THE RELATIONSHIP BETWEEN INTERPERSONAL FACTORS AND

DRINKING OUTCOMES OF WOMEN RECOVERING FROM ALCOHOL

USE DISORDERS: TESTING THE POTENTIAL MEDIATIONAL ROLE OF

INTRA-INDIVIDUAL FACTORS

by

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ABSTRACT OF THE THESIS

The Relationship Between Interpersonal Factors and Drinking Outcomes of Women

Recovering from Alcohol Use Disorders: Testing the Potential Mediational Role of Intra-

individual Factors

By DORIAN HUNTER REEL

Thesis Director:

Barbara S. McCrady, Ph.D.

Aim: To test the validity of four proposed mediators of the impact of alcohol-specific

social support on drinking outcomes: coping, motivation, negative affect and self-efficacy.

Method: Participants included 158 women participating in two Cognitive Behavior Therapy

clinical trials.   All participants completed an extensive battery of assessments prior to treatment

entry, just post-treatment (three-months) and six months post-treatment. The measures used for

this study included the Beck Anxiety Inventory and the Beck Depression Inventory to assess

negative affect, the Coping Behaviours Inventory to assess coping, the Important People and

Activities Interview to assess social support for drinking and for not drinking, the Situational

Confidence Questionnaire to assess self-efficacy, the Stages of Change Readiness and Treatment

Eagerness Scale to assess motivation, and the Timeline Follow-back Interview to assess drinking

frequency and intensity. Exploratory and confirmatory factor analyses were conducted to

construct latent models of each of the proposed mediators. Structural equation models were then

constructed and estimated to evaluate the hypothesized mediational models. Results: Coping and

self-efficacy at the end of treatment were predictive of drinking frequency and intensity at six

month post-treatment follow-up, and negative affect and motivation at the end of treatment were

predictive of drinking frequency at six month post-treatment follow-up. However, neither

coping, negative affect, nor self-efficacy was predicted significantly by abstinence-specific social support. Motivation was negatively predicted by support for drinking, but not by support for not drinking. The relationship between support for drinking and drinking frequency was found to be partially mediated by motivation. Conclusion: Motivation may be a mechanism by which social support exerts its effect on drinking outcomes. More work is needed to further probe the potential roles of each of these variables in mediational models and to understand the mechanisms by which general social support impacts drinking outcomes.

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INTRODUCTION

It is a commonly held belief among clinical scientists and alcoholism treatment professionals that social support and interpersonal functioning play a role in the treatment outcomes of persons with alcohol use disorders (AUD's). It has even been asserted that social settings and social relationships during and after treatment of clients recovering from AUD's are more important than the interventions of alcoholism treatment professionals in preventing relapse (Bacon, 1973). Intra-individual factors also are implicated in the process of relapse (Witkiewitz & Marlatt, 2004). This paper examines the role of social support of those being treated for AUD's on outcomes, and the current state of research on how social factors impact treatment outcome. Next, a contemporary intra-individual model of relapse and a potential extension of this model to integrate the role of social context are presented. Finally, research to provide an initial evaluation of this extension of the contemporary model is presented.

The Interpersonal Model of Relapse

Social support is defined by Beattie and Longabaugh as "the perceived or actual availability of both affective and instrumental support, exemplified by the provision and exchange of a sense of belonging, enhancement of self-esteem, and tangible and intangible aid given via money, goods, services, or information" (pg. 593, 1999). Three distinct aspects of social support are discussed frequently in the scientific literature: function, structure, and quality (Beattie & Longabaugh, 1997). The *functional* aspect is the perceived or actual availability of both emotional and instrumental support. *Structure* refers to the organization of relationships - quantity, duration, type and frequency of interactions. The *quality* of social support refers to the inherently subjective appraisals of value, strength, consistency or adequacy.

It has been a frequent finding that higher levels of social support are correlated with more positive drinking outcomes (Beattie, 2001; Havassy, Hall, & Wasserman, 1991). Barber and Crisp (1995) found that the degree of social support available from the most supportive person in the client's environment was the primary predictor of treatment outcome among social variables. The number of supportive relationships a person has also predicts abstinence (Booth, Russell, Soucek, & Laughlin, 1992; Gordon & Zrull, 1991; Humphreys, Moos, & Finney, 1996; MacDonald, 1987; Rosenberg, 1983; Zywiak, Longabaugh & Wirtz, 2002). Further, the more non-drinking friends a person has, the more positive outcomes tend to be (Mohr, Armeli, Tennen, Carney, Affleck, & Hromi, 2001; Zywiak, Longabaugh, & Wirtz, 2002). People have been found to be more likely to drink with others on days when they experienced more positive interpersonal experiences, and to drink alone more on days when they experienced more negative interpersonal experiences (Mohr et al., 2001a).

The relationship between social support and treatment outcome has at times been found to be inconclusive or weak (Beattie, 2001; Longabaugh, Beattie, Noel, Stout, & Malloy, 1993). One reason may be that the relationship of alcohol specific support to treatment outcomes is moderated by the social investment of the individual being treated (Longabaugh et al., 1993). Only among those highly invested in others (those who have larger social networks, more contact with their social networks, and greater subjective value of their social network members) does social support for abstinence predict good outcome (Beattie & Longabaugh, 1997). Simply being more socially invested is a good predictor of positive outcome (Havassy, Hall & Wasserman, 1991; Zywiak, et al., 2002). In fact, while for high social network investors pretreatment support is associated with greater subsequent abstinence, for low investors it actually is associated with less subsequent abstinence (Longabaugh et al., 1993; Longabaugh,

Wirtz, Beattie, Noel & Stout, 1995). As stated by Longabaugh and colleagues (1995), "To the extent that the person is affiliatively or instrumentally invested in his or her social environment, both alcohol involvement and psychological functioning are each affected by support from this environment for alcohol involvement or abstinence and psychological well-being, respectively" (p. 297).

The type of support offered by the social network is important as well. When compared with general support, alcohol-specific support has been found to be a more robust correlate of drinking (Beattie, Longabaugh, & Fava, 1992; Havassy et al., 1991). More abstinence-specific support from family, friends and work associates is associated with lower risk of relapse (Beattie & Longabaugh, 1999; Havassy et al., 1991; Longabaugh et al., 1995). Beattie and Longabaugh (1997) found that encouragement for abstinence by persons important to individuals recovering from an AUD was significantly and negatively related to the proportion of days in which heavy drinking occurred.

Interestingly, there is mixed evidence when it comes to support *for* drinking. Longabaugh and colleagues (1998), using the very large Project MATCH outpatient sample of 952, found that support for drinking from members of the network was directly associated with poorer outcomes. However, Zywiak, Longabaugh, and Wirtz (2002), using the same Project MATCH sample, found that support for drinking from the four most important people in the network was not at all related to drinking outcome. It may be that, in terms of support for drinking, the impact of the social network as a whole is more important than that of the individuals closest to the drinker, who perhaps are least likely to encourage drinking.

Beattie and Longabaugh (1999) found that having greater specific support for abstinence is associated with greater abstinence, but the effect is more pronounced when general support

also is high. Further, encouragement for abstinence has a relatively strong positive correlation with the percentage of days abstinent whether general support is high or low, but when general support is high, the correlation is even stronger. General support is more strongly correlated with higher percentages of days abstinent when encouragement for abstinence is low. General social support from friends and extended family repeatedly has been shown to be associated with better drinking outcomes among people who are both unemployed and unmarried (Booth et al., 1992; Gordon & Zrull, 1991; Humphreys et al., 1996; MacDonald, 1987; Rosenberg, 1983). Social support is less important for those who have one or both primary roles (i.e. employee or spouse).

The source of the support appears to be particularly important as well. Having a family that provides support and assurance of worth and capability has been associated repeatedly with lower risk of relapse (Booth et. al., 1992; Gordon & Zrull, 1991; Humphreys et al., 1996; MacDonald, 1987; Rosenberg, 1983). Beattie and Longabaugh (1997) found that encouragement of abstinence from family was associated with a significantly higher percentage of days abstinent and a lower percentage of days with heavy drinking. Certain behaviors of family members, such as withdrawing from the drinker, avoiding dealing with drinking, and tolerating drinking, have been associated with poorer outcomes (McCrady Hayaki, Epstein, & Hirsch, 2002).

Beattie found in her 2001 meta-analysis that good family adjustment was strongly associated with better outcomes. Moos and colleagues (1979) collected data from clients undergoing AUD treatment and their families and reported that drinkers with families that were cohesive, had an active, shared recreational focus and were lower in conflict, control and disagreement had more positive treatment outcomes. Reports of the family environment variables that predicted treatment outcome were generally similar regardless of which family

member's perceptions were used in the analyses, suggesting there is a high amount of intra-familial agreement with regard to family functioning. O'Farrell, Hooley, Fals-Stewart and Cutter (1998) found that high levels of expressed emotion by family members (characterized by social network members who talk about the afflicted person in a critical, hostile, or emotionally over-involved way) predicted a higher likelihood of relapse, shorter time to relapse and greater percentage of days drinking.

Having a spouse has been found to be a good predictor of outcome (Havassy et al., 1991), although the research in this area has been mixed. In her large meta-analysis, Beattie (2001) found that being married was associated with both the best and the worst outcomes, and that the positive effects of marriage were much more pronounced for men. McCrady et al. (2002) found that having a better functioning marriage prior to treatment predicted a lower risk of relapse and that higher levels of marital happiness predicted a lower intensity of drinking. A review by McCrady, Epstein, and Sell (2003) found that greater marital dissatisfaction predicted poorer outcome. Further, marital happiness and abstinence have been found to be positively correlated after treatment (McCrady, Epstein, & Kahler 2004).

Maisto et al. (1998) found that stressful marital interactions were related to more problematic substance use and to relapse after treatment. Further, events in the marriage and factors involving the spouse were the reasons most frequently cited by male alcoholics as the reasons for relapse. Chronic substance use outside the home has been found to be correlated with reduced marital satisfaction for the spouses of those with AUD's (Dunn, Jacob, Hummon, & Seilhamer, 1987; Fals-Stewart, O'Farrell, Birchler, Cordova, & Kelley, 2005) and stressful marital interactions repeatedly have been shown to be related to increased problematic substance

use and higher rates of relapse (Fals-Stewart et al., 2005; Fals-Stewart & Birchler, 1994; Maisto et al., 1998).

There are certain behaviors on the part of the spouse that have been shown to be predictive of outcome. O'Farrell (1993) found that the use of positive marital behaviors on the part of the wife and the percentage of days the husband was abstinent were highly correlated. McCrady et al. (2003) reported that more active/assertive coping and providing specifically anti-alcohol messages have been associated with reductions in drinking and that an increase in relationship-related skills on the part of the alcoholic and spouse is associated with less intense drinking. They also reported that spouse behaviors such as problem solving and seeking social support predicted lower frequency (though not intensity) of drinking.

The specific behaviors on the part of the family as a whole that have been found to be significantly associated with poor outcomes are withdrawing, disengaging, and avoidance (McCrady et al., 2002; Orford et al., 1975). Also, behavior of the spouse during a period of abstinence can have an important effect (Wiseman, 1981). Behaviors believed by the spouse to be helpful in promoting abstinence can be harmful as well. Steinglass (1981) suggested that couples behavior during periods of drinking could be adaptive in nature, which in turn may serve to reinforce and perpetuate abusive drinking.

Friendships also appear to play an important role in outcomes. Beattie and Longabaugh (1997) found that encouragement of abstinence from friends had a strong relationship to percentage of days abstinent, but that it was not significantly associated with percentage of days in which heavy drinking occurred. Also, the more non-drinking friends a person has, the more positive outcomes tend to be (Mohr, Averna, Kenny, & Delboca, 2001; Zywiak et al., 2002).

Having as few as one person in the social network with the same drug of abuse predicts poorer treatment outcomes (Havassy et al., 1991). The more drinking friends in the network, the poorer the outcomes tend to be (Mohr et al., 2001b), and maintaining these drinking relationships after treatment compounds the problem (Havassy et al., 1991). Higher levels of stress from friends are known to predict poorer outcome (Gordon & Zrull, 1991).

The best results are found when support for abstinence comes from all members of the network. Having more abstinence specific support from family, friends and work associates is associated with lower risk of relapse (Beattie & Longabaugh, 1999; Havassy et al., 1991), and both the structure and quality of relationships with drinkers and non-drinkers are associated with quantity and frequency of alcohol consumed (Mohr et al., 2001b). It has been found that the number of non-drinking co-workers (but not non-drinking friends or family) participating in treatment predicted drinking outcome (Gordon & Zrull, 1991). Strangely, it also has been found that perceived support from family and co-workers, but not from friends, predicts drinking outcome (Booth et al 1992; Gordon, & Zrull, 1991; Humphreys et al., 1996; MacDonald, 1987; Rosenberg 1983).

There may be sex differences in the effects of social networks on the treatment outcomes of persons with AUD's. There is mixed evidence about whether women are more affected by social networks than men. Allan and Cook (1985) found, compared to men, that women are more likely to drink in response to interpersonal stressors, such as marital discord, divorce and children leaving the home, and women are more likely to report conflict with their partners as precipitants of relapse (Connor, Maisto, & Zywiak, 1998; Lutz, 1991). However, Beattie (2001) and Mohr et al. (2001a) found that sex did not affect the relationship between drinking outcomes and social support: both sexes benefited roughly equally from receiving it. Rubin, Stout and

Longabaugh (1996) found that women relapse more in the presence of other people, and were particularly likely to relapse in the presence of romantic partners. Men have been found to have significantly more drinking friends who are part of their social network than women (Mohr et al., 2001b). Men and women do not differ in terms of the overall number of non-drinking friends in their networks, but women report significantly more friendships with non-drinking women than men report (with non-drinking women; Mohr et al., 2001a). Interestingly, while the evidence is inconclusive on the differential effects of social support on men and women, beneficial social support for alcoholics is found to *come* more often from women (Beattie, 2001).

There also are age differences in the social networks of individuals with AUDs. Younger alcoholics tend to have fewer non-drinking friends (Mohr et al., 2001a). Also, men and women who cited relationships as primary motivators for changing their drinking tended to be both slightly older and to have begun their drinking careers at later stages in their development (Lutz, 1991).

This section has summarized current research on the role of social networks and social support of those being treated for AUD's in relation to drinking outcomes. Many characteristics of the social network have been shown to be correlated to a greater or lesser degree with drinking outcomes, including the size of the social network, the types of relationships that compose the network, certain behaviors on the part of social network members and drinking status of network members. Also, some characteristics of the individual may moderate the relationship between social support and outcome, including social investment, age and gender. We do not know, however, by what mechanisms these social network characteristics translate into changes in an individual's behavior.

The Intra-individual Model of Relapse

In 2004, Witkiewitz and Marlatt proposed an adaptation to the cognitive-behavioral model of relapse that previously dominated the field (Marlatt & Gordon, 1985). The changes in the model were made in response to criticism of the static nature of the original model. Thus, the new model is said to reflect the dynamic and interactive nature of the relationships among factors affecting relapse. The model distinguishes between tonic processes and phasic responses. Tonic processes refer to an individual's chronic vulnerability for relapse, including family history, social support and severity of alcohol dependence. Tonic processes refer to distal risk factors. Phasic responses refer to situational cognitive, affective and physical states as well as coping skills employed that affect the likelihood of relapse, and refer to more immediate risk factors. This model appears to be a clear improvement over the previous model. It incorporates current research and recognizes the complexity of the system of factors affecting relapse. However, given that research has shown the importance of social factors in predicting relapse, it is surprising that interpersonal processes were characterized simply as distal risk factors.

In a commentary on the new relapse model, Stanton (2005) stated, "missing in this reconceptualization is a more thorough shift from an individual psychology of relapse to a systemic psychology of relapse" (pg. 340). A continued extension of this model to include social factors as both tonic and phasic would make the model truly dynamic. When considering the causes and maintenance of human behavior it is important to take into account not only the characteristics of and processes occurring within the individual engaging in the behavior, but the contextual factors involved as well as the dynamic relationship between intra-individual factors and environmental factors. The behavior of individuals with AUD's does not occur in a vacuum; there is constant interaction between one's intra-individual processes and contextual factors.

Any account of human behavior that excludes these is incomplete. Therefore, it is very likely that intra-individual and interpersonal factors affect one another continuously and that both play into the likelihood of relapse.

Witkiewitz and Marlatt (2005) clearly agree and referred to their model's processes as occurring within a context, stating that "relapse should be conceptualized as a feedback loop, whereby changes in intrapersonal factors (e.g. negative affect) interact with changes in interpersonal factors (e.g. marital happiness) until a steady state of drinking or not drinking is achieved," (pg. 341). A difficulty in adapting this model to include both interpersonal and intra-individual processes is that there is a paucity of research examining the relationship between interpersonal processes and intra-individual processes in relation to outcome. Within clinical psychological research there is a large body of evidence that both interpersonal and intra-individual factors are correlated with various behaviors and are related to multiple types of psychopathology (e.g. depression, eating disorders, schizophrenia, etc.), but little is understood about how these factors influence one another in determining behavior.

There is some direct evidence of the dynamic relationship between interpersonal and intra-individual factors. For example, it has been reported that seventy-five percent of the variance in interpersonal problems among college students could be explained by measures of attachment, emotional reactivity, and emotional isolation (e.g. intra-individual processes), suggesting that interpersonal and intrapersonal factors map onto one another (Wei, Vogel, Ku, & Zakalik, 2005). Also, it must be noted that individuals have some choice in the construction and maintenance of their social network; there is interplay between the social environment and intra-individual factors. As McCrady (2004) stated, "social networks are better viewed as dynamic

systems… with the exception of the family of origin, the construction of a social network is not a

passive process."

Model Extension

In a paper currently under review, Hunter-Reel, McCrady and Hildebrandt outlined a

modification of the Witkiewitz and Marlatt model (See Figure 1), extending it from a largely

intra-individual model to an intra- and inter-personal dynamic model. These modifications are

delineated briefly here.

Figure 1.

