mean scores that were well below the clinical cut-off score. The retained sample was also older in age (M=38.40 years, SD= 9.30 for the final sample and M=35.47 years, SD= 8.69 for the deleted group; t (243)=-2.53; p =.01), and had greater verbal ability (t(243)=-4.16; p<.01), although both groups demonstrated comprehension levels sufficient to participate in all phases of the study.

In summary, of the 245 individuals initially recruited in the study, 108 (44%) chose to terminate their participation, and 35 (14%) were deleted from the data set due to missing data. The final data set consisted of 102 individuals (41.63% of the initial 245 participants initially recruited) who had completed all four assessment sessions, and participated in one of two treatment conditions: (a) the usual treatment provided by the individual's treatment center, as well as a Relapse Prevention aftercare (Group RP), or (b) the usual treatment provided by the individual's treatment center, and an Alcoholics Anonymous (12-Step) aftercare (Group AA). Individuals who agreed to participate in the usual treatment and the assessment sessions but not in the aftercare, constituted a reference group (Group Reference). Participants who were assigned to the AA or RP aftercare but did not attend any sessions were also assigned to the Reference group. Participants in Group RP attended an average of 6 aftercare sessions, while those in Group AA attended an average of 7 aftercare sessions.

Results

Overview

The data were analyzed in four parts. In part one, Groups RP, AA, and Reference were compared on demographic and substance use-related variables assessed at intake prior to participation in the aftercare programs. The issue primarily addressed was the nature and extend of the differences between the groups, with a specific focus on Group Reference. In view of the self-selected nature of this group in comparison to the random assignment of participants to Groups RP and AA, the question to be answered was whether to include Group Reference in the formal analyses carried out with the other two groups.

Part two of the analyses examined the changes in self-efficacy scores from pre-aftercare to the six-month follow-up in the treatment groups, in each of four self-efficacy domains. Analysis of variance allowed for a comparison between the three groups.

In part three of the analyses, the association between self-efficacy and selected outcome variables was examined. Group differences on the outcome variables were first explored using ANOVA, and regression analyses were then computed to determine the contribution of self-efficacy to outcome. A survival analysis model was used to determine the role of self-efficacy in the prediction of a) latencyto-lapse, and b) latency-to-relapse.

Part One:

Comparison of Groups RP, AA and Reference on Selected Demographic and Substance Use-Related Intake Variables

An important issue that had to be addressed following preliminary data screening and reduction was whether to include Group Reference in the statistical analyses that were to be conducted. Specifically, this group was self-selected in nature, in comparison to Groups AA and RP which were formed based on urn randomization. It was decided that the inclusion of Group Reference in the quantitative analyses would be based on the nature and extent of the differences between the groups--if Group Reference was similar

to Groups AA and RP on selected measures, it would be included in the formal analyses. If any differences revealed were judged to be significant, Group Reference would only be compared qualitatively with the other two groups.

Selected demographic and substance use-related intake characteristics for Groups RP, AA and Reference are presented in Table 2 and Table 3. One-way analyses of variance (ANOVA) carried out on the continuous variables revealed that the three groups did not differ significantly on age ($F(2,99)=.94$, N.S.), level of sociopathy ($F(2,99)=.70$, N.S.), verbal ability ($F(2,99)=2.34$, N.S.), cognitive functioning ($F(2,99)=1.50$, N.S.), or psychological symptomatology ($F(2,99)=2.05$, N.S.). There were significant group differences, however, on years of education ($F(2,99)=3.72$, $p=.03$). Post hoc Bonferroni-adjusted paired t-tests showed that the participants in Group AA had more years of education than both Group RP ($t(67)=-2.29$, $p=.04$) and Group Reference ($t(67)=2.39$, $p=.04$).

To examine possible group differences on the categorical variables, the chi-square statistic was computed. No significant differences were obtained on sex ($X^2(2, N=102)=.46$, N.S.), race ($X^2(2, N=102)=4.00$, N.S.), religion ($X^2(2, N=102)=.40$, N.S.), marital status ($X^2(4, N=102)=5.97$, N.S.), employment status ($X^2(2, N=102)=.09$, N.S.), recruitment site ($X^2(4, N=102)=1.64$, N.S.), treatment status ($X^2(2, N=102)=1.64$, N.S.), primary substance(s) of use ($X^2(4, N=102)=7.50$, N.S.), or age at which alcohol- or drug-related problems began ($X^2(4, N=102)=.46$, N.S.).

In summary, the only difference revealed between Groups RP, AA and Reference was on years of education, with Group AA having significantly more years of scholarity than the other two groups. Since the groups did not differ on any of the variables which have been shown in the literature to potentially influence treatment outcome (e.g., age, sex, primary substance of abuse, psychological symptomatology, cognitive status and sociopathy), a decision was made to include Group Reference in the statistical analyses, but to covary out the effect of years of education in future analyses. Although not a true

Table 2

Selected Demographic Characteristics of the Sample

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	M	SD	M	SD	M	SD
Age	39.53	10.67	39.11	7.13	36.61	10.27
Education (years)	11.84	3.22	13.51	2.83	12.50	2.92
	%	n	%	n	%	n
Sex						
Male	71.90	(23)	78.40	(29)	72.70	(24)
Female	28.10	(9)	21.60	(8)	27.30	(9)
Race						
Caucasian	100.00	(32)	89.20	(33)	87.90	(29)
Other	0	(0)	10.80	(4)	12.10	(4)
Religion						
Catholic	56.30	(18)	48.70	(18)	54.50	(18)
Other	43.70	(14)	51.30	(19)	45.50	(15)
Marital Status						
Married/common-law	37.50	(12)	37.84	(14)	27.27	(9)
Divorced/separated/widowed	5.63	(5)	18.92	(7)	39.39	(13)
Never married	46.87	(15)	43.24	(16)	33.33	(11)

Table 2 (continued)

Selected Demographic Characteristics of the Sample

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	%	n	%	n	%	n
Employment Status						
Presently employed	53.13	(17)	56.76	(21)	54.54	(18)
Presently non-employed	46.87	(15)	43.24	(16)	45.45	(15)

Table 3

Selected Substance Use-Related Intake Characteristics of the Sample

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	M	SD	M	SD	M	SD
CPI (sociopathy)	37.56	9.10	35.35	8.68	35.18	9.50
PPVT-R (verbal ability)	157.88	14.73	156.57	16.23	150.12	15.70
WAIS-R (cognitive)	9.20	2.25	8.93	1.78	8.40	1.59
SCL-90R (psychological symptomatology)	65.69	11.21	66.57	9.79	70.42	9.34
	%	n	%	n	%	n
Recruitment site						
Maison Jean Lapointe	37.50	(12)	43.20	(16)	36.40	(12)
Pavillon Foster	46.90	(15)	35.20	(13)	48.50	(16)
Le Virage	15.60	(5)	21.60	(8)	15.10	(5)
Treatment status						
In-patient	71.90	(23)	73.00	(27)	75.80	(25)
Out-patient	28.10	(9)	27.00	(10)	24.20	(8)
Primary Substance(s) of Use						
Alcohol only	56.25	(18)	35.13	(13)	33.33	(11)
Drug(s) only	6.25	(2)	16.22	(6)	27.27	(9)
Alcohol and drug(s)	37.50	(12)	48.65	(18)	39.40	(13)

Table 3 (continued)

Selected Substance Use-Related Intake Characteristics of the Sample

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	%	n	%	n	%	n
Age at which alcohol/drug problems began						
Before age 17	34.37	(11)	32.43	(12)	42.42	(14)
Between ages 18 & 25	34.37	(11)	27.03	(10)	24.24	(8)
After age 25	31.25	(10)	40.54	(15)	33.34	(11)

randomized control group, the presence of Group Reference as a no-aftercare comparison group was perceived as a potentially important source of clinical information.

Part Two:

Comparison of Groups RP, AA and Reference on Self-Efficacy

Part two of the analyses focused on the self-efficacy measures, and on a comparison of the changes that occurred in each of the self-efficacy domains, from pre-aftercare to the 6-month follow-up, within each of the treatment groups. Specifically, participants in Groups RP, AA and Reference were compared on their abstinence self-efficacy (i.e., their perceived ability to resist using alcohol and/or drugs) in four separate domains: (1) situations in which they experience negative emotional states, (2) situations involving social positive interactions, (3) situations in which they experience physical concerns, and (4) situations in which they experience withdrawal symptoms and urges to use. Separate repeated measures ANOVA using assessment time (pre-aftercare, post-aftercare, 6-month follow-up) as the repeated (within) factor, and group (RP, AA, Reference) as the between factor, were computed for each domain of self-efficacy. Results are discussed for each domain. (Graphic representations of group differences on self-efficacy measures are provided for each domain of self-efficacy. Results are presented using the same range of efficacy scores on the y-axis to facilitate comparison between domains.)

I. Self-Efficacy Changes in Situations Involving Negative Emotional States

As revealed in Table 4, mean self-efficacy scores obtained for each group at each assessment period, and in situations involving negative emotional states, ranged from 3.65 to 4.03 (out of a possible 5.00), indicating relatively high self-confidence levels. Univariate repeated measures ANOVA comparing Groups RP, AA, and Reference on self-efficacy ratings revealed no significant Group effect, but a significant Time effect ($p=.013$). Further examination of the Time effects, carried out using post-hoc Bonferroni-adjusted paired t-tests for the combined sample, revealed that self-efficacy increased

Table 4

Repeated Measures Analysis of Variance for Abstinence Self-Efficacy in Situations Involving Negative Emotional States

Source of Variation	SS	df	MS	F_{univ}	p
Group	1.46	2	.73	0.41	.663
Error	175.28	99	1.77		
Time	3.65	2	1.82	4.41	.013
Group x Time	2.28	4	0.57	1.38	.242
Error	81.86	198	0.41		
		Simple Effects			
Time / RP	2.39	2	1.19	2.89	.058
Time / AA	3.47	2	1.73	4.19	.016
Time / Reference	0.19	2	0.09	0.23	.796
Groups / Pre-aftercare	1.65	2	0.83	0.98	.379
Groups / Post-aftercare	1.80	2	0.90	1.04	.358
Groups / 6-month FU	0.29	2	0.15	0.16	.849

significantly from pre-aftercare to the 6-month follow-up ($t(101)=-2.80$, $p=.01$).

Examination of the simple effects of Time that was computed for each of the three treatment groups (Table 4) also revealed that Group AA contributed to the significant Time effects obtained ($p=.016$). The results discussed are also demonstrated in Table 5, which presents the means and standard deviations for each group on the ADUSE scores obtained in each self-efficacy domain, and in Figure 3.

In summary, when time of assessment was controlled for, Groups RP, AA and Reference did not differ significantly on self-efficacy in situations involving negative emotional states. However, when collapsing the groups together, there was a significant time effect for self-efficacy, with self-efficacy increasing significantly from pre-aftercare to the 6-month follow-up. Group AA contributed to this effect.

II. Self-Efficacy Changes in Situations Involving Social Interactions and Positive States

With respect to abstinence self-efficacy assessed in situations involving social interactions and positive states, scores ranged from 3.70 to 4.13. Results of the repeated measures ANOVA, presented in Table 6, revealed no significant Group or Time effects, but a significant Group x Time interaction. The simple effects of Time and Group (also presented in Table 6) that were computed to examine the nature of the interaction were not significant, although a trend was noted for the effect of Time for Group Reference ($p=.087$). Although a lack of statistical power may have partly contributed to a lack of significant simple effects, the lack of significance was mostly due to the fact that no one group differed systematically and clearly from the other groups; that is, all three groups fluctuated relative to each other on self-efficacy scores, at each assessment time. These findings are demonstrated in Figure 4.

In summary, although a significant Group x Time interaction was obtained for Groups RP, AA and Reference on self-efficacy measures assessed in social and positive

Table 5

Means and Standard Deviations for Domain-Specific ADUSE Scores at Each Assessment Period

Variables	Group					
	RP (n=32)		AA (n=37)		Reference (n=33)	
	M	SD	M	SD	M	SD
ADUSE-Negative emotional states						
Pre-aftercare	3.65	(0.89)	3.48	(0.93)	3.78	(0.93)
Post-aftercare	4.03	(0.83)	3.71	(1.00)	3.89	(0.94)
6-month follow-up	3.89	(0.84)	3.91	(0.87)	3.79	(1.01)
ADUSE-Social positive situations						
Pre-aftercare	3.82	(0.98)	3.74	(1.02)	4.08	(0.77)
Post-aftercare	4.13	(0.97)	3.85	(1.08)	3.89	(1.04)
6-month follow-up	3.95	(1.04)	4.01	(0.79)	3.70	(1.02)
ADUSE-Physical and other concerns						
Pre-aftercare	4.21	(0.68)	4.16	(0.81)	4.46	(0.62)
Post-aftercare	4.39	(0.73)	4.17	(0.82)	4.31	(0.92)
6-month follow-up	4.38	(0.61)	4.28	(0.71)	4.22	(0.89)
ADUSE-Withdrawal and urges to use						
Pre-aftercare	3.66	(0.90)	3.71	(0.98)	3.90	(0.90)
Post-aftercare	3.90	(1.01)	3.82	(1.05)	3.89	(0.94)
6-month follow-up	3.86	(0.90)	3.89	(0.81)	3.92	(0.99)

Figure 3: Mean Level of Self-Efficacy in Situations Involving Negative Emotional States (± SE mean) as a Function of Treatment Group and Assessment Period.

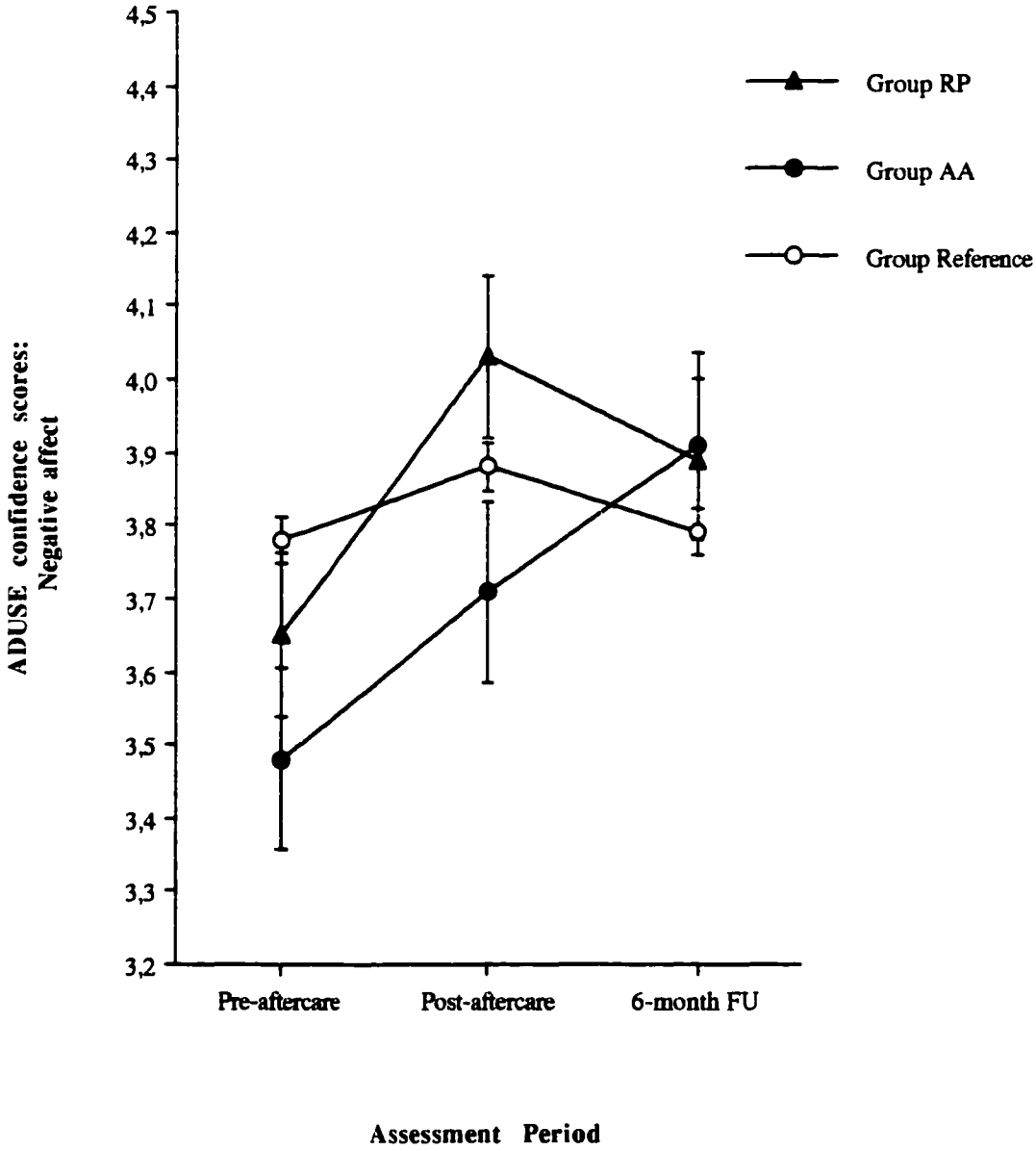
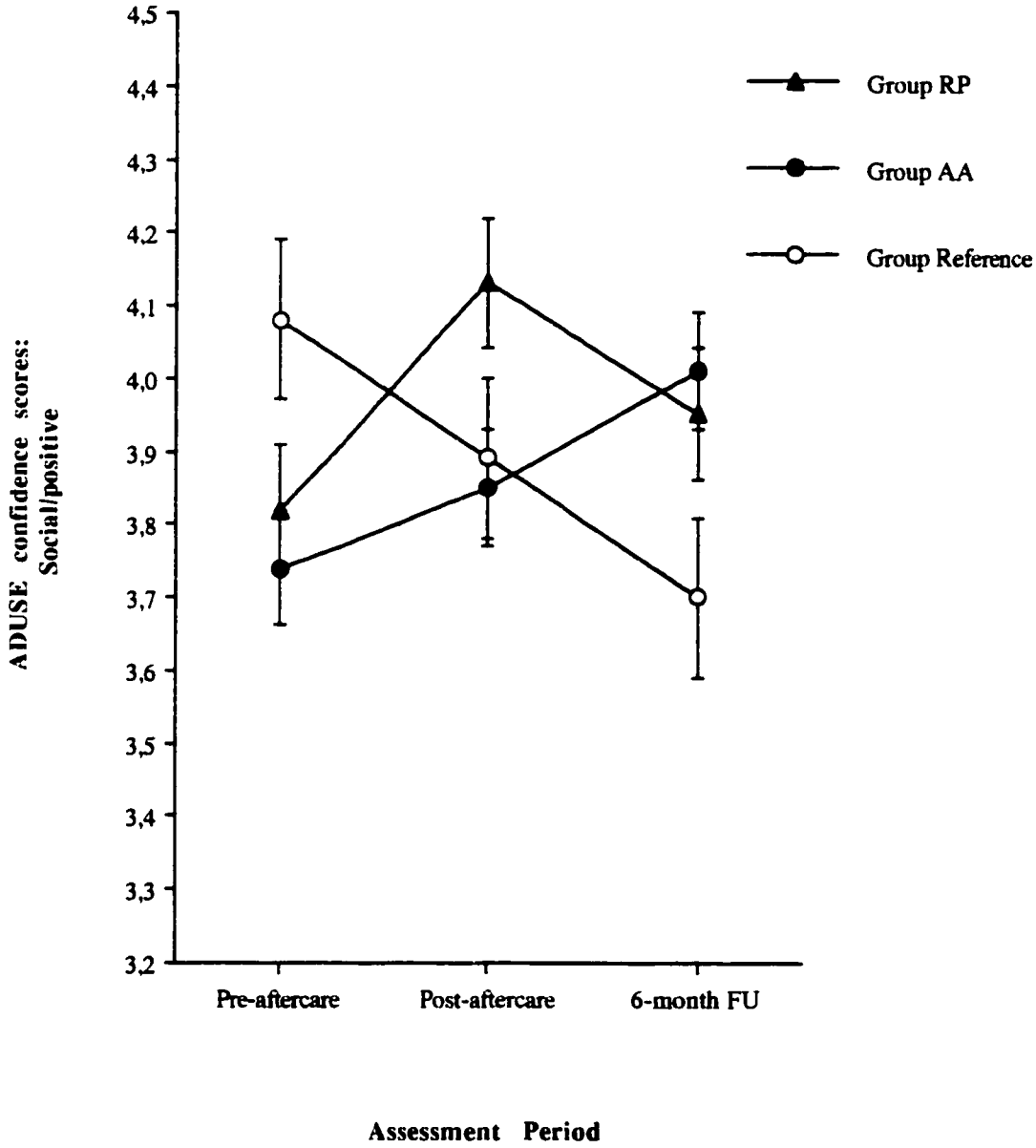