Witkiewitz and Marlatt's Revised Intra-individual Relapse Model
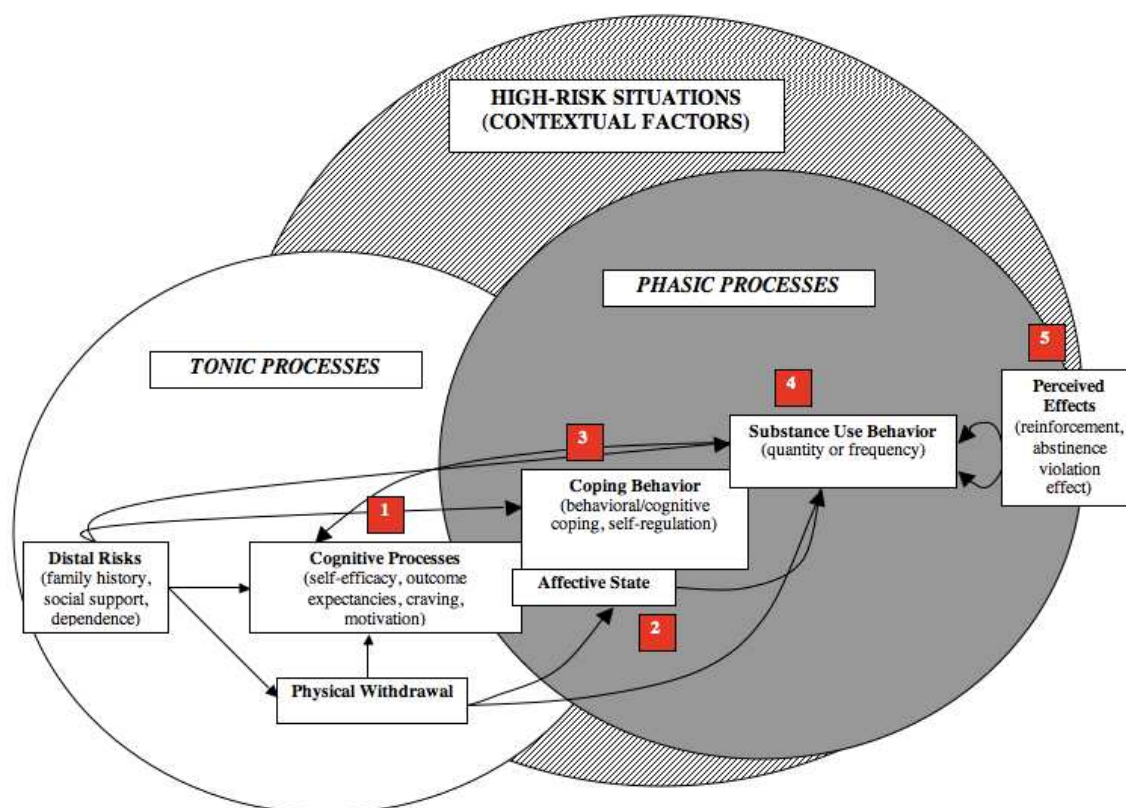
* Note: see text below for explanation of the numbered regions shown in the figure.

Within the proposed modifications to the model, we differentiate between two distinct

social factors. The first, social support, is both a tonic and phasic factor, and is composed of the

structure, function and quality of the social environment. The second, interpersonal functioning, refers to an individual's social network investment as well their ability to effectively build and utilize a social network. These are different types of social variables, one being largely an environmental factor and the other being largely an individual characteristic. However, these variables are inextricably linked to one another such that modifications in one are very likely to lead to changes in the other. There is a constant, bi-directional feedback loop between the social support environment and the individual functioning within that environment.

Cognitive Processes (see numerical value 1 in Fig. 1)

Witkiewitz and Marlatt (2004) described several cognitive processes as being related to relapse, including self-efficacy, outcome expectancies, craving, and motivation. Social support and interpersonal functioning may be involved in each or all of these processes during lapse and relapse.

Self-efficacy. Social support may serve to bolster the self-efficacy of an individual by providing support for abstinence and communication of confidence. Alternatively, the social network may reduce self-efficacy by providing support for drinking or communicating a lack of confidence. Further, an individual's interpersonal functioning may play a role in that an individual may be more or less likely to seek out members of the network that will provide support for self-efficacy, and may be more or less able to behave in ways that will reinforce network members being supportive.

Outcome expectancies. The expected social support outcomes of either abstinence or re-initiated use may have a significant effect on drinking behavior of an individual recovering from an AUD. If a drinker believes that they may lose the love or respect of those close to them or suffer other such interpersonal consequences by drinking, it will likely decrease the probability

of drinking. If increased social support can be expected as a result of abstinence, abstinence is more likely to occur. Alternatively, individuals may have positive social expectations of re-initiated drinking, and may believe that continued abstinence would separate them further from their social networks. Interpersonal functioning may play a large role in whether an individual is able to build and maintain new social networks that will be more likely to reinforce abstinence, thereby improving an individual's expectations of abstinence.

Craving. The experience of craving has been found to be highly related to expectancies of use (Witkiewitz & Marlatt, 2004). Craving is often cue-driven and therefore highly related to the environment (Bauman & Sayette, 2006; Cooney, Litt, Morse & Bauer, 1997; Franken, de Hann, van der Meer, Haffmas, & Hendricks, 1999; Hutchison, Niaura & Swift, 1999; Myrick et al., 2004; Volkow et al., 2006). Social network members may provide the initial cue for drinking, either in terms of serving as the cue themselves or by engaging in drinking behavior; social events also may serve as cues for drinking. Accessing members of the network who are not cues for drinking or engaging in social behaviors that do not provide drinking cues will likely lower the risk of craving occurring. Interpersonal functioning may play a role in that individuals may be more or less likely and/or able to avoid individuals or situations that elicit craving.

Motivation. Social network members may provide a large part of the motivation to resist drinking, and motivation may change relatively frequently as a function of what is happening within these relationships. Also, the social network may criticize or create an unpleasant environment for an individual when he or she is not drinking, thereby resulting in lower motivation for sobriety. Alternatively, the social environment may provide encouragement and support while sober, thereby increasing one's motivation to remain sober. In fact, a supportive environment may provide the only source of motivation when other kinds of motivation are

waning. Interpersonal functioning may play a role in that individuals may be more or less likely to seek, or behave in ways that will foster, motivation-enhancing social experiences.

Affective States (see numerical value 2 in Fig. 1)

Beattie et al. (1993) have proposed and found support for a model in which general social support predicts subjective well-being, a variable that incorporates affective states and general psychological health. Difficulties in the social support network and with social network members may be particularly powerful in producing negative affect, which may in turn put people at greater risk for relapse. Individuals whose social networks are chaotic and frequently induce negative affect may be particularly vulnerable. Interpersonal functioning also may be especially key in that the individual may have more a chaotic or off-putting interpersonal style, thereby eliciting negative affect-inducing behavior from the environment and simultaneously decreasing the availability of social support.

Coping Behavior (see numerical value 3 in Fig. 1).

Thinking about the potential impact of relapse on the social network may provide a powerful form of cognitive coping to protect against potential relapse. This form of coping is highly related to outcome expectancies: if social outcome expectancies of sobriety are positive, the effectiveness and probable utilization of this type of strategy will be higher. The quality of an individual's interpersonal functioning will likely moderate the effect of social coping efforts. The more an individual is attached to and invested in the social network the more effective cognitive coping is likely to be. Alternatively, if an individual has low attachment or investment, or if the individual does not believe relapse would cause harm to network members, cognitive coping is likely to be a less effective and less utilized strategy.

Reaching out to network members can be a skillful and powerful form of behavioral coping. The likelihood of an individual using this type of coping when the risk for relapse is high may be influenced by the composition of the social network in that there may or may not be individuals in the network available to provide help, and also by the individual's interpersonal functioning. An individual may be more or less likely to go to their social network, to create an appropriate social network, to recall or recognize all available support or to behave in ways that increase the likelihood that others will want to provide support.

Substance Use Behavior (see numerical value 4 in Fig. 1)

Environmental cues may elicit physiological responses to prepare the body for drinking, independent of the subjective experience of craving or cognitive processes related to drinking (Ramos, Siegel, & Bueno, 2002; Siegel, 2001). Such processes are known to occur when environmental stimuli (unconditioned stimuli) are repeatedly paired with drinking (unconditioned response), thus becoming conditioned stimuli (Siegel, 1970). The presence of these stimuli elicits responses that protect the body from the effects of the drug and preserve the body's homeostasis. For example, in rats tolerant to the body temperature lowering effects of alcohol, the administration of alcohol-placebo in the presence of conditioned alcohol cues results in a compensatory rise in body temperature (Siegel, Baptista, Kim, McDonald, & Weise-Kelly, 2000). This is one of the mechanisms by which tolerance is thought to occur (Siegel et al., 2000, Siegel, 2005). Hunter-Reel et al. (under review) propose that it is possible that these automatic processes cued by the environment not only play a role in tolerance, but also may make an individual more likely to drink, independent of thinking about drinking, planning to drink or experiencing craving. This is a potential explanation as to why some individuals who are trying not to drink report suddenly finding themselves drinking alcohol without having given it any

thought or having experienced craving. If these conditioned stimuli do indeed have such an effect on behavior, it is possible that certain social stimuli also increase the likelihood that drinking will occur by serving as conditioned stimuli.

Perceived Effects (see numerical value 5 in Fig. 1)

The social network may impose positive or negative consequences as a result of drinking, and the social network may seem less available after one has had a lapse. Also, the ability of an individual to effectively utilize the social network (interpersonal functioning) may be modified as a result of alcohol use, thereby leading to modifications in expectations of future social support. Thus, there may be a direct feedback loop from perceived social network effects to outcome expectancies, such that as individuals learn how the network responds to drinking after a period of abstinence, outcome expectancies are altered.

Study Aim

The aim of the present study was to test one specific component of the proposed extension of the Witkiewitz & Marlatt (2004) model: the relationships among alcohol specific social support, specific intrapersonal variables, and drinking outcomes. In previous research the link has been established between alcohol-specific social support and drinking outcomes (Beattie & Longabaugh, 1999; Havassy et al., 1991; Longabaugh et al., 1995), the link also has been established between Witkiewitz and Marlatt's (2004) intrapersonal variables and drinking outcomes. However, the mediational links between social support, intrapersonal functioning, and drinking outcomes have not been tested. It is proposed that the presence of high alcohol-specific social support in the social environment may to help maintain and/or to enhance intra-individual processes predictive of positive outcomes including coping, motivation, negative

affect, and self-efficacy. These variables are thought to be potential mechanisms by which alcohol specific social support exerts its effects on drinking outcomes.

<div align="center">Hypotheses</div>

The following hypotheses were evaluated:

Coping

1. Social network *support for drinking* at baseline will negatively predict *coping* at three months and coping at three months will negatively predict *drinking frequency* over the next six months. Coping at three months will mediate the relationship between social network support for drinking and drinking frequency.

2. Social network *support for not drinking* at baseline will positively predict *coping* at three months and coping at three months will negatively predict *drinking frequency* over the next six months. Coping at three months will mediate relationship between social network support for not drinking and drinking frequency.

3. Social network *support for drinking* at baseline will negatively predict *coping* at three months and coping at three months will negatively predict *drinking intensity* over the next six months. Coping at three months will mediate the relationship between social network support for drinking and drinking intensity.

4. Social network *support for not drinking* at baseline will positively predict *coping* at three months and coping at three months will negatively predict drinking *intensity* over the next six months. Coping at three months will mediate the relationship between social network support for not drinking and drinking intensity.

Motivation

5. Social network *support for drinking* at baseline will negatively predict *motivation* at three months and motivation at three months will negatively predict *drinking frequency* over the next six months. Motivation at three months will mediate the relationship between social network support for drinking and drinking frequency.

6. Social network *support for not drinking* at baseline will positively predict *motivation* at three months and motivation at three months will negatively predict *drinking frequency* over the next six months. Motivation at three months will mediate the relationship between social network support not for drinking and drinking frequency.

7. Social network *support for drinking* at baseline will negatively predict *motivation* at three months and motivation at three months will negatively predict *drinking intensity* over the next six months. Motivation at three months will mediate the relationship between social network support for drinking and drinking intensity.

8. Social network *support for not drinking* at baseline will positively predict *motivation* at three months and motivation at three months will negatively predict *drinking intensity* over the next six months. Motivation at three months will mediate the relationship between social network support for not drinking and drinking intensity.

Negative Affect

9. Social network *support for drinking* at baseline will positively predict *negative affect* at three months and negative affect at three months will positively predict *drinking frequency* over the next six months. Negative affect at three months will mediate the relationship between social network support for drinking and drinking frequency.

10. Social network *support for not drinking* at baseline will negatively predict *negative affect* at three months and negative affect at three months will positively predict *drinking frequency* over the next six months. Negative affect at three months will mediate the relationship between social network support for not drinking and drinking frequency.

11. Social network *support for drinking* at baseline will positively predict *negative affect* at three months and negative affect at three months will positively predict *drinking intensity* over the next six months. Negative affect at three months will mediate the relationship between social network support for drinking and drinking intensity.

12. Social network *support for not drinking* at baseline will negatively predict *negative affect* at three months and negative affect at three months will positively predict *drinking intensity* over the next six months. Negative affect at three months will mediate the relationship between social network support for not drinking and drinking intensity.

Self-Efficacy

13. Social network *support for drinking* at baseline will negatively predict *self-efficacy* at three months and self-efficacy at three months will negatively predict *drinking frequency* over the next six months. Self-efficacy at three months will mediate the relationship between social network support for drinking and drinking frequency.

14. Social network *support for not drinking* at baseline will positively predict *self-efficacy* at three months and self-efficacy at three months will negatively predict *drinking frequency* over the next six months. Self-efficacy at three months will mediate the relationship between social network support for not drinking and drinking frequency.

15. Social network *support for drinking* at baseline will negatively predict *self-efficacy* at three months and self-efficacy at three months will negatively predict *drinking intensity*

over the next six months. Self-efficacy at three months will mediate the relationship between social network support for drinking and drinking intensity.

16. Social network *support for not drinking* at baseline will positively predict *self-efficacy* at three months and self-efficacy at three months will negatively predict *drinking intensity* over the next six months. Self-efficacy at three months will mediate the relationship between social network support for not drinking and drinking intensity.

METHOD

Participants

Participants were 158 women participating in two arms of a randomized controlled trial comparing standard individual Cognitive Behavior Therapy (CBT) for AUDs with female specific CBT for AUDs and Behavioral Couples Therapy (BCT) for AUDs with blended CBT and BCT for AUDs. The women were allowed to choose whether to participate in individual or couples treatment, and were then randomly assigned to one of the two treatments within the individual or couples arm of the study. Early in the clinical trial, more women chose the individual than the couples' treatment; thus, the individual therapy arm of the study was closed and after a certain date all new participants were assigned to couples therapy.

Participants met the following inclusion criteria: (1) were female; (2) met criteria for current alcohol abuse or dependence on the Structured Clinical Interview for DSM-IV (SCID, First & Gibbon, 2004); (3) had consumed alcohol within the past 30 days; (3) did not meet criteria for current drug dependence with physiological dependence assessed using the SCID (First & Gibbon, 2004); (4) were married, cohabitating for at least six months, or currently in a committed heterosexual relationship of at least one year with intent to continue the relationship; (5) no signs of severe organic brain syndrome and (6) no signs of a psychotic disorder on the

psychotic screening section of the SCID (First & Gibbon, 2004). For those choosing or being

assigned to the couple's treatment, the following further criteria had to be met: (1) either there

was no evidence of domestic violence in the past 12 months, or, if any violence was reported,

then (a) the victim of the violence could have reported no fear of violent retribution for

discussions that may occur during treatment, *and* (b) the violence occurred only while the

aggressor was intoxicated; *or* (c) the violence did not result in injury requiring medical

attention. The Modified Conflict Tactics Scale (MCTS; Pan, Neidig, & O'Leary, 1994) was used

in the assessment of domestic violence. Further, (2) the male partner did not meet criteria for

current drug dependence with physiological dependence assessed using the SCID (First &

Gibbon, 2004); the male partner had no signs of severe organic brain syndrome and (3) the male

partner had no signs of a psychotic disorder on the psychotic screening section of the SCID (First

& Gibbon, 2004).

Of the 158 women, 99 women entered the individual arm of the study, and 59 entered the

couples' arm of the study.   The average age of the women was 47.17 (range = 25-69; SD =

8.97).   The percent of the sample that was married was 80.4%, 10.8% were living together as if

married and 8.9% were committed but not living together. The sample was primarily (95.6%)

Caucasian. The percent of the sample employed regularly full or part-time was 53.8, 14.6%

were irregularly employed part-time, 11.4% were unemployed, 7.6% were homemakers, 7.0%

were retired, 1.9% were students, 1.9% of the sample were disabled and 1.9% of the sample were

otherwise occupied. The mean years of education was 15.15 years (range = 8-27, SD = 2.6).

The average annual household income was $108,224 (range = $10,000-$650,000; SD =

$84,131).

Measures

An extensive assessment battery was administered to all participants at baseline, three months after baseline (or immediately after the end of treatment, whichever came later), nine months post baseline and at fifteen months post baseline. The measures described below are those that were used for the present study, drawn from baseline, three-months post baseline (three month) and nine-months post baseline (nine month) assessments.

Important People and Activities Interview (IPA): Parts I and II of the IPA (Longabaugh, Wirtz, Zweben, & Stout, 1998) were used to assess social support for drinking (SD) by calculating the percent of social network supporting drinking (the percent of the network perceived by the woman to "encourage" or "accept" drinking) and support for not drinking (SND) by calculating the percent of the social network supporting not drinking (the percent of the network perceived by the woman to "encourage" or "accept" not drinking; Appendix A). Reported test-retest reliability for the IPA is excellent (r = .95, Longabaugh et al., 1998).

The Stages of Change Readiness and Treatment Eagerness Scale – Short Form (SOCRATES, Miller and Tonigan, 1996*)* is a 19-item self-report instrument of motivation containing three subscales with high internal consistency and test-retest reliability (Appendix B). This measure was used to assess the mediating construct motivation.

The Beck Anxiety Inventory (BAI) is 21-item self-report instrument that measures symptoms of anxiety using a 4-point likert-type scale (Appendix C). The BAI has high internal consistency (alpha = .92) and a test-retest reliability of .73 (Beck, Epstein, Brown, & Steer, 1988). Scores can range from 0 to 63. Higher scores reflect higher anxiety in the last week, including the day of the assessment.

The Beck Depression Inventory (BDI) is a 21 item self-report instrument used to assess

depression (Appendix D). The BDI has been shown to have high internal consistency (alpha = .86 for psychiatric patients, alpha = .81 for nonpsychiatric patients). It also has been found to correlate highly with other self-report measures of depression and with clinician's ratings of depression (Beck, Steer, & Garbin, 1988). Scores can range from 0 to 63. Higher scores reflect more depression in the last two weeks. The BAI and the BDI were used to assess the proposed mediating construct of negative affect.

The Situational Confidence Questionnaire (SCQ-8) is a self-report instrument that asks participants how confident (from 0-100%) they are in their ability to resist urges to drink heavily in eight separate situations (Appendix E). Internal consistency has been found to be high (alpha = .85; Breslin, Sobell, Sobell, & Agrawal, 2000). Scores can range from 0 to 100% for each scale. The eight individual items in the SCQ were used to construct the self-efficacy variable.

The Coping Behaviours Inventory (CBI; Litman et al., 1983) is a 36-item self-report measure that assesses the frequency of use of coping behaviors on a four point likert-type scale from 0 (I have usually tried this) to 3 (I have never tried this). The inventory includes a list of 14 cognitive and 22 behavioral options (Appendix F). Individual CBI items were used to assess the mediating construct coping. Scores range from 0 to 108. Higher scores reflect both more frequent use of coping behaviors and the use of such behaviors in more different kinds of situations.

The Timeline Followback Interview (TLFB; Sobell & Sobell, 1996) is a calendar method using event prompts to cue recall to obtain daily drinking data for the 90 days prior to the baseline interview, and for the time elapsed since the previous interview during follow-up (Appendix G). Reported test-retest reliability of the TLFB is high and correlations between drinker and collateral reports of drinking also are high, ranging from r = .84 to r = .94 (Maisto,

Sobell, & Sobell, 1982). Systematic studies comparing TLFB with quantity-frequency assessments suggest reasonable agreement for aggregate measures of drinking (Sobell et al., 2003). The TLFB was used to assess drinking frequency by calculating "percent days drinking" (PDD) and drinking intensity "percent heavy drinking days" (PDHD) as defined by consuming more than three drinks on a given day.

Procedures

Potential participants were recruited using advertising in local newspapers, by sending flyers to local physicians offices and using advertising on the Internet. They were screened for eligibility using a telephone interview, during which the study was explained to them. At this point women chose which arm of the study (Individual versus Couples) they wanted to participate in (prior to the individual arm of the study becoming full and subsequently being closed). Potentially eligible women were then scheduled to attend an in-person interview with a masters or doctoral level study clinician. This interview consisted of additional screening for eligibility, a full explanation of the study procedures, collection of demographic information, the completion of some self-report measures used for urn randomization (including the BDI and BAI; urn randomization explained below), the completion of screening measures and informed consent. Women who participated in the couples arm attended this interview with their male partners (with the exception of the Mini-Mental Status and the domestic violence screener, which were completed individually).

A subsequent in-person baseline interview with the women was conducted by a trained interviewer using structured interviews to assess drinking, psychopathology and other areas of functioning. The remaining self-report measures were completed during this interview (including the CBI, SOCRATES and SCQ). Participants were then randomized to treatment

condition (standard CBT for AUDs versus female-specific CBT for AUDs in the individual arm and standard ABCT for AUDs versus blended CBT and ABCT for AUDs in the couples arm) using a computerized urn randomization program.

Urn randomization is a technique for random assignment in which the probability of assignment to a particular treatment changes dependent on the degree of imbalance on pre-determined variables already present between conditions in the study (Hedden, Woolson & Malcom, 2006). For this study, urn randomization controlled for depression severity (low BDI score versus high BDI score; low = score 0-13, high = score 14 and higher), personal drinking goal (abstinence versus other-than-abstinence) and male partners' drinking status (recovering, abstainer or light drinker versus moderate or heavy drinker). Once the individual arm of the study was closed, all couples were randomized within the couples' arm of the study. Participants were paid $50 once the baseline assessment was completed.

Participants completed follow-up interviews at three-months (just after the completion of treatment), nine months (six months post-treatment) and fifteen months post-baseline (one year post-treatment). Women were paid $50 for the three-month interview, and $75 each for the nine-month and fifteen month interviews.

<div align="center">RESULTS</div>

<div align="center">Data Screening and Management</div>

Data collected by an interviewer (the IPI and drinking data) were checked once by the interviewer who collected and coded the data, then two more times by additional data-checkers for missing values, coding errors and logical inconsistencies. Interview data were double entered by two independent individuals using a program that would not allow out-of-range values to be entered. Responses to questions on the BAI, CBI, SCQ and SOCRATES were all directly

entered at all time points by participants into a computer program that would not allow out-of-range values to be entered, and therefore no data checking was required. The BDI was completed on paper and checked by the interviewer at the baseline timepoint, but was entered directly by participants at subsequent interviews. Descriptive statistics were run and examined for outliers and logical inconsistencies; none were found.

The data were then checked to ensure normal distribution, by examining skewness and kurtosis statistics as well as by examining plotted distributions.   SEM assumes normal distribution of each variable, but is thought to be robust to violations of normality (Hoyle, 1995). The drinking data were found to be significantly non-normal, and were therefore transformed using a Log10 transformation. This resulted in significantly more normal distributions for the drinking data, though the data could not be said to be fully within normal range.

Descriptive Outcomes

The table below summarizes the descriptive outcomes on the measures used for this study. Note that reported here are the sum scores for the proposed mediators, though latent variables were constructed and entered into the path models.

Table 1

Descriptive Outcomes for Social Support Variables, Proposed Mediators and Drinking Outcomes

VARIABLE	BASELINE			3-MONTH FOLLOW-UP			9-MONTH FOLLOW-UP		
	N	M (SD)	Range	N	M (SD)	Range	N	M (SD)	Range
% Network supporting drinking	158	31.07 (30.12)	0-100	137	30.56 (30.40)	0-100	118	29.75 (30.89)	0-100
% Network supporting not drinking	158	73.19 (27.56)	0-100	137	70.65 (31.54)	0-100	118	69.20 (32.01)	0-100
Coping Behaviours Inventory	158	36.87 (16.85)	1-85	132	45.56 (17.88)	13-90	111	36.23 (17.25)	10-85
BAI	158	12.53 (9.59)	0-60	132	6.97 (8.02)	0-35	111	5.73 (6.37)	0-29
BDI	158	20.72 (11.01)	0-48	132	10.65 (10.73)	0-42	111	9.67 (9.95)	0-36
SCQ: Unpleasant Emotions	158	39.19 (34.11)	0-100	132	70.02 (30.95)	0-100	111	65.32 (35.17)	0-100
SCQ: Physical Discomfort	158	57.73 (35.94)	0-100	132	80.98 (26.48)	0-100	111	74.40 (33.10)	0-100
SCQ: Pleasant Emotions	158	57.50 (32.11)	0-100	132	75.40 (28.43)	0-100	111	72.93 (29.23)	0-100
SCQ: Testing Control	158	36.73 (31.62)	0-100	132	52.38 (35.86)	0-100	111	55.11 (37.56)	0-100
SCQ: Urges and Temptations	158	38.59 (30.28)	0-100	132	68.17 (29.36)	0-100	111	63.18 (33.61)	0-100
SCQ: Conflict with Others	158	48.34 (34.89)	0-100	132	77.28 (27.72)	0-100	111	72.03 (32.35)	0-100
SCQ: Social Pressure to Drink	158	49.27 (36.83)	0-100	132	77.14 (29.32)	0-100	111	71.34 (34.16)	0-100
SCQ: Pleasant Times with Others	158	43.72 (35.22)	0-100	132	69.27 (30.41)	0-100	111	65.96 (32.20)	0-100
SOCRATES: Precontemplation Score	157	5.99 (1.82)	4-11	132	7.64 (3.07)	4-16	111	8.50 (3.27)	4-20
SOCRATES: Contemplation Score	158	16.32 (3.40)	4-20	132	13.51 (4.26)	4-20	111	12.47 (4.40)	4-20
SOCRATES: Determination Score	158	16.08 (2.92)	8-20	131	13.69 (4.54)	4-20	111	12.32 (4.58)	4-20
SOCRATES: Action Score	158	14.56 (3.79)	4-20	132	17.41 (2.92)	8-20	111	16.19 (3.45)	4-20
SOCRATES: Maintenance Score	158	13.91 (3.71)	4-20	132	16.89 (2.99)	7-20	111	15.93 (3.37)	4-20
PDD	158	70.58 (27.11)	95-100	137	34.64 (34.40)	0-100	118	33.31 (31.57)	0-100
PDH	158	57.18 (31.08)	0-100	137	19.38 (27.05)	0-100	118	16.82 (27.02)	0-100

Structural Equation Modeling

Maximum-likelihood SEM was used to construct and assess the latent variables from the observed (measured) variables as well as to assess the set of links between the latent variables (the causal path). All eight of the models examined were "hybrid models" (Kline, 1998) as they contained both measurement model and structural model elements.

The Measurement Model

The measurement model is defined as "hypotheses about the relations between a set of observed variables" (Hoyce & Smith, 1994). In essence, the measurement model in SEM is used to construct and confirm the appropriateness of the proposed latent variables in a structural model.

Exploratory Factor Analysis of Mediating Variables

In order to reduce the number of indicators (and thus the number of parameters needing to be estimated), thereby increasing power available to test the mediation hypotheses, exploratory factor analyses (EFA's) of each of the measures for each mediating variable were conducted (for negative affect, EFA was conducted for all items from both the BAI and BDI). Initial EFA's were conducted using maximum likelihood extraction (MLE) and obliman rotation in order to most accurately evaluate the underlying factor structure of the four proposed mediators. If no emergent factor(s) were found, principal components analysis (PCA) was used as this technique is biased toward delivering a single emergent factor and favors a simple structure to the data. This process increases the likelihood of finding at least one emergent factor. EFA's were conducted on each of the variables for both time points.

Coping. EFA using MLE extracted eight factors from the CBI for each of the time points. None of the factors for either time point were emergent as strong factors, therefore EFA

using PCA was conducted. This technique resulted in one primary emergent factor for each time point.

For the baseline coping model, eight factors were extracted. One emergent factor was found, having items that loaded onto the factor highly (.6 or greater), and did not load highly onto the other factors. The determination to use the criterion of having a very high factor loading cutoff was made as the sample size was small (MacCullum, Widaman, Zhang & Hong, 1999). The factor items that were found in the baseline and the three-month model were "drinking is no bed of roses" (item 11), "let down family/friends" (item 19), "effect on family" (item 25), "good life without drinking" (item 26), "stop playing games" (item 28), "wish to stay well" (item 32), "how affected family" (item 34), "face life" (item 36). In addition, there were several items that did not load onto three-month model, but did load onto the baseline model including "thinking positively" (item 4), "thinking of mess" (item 5), "thinking of promises made" (item 7), "not worth it" (item 17), "doing something in house" (item 24), and "people who have helped" (item 31). For the three-month PCA EFA model, ten total factors were extracted. Again, one main emergent factor was found and included those variables listed above as well as "show my face" (item 13), and "look on the bright side" (item 22).

Motivation. For the baseline motivation model, EFA using MLE extracted five factors from the SOCRATES, only one of which emerged as clearly superior, with all of the variables loading onto the factor at .6 or above, and not loading highly onto the other factors. The variables from the emergent factor were "already started making changes" (item 4), "not just thinking about changing" (item 9), "looking to keep from slipping" (item 10), "actively doing things now" (item 14), "want to keep from going back" (item 15), "working hard to change" (item 19), and "want help to keep from going back" (item 20).

Self-Efficacy. The EFA of the baseline and three-month self-efficacy variables from the SCQ-8 yielded similar results for each time point. For the baseline model, two factors were extracted. However, in examining the results of the EFA only one factor was clearly emergent. The variables that made up the factor loaded highly onto the one factor (.7 or greater) and very little on the other included "pleasant emotions" (item 3), "urges and temptations" (item 5), "conflict with others" (item 6), "social pressure to drink" (item 7) and "pleasant times with others" (item 8).

For the three-month factor, two factors were also extracted, and upon examination one factor was emergent. This factor was made up of all of the variables of the baseline model except "social pressure to drink" (item 7).

Negative Affect. The EFA using MLE of the baseline and three-month BAI and BDI items yielded moderately similar results to one another. However, for the baseline model there was one emergent factor, and for the three-month model there were two emergent factors, each containing many of the variables from the baseline factor, one containing many items from the BDI and the other containing many items from the BAI.

Given that only one factor had emerged for the baseline negative affect variables, and in order to attempt to find one good emergent factor for the three-month negative affect variables as well, the PCA was again conducted on the baseline and on the three-month variables. This method resulted in one emergent factor for each time point, which were similar to one another at each time point.

For the baseline factor, ten factors were extracted. Each variable loaded highly onto the one emergent baseline negative affect factor (.6 or greater) and did not load highly onto other factors. The emergent factor included the variables "past failure" (BDI item 3), "loss of

pleasure" (BDI item 4), "guilty feelings" (BDI item 5), "self-dislike" (BDI item 7), "self-criticalness" (BDI item 8), "crying" (BDI item 10), "loss of interest" (BDI item 12), "indecisiveness" (BDI item 13), "loss of energy" (BDI item 15), "irritability" (BDI item 17), "tiredness or fatigue" (BDI item 20), "fear of the worst" (BAI item 5), "terrified" (BAI item 9), and "scared" (BAI item 17), all of which overlapped with variables emergent in the three-month factor, and also included the variables "heart pounding or racing" (BAI item 7) and "fear of losing control" (BAI item 14) which did not load onto the three-month emergent factor.

For the three-month factor, nine factors were extracted. The emergent factor included all of the variables stated above, with the exception of "heart pounding or racing" (BAI item 7) and "fear of losing control" (BAI item 14), included the additional variables "sadness" (BDI item 1), "pessimism" (BDI item 2), "worthlessness" (BDI item 14), "concentration difficulty" (BDI item 19), "loss of interest in sex" (BDI item 21), "indigestion" (BAI item 18), and "sweating" (BAI item 21). Each of these variables also loaded highly onto the one emergent three-month negative affect factor (.6 or greater) and did not load highly onto other factors.

Confirmatory Factor Analysis of Mediating Variables

In order to confirm the factor structure of the mediating variables, confirmatory factor models were built in AMOS and estimated using maximum likelihood imputation and MLE. Two techniques were used while conducting iterations to create better fitting models. The first technique for conducting iterations was to draw the modification index indicated correlations between latent error variables. These were conducted progressively, beginning with all modification indices of 10 and greater, then including all modification indices of five and greater. The second technique used was to progressively delete observed variables based on the modification of the standardized regression weights by removing all observed variables with

regression weights lower than .6. For each model, the techniques were applied in an alternating

pattern, once beginning with fit indices and once beginning with standardized regression

weights. The best fitting model of all of the iterations was the final model selected to use for

building the path models.

Model fit was assessed using the Aikike's Information Criterion (AIC), the Comparative

Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). CFI is a

goodness-of-fit measure of the amount of variance and covariance in the data set accounted for

by the implied model and is particularly preferred over other fit indices of its type for small

sample sizes (Hoyle, 1995). A model with a CFI of .9 or above is considered of acceptable fit

and a very good fitting model is indicated by a CFI of .95 or above. Marsh, Balla & McDonald

(1988) reported that GFIs performed better than any other fit index they studied. However, GFIs

have also been found to behave inconsistently with sample sizes smaller than 250 (Tanaka,

1987). Due to this limitation AIC was used to assess model fit. AIC is expected to be valid for

all sample sizes. There is no cutoff score for the AIC, but an AIC score for the default model

lower than that of the independence or saturated model indicates a good fitting model.   RMSEA

can be used to compute a confidence interval. Good models have an RMSEA of .05 or less, and

RMSEA under .10 is considered in the acceptable range.

Coping. The initial baseline coping model contained those items listed above from the

EFA. The fit indices of this model were inadequate in the first iteration (AIC = 353.9, saturated

(sat) = 238, independence (ind) = 1076.5; CFI = .79; RMSEA = .13). Iterations were conducted

using the steps outlined above. The best fitting model included the variables "thinking of mess"

(item 5), "thinking of promises" (item 7), "not worth it" (item 17), "let down family/friends"

(item 19), "effect on family" (item 25), "people who have helped" (item 31), "wish to stay well"

(item 32), and, "how affected family" (item 34). The individual items in this model were evaluated in comparison to the other items in the CBI in a qualitative way to determine how these items were qualitatively distinct from the other items in the measure. All of the items were cognitive in nature, rather than behavioral. Further, many of the items were guilt-related (e.g. "thinking of the promises", "let down family/friends") and none of the items not represented were guilt-related. This factor was therefore conceptualized as cognitive coping/guilt.

Table 2

Standardized Regression Weights and Significance Levels for Baseline Coping Model

Parameter Estimate	Standardized	p
Baseline coping → Baseline CBI5, "thinking of mess"	.70	<.001
Baseline coping → Baseline CBI7, "thinking of promises"	.64	<.001
Baseline coping → Baseline CBI17, "not worth it"	.56	<.001
Baseline coping → Baseline CBI19, "let down family/friends"	.74	<.001
Baseline coping → Baseline CBI25, "effect on family"	.75	<.001
Baseline coping → Baseline CBI31, "people who have helped"	.58	<.001
Baseline coping → Baseline CBI32, "wish to stay well"	.54	<.001
Baseline coping → Baseline CBI34, "how affected family"	.82	<.001

Note: AIC = 79.49, sat = 88, ind = 589.21; CFI = .99; RMSEA = .05

The initial three-month model contained those items delineated in the EFA section, and was also inadequate (AIC = 294.4, sat = 130, ind = 855; CFI = .74; RMSEA = .19). The best fitting model included the variables "no bed of roses" (item 11), "show my face" (item 13), "let down family/friends" (item 19), "bright side" (item 22), "effect on family" (item 25), "good life without drink" (item 26), "stop playing games" (item 28), "wish to stay well" (item 32), "how affected family" (item 34) and "face life" (item 36). The items in this model were again examined qualitatively to assess how these variables may be distinguished from other variables

in the CBI. In this model, as well as in the previous coping model, all of the items in the

measure were cognitive in nature, rather than behavioral. However, in this model, only three of

the items appeared to be guilt-related ("let down family/friends", "effect on family" and "how

affected family") and many of the guilt-related items from the baseline measure were not

represented. This factor was therefore conceptualized as cognitive coping.