Table 6

Repeated Measures Analysis of Variance for Abstinence Self-Efficacy in Situations Involving Social Interactions and Positive States

Source of Variation	SS	df	MS	F_{univ}	p
Group	0.50	2	0.25	0.13	.878
Error	192.10	99	1.94		
Time	0.36	2	0.16	0.37	.692
Group x Time	4.94	4	1.24	2.56	.040
Error	95.65	198	0.48		
		Simple Effects			
Time / RP	1.51	2	0.76	1.56	.212
Time / AA	1.36	2	0.68	1.41	.246
Time / Reference	2.39	2	1.19	2.47	.087
Groups / Pre-aftercare	2.20	2	1.10	1.27	.286
Groups / Post-aftercare	1.44	2	0.72	0.67	.514
Groups / 6-month FU	1.81	2	0.90	0.93	.396

Figure 4: Mean Level of Self-Efficacy in Situations Involving Social Interactions and Positive States (± SE mean) as a Function of Treatment Group and Assessment Period.



situations, no systematic pattern of change in self-efficacy across the assessment times was demonstrated.

III. Self-Efficacy in Situations Involving Physical and Other Concerns, and Withdrawal and Urges to Use

As shown in Tables 7 and 8, the univariate repeated measures ANOVA comparing Groups RP, AA, and Reference on self-efficacy ratings in (i) situations involving physical and other concerns, and (ii) situations involving withdrawal and urges to use, failed to reveal significant Group, Time, or Group x Time effects. Closer examination of the group means (which ranged from 4.16 to 4.46 for physical concerns, and from 3.66 to 3.92 for withdrawal and urges) and standard deviations on the ADUSE measures (presented in Table 5), and of Figures 5 and 6 reveal much similarity on self-efficacy ratings between the groups in situations involving withdrawal and urges to use, as well as self-efficacy levels that remain constant from pre-aftercare to the 6-month follow-up. With respect to self-efficacy in situations involving withdrawal symptoms and urges to use, participants in Group Reference appear to decrease in self-efficacy from pre-aftercare to the 6-month follow-up compared to participants in the other two groups who remain constant on the ADUSE measures. However, the direction and magnitude of these findings were not significant.

In view of the group differences revealed earlier on years of education (Group AA was found to have more years of education than both Groups RP and Reference), all analyses involving the ADUSE self-efficacy measures were repeated with years of education as a covariate. Results from these analyses did not differ from those presented, and mean values adjusted for years of education were not markedly different from the unadjusted means (the results are presented in Appendix G).

Table 7

Repeated Measures Analysis of Variance for Abstinence Self-Efficacy in Situations Involving Physical and Other Concerns

Source of Variation	SS	df	MS	F_{univ}	p
Group	1.15	2	0.57	0.54	.587
Error	106.17	99	1.07		
Time	0.02	2	0.01	0.02	.976
Group x Time	1.86	4	0.47	1.39	.239
Error	66.41	198	0.34		
		Simple Effects			
Time / RP	1.78	2	0.89	1.76	.178
Time / AA	0.82	2	0.41	0.60	.550
Time / Reference	0.42	2	0.21	0.37	.689
Groups / Pre-aftercare	1.65	2	0.83	0.98	.379
Groups / Post-aftercare	1.80	2	0.90	1.04	.358
Groups / 6-month FU	0.29	2	0.15	0.16	.849

Table 8

Repeated Measures Analysis of Variance for Abstinence Self-Efficacy in Situations Involving Withdrawal and Urges

Source of Variation	SS	df	MS	F_{univ}	p
Group	0.64	2	0.32	0.17	.844
Error	186.31	99	1.88		
Time	1.11	2	0.55	1.39	.252
Group x Time	0.61	4	0.15	0.38	.823
Error	79.16	198	0.40		
		Simple Effects			
Time / RP	1.10	2	0.55	1.38	.254
Time / AA	0.60	2	0.30	0.75	.472
Time / Reference	0.02	2	0.01	0.02	.980
Groups / Pre-aftercare	1.06	2	0.53	0.61	.545
Groups / Post-aftercare	0.13	2	0.07	0.07	.936
Groups / 6-month FU	0.06	2	0.03	0.03	.966

Figure 5: Mean Level of Self-Efficacy in Situations Involving Physical and Other Concerns (± SE mean) as a Function of Treatment Group and Assessment Period.

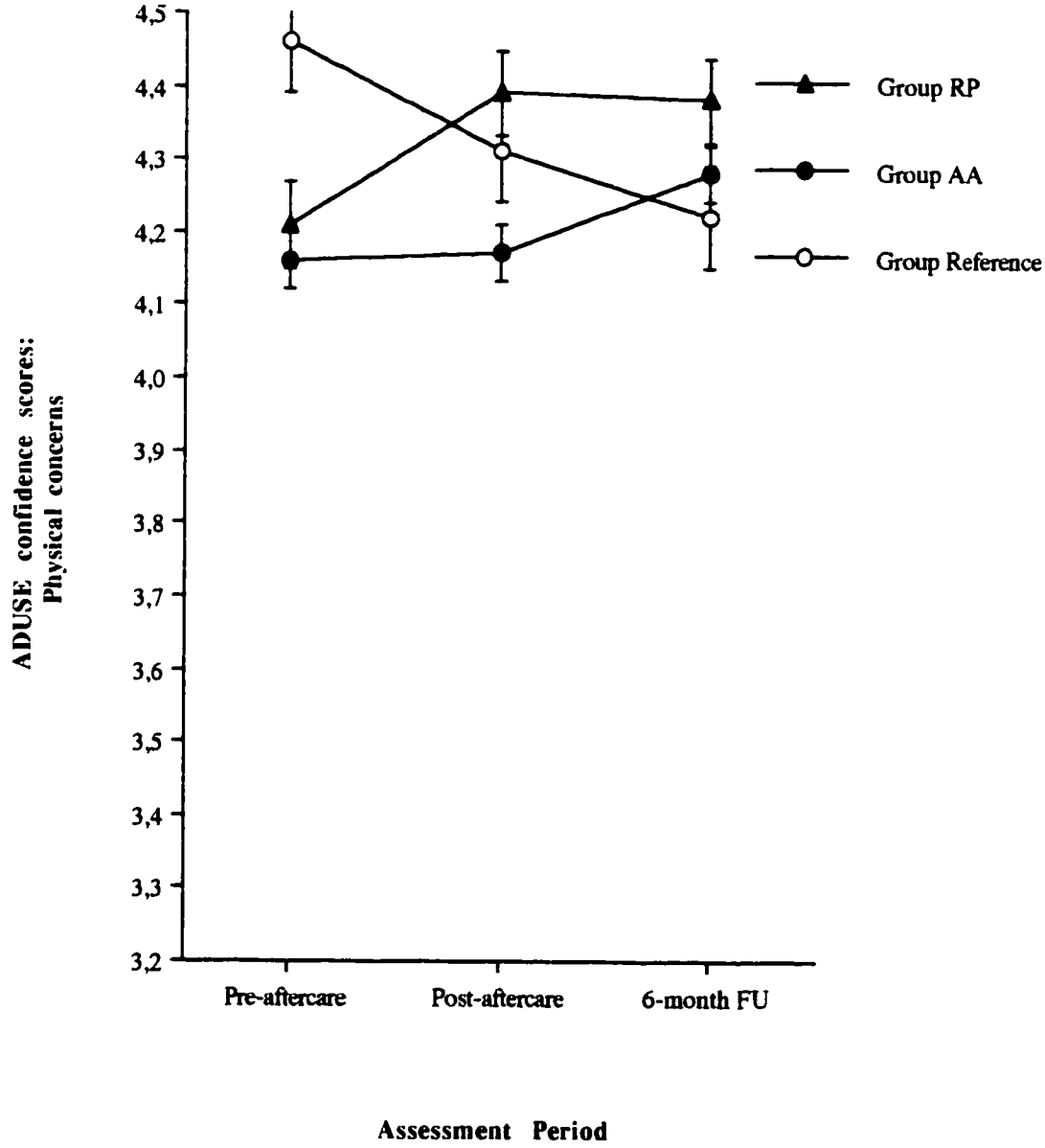
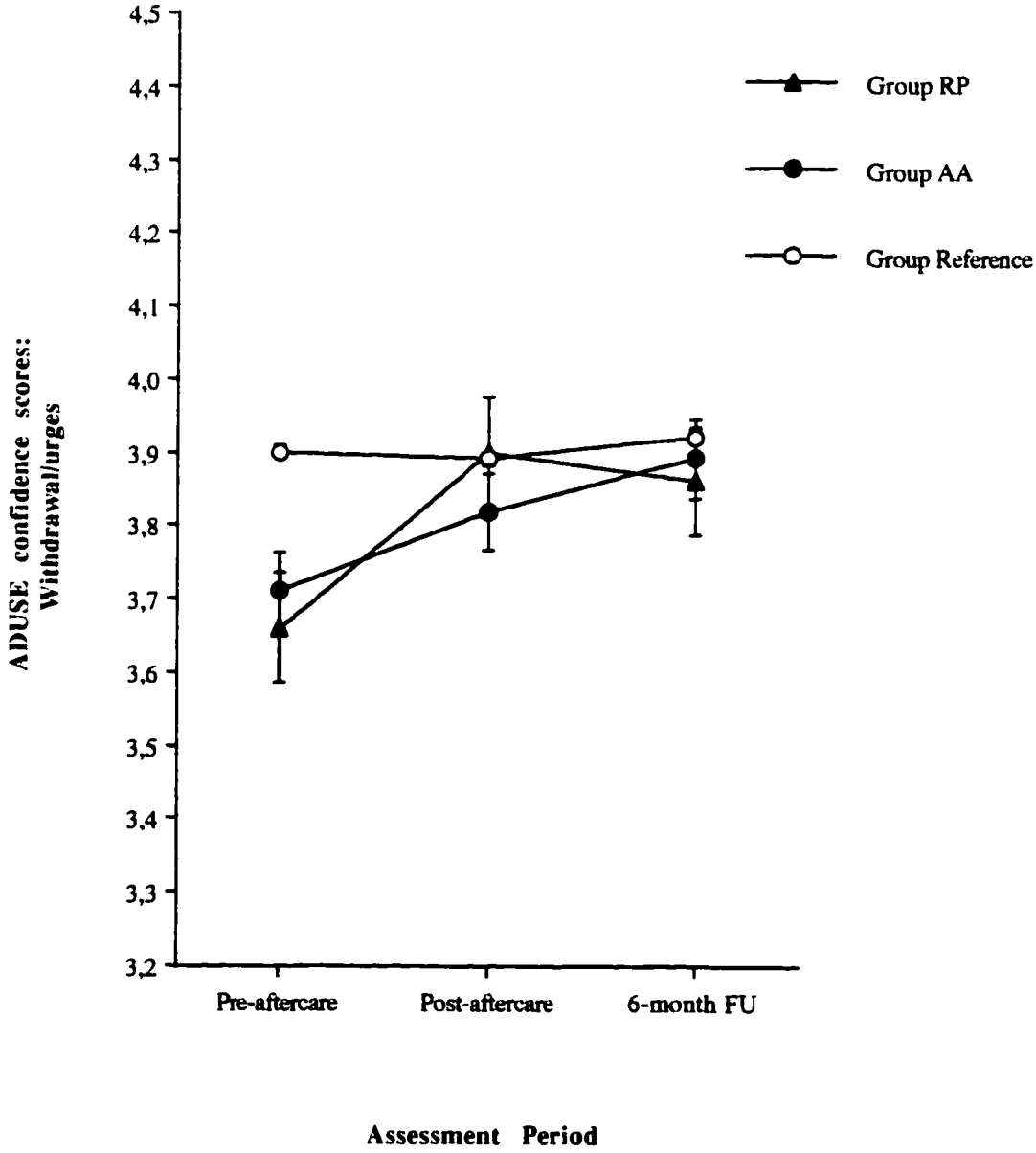


Figure 6: Mean level of self-efficacy in situations involving withdrawal and urges to use (± SE mean) as a function of Treatment group and Assessment period.



Part Three:

Association Between self-Efficacy and Outcome

I. Differences Between Groups AA, RP and Reference on Outcome

Before exploring the association between the domain-specific self-efficacy scores and subject functioning at the 6-month follow-up, various outcome measures included in the study were examined. The outcome measures chosen for this preliminary analysis included the ASI subscale scores in various domains (medical status, employment/support, drug use, alcohol use, legal status, family/social relations, and psychological status), as well as the global severity index of the SCL-90R, and the number of days of abstinence in the previous 30 days. Scores on each of these variables were obtained upon the subject's admittance to intensive-treatment (referred to as the pre-treatment assessment), as well as at pre-aftercare, post-aftercare, and the 6-month follow-up. Separate repeated measures ANOVA for each outcome variable were therefore computed using assessment time (pre-treatment, pre-aftercare, post-aftercare, 6-month follow-up) as the repeated (within) factor, and group (RP, AA, Reference) as the between factor. The inclusion of the pre-treatment assessment values were included to provide a more complete analysis of the changes in outcome variables throughout the full study. (It is important to note that self-efficacy values were not obtained at the pre-treatment assessment).

Prior to these analyses, each outcome variable was examined for outliers and skewness. A square root transformation was used to normalize the ASI subscale scores for medical status and family/social relations, which were moderately skewed in the positive direction. The scores for alcohol use were substantially positively skewed, and normalized using a log transformation. Finally, the scores for drug use and legal status (two domains of the ASI) were inflected, and the scores indicating the number of abstinent days in the prior 30 days were reflected and inversed. Skewness for all variables was corrected, except for the ASI drug use variable and the number of days of abstinence

in the previous 30 days (although skewness was significantly reduced). Given that the last two variables remained skewed to about the same extent and in the same direction, the effect of the skewness on the quality of the analyses was judged to be marginal (Tabachnick and Fidell, 1989; p. 84).

The means and standard deviations for the outcome variables (before transformation) are provided in Table 9. As demonstrated in Table 10, the results of the repeated measures ANOVA carried out on the outcome variables reveal no significant Group effects, but significant Time effects. Post-hoc Bonferroni-adjusted paired t-tests computed for each outcome variable assessed by the ASI subscales revealed that (a) the severity of alcohol/drug-related medical problems remained stable from pre-treatment to post-aftercare ($t(101)=0.32$, $p=.75$), but increased significantly from post-aftercare to the 6-month follow-up ($t(101)=-2.70$, $p=.008$); (b) employment and financial support difficulties decreased significantly from pre- to post-aftercare ($t(101)=3.56$, $p=.001$), and remained stable to the follow-up; (c) drug use-related problems decreased significantly from pre-treatment to pre-aftercare ($t(101)=-3.90$, $p=.000$), and from pre- to post-aftercare ($t(101)=-2.48$, $p=.015$), and remained stable to the 6-month follow-up; (d) alcohol use-related problems decreased significantly from pre-treatment to pre-aftercare ($t(101)=8.84$, $p=.000$), but increased again in the interval from post-aftercare to the follow-up ($t(101)=-10.52$, $p=.000$); (e) problems involving family and social relations reduced significantly from pre-treatment to pre-aftercare ($t(101)=4.90$, $p=.000$), and remained stable to the follow-up, (f) legal difficulties remained stable to the post-aftercare assessment, at which time they decreased significantly ($t(101)=-2.92$, $p=.004$); and (g) psychological status improved significantly from pre-treatment to pre-aftercare ($t(101)=3.24$, $p=.002$), and then remained stable. Changes in the ASI domain scores, collapsed across group, for each of the assessment periods, are depicted in Figure 7. The results of the paired t-tests computed on the SCL-90R scores were consistent with these results, demonstrating that psychological symptom severity and distress decreased significantly from pre-treatment

Table 9

Means and Standard Deviations for Outcome Variables as a Function of Treatment Group

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	M	SD	M	SD	M	SD
Medical status (ASI)						
Pre-treatment	0.31	0.05	0.22	0.04	0.33	0.05
Pre-aftercare	0.25	0.04	0.23	0.04	0.33	0.05
Post-aftercare	0.22	0.05	0.18	0.03	0.23	0.05
6-month FU	0.34	0.04	0.25	0.05	0.32	0.05
Employment/support (ASI)						
Pre-treatment	0.56	0.06	0.55	0.04	0.60	0.06
Pre-aftercare	0.57	0.06	0.56	0.05	0.60	0.06
Post-aftercare	0.50	0.06	0.47	0.04	0.51	0.06
6-month FU	0.54	0.06	0.47	0.05	0.47	0.05
Drug Use (ASI)						
Pre-treatment	0.09	0.02	0.11	0.02	0.13	0.02
Pre-aftercare	0.09	0.03	0.07	0.01	0.08	0.01
Post-aftercare	0.04	0.01	0.06	0.01	0.07	0.02
6-month FU	0.04	0.01	0.06	0.02	0.07	0.02

Note: The highest possible score that can be obtained in each ASI domain is 1.00. Higher scores indicate greater problem severity and poorer functioning.