Table 3

Standardized Regression Weights and Significance Levels for Three-Month Coping Model

Parameter Estimate	Standardized	p
Three month coping → Three month CBI11, "no bed of roses"	.61	<.001
Three month coping → Three month CBI13, "show my face"	.58	<.001
Three month coping → Three month CBI19, "let down family/friends"	.76	<.001
Three month coping → Three month CBI22, "bright side"	.70	<.001
Three month coping → Three month CBI25, "effect on family"	.62	<.001
Three month coping → Three month CBI26, "good life without drink"	.72	<.001
Three month coping → Three month CBI28, "stop playing games"	.61	<.001
Three month coping → Three month CBI32, "wish to stay well"	.64	<.001
Three month coping → Three month CBI34, "how affected family"	.63	<.001
Three month coping → Three month CBI36, "face life"	.66	<.001

Note: AIC = 112.07, sat = 550, ind = 1865.6; CFI = .1; RMSEA = .03

Motivation. The initial baseline motivation model contained those items listed above and

was of good fit on all indices except RMSEA (AIC = 56.5, sat = 54, ind = 603.9; CFI = .98;

RMSEA = .06). Iterations were conducted in order to find a better fitting model. The final

model was of excellent fit and included the variables "started making changes" (item 4), "not just

thinking about changing" (item 9), "looking to keep from slipping" (item 10), "actively doing

things now" (item 14), "working hard to change" (item 19), and "want help to keep from going

back" (item 20). The individual items in this model were evaluated in comparison to the other

items in the SOCRATES. As all of the items were either from the Action Stage subscale (four items) or the Maintenance subscale (two items), this factor was conceptualized as motivation to take action and to maintain changes already made.

Table 4

Standardized Regression Weights and Significance Levels for Baseline Motivation Model

Parameter Estimate	Standardized	p
Baseline motivation → Baseline SOCRATES 4, "started making changes"	.77	<.001
Baseline motivation → Baseline SOCRATES 9, "not just thinking about changing"	.80	<.001
Baseline motivation → Baseline SOCRATES,10, "looking to keep from slipping"	.80	<.001
Baseline motivation → Baseline SOCRATES 14, "actively doing things now"	.80	<.001
Baseline motivation → Baseline SOCRATES 19, "working hard to change"	.82	<.001
Baseline motivation → Baseline SOCRATES 20, "want help to keep from going back"	.81	<.001

Note: AIC = 45.87, sat = 54, ind = 603.9; CFI = 1; RMSEA = .00

The initial three-month motivation model was not of adequate fit on any of the fit indices except AIC (AIC = 174.2, sat = 70, ind = 536.8; CFI = .76; RMSEA = .23). Iterations were conducted in order to identify an appropriately fitting model. The final model was of excellent fit and included the variables "started making changes" (item 4), "not just thinking about changing" (item 9), "looking to keep from slipping" (item 10), "actively doing things now" (item 14), "working hard to change" (item 19), and "want help to keep from going back" (item 20). This model was found to be of adequate fit. The individual items in this model were evaluated in comparison to the other items in the SOCRATES. Again, as all of the items were either from the

Action Stage subscale (three items) or the Maintenance subscale (four items), this factor also was

conceptualized as motivation to take action and to maintain changes already made.

Table 5

Standardized Regression Weights and Significance Levels for Three-Month Motivation Model

Parameter Estimate	Standardized	p
Three month motivation → Three month SOCRATES 4, "started making changes"	.57	<.001
Three month motivation → Three month SOCRATES 9, "not just thinking about changing"	.93	<.001
Three month motivation → Three month SOCRATES 10, "looking to keep from slipping"	.90	<.001
Three month motivation → Three month SOCRATES 14, "actively doing things now"	.60	<.001
Three month motivation → Three month SOCRATES 15, "working hard to change"	.35	<.001
Three month motivation → Three month SOCRATES 19, "want help to keep from going back"	.53	<.001
Three month motivation → Three month SOCRATES 20, "want help to keep from going back"	.37	<.001

Note: AIC = 69.54, sat = 70, ind = 1865.6; CFI = .99; RMSEA = .076

Negative Affect. The initial baseline negative affect model was found to have inadequate

fit on all of the indices except for AIC (AIC = 372.9, sat = 270, ind = 1153.3; CFI = .8; RMSEA

= .12). Iterations were conducted as detailed above until an appropriately fitting model was

found. This model contained the observed variables "past failure" (BDI item 3), "loss of

pleasure" (BDI item 4), "guilty feelings" (BDI item 5), "self-criticalness" (BDI item 8), "crying"

(BDI item 10)," "loss of interest" (BDI item 12), "loss of energy" (BDI item 15), and

"irritability" (BDI item 17). This model had universally good fit on all of the indices. These

items were compared to other items in the BDI and BAI. These items were examined to
understand how these variables might be qualitatively different than the other items in the
measure. All of the items came from the BDI and none from the BAI, thus this factor was
determined to be measure of depression (rather than the more general negative affect). Further
distinction between these items and the other items on the BDI could not be made as all of the
items in the final model were fairly representative of the items from the BDI in terms
representing the cognitive, affective and behavioral symptoms of depression.

Table 6

Standardized Regression Weights and Significance Levels for Baseline Negative Affect Model

Parameter Estimate	Standardized	p
Baseline negative affect → Baseline BDI3, "past failure"	.66	<.001
Baseline negative affect → Baseline BDI4, "loss of pleasure"	.76	<.001
Baseline negative affect → Baseline BDI5, "guilty feelings"	.61	<.001
Baseline negative affect → Baseline BDI8, "self-criticalness"	.62	<.001
Baseline negative affect → Baseline BDI10, "crying"	.63	<.001
Baseline negative affect → Baseline BDI12, "loss of interest"	.70	<.001
Baseline negative affect → Baseline BDI15, "loss of energy"	.66	<.001
Baseline negative affect → Baseline BDI17, "irritability"	.63	<.001

Note: AIC = 74.49, sat = 88, ind = 489.58; CFI = .99; RMSEA = .04

The initial three month negative affect model was of universally poor fit on all of the
indices with the exception of AIC (AIC = 582.94, sat = 418, ind = 2277.6; CFI = .84; RMSEA =
.12). Iterations were performed as outlined above. The best fitting model contained the items
"sadness" (BDI item 1), "pessimism" (BDI item 2), "past failure" (BDI item 3), "loss of
pleasure" (BDI item 4), "guilty feelings" (BDI item 5), "self-dislike" (BDI item 7), "self-
criticalness" (BDI item 8), "crying" (BDI item 10), "loss of interest" (BDI item 12),

"indecisiveness" (BDI item 13), "worthlessness" (BDI item 14), "loss of energy" (BDI item 15) "irritability" (BDI item 17), "concentration difficulty" (BDI item 19), "tiredness or fatigue" (BDI item 20), and "loss of interest in sex" (BDI item 21). This model was found to have appropriate fit on all of the indices. These items were also compared to others on the BDI and BAI to determine how these variables were distinct from the other items in the measure. As in the baseline model all of the items came from the BDI and none from the BAI, thus this factor was also determined to be measure of depression. Further distinction between these items and the other items on the BDI could not be made as the items in the final model were somewhat representative of the items from the BDI in terms representing the cognitive, affective and behavioral symptoms of depression. However, many more items in the three-month model than in the baseline model could be said to be cognitive in nature.

Table 7

Standardized Regression Weights and Significance Levels for Three-Month Negative Affect Model

Parameter Estimate	Standardized	p
Three month negative affect → Three month BDI1, "sadness"	.75	<.001
Three month negative affect → Three month BDI2, "pessimism"	.69	<.001
Three month negative affect → Three month BDI3, "past failure"	.68	<.001
Three month negative affect → Three month BDI4, "loss of pleasure"	.78	<.001
Three month negative affect → Three month BDI5, "guilty feelings"	.73	<.001
Three month negative affect → Three month BDI7, "self-dislike"	.76	<.001
Three month negative affect → Three month BDI8, "self-criticalness"	.84	<.001
Three month negative affect → Three month BDI10, "crying"	.68	<.001
Three month negative affect → Three month BDI12, "loss of interest"	.69	<.001
Three month negative affect → Three month BDI13, "indecisiveness"	.65	<.001
Three month negative affect → Three month BDI14, "worthlessness"	.87	<.001
Three month negative affect → Three month BDI15, "loss of energy"	.76	<.001
Three month negative affect → Three month BDI17, "irritability"	.64	<.001
Three month negative affect → Three month BDI19, "concentration difficulty"	.74	<.001
Three month negative affect → Three month BDI20, "tiredness or fatigue"	.66	<.001
Three month negative affect → Three month BDI21, "loss of interest in sex"	.72	<.001

Note: AIC = 288.76, sat = 304, ind = 1957.66; CFI = .96; RMSEA = .07

Self-Efficacy. The initial baseline self-efficacy model contained those items listed above and had adequate all fit indices except for RMSEA (AIC = 28.3, sat = 28, ind = 312.08; CFI = .99; RMSEA = .09). Adjusting the model based on modification indices did not yield an

adequately fitting model. The variables "age", "total years of education" and "total household income" then were entered as covariates into the model, as it was thought each of these variables, representing personal resources, might account for some variance in self-efficacy. These variables were entered independently as well as in pairs and all together to construct a model with appropriate fit. The best fitting baseline self-efficacy model contained the SCQ items "pleasant emotions" (item 3), "urges and temptations" (item 5)," "social pressure to drink" (item 7), "pleasant times with others" (item 8) and the covariate "age". This model had universally excellent fit indices. These items were compared to other items from the SCQ. These items were examined qualitatively to determine how these variables might be distinct from the other items in the measure. All of the "positive situation" items were retained in the model ("pleasant emotions" and "pleasant times with others") and none of the negative situation items (i.e. "unpleasant emotions", "physical discomfort" and "conflict with others"). This model also contained two affectively neutral items ("urges and temptations" and "social pressure to drink") and excluded one affectively neutral item ("testing control").

Table 8

Standardized Regression Weights and Significance Levels for Baseline Self-Efficacy Model

Parameter Estimate	Standardized	p
Baseline self-efficacy → Baseline SCQ3, "pleasant emotions"	.76	<.001
Baseline self-efficacy → Baseline SCQ5, "urges and temptations"	.65	<.001
Baseline self-efficacy → Baseline SCQ7, "social pressure to drink"	.71	<.001
Baseline self-efficacy → Baseline SCQ8, "pleasant times with others"	.94	<.001
Age → Baseline self-efficacy	.09	.30

Note: AIC = 35.73, sat = 40, ind = 318.62; CFI = .1; RMSEA = .00

The initial three-month self-efficacy model had adequate fit on only AIC, but all of the other indices showed inadequate fit (AIC = 61.4, sat = 28, ind = 519.6; CFI = .88; RMSEA = .34). Adjusting the model based on modification indices again failed to yield an appropriately fitting model. In order to construct an appropriate model, the same three hypothesized covariates were entered into the three-month model as for the baseline model and iterations were performed for each of the covariate models. The best fitting model contained the observed self-efficacy variables "pleasant emotions" (item 3), "urges and temptations" (item 5) and "pleasant times with others" (item 8) as well as the covariate observed variables "age" and "total years of education." This model was found to be of good fit on all of the indices and was therefore entered into the final self-efficacy path models. These items were compared to other items from the SCQ. As this model also contained the "positive situation" items and none of the "negative situation" items.

These items also were examined qualitatively to understand how these variables may be distinct from the other items in the measure. Again, both of the "positive situation" items were retained in the model ("pleasant emotions" and "pleasant times with others") and none of the negative situation items (i.e. "unpleasant emotions", "physical discomfort", "conflict with others"). This model also contained one affectively neutral item ("urges and temptations") and excluded two affectively neutral items ("testing control" and "social pressure to drink").

Table 9

Standardized Regression Weights and Significance Levels for Three-Month Self-Efficacy Model

Parameter Estimate	Standardized	p
Three month self-efficacy → Three month SCQ3, "pleasant emotions"	.81	<.001
Three month self-efficacy → Three month SCQ5, "urges and temptations"	.79	<.001
Three month self-efficacy → Three month SCQ8, "pleasant times with others"	.86	<.001
Age → Three month self-efficacy	.14	<.001
Education → Three month self-efficacy	-.07	<.001

Note: AIC = 427.1, sat = 550, ind = 1865.6; CFI = .96; RMSEA = .05

Path Models

For each mediator, models were constructed with (a) the exogenous variables Support for Drinking and Support for Not Drinking, and the dependent variable Percent Days Drinking; (b) the exogenous variables Support for Drinking and Support for Not Drinking and the dependent Percent Days Heavy Drinking. All models were evaluated using AIC, CFI and RMSEA. Only those modifications that were justified theoretically, meaning that they indicated correlations of error of observed variables *within* latent constructs rather than *between* latent constructs, were made to the path models. This allowed for further association of items of the same latent construct, but did not allow further association between latent variables in order to assess the path models. Next, the individual standardized regression values and significance levels for each path were examined to determine whether there was support for the hypothesized mediational model. All models were estimated using MLE and utilizing the bootstrapping method (Byrne, 2000).

Coping

Support for drinking, support for not drinking, coping and percent days drinking. A path model was constructed in which baseline SD and baseline SND were predictors for three-month coping, which in turn was a predictor of nine-month PDD (see Figure 2). In this model, all earlier levels of the same variable predicted later levels of that same variable (baseline coping predicted three-month coping, baseline PDD predicted three-month PDD, three-month PDD predicted nine-month PDD). Additionally, SD was associated with baseline coping, SND predicted three-month PDD and baseline coping was associated with baseline PDD. No support was found for mediation, as neither SD nor SND predicted coping at three months.

Figure 2.

Support for Drinking, Support for Not Drinking, Coping and Percent Days Drinking Structural

Equation Path Model (Standardized Solution; N = 158)
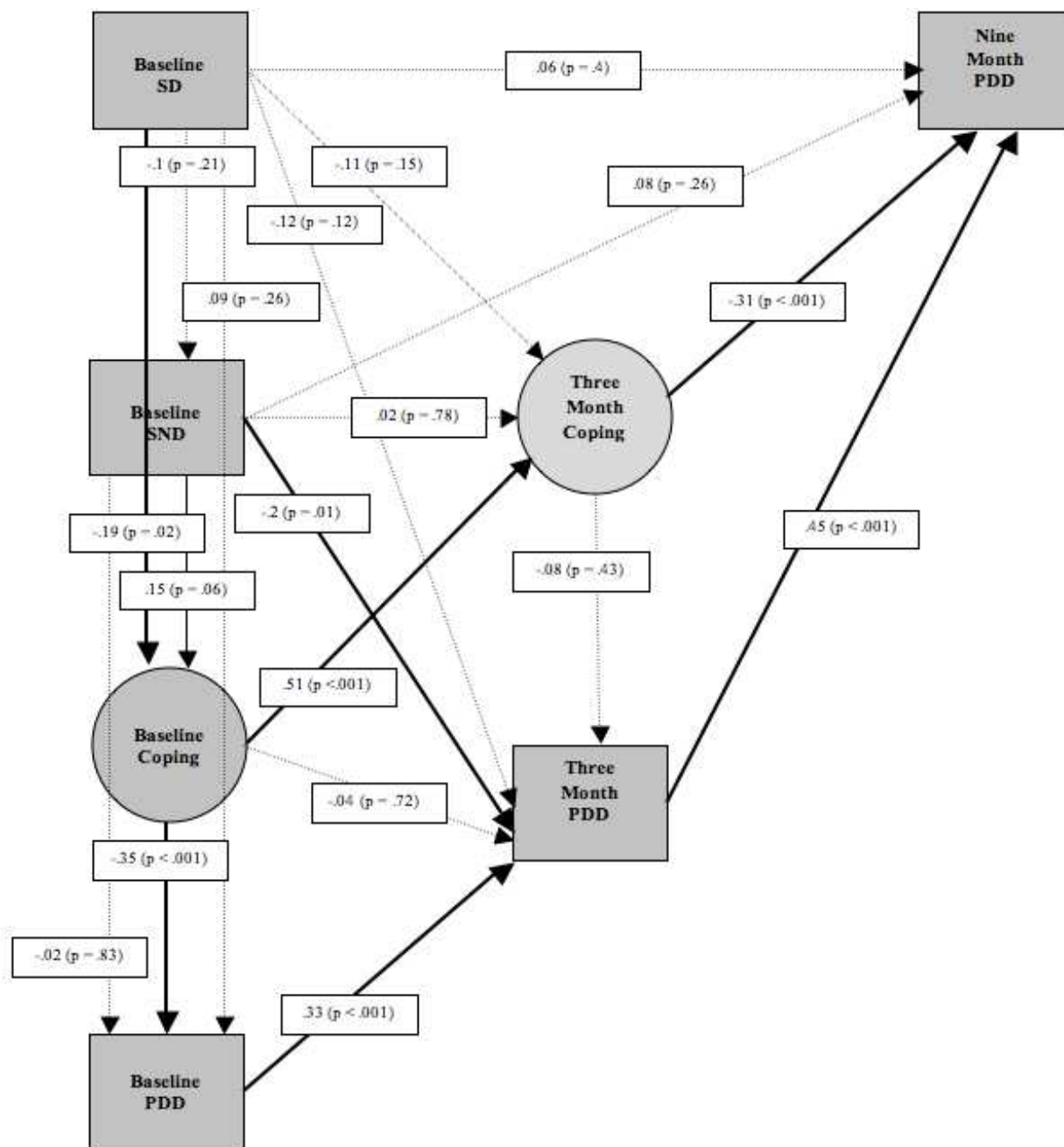
Note: AIC = 463.57 (saturated = 598; independence = 1878.92); CFI = .96; RMSEA = .04

Support for drinking, support for not drinking, coping and percent days heavy drinking.
This model was built using the same structure as the first coping model, though PDHD was entered into the model rather than PDD (see Figure 3). As in the previous coping model, all earlier levels of the same variable predicted later levels of that same variable. Additionally, SD was associated with baseline coping, SND was associated with baseline and predicted three-month PDHD and baseline coping was associated with baseline PDHD. Again, no support for mediation was found, as neither SD nor SND predicted coping at three months.

Figure 3.