Table 9 (continued)

Means and Standard Deviations for Outcome Variables as a Function of Treatment Group

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	M	SD	M	SD	M	SD
Alcohol Use (ASI)						
Pre-treatment	0.38	0.04	0.37	0.03	0.36	0.04
Pre-aftercare	0.21	0.02	0.18	0.02	0.16	0.02
Post-aftercare	0.17	0.03	0.18	0.02	0.20	0.03
6-month FU	0.19	0.04	0.17	0.03	0.22	0.04
Family/social support (ASI)						
Pre-treatment	0.27	0.04	0.26	0.03	0.30	0.04
Pre-aftercare	0.18	0.03	0.17	0.03	0.19	0.03
Post-aftercare	0.18	0.03	0.13	0.03	0.17	0.03
6-month FU	0.17	0.03	0.13	0.03	0.16	0.03
Legal status (ASI)						
Pre-treatment	0.09	0.03	0.05	0.02	0.08	0.03
Pre-aftercare	0.07	0.03	0.03	0.02	0.06	0.03
Post-aftercare	0.05	0.02	0.06	0.02	0.08	0.03
6-month FU	0.02	0.01	0.02	0.01	0.06	0.02

Note: The highest possible score that can be obtained in each ASI domain is 1.00. Higher scores indicate greater problem severity and poorer functioning.

Table 9 (continued)

Means and Standard Deviations for Outcome Variables as a Function of Treatment Group

Variables	Group					
	RP (n = 32)		AA (n = 37)		Reference (n = 33)	
	M	SD	M	SD	M	SD
Psychological status (ASI)						
Pre-treatment	0.27	0.04	0.26	0.03	0.28	0.04
Pre-aftercare	0.19	0.03	0.19	0.03	0.22	0.04
Post-aftercare	0.22	0.04	0.20	0.03	0.23	0.04
6-month FU	0.23	0.04	0.19	0.04	0.16	0.03
SCL-90R (Symptom severity)						
Pre-treatment	65.72	1.97	66.68	1.55	70.42	1.63
Pre-aftercare	63.44	1.99	61.03	1.70	64.42	1.84
Post-aftercare	60.66	2.21	57.97	2.07	59.15	2.50
6-month FU	60.69	2.10	59.05	2.38	59.79	2.28
Days of Abstinence (30 days)						
Pre-treatment	22.97	1.32	23.35	1.17	24.33	1.06
Pre-aftercare	28.62	0.94	28.40	0.89	29.29	0.62
Post-aftercare	27.78	0.90	28.08	1.01	26.00	1.18
6-month FU	27.81	0.86	26.92	1.17	24.30	1.53

Table 10

Repeated Measures Analysis of Variance for Selected Outcome Variables

Variable	Source of Variation	SS	df	MS	F_{univ}	p
Medical Status	Group	0.83	2	0.41	2.26	.109
(ASI)	Error	18.14	99	0.18		
	Time	0.57	3	0.19	3.05	.029
	Group x Time	0.28	6	0.05	0.76	.603
	Error	18.61	297	0.06		
Employment/	Group	0.11	2	0.05	0.18	.839
Support Status	Error	30.88	99	0.31		
(ASI)	Time	0.67	3	0.22	8.84	.000
	Group x Time	0.13	6	0.02	0.89	.502
	Error	7.47	297	0.03		
Drug Use	Group	0.03	2	0.01	0.97	.381
Status (ASI)	Error	1.30	99	0.01		
	Time	0.13	3	0.04	15.11	.000
	Group x Time	0.02	6	0.00	0.91	.488
	Error	0.84	297	0.00		

Table 10 (continued)

Repeated Measures Analysis of Variance for Selected Outcome Variables

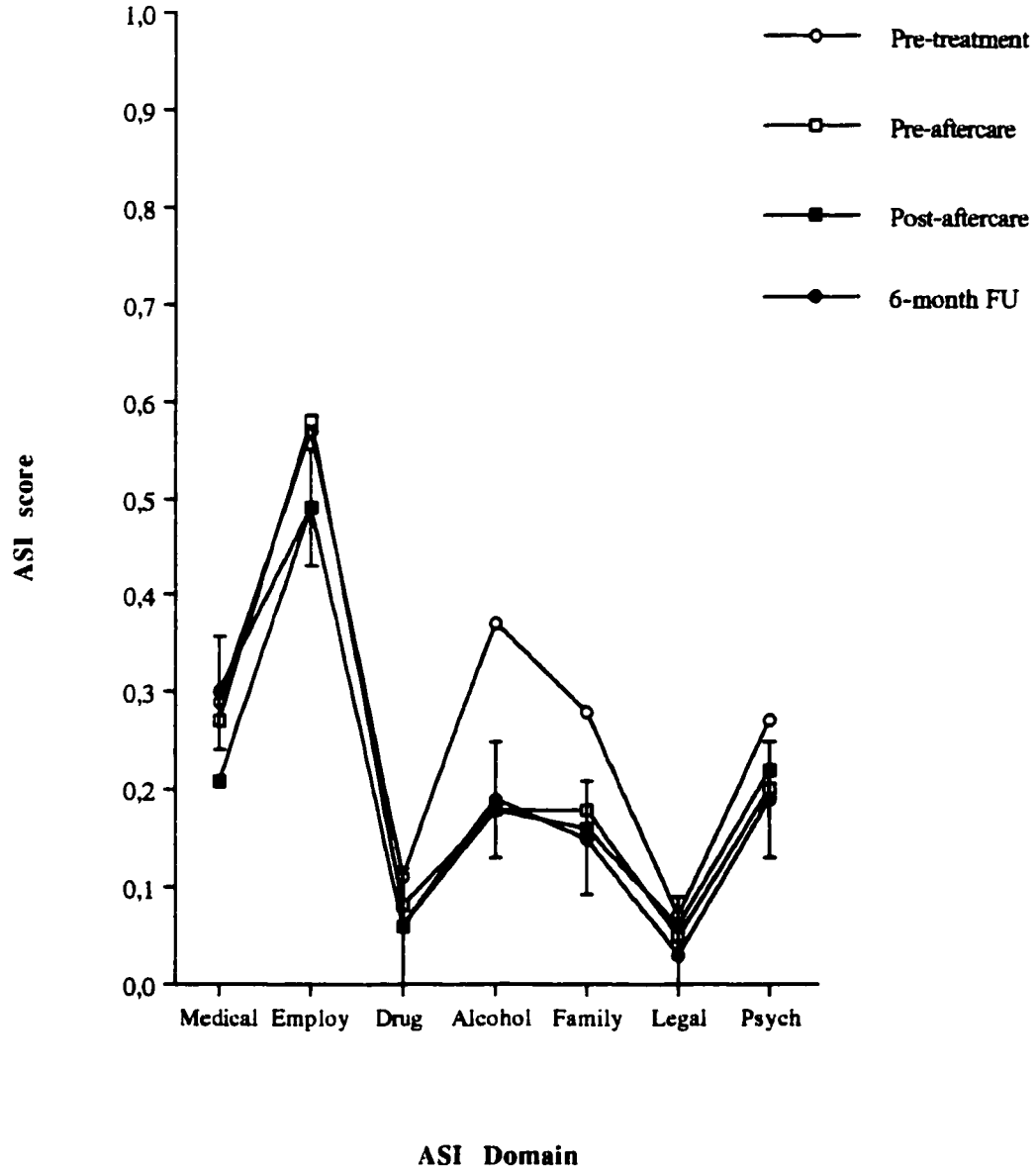
Variable	Source of Variation	SS	df	MS	F_{univ}	p
Alcohol Use	Group	0.01	2	0.00	0.16	.851
Status (ASI)	Error	3.00	99	0.03		
	Time	5.09	3	1.70	90.69	.000
	Group x Time	0.05	6	0.01	0.45	.846
	Error	5.56	297	0.02		
Family/Social	Group	0.20	2	0.10	0.70	.500
Status (ASI)	Error	14.11	99	0.14		
	Time	1.91	3	0.64	18.59	.000
	Group x Time	0.06	6	0.01	0.31	.930
	Error	10.15	297	0.03		
Legal Status	Group	0.03	2	0.01	0.49	.616
(ASI)	Error	2.58	99	0.03		
	Time	0.04	3	0.01	6.10	.000
	Group x Time	0.02	6	0.00	1.62	.142
	Error	0.69	297	0.00		

Table 10 (continued)

Repeated Measures Analysis of Variance for Selected Outcome Variables

Variable	Source of Variation	SS	df	MS	F_{univ}	p
Psychological	Group	0.02	2	0.01	0.13	.875
Status	Error	8.52	99	0.09		
(ASI)	Time	0.37	3	0.12	5.00	.002
	Group x Time	0.10	6	0.02	0.65	.689
	Error	7.27	297	0.02		
Psychological	Group	370.15	2	185.07	0.44	.647
Symptom Severity/	Error	41831.20	99	422.54		
Distress	Time	4451.83	3	1483.94	31.66	.000
(SCL-90R)	Group x Time	423.04	6	70.51	1.50	.176
	Error	13921.06	297	46.87		
No. of days of	Group	0.10	2	0.05	0.24	.785
Abstinence in	Error	20.21	99	0.20		
Prior 30 days	Time	12.84	3	4.28	37.23	.000
(Timeline)	Group x Time	0.84	6	0.14	1.22	.296
	Error	34.15	297	0.11		

Figure 7: Mean ASI Scores (Collapsed Across Treatment Group) as a Function of Assessment Period.



to pre-aftercare ($t(101)=5.84$, $p=.000$), and then again from pre- to post-aftercare ($t(101)=4.10$, $p=.000$), remaining stable thereafter. Finally, the number of days of abstinence in the prior 30 days increased significantly from pre-treatment to pre-aftercare ($t(101)=-10.46$, $p=.000$), and then decreased significantly from pre-aftercare to the 6-month follow-up ($t(101)=2.98$, $p=.004$).

In summary, the outcome measures selected for examination (namely, the ASI subscale scores, the SCL-90R's global severity index of psychological symptomatology, and the number of abstinent days in the prior 30 days) indicated significant changes over time, generally in the direction of decreased distress, throughout the study period. The greatest changes in functioning tended to occur from pre-treatment to pre-aftercare (when participants were involved in intensive treatment, mainly on an in-patient basis, at the drug treatment centers). However, significant time effects were also revealed from pre-aftercare to the 6-month follow-up on several of the outcome variables. Namely, the most important changes were noted in the employment/support and drug use (ASI) domains, and on psychological symptom severity and distress, where functioning improved and distress decreased, respectively, in the pre- to post-aftercare period. The number of abstinent days also increased from pre-aftercare to the 6-month follow-up. Problems related to alcohol use (reflected by the ASI subscore for that domain) actually increased from post-aftercare to the follow-up assessment. No main effect for group was obtained on any of the outcome variables.

II. The Role of Self-Efficacy in the Prediction of ASI and SCL-90R scores, and Number of Abstinent Days

The next phase of the analysis examined the degree of association between the self-efficacy and selected outcome scores, and more particularly, the contribution of self-efficacy to the prediction of (a) the ASI subscale scores, (b) the SCL-90R global severity index, and (c) the number of days of abstinence in the prior 30 days. Hierarchical regression analyses were thus computed. Although all the outcome variables described in

the previous section were initially considered as possible choices for the regression analyses, only those variables that had significant pairwise correlations with the self-efficacy measures were included in the regression analyses. The goal was thus to select the fewest independent variables necessary to provide a good prediction of the dependent variable where each predictor accounts for a substantial and independent part of the variability in the dependent variable. As self-efficacy measures were not obtained at pre-treatment, the outcome measures obtained at this assessment time were not included. The regression analyses thus focused on the pre-aftercare to the 6-month follow-up period.

a) Association Between Changes in Self-Efficacy and Changes in Outcome

Regression was initially used to explore the strength of the relationship between the changes in self-efficacy scores in each domain, and the changes in outcome scores from pre-aftercare to the 6-month follow-up. The dependent variable was self-efficacy at the 6-month follow-up. The independent variables were self-efficacy at pre-aftercare, treatment group (RP, AA, or Reference), and change scores for the selected outcome variables. Specifically, the scores representing self-efficacy at pre-aftercare were first entered into the equation, followed by a dummy coded variable representing treatment group. (One dummy variable contrasted Group RP with Group Reference, and the other contrasted Group AA with Group Reference). The outcome variables entered into the regression equation on step 3 included those having significant correlations with the self-efficacy change scores from pre-aftercare to the 6-month follow-up, namely, the drug use and alcohol use subscale scores of the ASI, the global severity index of the SCL-90R, and the number of days of abstinence in the previous 30 days.

Table 11 summarizes the results of the regression analyses computed for each domain of self-efficacy, as well as the correlations between the independent and dependent variables . As revealed, the proportion of shared variance between the change in self-efficacy (from pre-aftercare to the 6-month follow-up) and the change in outcome scores ranged from 14% to 19% depending on the domain of self-efficacy examined.

Table 11

Summary of Hierarchical Regression Analysis for Variables Predicting Self-Efficacy at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß
Abstinence self-efficacy in situations involving negative affect				
Step 1				
Self-efficacy at pre-aftercare	0.58	0.46	0.08	0.46
ΔR^2=0.33; $F_\Delta(1,100)$=50.37, p<.01				
Step 2				
RP vs. Reference	0.02	0.01	0.17	0.01
AA vs. Reference	0.04	0.15	0.16	0.08
ΔR^2=0.02; $F_\Delta(3,98)$=1.39, p=.25				
Step 3				
Drug use (ASI) change scores	-0.16	-0.12	0.55	-0.02
Alcohol use (ASI) change scores	-0.42	-0.64	0.35	-0.15
Psychol. symptom severity (SCL-90R) change scores	-0.30	-0.02	0.01	-0.19
Change scores for number of abstinent days in prior 30 days	0.54	0.03	0.01	0.30
ΔR^2=0.19; $F_\Delta(7,94)$=9.97, p<.01				
R^2=.55				
Adjusted R^2=.51				
R=.74				

Table 11 (continued)

Summary of Hierarchical Regression Analysis for Variables Predicting Self-Efficacy at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß
Abstinence self-efficacy in situations involving social interactions and positive states				
Step 1				
Self-efficacy at pre-aftercare	0.52	0.46	0.09	0.44
ΔR^2=0.27; $F_\Delta(1,100)$=37.20, p<.01				
Step 2				
RP vs. Reference	0.04	0.13	0.19	0.06
AA vs. Reference	0.09	0.29	0.18	0.14
ΔR^2=0.05; $F_\Delta(3,98)$=3.52, p=.03				
Step 3				
Drug use (ASI) change scores	-0.16	-0.60	0.60	-0.08
Alcohol use (ASI) change scores	-0.41	-0.70	0.38	-0.15
Psychol. symptom severity (SCL-90R) change scores	-0.11	-0.001	0.01	-0.01
Change scores for number of abstinent days in prior 30 days	0.55	0.04	0.01	0.34
ΔR^2=0.18; $F_\Delta(7,94)$=8.67, p<.01				
				R^2=.50
				Adjusted R^2=.47
				R=.71

Table 11 (continued)

Summary of Hierarchical Regression Analysis for Variables Predicting Self-Efficacy at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß
Abstinence self-efficacy in situations involving physical and other concerns				
Step 1				
Self-efficacy at pre-aftercare	0.55	0.49	0.39	0.48
ΔR^2=0.30; $F_\Delta(1,100)$=43.13, p<.01				
Step 2				
RP vs. Reference	0.08	0.15	0.15	0.10
AA vs. Reference	-0.02	0.11	0.14	0.07
ΔR^2=0.03; $F_\Delta(3,98)$=2.15, p=.12				
Step 3				
Drug use (ASI) change scores	-0.20	-0.33	0.47	-0.06
Alcohol use (ASI) change scores	-0.31	-0.17	0.30	-0.05
Psychol. symptom severity (SCL-90R) change scores	-0.19	-0.01	0.01	-0.11
Change scores for number of abstinent days in prior 30 days	0.49	0.03	0.01	0.32
ΔR^2=0.14; $F_\Delta(7,94)$=6.17, p<.01				
R^2=.45 Adjusted R^2=.43 R=.69				

Table 11 (continued)

Summary of Hierarchical Regression Analysis for Variables Predicting Self-Efficacy at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß
Abstinence self-efficacy in situations involving withdrawal and urges				
Step 1				
Self-efficacy at pre-aftercare	0.62	0.51	0.07	0.53
ΔR^2=0.38; $F_\Delta(1,100)$=61.97, p<.01				
Step 2				
RP vs. Reference	-0.02	-0.14	0.17	-0.08
AA vs. Reference	-0.003	-0.08	0.16	-0.04
ΔR^2=0.001; $F_\Delta(3,98)$=.15, p=.86				
Step 3				
Drug use (ASI) change scores	-0.25	-1.11	0.53	-0.15
Alcohol use (ASI) change scores	-0.40	-0.75	0.34	-0.18
Psychol. symptom severity (SCL-90R) change scores	-0.11	-0.001	0.01	-0.01
Change scores for number of abstinent days in prior 30 days	0.43	0.02	0.01	0.22
ΔR^2=0.15; $F_\Delta(7,94)$=7.29, p<.01				
R^2=.53 Adjusted R^2=.50 R=.73				

Group membership did not account for a significant part of the variance.

b) Predictors of Outcome at the 6-Month Follow-Up

Once the general degree of association between changes in self-efficacy and changes in outcome had been established, hierarchical regression analyses were computed to examine whether self-efficacy could predict outcome at the 6-month follow-up. Various strategies were used to elucidate this relationship. Specifically, the question examined was what constituted the best predictor of outcome at the 6-month follow-up: (i) the change in self-efficacy from pre- to post-aftercare, (ii) the change in self-efficacy from pre-treatment to the 6-month follow-up, or (iii) the absolute levels of self-efficacy at pre-aftercare or post-aftercare?

i) Self-Efficacy Change Scores from Pre- to Post-Aftercare as Predictors of Outcome

With respect to the predictive ability of self-efficacy change from pre- to post-aftercare, pairwise correlations between the changes in self-efficacy for this period and the outcome variables were first examined to determine which variables would be retained for the regression analyses. The only outcome variable significantly correlated with any of the self-efficacy change scores was the number of days of abstinence in the prior 30 days (with correlations ranging from .25 to .35, $p<.01$, depending on the domain of self-efficacy examined). Hierarchical regression was thus computed using the number of days of abstinence, assessed at the follow-up, as the dependent variable. Number of abstinent days assessed at pre-aftercare was entered into the equation at step 1, followed by group membership at step 2, and the changes in self-efficacy scores from pre- to post-aftercare (in each domain of self-efficacy) at step 4. Results revealed that none of the predictors accounted for a significant proportion of the variance in the dependent variable. (The correlations between the variables, and a summary of the regression analyses are provided in Table 1 of Appendix H). In summary, the changes that occurred

in self-efficacy from pre- to post-aftercare did not reliably predict the number of abstinent days at the 6-month follow-up.

ii) Self-Efficacy Change Scores from Pre-Aftercare to 6-Month Follow-Up as Predictors of Outcome

Hierarchical regression analyses were also computed to examine whether the changes in self-efficacy scores from pre-aftercare to the 6-month follow-up were reliable predictors of outcome at follow-up. Pairwise correlations revealed that the only outcome variables significantly correlated with the self-efficacy change scores for this period were the ASI alcohol use subscale score, and the number of abstinent days in the previous 30 days. Separate regression analyses were thus computed using each outcome variable as the dependent variable. The outcome variable at pre-aftercare was entered into the regression at step 1, followed by treatment group at step 2, and the self-efficacy change scores (in each domain) from pre-aftercare to the 6-month follow-up at step 3.

For the alcohol use ASI subscale scores, results (summarized in Table 2 of Appendix H) revealed that only the alcohol use scores at pre-aftercare were significant predictors of alcohol use scores at follow-up. The addition of the self-efficacy change scores into the regression did not reliably improve on the prediction (although the F statistic was not far from reaching significance, ΔR^2=0.08; $F_{\Delta}(7,94)$=2.16, p=.07).

The self-efficacy change scores for pre-aftercare to the 6-month follow-up were significant predictors, however, of the number of abstinent days at follow-up. As revealed in Table 12, changes in self-efficacy accounted for 12% of the variance in number of days of abstinence, over and above the portion of variance explained by the number of abstinent days at pre-treatment, and treatment group. A greater number of abstinent days was associated with increased self-efficacy in each domain. All domains contributed to this effect.

In summary, the analyses revealed that the changes that occurred in self-efficacy from pre- to post-aftercare were not significant predictors of outcome. However, the

Table 12

Summary of Hierarchical Regression Analysis for Self-Efficacy Change Scores (Pre-Aftercare to the 6-Month Follow-up) Predicting Number of Days of Abstinence at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Number of abstinent days					
at pre-aftercare	0.09	0.16	0.12	0.12	0.90
ΔR^2=0.09; $F_\Delta(1,100)$=0.81, p=.37					
Step 2					
RP vs. Reference	0.04	0.01	0.10	0.02	0.88
AA vs. Reference	0.06	0.002	0.10	0.003	1.00
ΔR^2=0.01; $F_\Delta(3,98)$=0.59, p=.56					
Step 3: Self-efficacy change scores (pre-aftercare to the 6-month follow-up)					
Negative emotional states	0.27	0.03	0.07	0.05	0.40
Social/positive situations	0.35	0.11	0.07	0.26	1.67
Physical concerns	0.27	0.02	0.08	0.03	0.20
Withdrawal and urges	0.25	0.03	0.07	0.06	0.46
ΔR^2=0.12; $F_\Delta(7,94)$=3.33, p=.01					
R^2=.14 Adjusted R^2=.08 R=.38					

changes in efficacy ratings from pre-aftercare to the 6-month follow-up accounted for a significant proportion of the variance in the number of days of abstinence, explaining 12% of the variance.

iii) Intake and Discharge Self-Efficacy as Predictors

This part of the analyses explored the ability of pre- and post-aftercare self-efficacy to predict outcome at the 6-month follow-up. The outcome variables retained for the regression (based on the significance of pairwise correlations) were the family and social support, employment status, drug use status, alcohol use status, and psychological status subscales of the ASI, as well as global severity index of the SCL-90R and the number of abstinent days in the previous 30 days. Each outcome variable constituted the dependent variable in separate regression equations.

For each regression analysis, the respective outcome score obtained at pre-aftercare was entered on step 1, followed by the variable representing treatment group on step 2. The pre-aftercare self-efficacy scores for each domain were added on step 3, and the post-aftercare self-efficacy scores for each domain on step 4. The questions of interest were (i) whether pre-aftercare (intake) self-efficacy could account for a significant proportion of the variance in each of the outcome variables, over that accounted for by group membership and by the outcome score obtained at pre-aftercare, and (ii) if post-aftercare (discharge) self-efficacy could significantly add to the prediction over and above the pre-aftercare self-efficacy scores.

The results of the analyses revealed that neither self-efficacy at pre-aftercare nor post-aftercare contributed significantly to the prediction of the employment status or psychological status subscales of the ASI (see Tables 3 and 4 in Appendix H). However, self-efficacy scores did account for a significant proportion of the variance in the other outcome variables, as summarized in Tables 13 to 17.

Specifically, pre-aftercare (intake) self-efficacy was a significant predictor of family and social support at the 6-month follow-up (see Table 13), accounting for 10% of

Table 13

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting Family/Social Support (ASI) at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Family/social support					
at pre-aftercare	0.43	0.37	0.10	0.35	4.73***
ΔR^2=0.18; $F_\Delta(1,100)$=22.33, p<.001					
Step 2					
RP vs. Reference	0.09	0.01	0.06	0.01	0.38
AA vs. Reference	-0.12	-0.08	0.05	-0.16	-0.72
ΔR^2=0.01; $F_\Delta(3,98)$=0.63, p=.54					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	-0.13	-0.04	-0.04	0.04	-1.21
Social/positive situations	-0.28	0.03	0.05	0.10	0.97
Physical concerns	-0.34	-0.07	0.05	-0.19	-1.30
Withdrawal and urges	-0.17	-0.05	-0.05	0.04	-0.81
ΔR^2=0.10; $F_\Delta(7,94)$=3.01, p=.01					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	-0.18	-0.12	0.06	-0.43	-2.06*
Social/positive situations	-0.10	0.03	0.05	0.13	0.62
Physical concerns	-0.07	0.01	0.04	0.04	0.33
Withdrawal and urges	-0.13	0.08	0.06	0.30	1.36
ΔR^2=0.04; $F_\Delta(11,90)$=1.20, p=.32					
R^2=.33 Adjusted R^2=.25 R=.57					

*p<.05 ***p<.001 Note: Higher family/support scores indicate reduced support

the variance over and above that explained by the family and social relations score at pre-aftercare (18%). Increased self-efficacy was associated with improved support. All four domains of self-efficacy contributed to this effect, with no one domain being singularly important. The self-efficacy scores at post-aftercare, entered on step 4 of the regression analysis, did not significantly improve on the prediction of family and social relations at follow-up.

Results were similar for the prediction of alcohol use status and drug use status, as shown in Tables 14 and 16, where self-efficacy at intake (pre-aftercare) accounted for 10% and 14% of the total variance, respectively (over and above the outcome scores obtained at pre-aftercare). For alcohol use status, self-efficacy in situations involving negative emotional states was the domain that contributed the most to this effect. In both cases, increased self-efficacy was associated with less alcohol- and drug-related problems. Post-aftercare efficacy scores did not improve significantly on this prediction.

Regarding the prediction of psychological symptom severity and distress (SCL-90R scores) at the 6-month follow-up, the results of the regression analysis (summarized in Table 15) reveal that symptom severity at pre-aftercare accounted for 39% of the variance. Although the self-efficacy measures at pre-aftercare did not improve significantly on the prediction, self-efficacy at post-aftercare did, explaining 6% of the variance in symptom severity. Self-efficacy in situations involving negative emotional states was the most important contributor to this effect.

In view of the importance of post-aftercare self-efficacy to the prediction of SCL-90R scores at the follow-up, the above regression was repeated, but entering post-aftercare self-efficacy scores before pre-aftercare scores (the goal was to examine the greatest proportion of variance accounted for by post-aftercare self-efficacy, over and above intake SCL-90R scores). The results indicated that post-aftercare self-efficacy explained 8% of the variance in symptom severity at follow-up (see Appendix H), with again the domain of negative emotional states contributing most to this prediction. Post-

Table 14

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting Alcohol Use Status (ASI) at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Alcohol use status (ASI)					
at pre-aftercare	0.31	1.72	0.67	0.26	3.27**
ΔR^2=0.10; F_Δ(1,100)=10.70, p=.002					
Step 2					
RP vs. Reference	-0.03	-0.06	0.07	-0.10	-1.19
AA vs. Reference	-0.05	-0.08	0.06	-0.15	-1.03
ΔR^2=0.02; F_Δ(3,98)=0.83, p=.44					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	-0.36	-0.10	0.05	-0.33	-1.99*
Social/positive situations	-0.22	0.04	0.06	0.14	0.22
Physical concerns	-0.25	-0.03	0.06	-0.09	-0.24
Withdrawal and urges	-0.25	0.01	0.05	0.02	-0.08
ΔR^2=0.10; F_Δ(7,94)=2.92, p=.02					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	-0.29	0.02	0.07	0.06	0.29
Social/positive situations	-0.30	-0.10	0.06	-0.38	-1.67t
Physical concerns	-0.24	0.02	0.05	0.05	0.38
Withdrawal and urges	-0.28	0.03	0.06	0.12	-0.53
ΔR^2=0.04; F_Δ(11,90)=1.05, p=.39					
R^2=.25 Adjusted R^2=.15 R=.50					

*p<.05; **p<.01; t trend

Table 15

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting Symptom Severity (SCL-90R) at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Symptom severity and distress (SCL-90R)					
at pre-aftercare	0.62	0.64	0.11	0.52	7.94***
ΔR^2=0.39; $F_\Delta(1,100)$=63.11, p<.001					
Step 2					
RP vs. Reference	0.05	1.77	2.58	0.06	0.64
AA vs. Reference	-0.04	-0.14	2.52	-0.01	0.75
ΔR^2=0.004; $F_\Delta(3,98)$=0.33, p=.72					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	-0.46	-0.65	1.96	-0.05	-1.14
Social/positive situations	-0.40	-0.15	2.22	-0.01	0.46
Physical concerns	-0.42	0.06	2.43	0.003	-0.16
Withdrawal and urges	-0.49	-2.23	2.05	-0.16	-1.07
ΔR^2=0.04; $F_\Delta(7,94)$=1.73, p=.15					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	-0.36	-7.37	2.54	-0.52	-2.90**
Social/positive situations	-0.28	1.09	2.37	0.09	0.46
Physical concerns	-0.22	-0.043	1.76	-0.03	-0.24
Withdrawal and urges	-0.232	4.54	2.55	0.34	1.78t
ΔR^2=0.06; $F_\Delta(11,90)$=2.49, p<.05					
R^2=.49 Adjusted R^2=.43 R=.70					

**p<.01; ***p<.001; t trend

Table 16

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting Drug Use Status (ASI) at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Drug use status (ASI)					
at pre-aftercare	0.33	0.25	0.09	0.27	3.48***
ΔR^2=0.11; $F_\Delta(1,100)$=12.11, p<.001					
Step 2					
RP vs. Reference	0.16	0.04	0.02	0.25	1.85
AA vs. Reference	-0.03	0.02	0.02	0.13	0.52
ΔR^2=0.03; $F_\Delta(3,98)$=1.83, p=.17					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	0.36	0.003	0.01	0.05	-0.90
Social/positive situations	0.29	-0.01	0.01	-0.11	-1.29
Physical concerns	0.35	0.02	0.01	0.16	1.54
Withdrawal and urges	0.36	0.02	0.01	0.22	1.53
ΔR^2=0.14; $F_\Delta(7,94)$=4.46, p<.001					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	0.34	0.02	0.02	0.25	1.20
Social/positive situations	0.26	-0.02	0.01	-0.25	-1.13
Physical concerns	0.22	0.003	0.01	0.04	0.28
Withdrawal and urges	0.30	0.01	0.02	0.08	0.35
ΔR^2=0.02; $F_\Delta(11,90)$=0.78, p=.54					
R^2=.30 Adjusted R^2=.22 R=.55					

***p<.001;

aftercare efficacy was therefore shown to be a better predictor than pre-aftercare efficacy of symptom severity and distress, with higher self-efficacy associated with lower distress.

The regression results for the number of abstinent days (assessed in the prior 30 days) are summarized in Table 17. In contrast to the other outcome measures, the outcome scores at pre-aftercare were not significant predictors of status at the 6-month follow-up, but self-efficacy at both pre- and post-aftercare were significant. Specifically, pre-aftercare efficacy scores accounted for 24% of the variance in the number of abstinentdays at the 6-month follow-up, with self-efficacy in social interaction and positive states (a trend), and in situations involving negative emotions, being the most important predictors. Interestingly, post-aftercare self-efficacy improved significantly on this prediction, accounting for an additional 9% of the variance, with all self-efficacy domains contributed together to this effect.

To see the maximum proportion of variance accounted for by post-aftercare efficacy in number of abstinent days, the above regression was repeated entering post-aftercare self-efficacy into the regression equation before pre-aftercare efficacy measures. Results are summarized in Appendix H. Post-aftercare self-efficacy measures accounted for a smaller proportion of variance in number of abstinent days (21%), than did pre-aftercare efficacy. Pre-aftercare efficacy was therefore shown to be a better predictor of number of abstinent days that post-aftercare measures.

In summary, self-efficacy at pre-aftercare contributed significantly to the prediction of several ASI domains of functioning at the 6-month follow-up---family and social support, alcohol and drug use status--and to psychological symptom severity/distress and number of days of abstinence. Self-efficacy in (a) situations involving negative emotional states, and (b) social interactions and positive states were generally revealed to be the most important contributors to these effects. Self-efficacy at post-aftercare improved the prediction for only one outcome measure, namely number of abstinent days (in the prior 30 days) at the follow-up. In all cases, increased self-efficacy

Table 17

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting No. of Abstinent Days (in Prior 30) at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Number of abstinent days (in the prior 30 days)					
at pre-aftercare	0.09	0.03	0.11	0.03	0.90
ΔR^2=0.01; $F_\Delta(1,100)$=0.81, p=0.37					
Step 2					
RP vs. Reference	0.04	0.06	0.09	0.07	0.88
AA vs. Reference	0.06	0.16	0.09	0.19	1.00
ΔR^2=0.01; $F_\Delta(3,98)$=0.59, p=.56					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	0.42	0.11	0.07	0.26	1.78[t]
Social/positive situations	0.43	0.15	0.08	0.35	2.19*
Physical concerns	0.27	-0.11	0.09	-0.20	-1.42
Withdrawal and urges	0.37	-0.03	0.07	-0.07	-0.80
ΔR^2=0.24; $F_\Delta(7,94)$=7.56, p<.001					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	0.40	0.09	0.09	-0.20	0.95
Social/positive situations	0.45	0.11	0.08	0.29	1.34
Physical concerns	0.32	0.02	0.06	0.05	0.38
Withdrawal and urges	0.38	0.08	0.09	-0.02	-0.92
ΔR^2=0.09; $F_\Delta(11,90)$=2.94, p=.02					
R^2=.34 Adjusted R^2=.26 R=.59					

*p<.05; [t] trend

was related to improved functioning and increased abstinence at the 6-month follow-up. Self-efficacy change scores (from pre-aftercare to the 6-month follow-up) were revealed to significantly predict only one outcome variable---number of days of abstinence at the 6-month follow-up.

III. The Role of Self-Efficacy Scores in the Prediction of Latency-to-Lapse and Latency-to-Relapse

Cox's (1972) proportional hazards regression model was used to quantify the predictive relationship between a) self-efficacy and latency-to-lapse (time to first use of alcohol and/or drugs), and b) self-efficacy and latency-to-relapse (time to three days of alcohol/drug use in a 7-day period). These analyses were conducted separately using pre-aftercare, post-aftercare, and change (pre- to post-aftercare, and pre-aftercare to 6-month follow-up) self-efficacy scores as potential predictors. The domain-specific efficacy scores were entered on the first step of the regression, and a variable representing group membership (AA, RP or Reference) was entered at the second step.

a) The Prediction of Latency-to-Lapse

Results indicated that 55 (53.9%) of the 102 study participants had lapsed by the 6-month follow-up. Both pre- and post-aftercare self-efficacy contributed significantly to the prediction of latency-to-relapse ($\chi^2(4, N=102)=18.20, p=.001$ and $\chi^2(4, N=102)=18.20, p<.001$, respectively). All pre-aftercare efficacy scores contributed to the prediction, with no one domain being individually significant. For post-aftercare self-efficacy, two domains were significantly better predictors of latency-to-lapse: self-efficacy in situations involving negative emotional states, and self-efficacy in social positive situations. In all cases, greater self-efficacy was associated with longer latency-to-lapse.