Support for Drinking, Support for Not Drinking, Coping and Percent Heavy Drinking Days

Structural Equation Path Model (Standardized Solution; N = 158)

Note: AIC = 471.68 (saturated = 598; independence = 1886.24); CFI = .96; RMSEA = .05
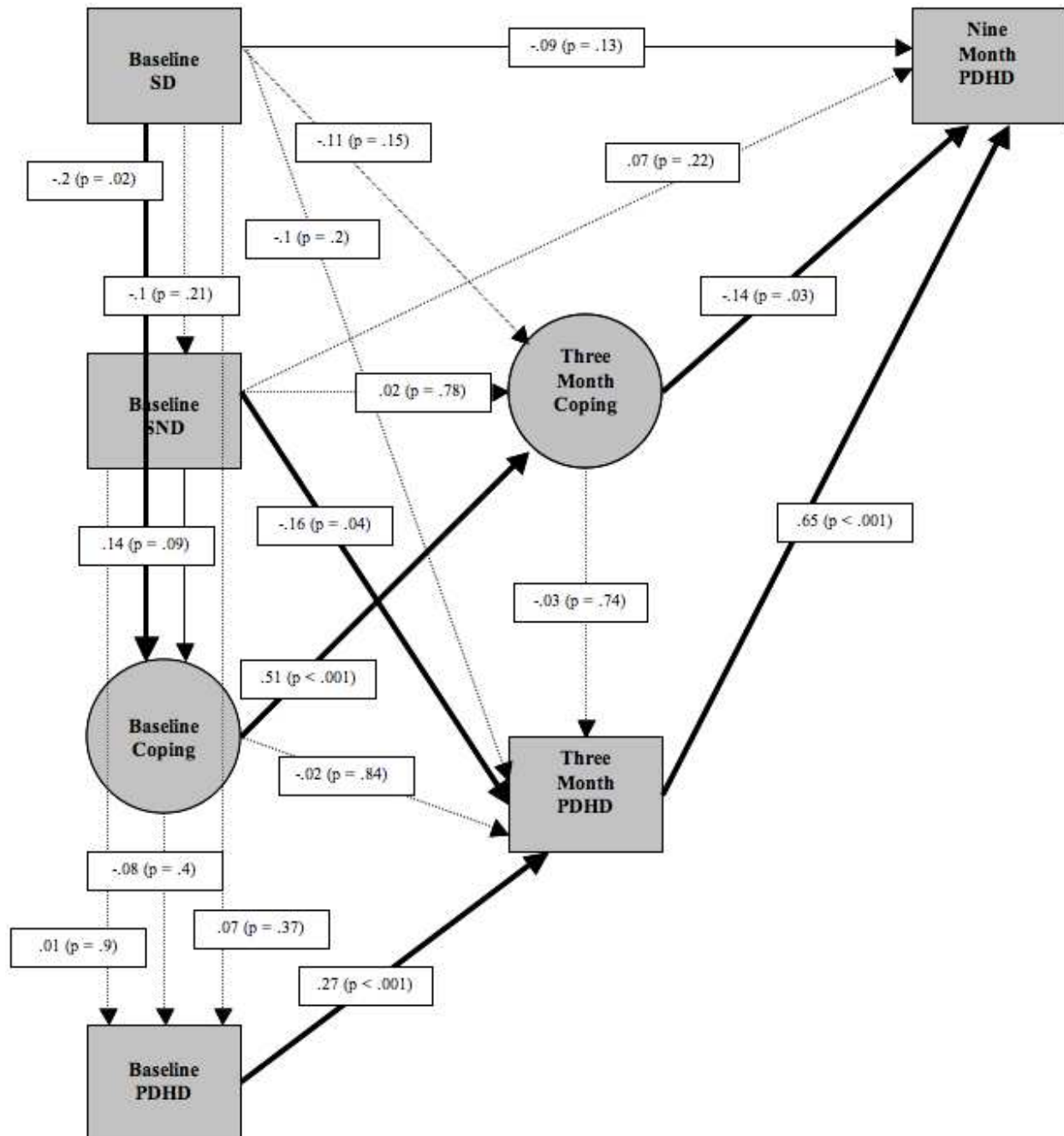
Motivation

  Support for drinking, support for not drinking, motivation and percent days drinking. A path model was constructed in which baseline SD and SND were predictors for three-month motivation, which in turn was a predictor of nine-month drinking to evaluate the hypothesized mediational model (see Figure 4). In this model, baseline PDD predicted three-month PDD, which in turn predicted nine-month PDD. However, baseline motivation was not found to predict three-month motivation. Additionally, SND predicted three-month PDD, baseline motivation was associated with baseline PDD, and three-month motivation was associated with three-month PDD. In support of mediation, baseline SD was found to predict three-month motivation, which in turn predicted nine-month drinking. However, the relationship between SD and nine-month PDD was not significant.

  In order to assess for the presence of true mediation, the paths from social support variables to motivation and from motivation to drinking were deleted to see if the path from baseline SD to nine-month PDD became significant and whether the model became more poorly fitting. The overall fit of the model was slightly reduced, but the model did not become poorly fitting (AIC = 304.54, sat = 378, ind = 1416.11; CFI = .96; RMSEA = .05). Further, the path from SD to nine-month PDD did not become significant, though it dropped from $p = .82$ to $p = .26$. The indirect effect of baseline SD on nine-month PDD also was examined and found to be non-significant.

Figure 4.

Support for Drinking, Support for Not Drinking, Motivation and Percent Days Drinking

Structural Equation Path Model (Unstandardized Solution; N = 158)

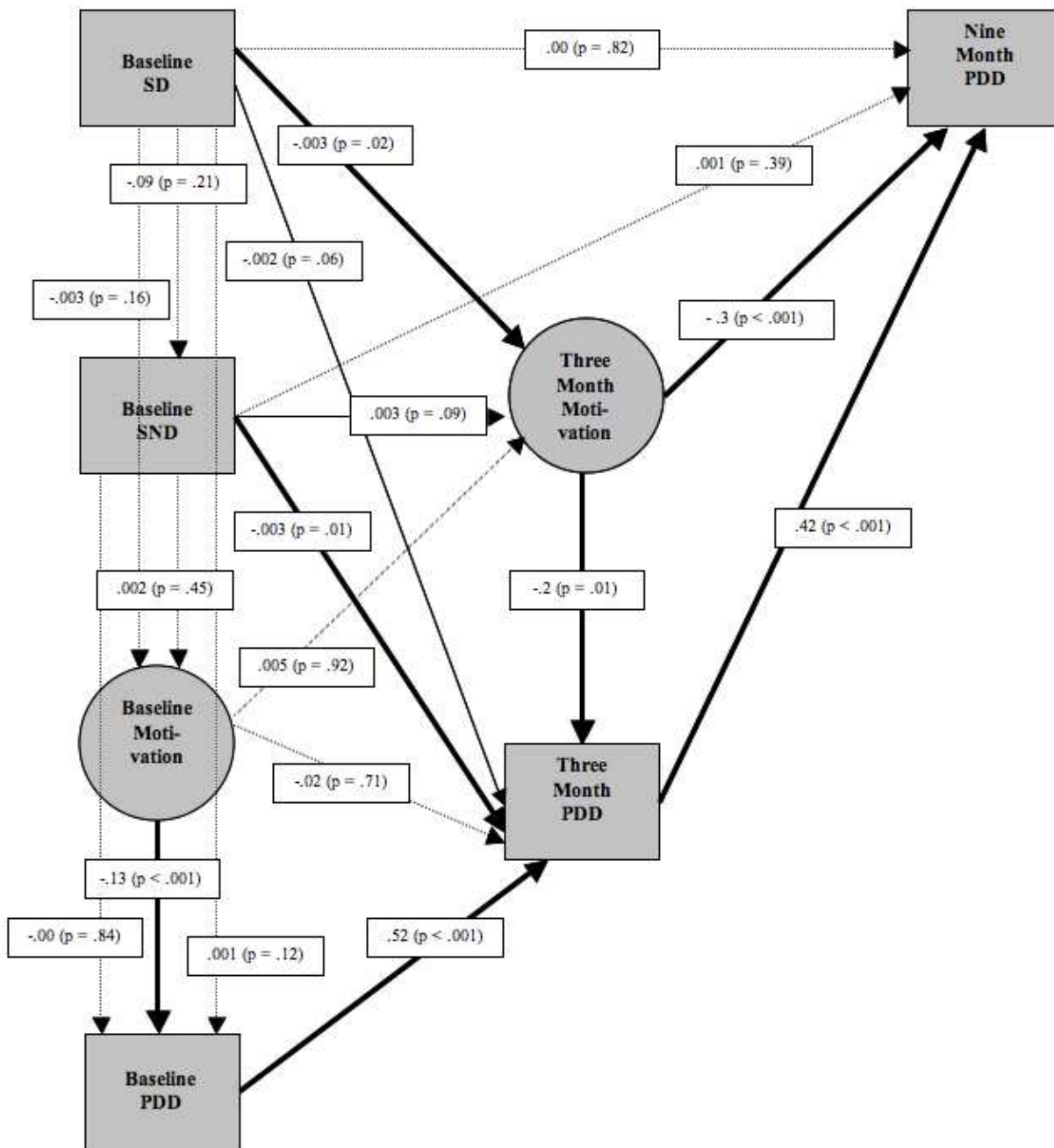Note: AIC = 285.66 (saturated = 378; independence = 1416.11); CFI = .98; RMSEA = .03

Support for drinking, support for not drinking, motivation and percent days heavy drinking. This model was built using the same structure as the previous motivation model, though PDD was replaced with PDHD. As in the previous motivation model, earlier levels of drinking predicted later levels of drinking, though baseline motivation did not predict three-month motivation. Additionally, SD predicted three-month PDHD, and motivation was associated with drinking at baseline and three months. Support was not found for the mediational model, as three-month motivation did not predict nine-month PDHD.

Figure 5.

Support for Drinking, Support for Not Drinking, Motivation and Percent Days Heavy Drinking

Structural Equation Path Model (Unstandardized Solution; N = 158)
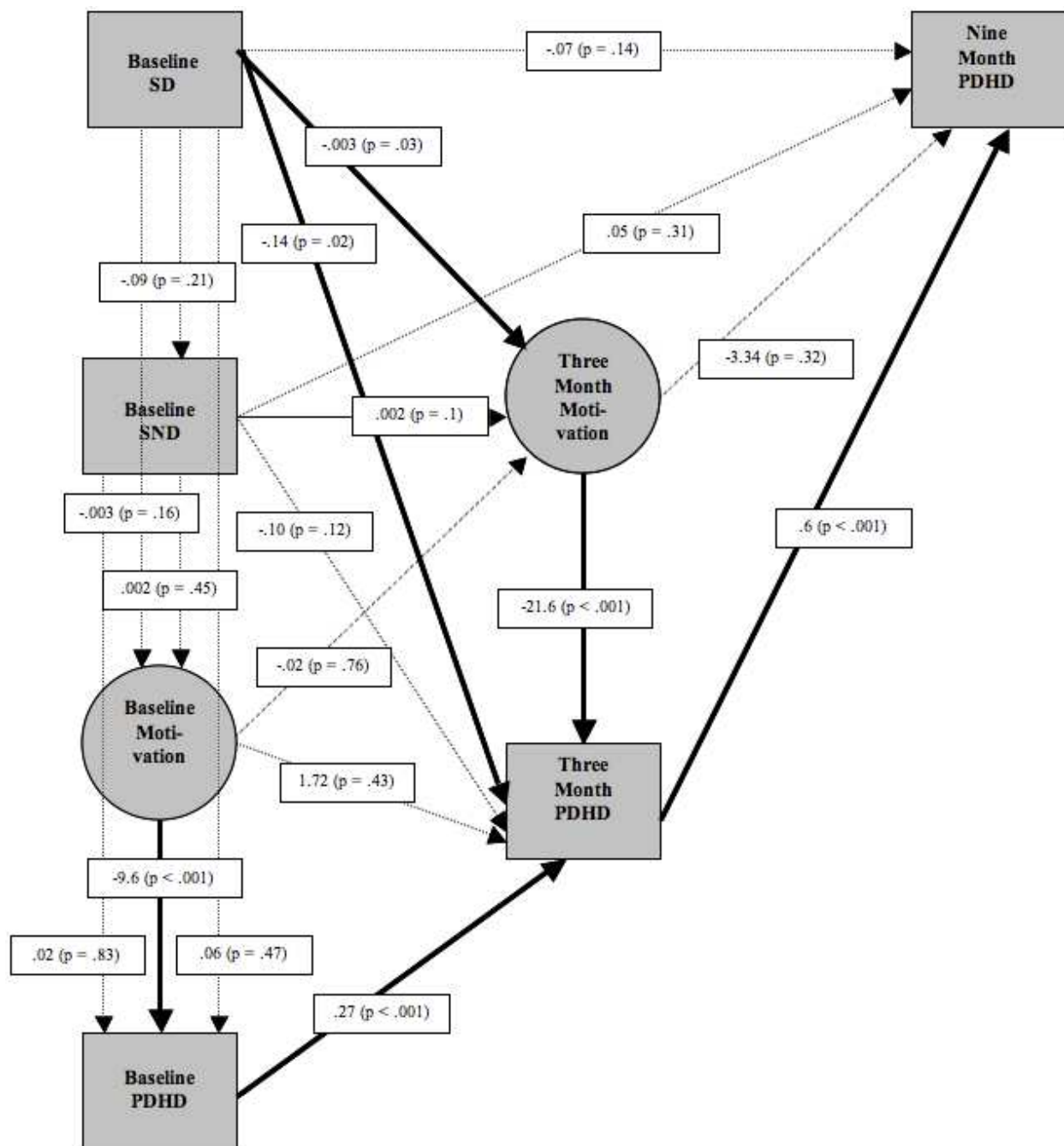
Note: AIC = 271.72 (saturated = 378; independence = 1437.53); CFI = .1; RMSEA = .02

Depression

     Support for drinking, support for not drinking, depression and percent days drinking. A path model was constructed in which baseline SD and SND were predictors of three-month depression, which in turn was a predictor of nine-month PDD. In this model, all earlier levels of the same variable predicted later levels of that same variable. SD was associated with baseline PDD, SND predicted three-month PDD and three-month negative affect predicted nine-month PDD. Support was not found for the mediational model, as neither support for drinking nor support for not drinking predicted negative affect at three months.

Figure 6.

Support for Drinking, Support for Not Drinking, Depression and Percent Days Drinking

*Structural Equation Path Model (Standardized Solution; N = 158)*

Note: AIC = 717.76 (saturated = 928; independence = 3052.8); CFI = .95; RMSEA = .05

Support for drinking, support for not drinking, depression and percent heavy drinking days. This model was built using the same structure as the first negative affect model, though PDD was changed to PDHD (see Figure 7). All earlier levels of the same variable predicted later levels of that same variable. SND predicted three-month PDHD and three-month negative affect was associated with three-month PDHD. Support was not found for the mediational model, as neither support for drinking nor support for not drinking predicted negative affect at three months, and negative affect at three months was not predictive of nine-month PDHD.

Figure 7.

Support for Drinking, Support for Not Drinking, Depression and Percent Heavy Drinking Days

Structural Equation Path Model (Standardized Solution; N = 158)