Group membership did not contribute any significant improvement in the regression model beyond that of pre-aftercare and post-aftercare self-efficacy alone ($\chi^2(2, N=102)=4.26$, p=N.S., and $\chi^2(2, N=102)=4.67$, p=N.S.). Cox regressions carried out

using the self-efficacy change scores were not significant ($\chi^2(4, N=102)=2.77$, p=N.S. for pre- to post-aftercare scores, and $\chi^2(4, N=102)=3.72$, p=N.S. for pre-aftercare to 6-month follow-up scores). The cumulative lapse curves for each of the three treatment groups are provided in Figure 8.

b) The Prediction of Latency-to-Relapse

Results showed that thirty-seven (36.3%) of the 102 participants had relapsed by the six-month follow-up. As obtained above for latency-to-lapse, both pre- and post-aftercare self-efficacy scores contributed significantly to the prediction of latency-to-relapse ($\chi^2(4, N=102)=15.00$, p=.005, and $\chi^2(4, N=102)=19.31$, p<.001, respectively), with certain domains playing a more important role in these effects. Specifically, among the pre-aftercare scores, self-efficacy in situations involving negative emotional states was the most important predictor of latency-to-relapse (p<.05). A trend was obtained for self-efficacy in situations involving physical and other concerns (p=.09). Among the post-aftercare efficacy measures, all domains contributed to theprediction, with a trend obtained for self-efficacy in social positive situations (p=.08). As above, greater self-efficacy predicted longer latency-to-relapse.

Group membership was revealed to improve the prediction of latency-to-relapse beyond pre-aftercare self-efficacy ($\chi^2(2, N=102)=7.69$, p=.02. This effect was accounted for by the AA versus Reference contrast.

Cox' regression model was also used to examine the contribution of self-efficacy change scores to the prediction of latency-to-relapse. Changes in self-efficacy from pre- to post-aftercare were not significant predictors of latency-to-relapse ($\chi^2(4, N=102)=4.10$, p=N.S.). A trend was obtained for the contribution of pre-aftercare to 6-month follow-up change scores to the prediction of latency-to-relapse ($\chi^2(4, N=102)=8.30$, p=.08). Group membership, entered on step two of the regression, was not a significant predictor. The cumulative relapse curves for each of the three treatment groups are provided in Figure 9.

Figure 8: Survival to Lapse Following Pre-Aftercare Assessment, as a Function of Treatment Group.

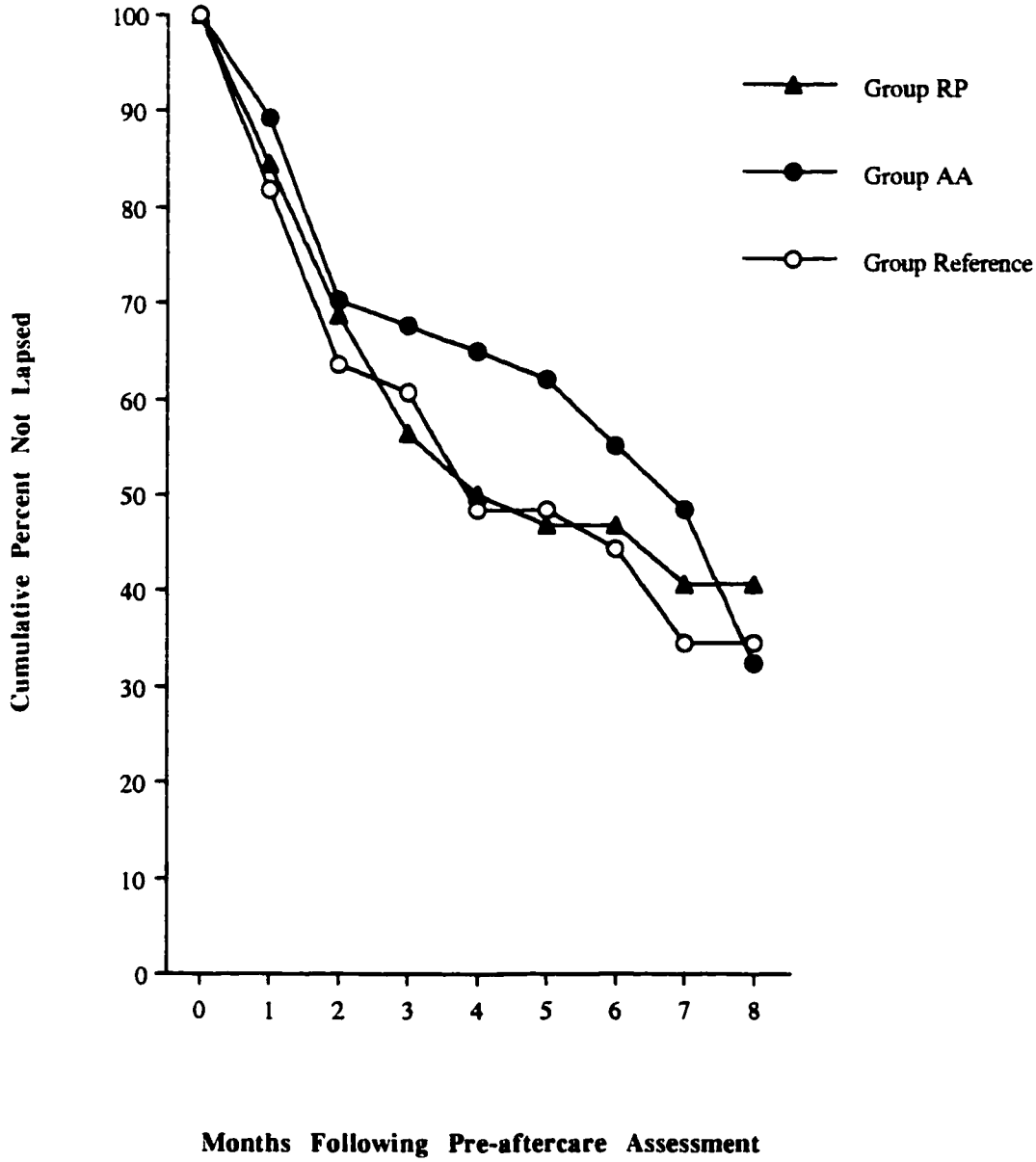
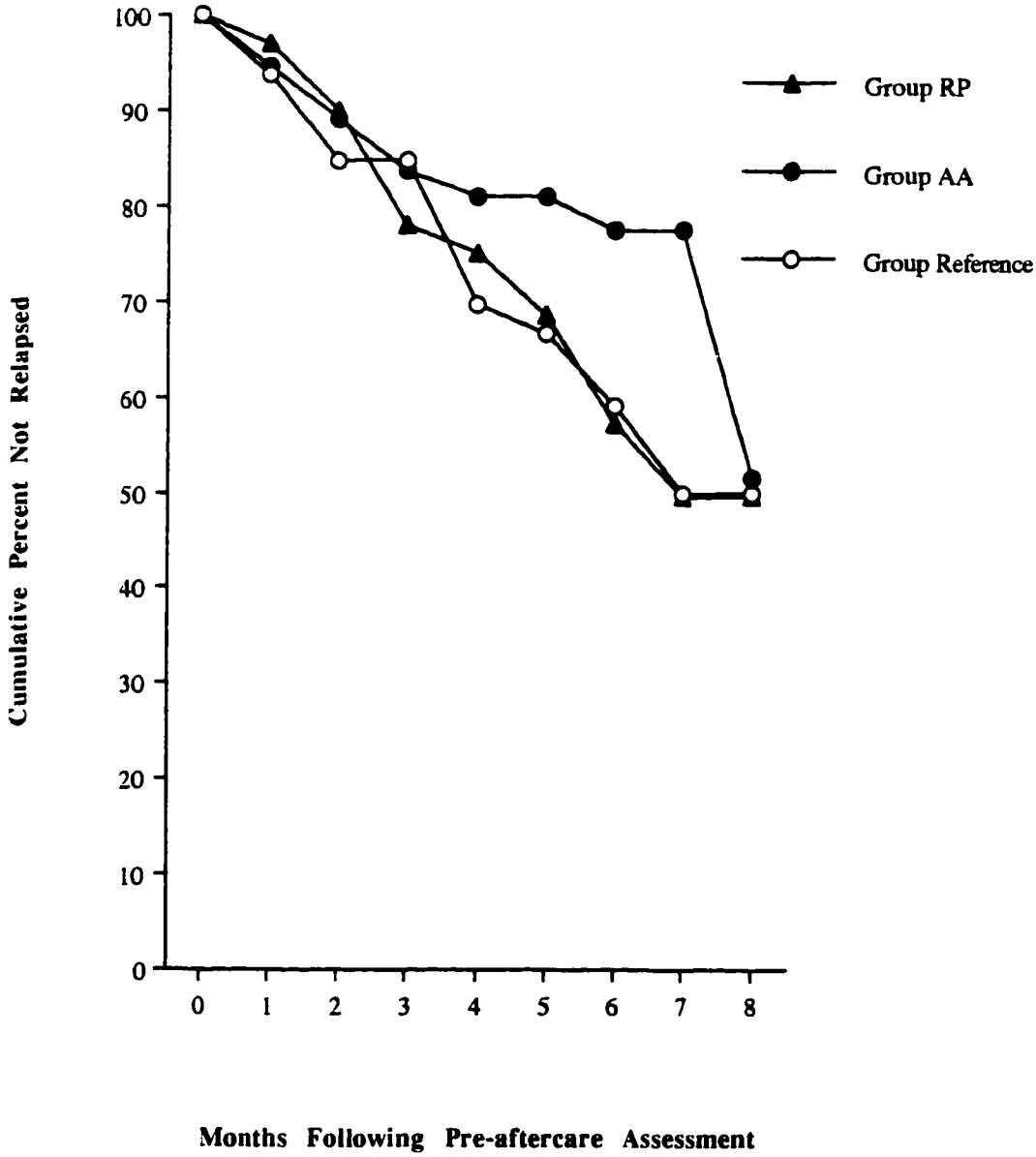


Figure 9: Survival to Relapse Following Pre-Aftercare Assessment, as a Function of Treatment Group.



In summary, both pre-aftercare and post-aftercare self-efficacy levels were revealed to be significant predictors of latency-to-lapse and latency-to-relapse. Although all domains of self-efficacy generally contributed to these effects, several domains (e.g., self-efficacy in situations involving negative emotional states, and self-efficacy in social positive situations) were revealed as playing a greater predictive role. In general, changes in self-efficacy from pre- to post-aftercare and from pre-aftercare to the 6-month follow-up did not improve on the prediction. Group membership was found to be a significant predictor of time-to-relapse beyond pre-aftercare self-efficacy scores.

Discussion

The first goal of the present study was to investigate any self-efficacy changes that occurred in Groups RP, AA and Reference from pre- to post-aftercare to a 6-month follow-up, with a specific focus on group differences demonstrated, in each of the four self-efficacy domains assessed. The results obtained reveal that self-efficacy increased significantly from pre-aftercare to the 6-month follow-up in only one domain of self-efficacy-- situations involving negative emotional states. No group differences were demonstrated in this effect, although follow-up analyses did reveal that Group AA appeared to contribute the most to this result. These findings do not support the hypothesis that the three treatment groups would differ in the self-efficacy changes revealed, with Group RP exhibiting the greatest increase in self-efficacy, at least during the aftercare phase of the study (pre- to post-aftercare).

No significant increases in self-efficacy from pre-aftercare to the 6-month follow-up were revealed in any of the other efficacy domains. An interaction was observed in situations involving social interactions and positive states, but the effect over time was not systematic or strong enough to provide conclusive findings.

The above findings raise several interesting issues, the first of which relates to the lack of differentiation among the three aftercare groups with respect to their effects on self-efficacy. Specifically, the findings of the present study demonstrate that the RP and

AA aftercare programs did not have an overall greater effect on self-efficacy than the usual aftercare provided by the treatment centers. Even the RP aftercare which incorporates specific techniques to enhance efficacy expectations did not show a differential effect on self-efficacy.

One explanation to account for this finding may relate to the manner in which the techniques in the RP aftercare were utilized. Specifically, relapse prevention incorporates performance-based exercises which are posited to directly enhance the development of strong efficacy expectations. However, as stated by Annis (1990), certain conditions must be met in order for these exercises to increase self-efficacy: (a) the exercise must be challenging, (b) it must require only a moderate degree of effort, (c) it must be carried out with little aid from others, (d) the success must be part of an overall pattern of improved performance, (e) an increase in personal control must have been demonstrated, and (f) the successful performance must be highly relevant to substance use situations frequently encountered by the individual. It is unknown whether these conditions were met in RP program provided in the present study because they were not monitored. Unless it is known whether the RP participants engaged in performance-based exercises, succeeded in demonstrating greater control over substance use, and made internal attributions for their increased control, the efficacy of RP aftercare cannot be assessed. On a clinical level, this suggests that self-efficacy expectations should be monitored and assessed during aftercare to ensure that the efficacy-enhancing techniques are having the desired effect.

The finding that all three aftercare groups demonstrated similar changes in self-efficacy also reveals processes which underlie the AA and usual aftercare interventions provided, especially AA group affiliation. Specifically, although self-efficacy as a central tenet to RP aftercare is supported (Annis & Davis, 1988, 1989), the importance of self-efficacy as a mechanism of action in AA participation has only recently been explored (Snow, Prochaska & Rossi, 1994; Morgenstern, Labouvie, McCrady, Kahler & Frey,

1997). Although 12-step programs do not specifically target self-efficacy changes, the present study shows that self-efficacy increases occur nonetheless. These findings are similar to those obtained by Morgenstern et al. (1997) who found self-efficacy to increase significantly during treatment, and by more recent research (Finney, Noyes, Coutts & Moos, 1998), which demonstrates that AA shares a common change strategy (self-efficacy) with effective cognitive-behavioral treatments, an approach put forth by DiClemente (1993) and McCrady (1994). This points to a continued need to explore the active treatment components included in various treatment types, and how they relate to outcome.

The second issue relates to the magnitude of self-efficacy increases that were generally observed in the present study. Specifically, although self-efficacy in situations involving negative emotional states did increase significantly, no increase was observed in any of the other domains. The finding that efficacy expectations increased in situations involving negative emotional states is nonetheless encouraging, given that this domain is among those in which relapse is more likely to occur (Marlatt et al., 1980). It is unknown why self-efficacy failed to increase in any of the other domains. As indicated above, there is a need to explore in greater detail the various treatment components which comprise the aftercare programs to address this question. There is evidence to suggest that different domains may be more pertinent at various points in the treatment process, an issue will be discussed later. The importance of a stage model of change (DiClemente, 1993; Prochaska & DiClemente, 1986) to explain how or why individuals attempting behavior change do or do not benefit from various treatment techniques also holds promise.

The second hypothesis that higher levels of, or greater increases in, self-efficacy would be generally associated with improved functioning at the 6-month follow-up, was supported. In general, although the changes in self-efficacy that occurred during aftercare and the 6-month follow-up were not important predictors of outcome, high pre- and post-aftercare efficacy levels predicted better functioning at the follow-up, with pre-aftercare

self-efficacy constituting the best predictor by far. Specifically, higher self-efficacy at pre-aftercare predicted better social and family relations, improved alcohol and drug use status, less psychological symptomatology and distress, and a greater number of abstinent days. Both pre- and post-aftercare were associated with greater latency- to-lapse and latency-to-relapse.

Although this was the direction of association expected, what is surprising and somewhat perplexing is the superiority of self-efficacy prior to the aftercare as the strongest predictor of outcome. Specifically, Bandura's (1977, 1986) self-efficacy theory states that self-efficacy is a better predictor over the short-term---that is, new information is continuously being received from the environment and processed by an individual. This information will naturally impact on his or her efficacy expectation. The longer the time lapse between measurement of self-efficacy and assessment of the behavior of interest, the greater the probability that intervening variables will have impacted on the efficacy judgment formulated by the individual. It is thus expected that post-aftercare self-efficacy would have been the better predictor of outcome at the 6-month follow-up. Why was this not the case?

Although the conceptual model put forth by Bandura posits self-efficacy as having the strongest relationship with outcome behavior, he nevertheless states that other factors may intervene in, and impact on, this relationship. For example, although the type outcome one anticipates from performing a behavior (outcome expectancy) will depend on the quality of performance, there are circumstances when extraneous factors also affect outcome. Although high in self-efficacy, individuals may therefore choose not to perform the behavior if they feel that the outcome they desire is controlled more by contextual or situational factors than by the quality of their performance. Bandura (1984) states that "under such circumstances, people in disfavored groups expect poor outcomes however efficacious they judge themselves to be" (pp. 20). Substance abusers may constitute such a disfavored group; they often have a history of medical, legal and social

problems that render them more susceptible to social and situational factors. Therefore, although they may have confidence in their ability to stop using drugs or alcohol in a given situation, the desired outcome (e.g., better employment, improved financial situation) may also be more dependent on other factors (e.g., the presence of a criminal record, unemployment rates, financial debts accrued). In these situations, the individual may choose not to perform the behavior as it may prove futile. As stated by Bandura (1982), people "may be assured of their capabilities but give up trying because they expect their efforts to produce no results due to the unresponsiveness, negative bias, or punitiveness of the environment " (pp. 140). Such intervening factors thus cloud the relationship between efficacy expectations and performance. Further understanding of these factors, as well as attention to how they may be modified so as to allow individuals to gain the benefits of the competencies they demonstrate, is required.

The third goal of the present investigation was to explore the multidimensionality of the self-efficacy construct. The findings support the multidimensionality of Bandura's self-efficacy construct, and its measurement in specific domains rather than globally. It also suggests that different domains may be more important than others at different time periods in the treatment process. For example, the magnitude of the self-efficacy changes that occurred from pre-aftercare to the 6-month follow-up were not the same for every efficacy domain---aftercare was only found to have an effect on self-efficacy in situations involving negative emotional states. In comparison, efficacy levels in situations involving physical concerns, and withdrawal symptoms and urges to use were relatively high at pre-aftercare, and remained at these levels to the 6-month follow-up. Given that situations involving physical concerns, withdrawal symptoms, and urges are generally the first to be experienced by individuals attempting to stop their substance use, it could be posited that by the time aftercare began, individuals had already succeeded in dealing with these symptoms early in treatment, had thus made maximal gains in self-efficacy in these domains by the start of the aftercare programs, and thus demonstrated no additional

increases from pre-aftercare to the 6-month follow-up. In contrast, self-efficacy in (a) situations involving negative emotional states, and in (b) situations involving social interactions and positive states appears to change later in treatment, and be the most affected by aftercare treatment. It may be that individuals who stop their substance use can only begin developing a sense of self-efficacy in these situations following their release from intensive treatment (generally in-patient), and when they start encountering such situations in their environment.

This conceptualization of self-efficacy is consistent with the hierarchical model for self-efficacy put forth by Velicer et al. (1990). Velicer states that self-efficacy consists not only of a global underlying (second order) factor, but also of several first-order factors, or domains. These domains differentiate themselves from the general order factor at various points in the recovery process. The result is that certain domains of self-efficacy will occupy a more important role at specific times. This was demonstrated in the present study by the relative importance of specific self-efficacy domains in the prediction of outcome. For example, it was revealed that two specific domains of self-efficacy---those involving negative emotional states, and social interactions and positive states---contributed more to the prediction of outcome at the 6-month follow-up. Given that relapse most often occurs in these two types of situations (Marlatt, 1985), it makes sense that an improved ability to cope effectively in these situations (as demonstrated by higher self-efficacy levels) will reduce the risk of relapse and result in improved long-term functioning.

Having discussed and attempted to make sense of the findings obtained in this study, a broader question is raised pertaining to the role of aftercare in the treatment process. Specifically, the goal of aftercare is to help in the maintenance of gains made during intensive treatment. Was this achieved in the present study? Lapse and relapse rates obtained in the present study demonstrate that regardless of participation in aftercare (RP, AA or usual care provided by the treatment centers), 54% and 36% of the study

participants had lapsed or relapsed, respectively, by the 6-month follow-up. Does this constitute a maintenance of treatment gains? This raise the question regarding what is meant by treatment gains, and how it should be assessed. Traditionally, gains or improvements have rested on an evaluation of quantity and frequency of alcohol and drug use. However, given the recent tendency to view substance use behavior change as a process involving several lapses or relapses (Conners et al., 1996), should evaluation of gains rely more on other measures of functioning? The present study demonstrated that from pre-aftercare to the 6-month follow-up, participants in all groups either showed significant improvements, or maintained gains made during intensive treatment, in various domains of functioning such as family and social relations and psychological symptomatology and distress. Does this imply that aftercare has been beneficial? Unfortunately, a response to this question is not readily available without the availability of a true no-aftercare control group. It does, however, raise important questions regarding the expectations for aftercare, and the evaluation of its effects.

It can therefore be concluded that the hypotheses put forth by the present study have been partially supported. However, other interesting findings have been revealed, such as the relapse rates obtained, and the lack of treatment group differentiation on the process and outcome measures. Specifically, regardless of Groups RP and AA's participation in aftercare programs which specifically attempt to reduce the chance of relapse, the survival analyses conducted reveal that at least half of the participants had nevertheless lapsed or relapsed by 6 to 8 months following discharge from intensive treatment, and did not show a lower relapse rate than Group Reference. The relapse rates obtained in the present study are consistent with the relapse rates provided in the literature, and point to the need for continued research on the phenomenon of relapse and its prevention. What the present study appears to suggest is that self-efficacy level is a better predictor of outcome than treatment type. Interestingly, the number of aftercare

sessions attended was not significantly correlated with any of the outcome measures, and was therefore not included in the regression analyses conducted.

Although the present study improved on limitations inherent in prior studies carried out (that is, it was prospective in design and included a sample that was more representative of that typically seen in substance abuse treatment), it does present with its limitations, perhaps the greatest of which is the large number of participants (143 of the 245 recruited) who were not included in the final analyses. With such a high attrition rate, it is difficult to ascertain what effect these individuals would have had on the results obtained, had they been included. To avoid the unfair inflation of success estimates, there has been a tendency to assume that those who drop out of treatment have returned to abusive substance use (Nathan & Skinstad, 1987). Although this is a possibility, the present study suggests that participants who were not included in the final analyses were little different from those who were retained. First, those retained in the study demonstrated a higher level of sociopathy. Considering that high sociopathy is associated with a less favorable treatment outcome, and that these individuals remained in treatment, it is not likely that the results of the present study were overly positive. Second, individuals who were not retained in analyses were younger, and had lower verbal ability (with respect to this latter difference, both groups nevertheless had sufficient levels of verbal ability to permit active participation in all phases of the study). The age differences may simply reflect the treatment process, and the fact that older individuals may make several attempts to stop their substance abuse before they are "motivated" enough to remain in treatment. Although this may be one hypothesis, it is nevertheless dangerous to assume that younger individuals who drop out of treatment will necessarily relapse or demonstrate an unfavorable outcome. Although additional research on dropouts is warranted and that it may make sense presently to conservatively estimate that those who are lost to treatment or follow-up have returned to substance use (Nathan & Skinstad,

1987), there is truth in Mackenzie, Funderburk, Allen and Stefan's (1987) remark that there is no simple relationship between attrition and substance use behavior.

The third difference revealed between the retained and non-retained participants was that the retained sample contained a smaller proportion of women, meaning that a large proportion of women dropped out of the study. The higher attrition among women is probably accounted for by the manner in which the aftercare groups were formed. Specifically, the RP and AA aftercares were comprised of mixed groups. Given the greater proportion of men recruited into the study compared with women, groups invariably contained more men that women. Although attempts were made to have no less than two women in any one aftercare group, it is possible that the male-dominated groups did not meet the particular treatment needs of the women, or that the women did not feel comfortable in the groups. This finding is an important one, and can be easily addressed in the design of future treatment programs by having groups comprised only of women. Unfortunately, the low rate of recruitment of women in the present study, and the need to respect the time limits between termination from intensive treatment and initiation of the aftercare program, did not permit the creation of all-female aftercare groups.

Another limitation of the present study, the effect of which is perhaps more evident in hindsight, was the unavailability of self-efficacy measures at intake to intensive treatment. Specifically, although self-efficacy did demonstrate some change from pre- to post-aftercare in one domain, the relatively high self-efficacy levels present at pre-aftercare (ranging from 3.65 to 4.46) suggest that the greatest changes occurred during intensive treatment. Although the present study focused on the aftercare phase and its effect on outcome at 6 months post-treatment, it would have nevertheless been interesting to gain information regarding the gains in self-efficacy made during intensive treatment and their significance in predicting outcome.

In summary, the findings put forth by this study support the relationship between higher self-efficacy and improved post-treatment functioning. However, the effect of aftercare on self-efficacy levels is not as clear, and the superiority of a relapse prevention intervention in increasing efficacy expectations was not supported. This last finding is consistent with the results of a recent meta-analysis conducted by Irwin, Bowers, Dunn & Wang (1999) on the efficacy of relapse prevention, although the authors discuss findings suggesting that RP may be more effective under certain conditions, and suggest that future research focus on identifying the conditions which maximize the effectiveness of various treatment types. Although ambitious, the continuing challenge will be to identify the factors associated with successful behavior change and improved functioning, understand their mechanisms of action, and establish how they are, or can be incorporated into treatment programs that are clinically beneficial. To this end, self-efficacy appears to have a promising potential.

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Appendix A

Measures of Sociodemographic, Psychological and Substance Abuse Status

Structured Clinical Interview for DSM-III-R: Patient Version (SCID-P)

Addiction Severity Index (ASI)

Cross Study Shared Data Base-Intake, Demographic & Follow-up Versions (CSS-I, D, F)

Timeline Followback Method (TLFB)

Appendix B

Measures of Psychological Status

Symptoms Checklist-90R (SCL-90R)

Appendix C

Process Measures

Alcohol and Drug Use Self-Efficacy Scale (ADUSE)

30392

Date ___ / ___ / ___ (month / day / year)

Session

ID No.

The Alcohol and Drug Use Self-Efficacy Scale

Directions

Please respond to each item by darkening the circle that most closely corresponds to your assessment of your status. The 20 items on this questionnaire are presented twice.
On your first pass through the items please indicate on a five point scale **how TEMPTED you would be to drink or to use drugs** in that situation (**not at all tempted = 1** to **extremely tempted = 5**).
On your second pass through the 20 items please indicate **how CONFIDENT you would be to not drink or not use drugs** again on a five point scale (**not at all confident = 1** to **extremely confident = 5**).

1=not at all; 2=a little bit; 3=moderately; 4=quite a bit; 5=extremely

	How tempted would you be to drink or use drugs					How confident would you be not to drink or use drugs				
	1	2	3	4	5	1	2	3	4	5
1. When I feel angry inside.	○	○	○	○	○	○	○	○	○	○
2. When I see others drinking or using drugs.	○	○	○	○	○	○	○	○	○	○
3. When I have a headache.	○	○	○	○	○	○	○	○	○	○
4. When I am in agony because of stopping or withdrawing from alcohol or drug use.	○	○	○	○	○	○	○	○	○	○
5. When I sense everything is going wrong for me.	○	○	○	○	○	○	○	○	○	○
6. When I am excited or celebrating with others.	○	○	○	○	○	○	○	○	○	○
7. When I am physically tired.	○	○	○	○	○	○	○	○	○	○
8. When I have the urge to try just one drink or use drugs just once to see what happens.	○	○	○	○	○	○	○	○	○	○
9. When I am feeling depressed.	○	○	○	○	○	○	○	○	○	○
10. When I am on vacation and want to relax.	○	○	○	○	○	○	○	○	○	○
11. When I am concerned about someone.	○	○	○	○	○	○	○	○	○	○
12. When I feel a physical need or craving for alcohol or drugs.	○	○	○	○	○	○	○	○	○	○
13. When I feel like blowing up because of frustration.	○	○	○	○	○	○	○	○	○	○
14. When people I drank and/or used with encourage me to drink or use again.	○	○	○	○	○	○	○	○	○	○
15. When I experience physical pain or injury.	○	○	○	○	○	○	○	○	○	○
16. When I want to test my willpower over alcohol and drugs.	○	○	○	○	○	○	○	○	○	○
17. When I am very worried.	○	○	○	○	○	○	○	○	○	○
18. When I am offered drinks or drugs in a social situation.	○	○	○	○	○	○	○	○	○	○
19. When I dream about taking a drink or using drugs.	○	○	○	○	○	○	○	○	○	○
20. When I experience an urge to drink or take drugs that catches me unprepared.	○	○	○	○	○	○	○	○	○	○

Appendix D

Miscellaneous Measures

Corroborators Report

California Psychological Inventory-Socialization Scale (CPI-So)

Corroborator's Report

Date: _____

Session: _____

Corroborators ID# _____

Patient Name _____

Since we last talked to you on _____ regarding _____ 's substance abuse problem the research team would like to inquire about your impressions about how _____ has been doing.

1. Since our last telephone conversation do you suspect that _____ has used alcohol or drugs? Yes _____ No _____

If #1 is answered "Yes" go to #2: if #1 is answered "No" go to #3.

2. Relative to your knowledge of _____'s alcohol or drug usage before entering treatment was this present usage in comparison:

a) about the same
b) less severe
c) more severe

3. Are there any other aspects about _____ that you feel might impact upon his treatment for alcohol or drug abuse (e.g. relationships with family or friends, work or legal status)?

(Summarize essence of response in a few sentences

_____
_____
_____
_____
_____
_____
_____
_____
_____
_

Rapport corroborant

Date: _____

Session: _____

Corroborant - ID# _____

Nom du patient_____

Depuis la dernière fois où nous vous avons parlé le _____ au sujet de l'abus de substance par _____ l'équipe de recherche aimerait s'informer de vos impressions sur l'évolution de _____ .

1. Depuis notre dernière conversation téléphonique, avez-vous l'impression que _____ a fait usage d'alcool ou de drogue? Oui _____ Non _____

Si au #1 la réponse est "Oui", allez à #2; si au #1 la réponse est "Non", allez à #3.

2. En rapport avec votre connaissance de la consommation d'alcool ou de drogue de_____ avant son admission en traitement, est-ce que la consommation actuelle est:

a) à peu près la même
b) moins sévère
c) plus sévère

3. Est-ce qu'il y a un autre aspect chez _____ dont vous croyez qu''il puisse avoir un impact sur son traitement pour abus d'alcool ou de drogue (ex.: relations avec la famille ou les amis, statut au travail ou statu légal)?

(Résumez l'essentiel de la réponse en quelques phrases)

23644

Date: ☐☐ / ☐☐ / ☐☐
month / day / year

Session: ☐
0 1 2 3 4 5

ID. No. ☐☐☐☐☐☐☐☐
1 2 3 4 5 6 7 8 9 0

CALIFORNIA PSYCHOLOGICAL INVENTORY-SO

This questionnaire contains a series of statements. Read each one, decide how you feel about it, and then mark your answer. If you AGREE with a statement, or feel that it is TRUE about you, darken "true". If you DISAGREE with a statement, or feel that it is NOT TRUE about you, darken "false".

	TRUE	FALSE
1. I often feel that I made the wrong choice in my occupation	○	○
2. When I was going to school I played hooky quite often	○	○
3. I think Lincoln was greater than Washington	○	○
4. I would do almost anything on a dare	○	○
5. With things going as they are, it's pretty hard to keep up hope of amounting to something	○	○
6. I think that I am stricter about right and wrong than most people	○	○
7. I am somewhat afraid of the dark	○	○
8. My parents often disapproved of my friends	○	○
9. My home life was always happy	○	○
10. I often act on the spur of the moment without stopping to think	○	○
11. My parents have generally let me make my own decisions	○	○
12. I would rather go without something than ask for a favor	○	○
13. I have had more than my share of things to worry about	○	○
14. When I meet a stranger I often think that he is better than I am	○	○
15. Before I do something I try to consider how my friends will react to it	○	○
16. I have never been in trouble with the law	○	○
17. In school I was sometimes sent to the principal because I had misbehaved	○	○
18. Most of the time I feel happy	○	○
19. I often feel as though I have done something wrong or wicked	○	○
20. I have often gone against my parents' wishes	○	○
21. I often think about how I look and what impression I am making upon others.	○	○
22. I have never done any heavy drinking	○	○
23. I find it easy to "drop" or "break with" a friend	○	○
24. I get nervous when I have to ask someone for a job	○	○
25. Sometimes I used to feel that I would like to leave home	○	○
26. I never worry about my looks	○	○
27. My home life was always very pleasant	○	○

23644

ID. No. _____

	TRUE	FALSE
28. I seem to do things that I regret more often than other people do	O	O
29. My table manners are not quite as good at home as when I am out in company	O	O
30. It is pretty easy for people to win arguments with me	O	O
31. I know who is responsible for most of my troubles	O	O
32. I get pretty discouraged with the law when a smart lawyer gets a criminal free	O	O
33. I have used alcohol excessively	O	O
34. I sometimes wanted to run away from home	O	O
35. Life usually hands me a pretty raw deal	O	O
36. People often talk about me behind my back	O	O
37. I would never play cards (poker) with a stranger	O	O
38. I don't think I'm quite as happy as others seem to be	O	O
39. I used to steal sometimes when I was a youngster	O	O
40. My home as a child was less peaceful and quiet than those of most other people	O	O
41. As a child in school I used to give the teachers lots of trouble	O	O
42. If the pay was right I would like to travel with a circus or carnival	O	O
43. I never cared much for school	O	O
44. The members of my family were always very close to each other	O	O
45. My parents never really understood me	O	O
46. A person is better off not to trust anyone	O	O

Appendix E

Information Pamphlets (French and English)

Informed Consent Forms (French and English)

The Pavillon Foster-

Concordia University

Aftercare Study

Pavillon Foster, in collaboration with Concordia University, would like your help in a research project aimed at evaluating two different aftercare programs.

What is the goal of the study?
The goal of the study is to help individuals like yourself, who have experienced alcohol and/or drug use problems. This will be done by evaluating the efficacy of two different aftercare regimes, and more specifically, determining which aftercare regime is of greater benefit to which type of individual. This should help in the development of more effective drug treatment programs.

What type of aftercare programs are being evaluated?
The two aftercare programs being evaluated are:

1) a **12-Step approach** based on the principles of Alcoholics Anonymous, which involves discussion of weekly themes, goal-setting, and discussion of participation in AA meetings, and

2) a **Relapse Prevention approach**, which involves the identification of substance use triggers, evaluation of strengths and resources, and the learning of effective coping skills to deal with risk situations.

Both aftercare programs adhere to a goal of complete abstinence.
Both aftercare programs are offered in a structured group format. This means that in this study, the 12-Step approach is structured differently from the typical AA meeting, and like the Relapse Prevention approach, focuses primarily on group discussion.

Both aftercare programs consist of **two-hour sessions that take place once a week, for 10 weeks.**
Both aftercare programs are offered in addition to the treatment aftercare offered to you by Pavillon Foster.
Both aftercare programs are led by qualified interveners from Concordia University who have been trained by substance abuse professionals at Yale University and the Addiction Research Foundation in Toronto.

Can you choose which aftercare program you are in?
In order to ensure that all types of individuals are included in each aftercare program, you will be assigned at random to one aftercare or another, and cannot choose which aftercare you are in. If you are not assigned to the aftercare that you were hoping, give it a try just the same--it may offer you some valuable information! If at any point you are truly unsatisfied with the program, it is important to note that you can withdraw from the study at any time.

What would my participation involve?
The study consists of two distinct parts:

1) **Assessment**

This consists of interview sessions and questionnaire completion, aimed at assessing your alcohol and drug use. The assessment is conducted by an interviewer from Concordia University, at 5 times during your treatment:

a) when you enter intensive treatment at Pavillon Foster,

b) when you complete intensive treatment at Pavillon Foster,

c) when you complete the 10-week aftercare program offered by Concordia University,

d) 6 months following completion of intensive treatment at Pavillon Foster, and

e) 12 months following completion of intensive treatment at Pavillon Foster.

If possible, we would also like you to provide names of two individuals (we call them corroborators) who know you well, and who see you regularly (e.g., a spouse, close friend, parent, brother, sister). These people will be contacted for a 5 minute interview, at the 4 last assessment periods mentioned above, in order to obtain additional information regarding your progress during treatment and aftercare.

2) **Intervention**

This consists of the actual 10-week aftercare intervention, based on either the 12-Step or Relapse Prevention approach.

If I decide to participate, in what order will the assessment and intervention be done?

The scheduling of the various parts of the study will be as follows:

Part 1: The first assessment is done when you enter intensive treatment at Pavillon Foster. This is the longest assessment session, lasting between 2 and 3 hours.

Part 2: The second assessment is done when you complete intensive treatment, and is of approximately one hour duration. Corroborators are also interviewed.

Part 3: You begin the10-week aftercare program (either the 12-Step approach, or Relapse Prevention).

Part 4: The third, one-hour assessment session is done when you have completed

the aftercare program. Corroborators are interviewed.