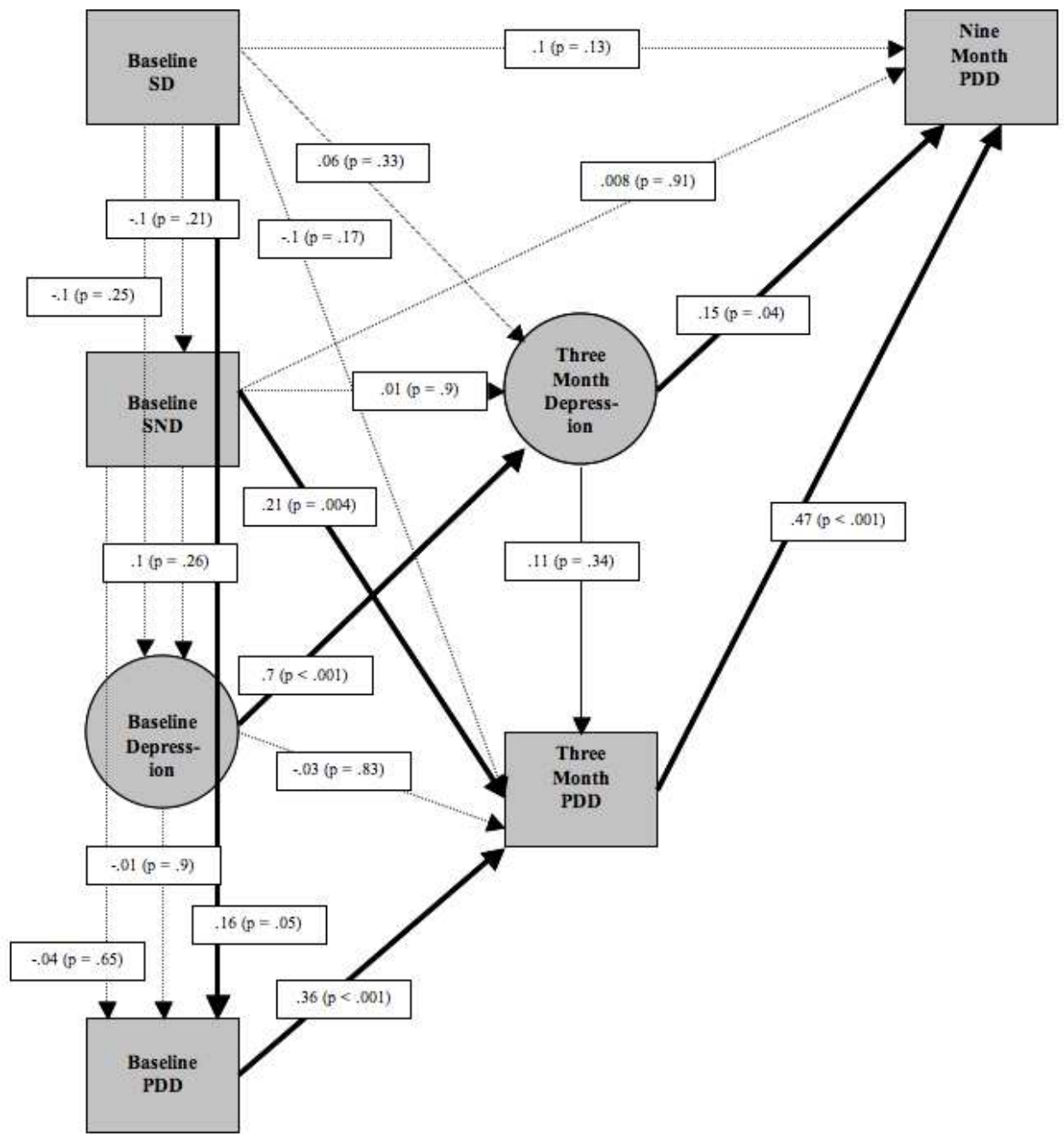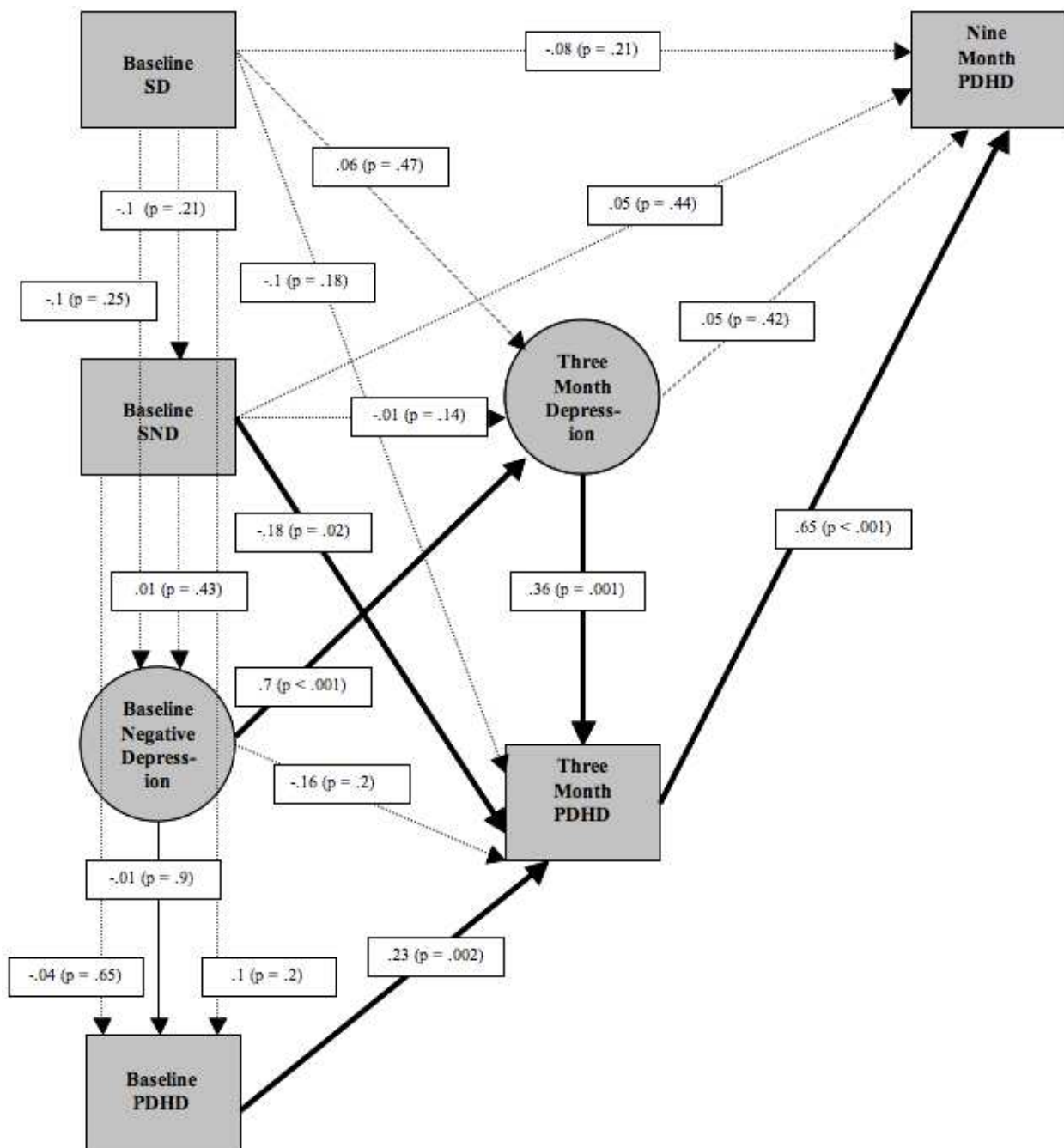Note: AIC = 742.62 (saturated = 928; independence = 3124.60); CFI = .94; RMSEA = .05

Self-Efficacy

The self-efficacy models could not be built as the previous model; as such models were found to be unidentified four separate models were constructed and evaluated.

Support for drinking, self-efficacy and percent days drinking. A path model was constructed in which baseline SD was a predictor of three-month self-efficacy, which in turn was a predictor of nine-month PDD to evaluate the hypothesized mediational model (see Figure 8). All earlier levels of variables predicted later levels of variables. Additionally, baseline SD was associated with baseline self-efficacy and predicted three-month PDD, and three-month self-efficacy predicted nine-month PDD. Three-month self-efficacy was also associated with three month PDD. However, support was not found for the mediational model, as SD did not predict self-efficacy at three months.

Figure 8.

Support for Drinking, Self-Efficacy and Percent Days Drinking Structural Equation Path Model

(Standardized Solution; N = 158)

Note: AIC = 205.09 (saturated = 208; independence = 847.6); CFI = .93; RMSEA = .08

Support for not drinking, self-efficacy and percent days drinking. A path model was constructed in which baseline SND was a predictor of three-month self-efficacy, which in turn was a predictor of nine-month PDD to evaluate the hypothesized mediational model (see Figure 9). All earlier levels of variables predicted later levels of variables. Additionally, baseline self-efficacy was associated with baseline SND and baseline PDD, and three-month self-efficacy was associated with three-month PDD. Further, baseline self-efficacy predicted three-month PDD and three-month self-efficacy predicted nine-month PDD.

Figure 9.

Support for Not Drinking, Self-Efficacy and Percent Days Drinking Structural Equation Path

Model (Standardized Solution; N = 158)
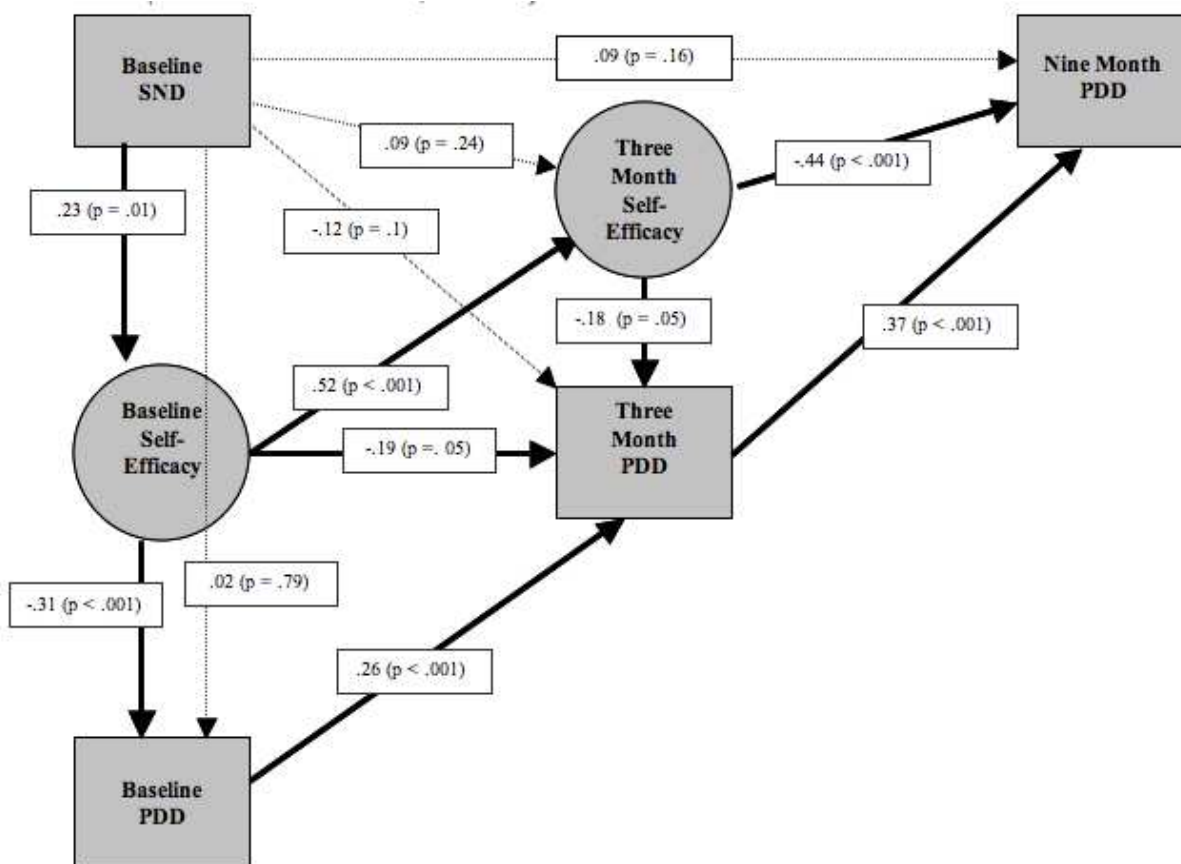
Note: AIC = 209.84 (saturated = 208; independence = 886.19); CFI = .93; RMSEA = .08

Support drinking, self-efficacy and percent heavy drinking days. A path model was constructed in which baseline SD was a predictor of three-month self-efficacy, which in turn was a predictor of nine month PDHD, was constructed. All earlier levels of variables predicted later levels of the same variable. Additionally, three-month self-efficacy was associated with three-month PDHD and predicted nine-month PDHD. However, no support was found for the mediation model, as baseline SD did not predict three-month self-efficacy.

Figure 10.

Support for Drinking, Self-Efficacy and Percent Days Drinking Structural Equation Path

Model (Standardized Solution; N = 158)
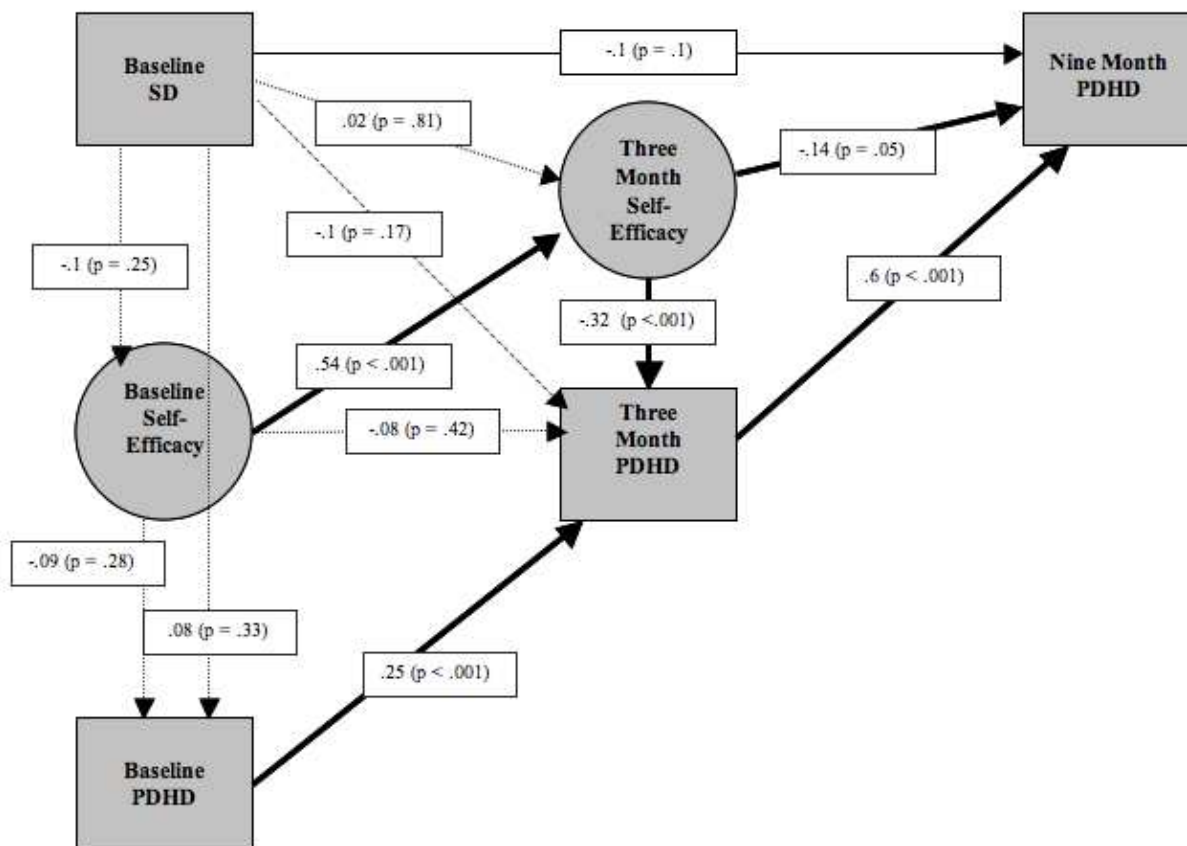
Note: AIC = 188.53 (saturated = 208; independence = 849.09); CFI = .95; RMSEA = .06

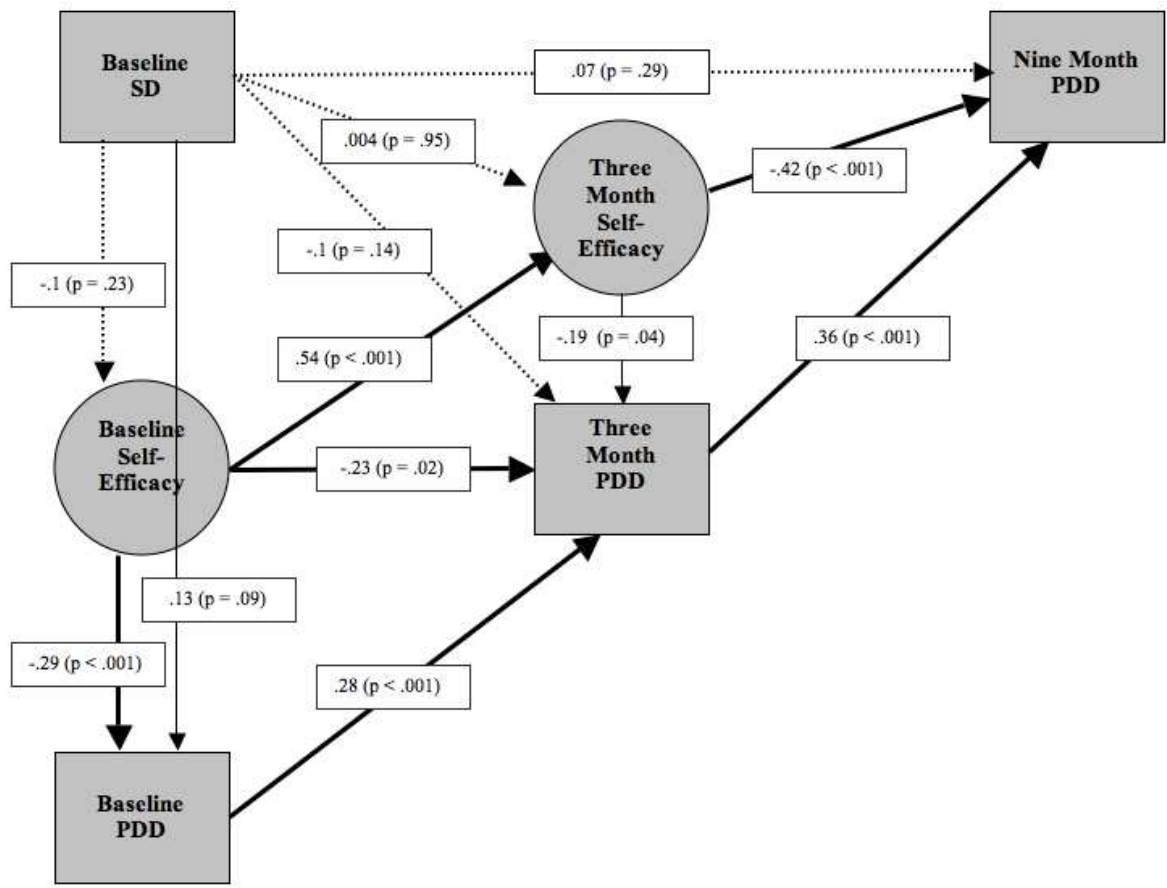*Support for not drinking, self-efficacy and percent days heavy drinking.* A path model was constructed in which baseline SND was a predictor of three-month self-efficacy, which in turn was a predictor of nine-month PDD, was constructed (see Figure 11). All earlier levels of variables predicted later levels of the same variable. Additionally, baseline self-efficacy was associated with baseline SND and predicted three month PDHD. Three-month self-efficacy predicted nine month PDHD as well. Support was not found for the mediational model, though, as SND did not predict three-month self-efficacy.

Figure 11.

Support for Not Drinking, Self-Efficacy and Percent Days Heavy Drinking Structural Equation

*Path Model (Standardized Solution; N = 158)*
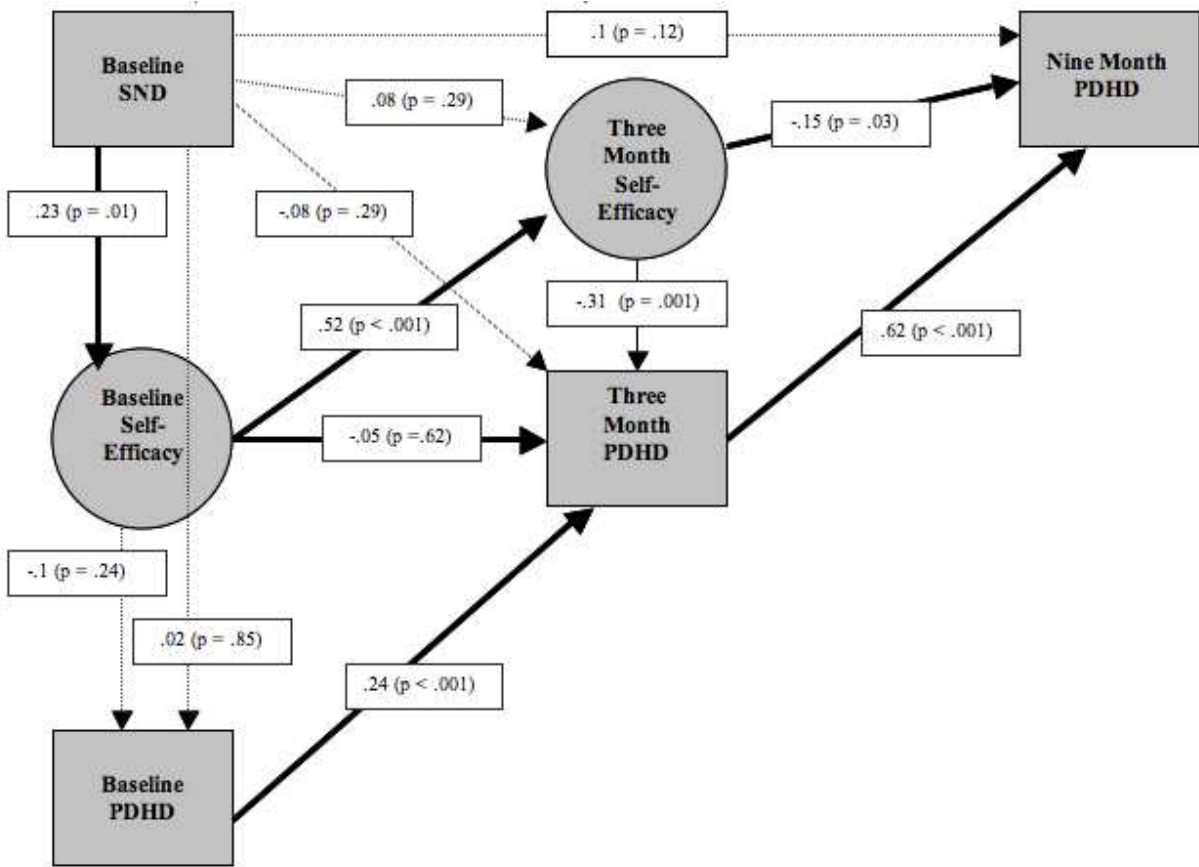
Note: AIC = 194.07 (saturated = 208; independence = 858.74); CFI = .95; RMSEA = .07)

DISCUSSION

Alcohol researchers increasingly have been focused on understanding the mechanisms of change in psychological/behavioral treatments and self-help groups. The present study followed in the same vein, though focused on testing potential mechanisms by which a pre-existing (or natural) variable impacts drinking outcomes in women being treated for alcohol use disorders. Finding reliable mechanisms of change has long been elusive for treatment researchers (see Huebner & Tonigan, 2007) and the search for mechanisms by which social support impacts drinking behaviors may be equally difficult. However, the present study offered preliminary evidence of motivation being a viable mechanism by which abstinence-specific social support affects treatment outcome.

Ten hybrid structural equation models were built to test whether coping, motivation, negative affect, and self-efficacy would mediate the relationships between alcohol-specific social support and drinking outcomes. All four intraindividual variables (coping, motivation, negative affect and self-efficacy) measured at the end of treatment were significant predictors of drinking frequency over the next six months. Coping and self-efficacy also predicted heavy drinking. Evidence of partial mediation of motivation in the relationship between support for drinking and drinking frequency was found. Individuals with more network support for drinking at baseline had less motivation at the end of treatment, which was predictive of nine-month drinking frequency.

In each of the coping models, coping just after treatment was significantly associated with drinking frequency and intensity over the course of the follow-up period. At baseline, support for not drinking was found to be associated with baseline coping, and support for

drinking showed a trend (p = .06) toward significant association with baseline coping. However, neither support for drinking nor support for not drinking were predictive of coping at three months, therefore no support for mediation was found. At baseline, support for not drinking was significantly associated with baseline drinking frequency and intensity. Further, coping prior to treatment entry was found to predict coping just after treatment, and earlier levels of drinking predicted later levels of drinking.

Researchers have had significant difficulties in understanding the relationships among treatment, coping and drinking outcomes. The lack of support for the mediation coping model is consistent with Morgenstern and Longabaugh (2000), a review using ten studies to examine a model in which CBT predicted increased coping behavior, which in turn predicted nine month drinking. It was found that CBT unreliably led to changes in coping, which in turn unreliably predicted drinking outcomes.

In the motivation-drinking frequency model, initial evidence for mediation was found, as support for drinking at entry to treatment was found to predict motivation just post-treatment, and motivation in turn predicted drinking frequency over the follow up period. When the mediation paths (from baseline support for drinking and support for not drinking to three month motivation, and from three month motivation to nine month drinking frequency) were removed from the model, the path from support for drinking to percent days drinking did not become significant (from $p = .82$ to $p = .26$), and the indirect effect from support for drinking to nine month drinking frequency was not significant. Therefore, some evidence for our model was found, though we cannot assert mediation.

In the motivation-drinking intensity model, support for drinking predicted post-treatment motivation as well as post treatment drinking intensity, though it did not predict drinking

intensity over the follow up period, and therefore no support for mediation can be asserted. In both models support for not drinking showed a trend of predicting post-treatment motivation (p = .09 and .1).

Motivation was associated with both drinking frequency and intensity at pre-treatment and three months post-treatment. In both models earlier levels of drinking predicted later levels of drinking at each time point. In neither model did pre-treatment motivation predict post-treatment motivation, pointing to the relative instability of this construct.

Increased interest in recent years has been focused on the role that motivation plays in recovery from AUDs (DiClemente, Bellino & Neavans, 1999), and clinical researchers have worked to develop treatments specifically aimed at increasing motivation for change (e.g. Miller & Rollnick, 2002). While motivationally-focused treatments have been found to be efficacious, to-date there is no evidence to support that their unique mechanism of action is changes in motivation. Motivation may be more a function of environmental factors than specific interventions. However, that motivation was specifically influenced by social factors is consistent with previous work. For example, Steinberg et al. (1997) found that 53% of their sample of married men reported that their spouse was their primary source of motivation.

Pre-treatment support for drinking was not predictive of post-treatment depression, though support for not drinking did negatively predict post-treatment depression at the trend level in the percent days heavy drinking model. Support for drinking was associated with pre-treatment drinking frequency, though was not found to be predictive of drinking frequency post-treatment. Pre-treatment depression was associated with both baseline drinking frequency and intensity. Further, while post-treatment affect was found to predict drinking frequency (though not intensity) during the follow-up period, pre-treatment depression did not predict either

drinking frequency or intensity at three months, suggesting that treatment may have buffered the effects of negative affect on drinking frequency. Pre-treatment negative affect was predictive of post-treatment negative affect and earlier levels of drinking were predictive of later levels of drinking.

Our lack of statistically significant findings with regard to negative affect is consistent with the Beattie et al. (1993) model. This model postulates that general social support (perceived support from family and friends as well as support given family and friends) influences the intra-individual factor "subjective well-being," a variable that incorporates both affect (general sense of well-being) and their relative degree of psychological health and resources.

Support for not drinking was associated with self-efficacy at treatment entry. However, neither support for drinking nor support for not drinking predicted self-efficacy post-treatment. Pre-treatment self-efficacy was associated with pre-treatment drinking frequency, and post-treatment self-efficacy was associated with post-treatment drinking frequency and intensity. Pre-treatment self-efficacy predicted post-treatment drinking frequency, but not intensity, and also predicted post-treatment self-efficacy. Earlier levels of drinking predicted later levels of drinking.

It should be noted that there was significant difficulty in creating an appropriate measurement model for self-efficacy, and as such, demographic variables were entered into the model. Given this, the findings on self-efficacy should be interpreted with caution, as demographic variables have been found to account for a significant amount of the variance in drinking outcomes (Greenfield et al., 2006).

Limitations

The demographic homogeneity of the sample may have resulted in limited variance in responses and outcomes. This sample was completely homogenous in terms of gender, almost completely homogeneous in terms of marital/relationship status and was also largely well educated. These variables are known to be related to drinking outcomes. For example, Walter and colleagues (2006) found that unmarried alcoholics were nearly twice as likely to relapse to drinking as non-married alcoholics. Greenfield et al. (2006) found that demographic variables such as being single and having a lower education were the best predictors of poorer drinking outcomes.

Lack of power is a significant limitation of this study. The sample size of 158 is considered a medium to small sample size for structural equation modeling. It recently has been asserted that sample sizes of 400 and above are required to test complicated structural equation mediation models in the behavioral sciences (Fritz & McKinnon, 2007; MacKinnon, 2008). It is possible that had the sample size been adequately large coping and self-efficacy would have shown evidence of mediating relationships between abstinence-specific support and drinking outcomes.

Another limitation of the study is the lack of a no treatment control condition. It is possible that the administration of treatment may have buffered the effect of social support on mediators. Each of the treatments administered was a cognitive-behavioral therapy designed to target intraindividual factors (including coping, motivation, negative affect and self-efficacy) as well as to directly target drinking behavior. Further, the BCT directly targeted social support, which may have washed out the baseline effects. The utilization of a control condition would

have allowed for examination of the effect of treatment on the relationship between support for drinking and support for not drinking and the proposed mediators.

In any longitudinal mediational analysis the assessment of variables at the appropriate time points is important (MacKinnon, 2008). The time lags utilized in this study may have been too large to detect causal relationships and this study may have been improved by more frequent assessment of interpersonal, intraindividual and drinking variables to examine more temporally proximal causal models. It is possible that social support variables lead to changes in intraindividual variables and therefore changes in drinking, and that the whole causal chain took place during the treatment period, in which case such a relationship could not have been detected with the methodology used in this study.

The time lag issue may have been particularly important for the coping and self-efficacy models. In the coping model, support for drinking was associated with coping at baseline, but the relationship was not statistically significant at three months ($p = .14$). If these assessments had been closer to one another in time, the relationship may have held. The same may have been true for the support for not drinking and coping model as the relationship was almost significant at baseline ($p = .06$). Had the sample been larger and assessment more frequent, it is likely that a predictive relationship would have been found. The large time lags may have also been a problem for the support for not drinking and self-efficacy model, as the relationship between support for not drinking and self-efficacy was significant at baseline, though not at three months.

<center>Future Directions</center>

The present study is a "first-pass" at examining the mechanisms of effect of social support on drinking outcomes. There remain a number of potential methodologies to be used and further questions to address. A good next step in this line of research would be to test the

mediational models utilizing more frequent assessment to further assess potential coping, motivation and self-efficacy mediation that might occur over shorter time lags. Such a study would best be conducted using ecological momentary assessment (EMA), though the use of diary cards or self-report measures administered more frequently would be good alternatives.

It also would be interesting in such a study to utilize an experimental design, comparing individuals in treatment to those outside of treatment (or multiple modalities). It is possible, perhaps likely, that the same mediational relationships may not hold for each group. Future studies should also assess potential mediational relationships among general social support, negative affect and drinking outcomes in order to further assess the validity of the Beattie et al. (1993) model.

Future work also should focus on testing the above hypotheses using different methods of assessing the variables of interest. More recent unpublished work has found that the presence or absence of any support for drinking may be the best predictor of drinking outcomes (Longabaugh, personal communication). Using the same measure of social support (the IPA), but different calculations of alcohol-specific support (e.g. presence versus absence of support for drinking), different relationships among variables may be found. Further, examining the role of general social support in each of these potential mediational pathways is important.

Research also should focus on examining the relationships among these variables using different measurements of the mediating variables (e.g. coping: positive versus negative, approach versus avoid, cognitive versus behavioral). The present study only examined the potential mediational role of the *amount* of cognitive-social coping used. Some studies examining the relationship between coping and drinking outcomes have looked at the differential effect of certain types of coping such as coping in general rather than just in response to alcohol

craving (e.g. Kahler, Ramsey, Read, & Brown, 2002), positive versus negative coping (e.g.

Walter et al., 2006) and approach versus avoidance coping (e.g. Forys, McKellar, & Moos,

2007). It may be that social support is predictive of the implementation of a particular *kind* or

quality of coping, rather than of the *quantity* of coping used.

Future studies should utilize a more diverse sample of participants, in particular people of

both genders and of greater racial, financial and ethnic diversity. It may be that various

demographic groups have different pathways to change, and that there are differential

moderating effects between groups.

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Appendix A: Important People and Activities IntervIew (IPA)

"Now, I am going to ask you some questions about the people that have been important to you and with whom you've had contact <u>during the past six months</u>. These people may be family members, friends, people from work, or anyone that you see as having had a significant impact on your life, <u>regardless of whether or not you liked them</u>. Should you have any questions during the interview please don't hesitate to ask. Now before we begin, do you have any questions?"

(1) ID #	(2)Relationship ----------------- 1= study partner 2= ex-partner 3= boy/girlfriend 4= child 5= parent 6= sibling 7= other relative 8= friend 9= co-worker 10= AA member 20= Other	(3) Person's Name -------- ------- (first name & last initial)	(4) *During the past 6 months on average how frequently have you been in contact with…?* ------------------------------ 7=daily (7 times a week) 6=three to six times a week 5=once or twice a week 4=every other week 3= about once a month 2=less than monthly 1=once in past 6 months	(5) *How important has this person been to you?* ---------------------- 6=Extremely Important 5=Very Important 4=Important 3=Somewhat Important 2=Not very Important 1=Not at all Important	(6) **To what extent is this person generally supportive of you…** ---------------------- 6=Extremely Supportive 5=Very Supportive 4=Supportive 3=Somewhat Supportive 2=Not very Supportive 1=Not at all Supportive
01					
02					
03					
04					
05					
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11					
12					

* "To what extent is this person generally supportive of you… by being sensitive to your personal needs, helping you to think about things and solve problems, and by giving you the moral support you need?

(7) ID # -------- *from page 1, column1*	(8) First name ------------- *from page 1, column 3*	(9) *What is this person's Drinking Status?* -------------- 5 = heavy drinker 4 = moderate drinker 3 = light drinker 2 = abstainer 1 = recovering alcoholic	(10) *How often does this person drink alcohol?* ---------------- 7 = daily 6 = three to six times a week 5 = one or two times a week 4 = about every other week 3 = about once a month 2 = less often than monthly 1 = once in past six months 0 = not in past six months	(11) *How has or would this person react to your drinking?* ----------------- 5 = Encouraged 4 = Accepted 3 = Neutral 2 = Didn't Accept 1 = Left, or made you leave when you're drinking	(12) *How has or would this person react to your not drinking?* ----------------- 5 = Encouraged 4 = Accepted 3 = Neutral 2 = Didn't Accept 1 = Left, or made you leave when you're not drinking	(13) *How has or would this person feel about your coming to treatment?* ----------------- 6=Would Strongly Support it 5=Would Support it 4=Neutral 3=Mixed 2=Would Oppose it 1=Would Strongly Oppose it
01						
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Appendix B: Coping Behaviours Inventory

Instructions: If there are times when you want to start drinking again, how do you try to stop yourself? Here are a list of ways some people have tried to stop themselves. Which of these ways have you tried? There are four boxes 'Usually, often, sometimes and never'. Please circle the number which comes closest to how *often* you have used these ways to stop yourself from starting to drink again. There are no right or wrong answers or trick questions. We want to know what *you* have tried.

		I have usually tried this	I have often tried this	I have sometimes tried this	I have never tried this
1	Thinking about how much better off I am without drink………….	3	2	1	0
2	Telephoning a friend………	3	2	1	0
3	Keeping in the company of non drinkers………………………….	3	2	1	0
4	Thinking positively……………………	3	2	1	0
5	Thinking of the mess I've got myself into through drinking………	3	2	1	0
6	Stopping to examine my motives and eliminating the false ones…	3	2	1	0
7	Thinking of the promises I've made to others…………………….	3	2	1	0
8	Staying indoors – hiding………………………………	3	2	1	0
9	Pausing and really thinking the whole alcoholic cycle through……	3	2	1	0
10	Leaving my money at home…………………………………	3	2	1	0
11	Recognizing that life is no bed of roses but drink is not the answer	3	2	1	0
12	Going to an A.A. meeting……………………….……	3	2	1	0
13	Knowing that by not drinking I can show my face again without fear of what others will think………………………………	3	2	1	0
14	Cheering myself up by buying myself something special instead...	3	2	1	0
15	Facing up to my bad feelings instead of trying to drown them…….	3	2	1	0
16	Working harder…………………………………	3	2	1	0

17	Realizing it's just not worth it……………………………….	3	2	1	0
18	Waiting it out until everything is shut……………………………..	3	2	1	0
19	Remembering how I've let my friends and family down in the past	3	2	1	0
20	Keeping away from people who drink…………………………….	3	2	1	0
21	Going for a walk……………………………………	3	2	1	0
22	Looking on the bright side and trying to stop making excuses for myself……………………………………… ………………………..	3	2	1	0
23	Realizing it's affecting my health…………………………………...	3	2	1	0
24	Start doing something in the house……………………………..	3	2	1	0
25	Considering the effect it will have on my family………………….	3	2	1	0
26	Reminding myself of the good life I can have without drink……...	3	2	1	0
27	Getting in touch with old drinking friends who are better now…...	3	2	1	0
28	Making up my mind that I'm going to stop playing games with myself……………………………………… ……………………….	3	2	1	0
29	Eating a good meal………………………………………	3	2	1	0
30	Avoiding places where I drank………………………………	3	2	1	0
31	Thinking about all the people who have helped me……………….	3	2	1	0
32	Saying I am well and wish to stay so…………………………...	3	2	1	0
33	Going to sleep……………………………………	3	2	1	0
34	Remembering how it has affected my family……………………..	3	2	1	0

35	Forcing myself to go to work………………………………	3	2	1	0
36	Trying to face life instead of avoiding it………………………..	3	2	1	0

Appendix C: Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES)

Please read the following statements carefully. Each one describes a way that you might (or might not) feel about your drinking. For each statement, circle one number on the scale at the right, to indicate how much you agree or disagree with it right now. Please circle one and only one number for every statement.