Part 5: The fourth, one-hour assessment session will be done six months after completion of intensive treatment. Corroborators are interviewed.

Part 6: The final assessment session, again of approximately one hour duration, will be done 12 months after completion of intensive treatment. Corroborators are interviewed.

If I am unable to participate in the 10-week aftercare, can I still participate in the assessment?

If you are unable to participate in the aftercare, we would be grateful for your participation in the assessment portion of the study.

What benefits can I expect from my participation?

The major benefit of this study is that it will offer you an additional follow-up period within which to examine and understand your past alcohol and drug use, and use this information in working toward your goal of abstinence. Although the aftercare offered by Concordia University may present some of the same issues introduced to you in the treatment and aftercare offered by Pavillon Foster, these issues may be discussed from a different perspective, and thus provide you with valuable information.

Your participation will also help to provide us with a better understanding of the aspects of successful aftercare programs. If one of the aftercare programs is shown to be more beneficial than the other, then you will be given the opportunity, if you haven't

already, to receive this 10-session program once the study is over.

How much does it cost to participate?

It costs nothing for you to participate in this study. In fact, to defer any costs of your participation in the study, you will be given $10.00 for completing the third assessment session, $20.00 for completing the fourth assessment session, and $20.00 for completing the fifth assessment session.

Will the information I provide be kept confidential?

All the information you provide in the assessment sessions and in the aftercare groups will be kept strictly confidential, and only individuals directly related to the study will have access to it. The only situation in which confidentiality may be waived is where there is an indication that potential harm exists to you or to others (e.g., suicide, violence). In this situation, we would inform you and, if necessary, the appropriate health professionals.

Who may I contact for further information regarding this study?

If you have any questions regarding any of the procedures or wish to obtain further information, you can call Naomi Rappaport, the project co-ordinator, at 848-2856 during regular business hours.

Concordia University
Department of Psychology
2130 Bishop Street
MI Annex, Room 103
Montreal, Quebec
H3G 1M8

Programmes de suivi:

Une étude du centre

Le Virage

et de l'Université Concordia

Le Virage, en collaboration avec l'Université Concordia, vous offre la possibilité d'entreprendre un programme de suivi supplémentaire. Dans le cadre d'une étude visant à évaluer deux types de programmes, vous pourriez bénéficier gratuitement de 10 séances de suivi offertes à des petits groupes de personnes ayant participé au programme du Centre.

Quel est le but de l'étude?
Le but de l'étude est d'aider les gens comme vous, qui ont vécu des problèmes de consommation de drogue et/ou d'alcool. À cette fin, l'efficacité de deux programmes de suivi différents seront évalués en déterminant lequel des programmes offre le meilleur résultat pour différents profils d'individus. Les résultats devraient contribuer au développement de programmes de traitement plus efficaces.

Quels types de programme de suivi seront évalués?
Les deux types de programmes de suivi évalués seront:

1) **une approche en 12 étapes** fondée sur les principes des Alcooliques Anonymes, qui consiste en des discussions de thèmes hebdomadaires, l'élaboration d'objectifs, et de discussions sur la participation aux réunions AA;

2) **une approche de prévention de la rechute**, qui implique l'identification des déclencheurs de consommation de drogue et/ou d'alcool, l'évaluation des forces et des ressources, et l'apprentissage de stratégies pour affronter les situations à risque.

Les deux programmes de suivi ont comme objectif l'abstinence complète.

Les deux programmes de suivi sont offerts dans un contexte structuré de groupe. Cela

signifie que dans cette étude, l'approche en 12 étapes se déroule différemment des réunions AA typiques, et est basée principalement sur les discussions de groupe comme l'approche de prévention de la rechute.

Les deux programmes de suivi sont offerts sous forme de rencontres hebdomadaires d'une durée de 2 heures, durant 10 semaines, qui pourraient débuter ou se dérouler avant que vous ayez terminé le traitement offert dans votre centre.

Les deux programmes de suivi sont dirigés par des intervenants qualifiés de l'Université Concordia, qui ont reçu une formation par des professionnels de l'Université Yale et de la Fondation de la recherche sur la toxicomanie à Toronto.

Puis-je choisir le programme de suivi à lequel je veux participer?
Non. Afin d'assurer la validité de la recherche, le choix doit se faire au hasard. Si le programme que vous espériez avoir ne vous est pas assigné, essayez-le tout de même---il pourrait vous offrir des informations enrichissantes! Il est important de noter que vous pouvez vous retirer de l'étude à n'importe quel moment si vous n'êtes pas satisfait du programme.

Qu'impliquerait ma participation?
L'étude comprend deux parties distinctes:

1) **L'évaluation**

Cette partie consiste à évaluer votre consommation d'alcool et de drogue à l'aide d'entrevues et de questionnaires.
L'évaluation est effectuée à 5 reprises par une personne de l'Université Concordia:

a) au moment de votre admission en traitement au centre Le Virage,

b) avant le début du programme de suivi offert par l'Université Concordia,

c) immédiatement aprés les dix rencontres du programme de suivi,

d) six mois aprés le début du programme de suivi ,et

e) 12 mois après le début du programme de suivi.

Nous aimerions également, si possible, que vous nous donniez le nom de deux personnes (témoins personnels) qui vous connaissent bien et qui vous fréquentent régulièrement (ex. conjoint(e), ami(e), parent, frère, soeur). Ces personnes seront contactées pour une entrevue de 5 minutes, aux 4 dernières périodes d'évaluation mentionnées ci-haut. Des informations supplémentaires seront obtenues sur votre progrès durant le traitement et le suivi.

2) **L'intervention**

Ceci réfère au programme de suivi de 10 semaines, basé soit sur l'approche en 12 étapes, ou sur l'approche de prévention de la rechute.

Si je décide de participer, comment se dérouleront l'évaluation et l'intervention?

Les différentes parties de l'étude se dérouleront comme suit:

Partie 1: La première séance d'évaluation se tiendra au moment de votre admission en traitement au centre Le Virage. Elle durera de 2 à 3 heures et sera la plus longue période d'évaluation.

Partie 2: La seconde évaluation, d'une durée approximative d'une heure, se tiendra avant que vous débutiez le programme de suivi offert par l'Université Concordia. Les témoins personnels seront aussi contactés.

Partie 3: Vous débuterez le programme de suivi de 10 semaines (soit l'approche en 12 étapes, ou l'approche de prévention de la

rechute). Ce programme pourrait débuter ou se dérouler avant que vous ayez terminé le traitement offert dans votre centre.

Partie 4: La troisième évaluation, d'une durée d'une heure, se tiendra lorsque vous aurez complété le programme de suivi. Les témoins personnels seront aussi contactés.

Partie 5: La quatrième évaluation, d'une durée d'une heure, se tiendra 6 mois après le début du programme de suivi. Les témoins personnels sont contactés.

Partie 6: La dernière séance d'évaluation, aussi d'une durée approximative d'une heure, se tiendra 12 mois après le début du programme de suivi. Les témoins personnels seront contactés.

Si je suis incapable de participer au suivi de 10 semaines, est-ce que je pourrais participer à l'évaluation?

Si vous ne pouvez pas participer au suivi, nous vous serions reconnaissants de compléter l'évaluation.

Quels bienfaits puis-je attendre de ma participation?

Le principale avantage de cette étude sera de vous offrir une période additionnelle de suivi pour examiner et comprendre vos habitudes de consommation dans le passé, et d'utiliser ces informations dans votre démarche vers l'abstinence. Bien que le programme de suivi pourrait discuter des mêmes thèmes abordés lors du traitement et suivi offerts par Le Virage, ceux-ci pourraient être discutés d'une perspective différente et vous fournir des informations valables pour un meilleur rétablissement.

Votre participation nous fournira aussi une meilleure compréhension des éléments d'un programme de suivi efficace. Si un des programmes de suivi s'avérait nettement plus efficace que l'autre, ce programme pourrait

vous être offert à la fin de l'étude, si vous n'en aviez pas encore benéficié.

Combien coûtera ma participation?

Cela ne coûte rien --- tout le programme de suivi est gratuit. De plus, pour défrayer les coûts de votre participation à cette étude, vous recevrez $10.00 pour avoir complété la troisième séance d'évaluation, $20.00 pour avoir complété la quatrième séance d'évaluation, et $20.00 pour la dernière séance d'évaluation.

Est-ce que les renseignements que je fournirai seront gardés confidentiels?

Tous les renseignements que vous aurez fournis dans les séances d'évaluation et dans les groupes de suivi seront strictement confidentiels. Leur accès sera restreint seulement aux personnes directement impliquées dans la recherche. Cette garantie de confidentialité ne sera suspendue que dans le seul cas d'un risque potentiel sérieux pour votre vie ou pour celle d'une autre personne (ex. menaces de suicide ou de violence). Dans ce cas, nous vous en aviserons et, si nécessaire, nous contacterons les personnes ressources appropriées.

Qui puis-je contacter pour des informations additionnelles concernant l'étude?

Si vous avez besoin de renseignements sur l'un ou l'autre des aspects de l'étude, vous pouvez contacter la coordinatrice de la recherche, Naomi Rappaport, au 848-2856, durant les heures d'affaires régulières.

Université Concordia
Département de psychologie
2130, rue Bishop
MI Annex, local 103
Montréal, Québec
H3G 1M8

Experimental Manipulation of Treatment Aftercare Regimes for the Substance Abuser

Patient Informed Consent Form

September 1995

Pavillon Foster, la Maison Jean Lapointe and le Centre de Readaption Monteregie in conjunction with researchers from Concordia University request your co-operation in a research project aimed at evaluating the influence of two different aftercare programs. Participation in the research project has no bearing on the intensive treatment or the usual aftercare program which your center offers; the aftercare programs which are part of the research project are added-on to those which you are already scheduled to receive. The two aftercare programs, which are both held for one session per week for ten weeks, are based on either a 12-Step model which employs the principles of Alcoholics Anonymous or a Relapse Prevention model which tries to teach you new coping skills. If more than a week lapses between the end of your intensive treatment and the scheduled start-up of your 10-week aftercare program, an induction session will also be offered to familiarize you with what is to come. Both aftercare programs adhere to a philosophy of complete abstinence from alcohol and drug usage. If you agree to participate in the project you will be assigned at random to participate in one or the other aftercare program. This means that the additional aftercare program that you receive as part of the research project is decided by the luck of the draw and not selected deliberately because of any special characteristics or problems you have. Trained counselors under the supervision of expert consultants oversee the planning and implementation of the aftercare programs. Therapists from your treatment center might, from time to time, attend some of the aftercare sessions as observers.

Participants in this study undergo assessment of alcohol and drug use, physical , cognitive as well as psychological status at five points in time: 1) intake into intensive treatment, 2) following completion of intensive treatment, 3) following the ten session aftercare program, 4) six months following completion of intensive treatment, and 5) twelve months following completion of intensive treatment. Each of these assessment sessions takes around about two hours to complete with the first session being a little longer than the others.

As part of the research project we also would like to interview, around the time of these five assessment sessions, a person who knows you well to ask for their views on how you are doing. This person, whom we call a corroborator, could be your spouse, close friend, roommate, co-worker, brother, sister or parent. The corroborator should ideally be someone whom you know well, sees you regularly, knows about your alcohol or drug use, and that you trust that we could talk in confidence without creating problems for you. These interviews are completely confidential, and would not give the person being interviewed any information that we have gathered from you other than that you are in treatment for substance abuse. The person serving as corroborator should be someone who understands the importance of the research and would give us honest answers. At the bottom of this form we ask you to provide names and addresses of two individuals who we can contact in order to ask them to corroborate your alcohol and drug

status. We require only one corroborator but we ask for two names in case the first person isn't willing to participate in the study.

As a token of our appreciation for your participation in the study you will be given $10.00 for completing the third assessment session as well as $20.00 for completing each of the fourth and the fifth assessment sessions (i.e. a total of $50.00). At the end of the project you can receive, if you wish, a description of your individual results as well as a summary of the group findings.

It is anticipated that the results of this study will improve understanding of the aspects of aftercare programs that contribute to greater success in the struggle to combat alcohol and drug abuse. If one of the aftercare programs proves to be more beneficial than the other, all study participants, if they haven't already, will be given the opportunity to receive this 10 session program , once the study is over.

If you are unwilling to participate in the experimental aftercare programs but would be prepared to allow us to perform the assessment sessions (five maximum), we would also be grateful for such partial participation in the research project. There is a section at the end of this form that you can check off if such partial participation in the project is of interest to you.

Risks and Discomfort

We envision no risk to your physical or psychological well-being due to any of the above procedures. If we feel at any time that your further participation in the research project is detrimental to your well-being we will inform you of this decision, terminate your participation in the study , and provide appropriate referrals.

Confidentiality

All data collected will be kept strictly confidential . A qualified researcher from Concordia University who is not involved in your treatment will gather the experimental data. Thus, the information that you provide will in no way influence your treatment. Information gathered from you will be coded for the purpose of statistical analysis and will not be available to the clinical staff or others not directly involved in this study. Due to this commitment to confidentiality some questions or sections of questionnaires which are asked in the assessment sessions may duplicate information which staff from your treatment center may have gathered. Although such duplication is unfortunate, it is a price we must pay for keeping your data confidential.

There is one situation in which our commitment to confidentiality may be waived. If our data strongly suggest the potential for harm to you or others (e.g. suicide, violence) we must inform you and, if necessary, the appropriate health professionals.

Inquiries

If you have any doubts or questions about any of the procedures please ask the experimenter for further information or call Naomi Rappaport, the project co-ordinator, at 848-2856 during regular business hours.

Freedom of Consent

Your participation in this study is voluntary. You are free to deny consent or to withdraw from the study at any time. Your actions in this regard will have no bearing on the services usually offered at Pavillon Foster, la Maison Jean Lapointe and le Centre de Readaption Monteregie.

I have read this form, understand the procedures, and consent to participate in the project either

fully_____

just for the assessment sessions (five maximum)_____

Signature of participant_____

Address_____

Telephone (home_____

Witnessed by_____ Date_____

Please provide below the names, addresses and telephone numbers of two people (corroborators) whom we can contact to inquire about your alcohol and drug use status at the time of the four assessment sessions.

Name_____

Address_____

Telephone# _____

Relationship _____

Best time to call _____

Name _____

Address _____

Telephone # _____

Relationship _____

Best time to call _____

Procédure expérimentale portant sur les programmes de suivi après un traitement pour toxicomanie

Consentement éclairé du client

Avril 1996

Le Pavillon Foster, la Maison Jean Lapointe et Le Virage, conjointement avec une équipe de recherche de l'Université Concordia, sollicite votre collaboration dans une étude ayant pour but d'évaluer l'efficacité de deux programmes de suivi différents. Votre participation à cette étude n'influencera d'aucune façon ni votre traitement pour toxicomanie ni le programme de suivi actuellement en cours dans votre centre; les programmes évalués dans cette étude viennent en supplément de ceux qui sont déjà prévus pour vous. Les deux programmes visés se déroulent au rythme d'une rencontre par semaine durant dix semaines; il s'agit ou bien d'une approche en 12 étapes fondée sur les principes Alcooliques Anonymes, ou bien d'une approche de prévention de la rechute qui propose l'apprentissage de nouvelles compétences à résister. Ces deux programmes ont pour but l'abstinence totale de drogue et d'alcool. Si vous acceptez de participer à l'étude, vous serez choisi au hasard pour suivre l'un ou l'autre des deux programmes; il est important de noter que le choix de ce programme supplémentaire se fait par tirage au sort et non pas en fonction de votre profil personnel ou de votre dossier clinique. Des conseillers encadrés par des experts verront à la réalisation des programmes de suivi. À l'occasion, des intervenants de votre centre de réadaptation pourront être présents en tant qu'observateurs. Si vos déplacements nécessaires aux programmes de suivi vous causent un problème financier, des billets d'autobus aller-retour peuvent vous être fournis afin de pouvoir assister aux sessions. Ces billets peuvent être obtenus du conseiller du programme sur une base hebdomadaire.

Les participants à cette étude seront consultés à cinq moments afin d'établir leur usage d'alcool et de drogue et d'évaluer leur état de santé physique, cognitive et psychologique: 1) au moment de l'admission en traitement intensif, 2) dès la fin du traitement intensif, 3) immédiatement après les dix rencontres du programme de suivi, 4) six mois après la fin du programme intensif, et 5) douze mois après la fin du programme intensif. Chacune de ces rencontres d'évaluation prend environ deux heures, la première rencontre étant la plus longue période d'évaluation.

Dans le cadre de la recherche, à peu près aux mêmes moments, nous aimerions rencontrer une personne qui vous connait bien pour nous entretenir de votre santé. Cette personne, que nous appelons votre témoin personnel, peut être votre conjoint-e, un-e ami-e intime, un-e partenaire,

un-e parent-e proche. Idéalement, la personne choisie comme témoin personnel doit bien vous connaître, vous voir fréquemment, être au courant de votre toxicomanie, être une personne en qui vous avez assez confiance pour que nous abordions avec elle ce sujet sans conséquence négative pour vous. Ces rencontres seront strictement confidentielles; à part le fait que vous étiez en traitement pour toxicomanie, la personne que vous aurez choisie comme témoin personnel ne recevra aucun autre renseignement vous concernant. Cette personne doit comprendre l'importance de la recherche et être disposée à répondre honnêtement à nos questions. À la fin de ce formulaire de consentement, nous vous demandons de fournir les noms et adresses de deux personnes à contacter pour le rôle de témoin personnel par rapport à votre consommation d'alcool ou de drogue. Nous ne retiendrons qu'un seul témoin personnel mais nous vous demandons d'identifier deux personnes, en cas de refus de la première.

En témoignage de notre gratitude pour votre participation, vous recevrez $10.00 après la troisième rencontre d'évaluation, $20.00 après la quatrième rencontre d'évaluation, et $20.00 après la cinquième rencontre d'évaluation (i.e., un total de $50.00). Une fois l'étude terminée, nous vous ferons parvenir, si vous le souhaitez, un résumé des résultats d'ensemble de la recherche ainsi qu'un relevé de vos résultats personnels.

Nous croyons que les résultats de cette recherche nous permettrons de mieux comprendre quels sont les aspects des programmes de suivi qui augmentent l'efficacité de la lutte contre la toxicomanie. Si l'un des deux programmes de suivi s'avère nettement plus efficace que l'autre, celui-ci sera offert dans sa totalité à tous les participants qui n'en auraient pas encore bénéficié à la fin de l'étude.

Si vous ne voulez pas participer aux programmes de suivi expérimentaux supplémentaires, mais si néanmoins vous acceptez de participer aux rencontres d'évaluation (cinq au maximum), nous apprécierions votre participation limitée. À la fin du présent formulaire, vous trouverez une section vous permettant d'indiquer que vous souhaitez avoir une participation limitée à la recherche.

Risques et inconvénients

Ces procédures de recherche ne devraient entraîner aucun risque pour votre bien-être physique ou psychologique. Si nous croyons que votre participation à la recherche nuit à votre bien-être, à quelque étape que ce soit, nous vous en avertirons; vous serez retiré de l'étude et mis en contact avec les ressources appropriées.

Confidentialité

Tous les renseignements sont strictement confidentiels. La collecte des données sera réalisée par un chercheur autorisé par l'Université Concordia, mais qui n'est pas impliqué dans votre traitement. Les renseignements que vous nous fournissez n'auront ainsi aucune influence sur votre traitement; ces renseignements seront encodés pour fins d'analyses statistiques et ne seront pas transmis au personnel clinique ou à quiconque n'est pas directement impliqué dans les activités de cette recherche. Afin de respecter la confidentialité, certaines questions utilisées lors des rencontres d'évaluation seront parfois similaires à celles qu'on vous a déjà posées dans votre centre de réadaptation. Nous nous excusons d'avance de ces redites, mais c'est un prix qu'il faut payer pour assurer la confidentialité des renseignements.

Cette garantie de confidentialité ne sera suspendue que dans le seul cas d'un risque potentiel sérieux pour votre vie ou pour celle d'une autre personne (par exemple, à la suite de menaces de suicide ou de violence). Nous vous aviserons alors de cet état de fait et, si nécessaire, nous contacterons les instances appropriées.

Renseignements additionnels

Si vous avez besoin de renseignements sur l'un ou l'autre des aspects de l'étude, addressez-vous au chercheur sur place ou téléphonez à la coordinatrice de la recherche, Naomi Rappaport, au 848-2856, durant les heures d'affaires habituelles.

Consentement éclairé et libre

Votre participation à cette recherche est facultative. En tout temps, vous pouvez annuler votre consentement et vous retirer de l'étude. Votre décision sur ce point n'aura aucune conséquence sur les services disponibles au Pavillon Foster, à la Maison Jean Lapointe et au centre Le Virage.

J'ai bien lu ce formulaire, je comprends en quoi consistent les procédures de recherche, et je consens à participer à l'étude

à toutes les rencontres prévues _____

aux rencontres d'évaluation seulement (cinq au maximum) _____

Signature du participant_____

Adresse_____

_____

Téléphone (résidence)_____

Témoin_____

Date_____

Nous vous prions d'indiquer les coordonnées de deux personnes pouvant agir comme témoin personnel et avec qui nous pourront entrer en contact afin de vérifier votre consommation d'alcool et de drogue aux cinq moments de l'évaluation.

Nom_____

Adresse_____

_____

Téléphone_____

Lien avec moi_____

Heures de disponibilité pour appel_____

Nom_____

Adresse_____

_____

Téléphone_____

Lien avec moi_____

Heures de disponibilité pour appel_____

Experimental Manipulation of Treatment Aftercare Regimes for the Substance Abuser

Corroborator Informed Consent Form

Dear _____

Patients who have recently entered treatment for alcohol and drug abuse problems at Pavillon Foster, la Maison Jean Lapointe and le Centre de Readaption Monteregie have been approached by researchers from Concordia University to request their participation in a research project aimed at evaluating the influence of two different aftercare programs. The two aftercare programs, which are both held for one session per week for ten weeks, are either a 12-Step approach based on the principles of Alcoholics Anonymous or a Relapse Prevention approach which tries to teach the abuser new coping skills. Both of these aftercare programs adhere to a philosophy of complete abstinence from alcohol and drug usage.

Participants in this study undergo assessment of alcohol and drug use, physical , cognitive as well as psychological status at five points in time: 1) intake into intensive treatment, 2) following completion of intensive treatment, 3) following the ten session aftercare program, 4) six months following completion of intensive treatment, and 5)twelve months following completion of intensive treatment. Each of these assessment sessions requires about two hours to complete.

As part of the research project we also would like to interview, around the time of these five assessment sessions, a person who knows the patient well to ask for their views on how the patient is doing. This person, whom we call a corroborator, should ideally be someone whom knows the patient well, , knows about their substance abuse, and whom the patient trusts to keep the inquiries confidential.

Your name was given to us by _____ as such a person who might serve to corroborate their reports of alcohol and drug usage.

If you are willing to participate in the study as a corroborator please sign the form below and return it in the attached, addressed envelope.

Inquiries

If you have any doubts or questions about any of the procedures please ask the experimenter for further information or call Naomi Rappaport, the project co-ordinator, at 848-2856 during regular business hours.

Freedom of Consent

Participation in this study is voluntary. Withdraw from the study at any time is possible.

I have read this form, understand the procedures, and consent to participate in the projectas a corroborator:

Signature of participant _____ Date _____

Procédure expérimentale portant sur les programmes de suivi après un traitement pour toxicomanie

Consentement éclairé du témoin personnel

Avril 1996

Madame, Monsieur,

Des clients qui ont récemment entrepris un traitement pour alcoolisme ou toxicomanie au Pavillon Foster, à la Maison Jean Lapointe et au centre Le Virage ont été approchée par une équipe de recherche de l'Université Concordia en vue d'obtenir leur collaboration à une étude ayant pour but d'évaluer l'efficacité de deux programmes de suivi différents. Les deux programmes en question se dérouleront au rythme d'une rencontre par semaine, durant dix semaines; il s'agit ou bien d'une approche en 12 étapes fondée sur les principes Alcooliques Anonymes, ou bien d'une approche de prévention de la rechute qui propose l'apprentissage de nouvelles compétences à résister. Ces deux programmes ont pour but l'abstinence totale de drogue et d'alcool.

Les participants à cette étude seront consultés à cinq moments afin d'établir leur usage d'alcool et de drogue et d'évaluer leur état de santé physique, cognitive et psychologique: 1) au moment de l'admission en traitement intensif, 2) dès la fin du traitement intensif, 3) immédiatement après les dix rencontres du programme de suivi, 4) six mois après la fin du programme intensif, et 5) douze mois après la fin du programme intensif. Chacuen de ces rencontres d'évaluation prend environ deux heures, la première rencontre étant la plus longue période d'évaluation.

Dans le cadre de la recherche, à peu près aux mêmes moments, nous aimerions rencontrer une personne qui connait bien la personne en traitement pour nous entretenir de sa santé. Idéalement cette personne que nous appelons le témoin personnel de la personne en traitement, doit bien la connaître, être au courant de sa toxicomanie et bénéficier de sa confiance en ce qui a trait à la confidentialité des rencontres.

Votre nom nous a été proposé par _____
afin que vous lui serviez de témoin personnel pour vérifier ses déclarations concernant sa consommation d'alcool et de drogue.

Si vous acceptez de participer à l'étude à titre de témoin personnel, nous vous prions d'apposer votre signature au bas du présent formulaire et nous le retourner dans l'enveloppe ci-jointe.

Renseignements

Si vous avez des questions concernant l'un ou l'autre des aspects de la recherche, téléphonez à la coordinatrice de la recherche, Naomi Rappaport, au 848-2856, durant les heures d'affaires habituelles.

Consentement éclairé et libre

La participation à cette recherche est facultative. En tout temps, vous pouvez vous retirer de l'étude.

J'ai bien lu ce formulaire, je comprends en quoi consistent les procédures de recherche, et je consent à participer à l'étude à titre de témoin personnel.

Signature du participant _____ Date _____

Appendix F

T-Test Summary Tables

Chi-Square Analyses

Table 1

Comparison of participants who were retained for final analysis with those who were not included, on selected demographic characteristics

Variables	Group				
	Retained (n = 102)		Not retained (n = 143)		
	M	SD	M	SD	t
Age	38.40	9.30	35.47	8.69	-2.53*
Education (years)	12.00	2.92	11.73	3.08	-1.96
	%	n	%	n	X^2
Sex					4.08*
Male	74.51	(76)	62.24	(89)	
Female	25.49	(26)	37.76	(54)	
Race					.90
Caucasian	92.16	(94)	93.51	(136)	
Other	7.84	(4)	4.89	(7)	
Religion					1.79
Catholic	52.94	(54)	56.64	(81)	
Other	47.06	(48)	43.36	(61)	

*p<.05

Table 2

Comparison of participants who were retained for final analysis with those who were not included, on selected substance use-related intake characteristics

Variables	Group				
	Retained (n = 102)		Not retained (n = 143)		
	M	SD	M	SD	t
PPVT-R (Verbal ability)	154.89	15.80	146.05	16.78	-4.16*
CPI-So (Sociopathy)	35.99	9.06	33.51	9.13	-2.10**
WAIS-R (Cognitive status)	8.85	1.91	8.79	1.77	-.23
SCL-90R (Psychological symptomatology)	67.59	10.07	66.34	9.90	-.97
	%	n	%	n	X^2
Primary substance of use					
Alcohol only	41.18	(42)	38.46	(55)	
Drug(s) only	15.67	(17)	19.58	(28)	
Alcohol + drug(s)	42.15	(43)	41.96	(60)	
Treatment Status					.12
In-patient	73.53	(75)	74.13	(106)	
Out-patient	26.47	(27)	25.87	(37)	

*p<.05

**p<.01

Table 2 (continued)

Comparison of participants who were retained for final analysis with those who were not included, on selected substance use-related intake characteristics

Variables	Group				
	Retained (n = 102)		Not retained (n = 143)		
	%	n	%	n	X^2
Recruitment Site					2.71
Maison Jean Lapointe	36.40	(40)	40.60	(42)	
Pavillon Foster	48.50	(44)	40.60	(69)	
Le Virage	27.80	(18)	18.80	(32)	

Appendix G

Repeated Measures ANCOVA Tables

Table 1

Repeated Measures Analysis of Covariance for Abstinence Self-Efficacy

Source of Variation	SS	df	MS	F_{univ}	p
Domain of self-efficacy: Negative emotional states					
Regression	3.71	1	3.71	2.12	.149
Group	2.79	2	1.40	0.80	.453
Error	171.57	98	1.75		
Time	3.65	2	1.82	4.41	.013
Group x Time	2.28	4	0.57	1.38	.242
Error	81.86	198	0.41		
Domain of self-efficacy: Social interactions and positive states					
Regression	0.50	1	0.05	0.03	.873
Group	0.43	2	0.21	0.11	.897
Error	192.05	98	1.96		
Time	0.36	2	0.16	0.37	.692
Group x Time	4.94	4	1.24	2.56	.040
Error	95.65	198	0.48		

Table 1 (continued)

Repeated Measures Analysis of Covariance for Abstinence Self-Efficacy

Source of Variation	SS	df	MS	F_{univ}	p
Domain of self-efficacy: Physical and other concerns					
Regression	1.16	1	1.16	1.08	.300
Group	1.74	2	0.87	0.81	.448
Error	106.17	99	1.07		
Time	0.02	2	0.01	0.02	.976
Group x Time	1.86	4	0.47	1.39	.239
Error	66.41	198	0.34		
Domain of self-efficacy: Withdrawal and urges					
Regression	0.00	1	0.00	0.00	.986
Group	0.63	2	0.31	0.16	.848
Error	186.31	99	1.88		
Time	1.11	2	0.55	1.39	.252
Group x Time	0.61	4	0.15	0.38	.823
Error	79.16	198	0.40		

Appendix H

Regression Summary Tables

Table 1

Summary of Hierarchical Regression Analysis for Self-Efficacy Change Scores (Pre- to Post Aftercare) Predicting Number of Abstinent Days at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1					
Number of days of abstinence at pre-aftercare	0.09	0.12	0.13	0.10	.90
ΔR^2=0.01; $F_\Delta(1,100)$=.809, p=.3701					
Step 2					
RP vs. Reference	0.04	0.08	0.10	0.09	.88
AA vs. Reference	0.06	0.09	0.10	0.10	1.00
ΔR^2=0.01; $F_\Delta(3,98)$=.66, p=.58					
Step 3: Self-efficacy change scores (Pre- to post-aftercare)					
Negative emotional states	-0.01	-0.07	0.07	-0.16	-.97
Social/positive situations	0.06	0.04	0.08	0.10	.48
Physical concerns	0.08	0.03	0.06	0.08	.55
Withdrawal and urges	0.03	0.02	0.07	0.04	.24
ΔR^2=0.02; $F_\Delta(7,94)$=0.48, p=.85					
R^2=.03 Adjusted R^2=-.04 R=.19					

Table 2

Summary of Hierarchical Regression Analysis for Self-Efficacy Change Scores (Pre-Aftercare to the 6-Month Follow-up) Predicting Alcohol Use (ASI) scores at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1					
Alcohol use (ASI)					
at pre-aftercare	0.31	2.10	0.63	0.32	3.27**
ΔR^2=0.10; $F_\Delta(1,100)$=10.70, p<.01					
Step 2					
RP vs. Reference	-0.03	-0.05	0.07	-0.09	-1.19
AA vs. Reference	-0.05	-0.03	0.06	-0.05	-1.03
ΔR^2=0.02; $F_\Delta(3,98)$=4.11, p=.44					
Step 3: Self-efficacy change scores (Pre-aftercare to the 6-month follow-up)					
Negative emotional states	-0.17	0.01	0.04	0.02	.12
Social/positive situations	-0.27	-0.08	0.04	-0.27	-1.75
Physical concerns	-0.16	0.06	0.05	0.14	1.03
Withdrawal and urges	-0.25	-0.05	0.04	-0.14	-1.12
ΔR^2=0.08; $F_\Delta(7,94)$=2.16, p=.07					
R^2=.20 Adjusted R^2=.14 R=.43					

**p<.001

Table 3

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting Employment Status (ASI) scores at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1:Employment status (ASI)					
at pre-aftercare	0.68	0.66	0.08	0.66	9.17***
ΔR^2=0.46; $F_\Delta(1,100)$=84.00, p<.001					
Step 2					
RP vs. Reference	0.11	0.08	0.10	0.09	1.56
AA vs. Reference	-0.07	-0.01	0.06	-0.02	0.34
ΔR^2=0.01; $F_\Delta(3,98)$=1.35, p=.26					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	-0.18	0.06	0.04	0.19	1.30
Social/positive situations	-0.18	-0.07	0.05	-0.22	-1.11
Physical concerns	-0.21	-0.05	0.06	-0.12	-1.38
Withdrawal and urges	-0.23	0.003	0.05	-0.01	0.08
ΔR^2=0.04; $F_\Delta(7,94)$=1.68, p=.16					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	-0.09	0.01	0.06	0.03	0.20
Social/positive situations	-0.08	0.06	0.05	0.21	1.18
Physical concerns	-0.21	-0.07	0.06	-0.20	-1.83
Withdrawal and urges	-0.16	-0.03	0.06	-0.10	-0.53
ΔR^2=0.02; $F_\Delta(11,90)$=0.93, p=.45					
R^2=.03 Adjusted R^2=-.04 R=.19					

***p<.001

Table 4

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Pre- and Post-Aftercare Predicting Psychological Status (ASI) scores at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Psychological status (ASI)					
at pre-aftercare	0.45	0.38	0.11	0.37	5.05***
ΔR^2=0.20; $F_\Delta(1,100)$=25.47, p<.001					
Step 2					
RP vs. Reference	0.11	0.07	0.05	0.16	1.78
AA vs. Reference	-0.001	0.03	0.05	0.07	1.01
ΔR^2=0.03; $F_\Delta(3,98)$=1.62, p=.20					
Step 3: Pre-aftercare self-efficacy scores					
Negative emotional states	-0.39	-0.05	0.04	-0.21	-1.51
Social/positive situations	-0.34	-0.01	0.04	-0.07	-0.26
Physical concerns	-0.32	0.03	0.04	0.09	0.50
Withdrawal and urges	-0.36	-0.005	0.04	-0.02	-0.23
ΔR^2=0.05; $F_\Delta(7,94)$=1.51, p=.21					
Step 4: Post-aftercare self-efficacy scores					
Negative emotional states	-0.21	-0.001	0.05	-0.02	-0.03
Social/positive situations	-0.18	0.01	0.04	0.07	0.32
Physical concerns	-0.13	0.001	0.03	0.002	0.02
Withdrawal and urges	-0.24	-0.02	0.05	-0.09	-0.41
ΔR^2=0.001; $F_\Delta(11,90)$=0.06, p=.99					
R^2=.28 Adjusted R^2=.19 R=.53					

***p<.001

Table 5

Summary of Hierarchical Regression Analysis for Self-Efficacy Scores at Post- and Pre-Aftercare Predicting Symptom Seveity (SCL-90R) at 6-Month Follow-Up (N=102)

Variable	Correlation	B	SE B	ß	t
Step 1: Symptom severity (SCL-90R)					
at pre-aftercare	0.62	0.64	0.11	0.52	7.94***
ΔR^2=0.39; $F_\Delta(1,100)$=63.11, p<.001					
Step 2					
RP vs. Reference	0.05	1.77	2.58	0.06	0.64
AA vs. Reference	-0.04	-0.14	2.52	-0.01	0.75
ΔR^2=0.004; $F_\Delta(3,98)$=0.33, p=.72					
Step 3: Post-aftercare self-efficacy scores					
Negative emotional states	-0.36	-7.37	2.54	-0.52	-3.04**
Social/positive situations	-0.28	1.09	2.37	0.09	0.31
Physical concerns	-0.22	-0.43	1.76	-0.03	-0.14
Withdrawal and urges	-0.32	4.54	2.55	0.34	1.58
ΔR^2=0.08; $F_\Delta(7,94)$=3.38, p=.01					
Step 4: Pre-aftercare self-efficacy scores					
Negative emotional states	-0.46	-0.65	1.96	-0.05	-0.33
Social/positive situations	-0.40	-0.15	2.22	-0.01	-0.07
Physical concerns	-0.42	0.06	2.43	0.003	0.03
Withdrawal and urges	-0.49	-2.23	2.05	-0.16	-1.09
ΔR^2=0.02; $F_\Delta(11,90)$=0.95, p=.44					
R^2=.49 Adjusted R^2=.43 R=.70					

**p<.01