	Strongly Disagree	Disagree	Undecided or Unsure	Agree	Strongly Agree
1. I really want to make changes in my drinking. (precontemplation)	1	2	3	4	5
2. Sometimes I wonder if I am an alcoholic. (contemplation)	1	2	3	4	5
3. If I don't change my drinking soon, my problems are going to get worse. (determination)	1	2	3	4	5
4. I have already started making some changes in my drinking. (action)	1	2	3	4	5
5. I was drinking too much at one time, but I've managed to change my drinking. (maintenance)	1	2	3	4	5
6. The only reason I'm here is that somebody made me come. (precontemplation)	1	2	3	4	5
7. Sometimes I wonder if my drinking is hurting other people. (contemplation)	1	2	3	4	5
8. I am a problem drinker. (determination)	1	2	3	4	5
9. I'm not just thinking about changing my drinking, I'm already doing something about it. (action)	1	2	3	4	5
10. I have already changed my drinking, and I am looking for ways to keep from slipping back to my old pattern. (maintenance)	1	2	3	4	5
11. I have serious problems with drinking. (precontemplation)	1	2	3	4	5
12. Sometimes I wonder if I am in control of my drinking. (contemplation)	1	2	3	4	5
13. My drinking is causing a lot of harm. (determination)	1	2	3	4	5
14. I am actively doing things now to cut down or stop drinking. (action)	1	2	3	4	5
15. I want help to keep from going back to the drinking problems that I had before. (maintenance)	1	2	3	4	5
16. I know that I have a drinking problem. (precontemplation)	1	2	3	4	5
17. There are times when I wonder if I drink too much.(contemplation)	1	2	3	4	5
18. I am an alcoholic. (determination)	1	2	3	4	5
19. I am working hard to change my drinking. (action)	1	2	3	4	5
20. I have made some changes in my drinking, and I want some help to keep from going back to the way I used to drink. (maintenance)	1	2	3	4	5

Appendix D: Beck Anxiety Inventory

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an "X" in the corresponding box in he column next to each symptom.

		NOT AT ALL	**MILDLY** It did not bother me much	**MODERATELY** It was very unpleasant, but I could stand it.	**SEVERELY** I could barely stand it
1	Numbness or tingling.				
2	Feeling hot.				
3	Wobbliness in legs.				
4	Unable to relax.				
5	Fear of the worst happening.				
6	Dizzy or lightheaded.				
7	Heart pounding or racing.				
8	Unsteady.				
9	Terrified.				
10	Nervous.				
11	Feelings of choking.				
12	Hands trembling.				
13	Shaky.				
14	Fear of losing control.				
15	Difficulty breathing.				
16	Fear of dying.				
17	Scared.				
18	Indigestion or discomfort in abdomen.				
19	Faint.				
20	Face flushed.				
21	Sweating (not due to heat).				

Appendix E: Beck Depression Inventory II

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past two weeks, including today.** Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
  0.   I do not feel sad.
  1.   I feel sad much of the time.
  2.   I am sad all the time.
  3.   I am so sad or unhappy that I can't stand it.

2. Pessimism
  0.   I am not discouraged about my future.
  1.   I feel more discouraged about my future that I used to be.
  2.   I do not expect things to work out for me.
  3.   I feel my future is hopeless and will only get worse.

3. Past Failure
  0.   I do not feel like a failure.
  1.   I have failed more than I should have.
  2.   As I look back, I see a lot of failures.
  3.   I feel I am a total failure as a person.

4. Loss of Pleasure
  0.   I get as much pleasure as I ever did from the things I enjoy.
  1.   I don't enjoy things as much as I used to.
  2.   I get very little pleasure from the things I used to enjoy.
  3.   I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings.
  0.   I don't feel particularly guilty.
  1.   I feel guilty over many things I have done or should have done.
  2.   I feel quite guilty most of the time.
  3.   I feel guilty all of the time.

6. Punishment Feelings
  0.   I don't feel I am being punished.
  1.   I feel I may be punished.
  2.   I expect to be punished.
  3.   I feel I am being punished.

7. Self-Dislike
  0.   I feel the same about myself as ever.
  1.   I have lost confidence in myself.
  2.   I am disappointed in myself.
  3.   I dislike myself.

8. Self-Criticalness
  0.   I don't criticize or blame myself more than usual.
  1.   I am more critical of myself than I used to be.
  2.   I criticize myself for all of my faults.
  3.   I blame myself for everything bad that happens.

9. Suicidal Thought or Wishes
    0.   I don't have any thought of killing myself.
    1.   I have thoughts of killing myself, but I would not carry them out.
    2.   I would like to kill myself.
    3.   I would kill myself if I had the chance.

10. Crying
    0.   I don't cry anymore that I used to.
    1.   I cry more than I used to.
    2.   I cry over every little thing.
    3.   I feel like crying, but I can't.

11. Agitation
    0.   I am no more restless or wound up than usual.
    1.   I feel more restless or wound up than usual.
    2.   I am so restless or agitated that it's hard to stay still.
    3.   I am so restless or agitated that I have to keep moving or doing something.

12. Loss of Interest
    0.   I have not lost interest in other people or activities.
    1.   I am less interested in other people or things than before.
    2.   I have lost most of my interest in other people or things.
    3.   It's hard to get interested in anything.

13. Indecisiveness
    0.   I make decisions about as well as ever.
    1.   I find it more difficult to make decisions than usual.
    2.   I have much greater difficulty in making decisions than I used to.
    3.   I have trouble making any decisions.

14. Worthlessness
    0.   I do not feel I am worthless.
    1.   I don't consider myself as worthwhile and useful as I used to.
    2.   I feel more worthless as compared to other people.
    3.   I feel utterly worthless.

15. Loss of Energy
    0.   I have as much energy as ever.
    1.   I have less energy that I used to have.
    2.   I don't have enough energy to do very much.
    3.   I don't have enough energy to do anything.

16. Changes in Sleeping Pattern
    0.   I have not experienced any change in my sleeping pattern.
_____
    1a.   I sleep somewhat more than usual.
    1b.   I sleep somewhat less that usual.
_____
    2a.   I sleep a lot more than usual.
    2b.   I sleep a lot less than usual.
_____
    3a.   I sleep most of the day.
    3b.   I wake up 1-2 hours early and can't get back to sleep.

17. Irritability
- 0. I am no more irritable than usual.
- 1. I am more irritable than usual.
- 2. I am much more irritable than usual.
- 3. I am irritable all the time.

18. Changes in Appetite
- 0. I have not experienced any change in my appetite.

———————————————————————————————
- 1a. My appetite is somewhat less than usual.
- 1b. My appetite is somewhat greater than usual.

———————————————————————————————
- 2a. My appetite is much less than before.
- 2b. My appetite is much greater than usual.

———————————————————————————————
- 3a. I have no appetite at all.
- 3b. I crave food all the time.

19. Concentration Difficulty
- 0. I can concentrate as well as ever.
- 1. I can't concentrate as well as usual.
- 2. It's hard to keep my mind on anything for very long.
- 3. I find I can't concentrate on anything.

20. Tiredness or Fatigue
- 0. I am no more tired or fatigued than usual.
- 1. I get more tired or fatigued more easily than usual.
- 2. I am too tired or fatigued to do a lot of the things I used to do.
- 3. I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex
- 0. I have not noticed any recent change in my interest in sex.
- 1. I am less interested in sex that I used to be.
- 2. I am much less interested in sex now.
- 3. I have lost interest in sex completely.

Appendix F: Situational Confidence Questionnaire

Listed below are 8 types of situations in which some people experience a drinking problem.
Imagine yourself as you are right now in each of the following types of situations. Indicate on the space provided how confident you are **right now** that you will be able to resist drinking in each situation by writing in a number from 0% "Not At All Confident" to 100% "Totally Confident."

Right now I would be able to resist the urge to drink in situations involving . . .

1. **UNPLEASANT EMOTIONS** (e.g., If I were depressed about things in general; If everything was going badly for me).

    I feel . . . ___% Confident

2. **PHYSICAL DISCOMFORT** (e.g., If I would have trouble sleeping; If I felt jumpy and physically tense).

    I feel . . . ___% Confident

3. **PLEASANT EMOTIONS** (e.g., If something good would happen and I would feel like celebrating; If everything were going well).

    I feel . . . ___% Confident

4. **TESTING CONTROL OVER MY USE OF ALCOHOL** (e.g., If I would start to believe that alcohol was no longer a problem for me; If I would feel confident that I could handle a few drinks).

    I feel . . . ___% Confident

5. **URGES AND TEMPTATIONS** (e.g., If I would suddenly have an urge to drink; If I would be in a situation in which I was in the habit of having a drink).

    I feel . . . ___% Confident

6. **CONFLICT WITH OTHERS** (e.g., If I had an argument with a friend; If I were not getting along well with others at work).

    I feel . . . ___% Confident

7. **SOCIAL PRESSURE TO DRINK** (e.g., If someone would pressure me to "be a good sport" and have a drink; If I would be invited to someone's home and they would offer me a drink).

    I feel . . . ___% Confident

8. **PLEASANT TIMES WITH OTHERS** (e.g., If I wanted to celebrate with a friend; If I would be enjoying myself at a party and wanted to feel even better).

    I feel . . . ___% Confident

Appendix G: Form-90
(from which the Timeline Followback Interview was derived)

1. ID # _____	IDNUM	9001-		4. Interviewer: _____	FNINT		
2. DATE _____	FNDATE	mm/dd/yy					
3. BAL	FNBAL						

For Period from _____/_____/_____ through _____/_____/_____ (day before baseline interview)

5.	Total number of days in this assessment period	FN5	90-150 =#Days 199=Unsure . = Missing	

"I'd like to begin by reminding you that whatever you say here is confidential. I am going to be asking you some specific questions about the period of time from about three months before your last drink up until yesterday. (Place calendars in front of client.) *Here are some calendars to help you remember this period of time. First of all, when was your last drink?* (Count back 89 days from the day of last drink, and cross out with X's the days preceding this period of time.) *So, the period I'm going to be asking you about is from ____/____/____ until yesterday."*

"I realize that this is a long period of time to remember things that happened, so we will use these calendars to help you identify events that occurred during this period. Notice that a few events are already printed on the calendars. (Point out some specific events already printed on the calendars.) *Were there any particularly memorable things that happened during this time--any birthdays, illnesses or accidents, anniversaries, parties, hospitalizations, vacations, changes in your work or at home, things like that?"* (Record on calendars.)

"Now, the rest of the questions that I will ask you are also about this time period, from ____/____/____ up through yesterday. I'll be asking you about your drinking in a few minutes, but first I'd like to know about a few other things. Fell free to take your time in answering, since it is important for you to remember as accurately as you can. Let me know if you're not sure what I am asking, or what I mean by a particular question. OK?"

TREATMENT/INCARCERATION/LIVING EXPERIENCES

"Have you <u>ever</u> spent time in a hospital or treatment program where you stayed overnight to get treatment for your drinking problem?"

6.	Any overnight treatment for alcoholism in life	FN6	0 = No 1 = Yes . = Missing	

"Now, during this time period we've marked on the calendars, how many days did you spend in a hospital or treatment program where you stayed overnight?" (Mark days on calendars.)

7.	Total number of hospital days for medical problems	FN7	0-150=#Days 199=Unsure . = Missing	
8.	***Total number of hospital days for detoxification***	FN8	0-150=#Days 199=Unsure . = Missing	

9.	Total number of non-hospital residential detox days	FN9	0-150=#Days 199=Unsure . = Missing	
10.	Total number of ambulatory detox treatment days	FN10	0-150=#Days 199=Unsure . = Missing	
11.	Total number of residential days for alcohol treatment	FN11	0-150=#Days 199=Unsure . = Missing	
12.	Total number of residential days for other drug problems	FN12	0-150=#Days 199=Unsure . = Missing	
13.	Total residential days for emotional/psych problems	FN13	0-150=#Days 199=Unsure . = Missing	
14.	TOTAL days in residential treatment in the last 90-150 days: (Sum of #s 7, 8, 9, & 11, 12, & 13 EXCLUDE # 10)	FN14	0-150=#Days 199=Unsure . = Missing	

"During this time period we've marked on the calendars, were you arrested for a DWI?"
(Mark days on calendars.)

15.	Arrested for DWI in Baseline time period	FN15	0 = No 1 = Yes . = Missing	

"During this time period we've marked on the calendars, did you spend any time in jail or prison?" (Mark days on calendars.)

16.	Total days incarcerated	FN16	0-150=#Days 199=Unsure . = Missing	
17.	TOTAL days in institutions (Sum of #s 14 & 16)	FN17	0-150=#Days 199=Unsure . = Missing	

"During this time period we've marked on the calendars, were you separated from your partner due to relationship problems?"   (If yes:) *"How many days?"*

18.	Separation/broken-up from partner in past (90-150) days? (If "no" then #19 should = #5, and #20 should be 0 days) (If "yes" then #19 plus #20 should total #5)	FN18	0 = No 1 = Yes . = missing	
19.	Total number of days living with partner (NOTE: Still "living w/ partner" if traveling for work or vacation etc.)	FN19	0-150=#Days 199=Unsure . = Missing	
20.	Total number of days separated from partner due to relationship problems	FN20	0-150=#Days 199=Unsure . = Missing	

"During this time period we've marked on the calendars, where did you live? How many days did you live in…"
(Do not record on calendars unless useful as memory aids.)

21.	Total number of days in own house, apartment, room (NOTE: even if away on business or vacation, client is still considered to be living in her primary residence, include here)	FN21	0-150=#Days 199=Unsure . = Missing	
22.	Total number of days living with others (no rent) *Lived/stayed where?*	FN22	0-150=#Days 199=Unsure	

	Why?		. = Missing	
23.	Total number of days living in halfway house	FN23	0-150=#Days 199=Unsure . = Missing	
24.	Total number of days homeless (shelters, etc.)	FN24	0-150=#Days 199=Unsure . = Missing	

"During this time period we've marked on the calendars, how many days were there (not including hospital or detox days) *when you saw a doctor, nurse, nurse-practitioner, or physician's assistant for any kind of medical care?"*
(Do not record on calendars unless useful as memory aids.)

25.	Total days seen for medical care	FN25	0-150=#Days 199=Unsure . = Missing	

"Have you <u>ever</u> in your life had a session with a counselor or a therapist for your drinking problem?"

26.	Any past treatment sessions for alcohol problem	FN26	0 = No 1 = Yes . = Missing	

"During this time period we've marked on the calendars, on how many days did you have a session with a counselor or therapist?" (Do not record on calendars unless useful as memory aids.)

27.	Total number of days for alcohol problems	FN27	0-150=#Days 199=Unsure . = Missing	
28.	Total number of days for other drug problems	FN28	0-150=#Days 199=Unsure . = Missing	
29.	Total days for emotional/psychological problems	FN29	0-150=#Days 199=Unsure . = Missing	
30.	TOTAL number of days had therapy/counseling sessions	FN30	0-150=#Days 199=Unsure . = Missing	

"During this time period we've marked on the calendars, on how many days did you attend a meeting of Alcoholics Anonymous or another Twelve-Step meeting?" (Do not record on calendars unless useful as memory aids.)

31.	Total number of days attended 12-step meetings Enter "0" if None (Attending Al-Anon for someone else's problem does not count)	FN31	0-150=#Days 199=Unsure . = Missing	

OTHER ACTIVITIES
(Do not record on calendars unless helpful for recalling drinking.)

"How many days have you been paid for working in this time period we've marked on the calendars?"

32.	Total number of paid working days	FN32	0-150=#Days 199=Unsure . = Missing	

"How many days have you missed from work in this time period we've marked on the calendars?"

33.	Total number of missed work days	FN33	0-150=#Days 199=Unsure . = Missing	

"How many days have you been in school or training in this time period we've marked on the calendars?"

| 34. | Total number of days in school or training | FN34 | 0-150=#Days
199=Unsure
. = Missing | |

"How many days have you missed from school or training in this time period we've marked on the calendars?"

| 35. | Total days missed from school or training | FN35 | 0-150=#Days
199=Unsure
. = Missing | |

"During this time period we've marked on the calendars, how many days have you had problems carrying out responsibilities at home?"

| 36. | Total days had trouble carrying out home responsibilities | FN36 | 0-150=#Days
199=Unsure
. = Missing | |

"How many days did you attend a worship service or other religious celebration in this time period we've marked on the calendars?"

| 37. | Total number of religious attendance days | FN37 | 0-150=#Days
199=Unsure
. = Missing | |

MEDICATION

"During this time period we've marked on the calendars, on how many days did you take <u>any</u> medications prescribed by a physician…?" *(Do not record on calendars unless useful as memory aids.)*

Ask about the following categories:

38.	*…to treat a medical problem?"* Specify meds & problem:	FN38	0-150=#Days 199=Unsure . = Missing	
39.	*…to prevent you from drinking?"* (Antabuse Only)	FN39	0-150=#Days 199=Unsure . = Missing	
40.	**…to help you detoxify/come off alcohol or another drug?"** Specify meds:	FN40	0-150=#Days 199=Unsure . = Missing	
41.	*…to help you stabilize or change your use of drugs other than alcohol?"* - Specify & code maintaining/stabilizing drugs (e.g. Methadone):	FN41	0-150=#Days 199=Unsure . = Missing	
42.	*…to help you stabilize or change your use of drugs other than alcohol?"* - Specify & code drug antagonists/blockers (e.g. Naltrexone):	FN42	0-150=#Days 199=Unsure . = Missing	
43.	*…for psychological or emotional problems?"*	FN43	0-150=#Days	

Specify Meds:	Specify-- For what problem:		199=Unsure . = Missing	

NOTE: Interviewer-- you will now proceed to fill out the calendars, recording the number of standard drinks consumed each day throughout the baseline period. ***You will also chart any drug use that occurred - make sure you inquire about it!*** Continue below following the flow of the interview, making sure the calendars are completed as accurately as possible.

<p style="text-align:center">PERIODS OF ABSTINENCE</p>

"Now I'd like to ask you about your drinking during this time period we've marked on the calendars. The things already recorded on the calendars here may help you to remember better. First of all, were there any periods of days when you had nothing to drink at all?" (Mark all abstinent days as "A" on calendars.)

44.	Date of first drink in BL period (90-150 days ago):	FN44	mm/dd/yy	
45.	Date of last drink in BL period (must be 1or more days ago. Baseline period ends the day before the Baseline Interview)	FN45	mm/dd/yy	

"During this period of time, when you were drinking, I'd like to see if your pattern was at all similar from one week to the next, at least for a few of these weeks. I realize that drinking will vary from day to day and from week to week, but I want to know if there was any similarity among weeks. Was there any consistency to your drinking from week to week?"

(If NO, skip to page 9.   If YES, continue below.)

"Could you describe for me a usual or typical week of drinking. In a typical week, let's start with weekdays – Monday through Friday – what did you normally drink in the morning, from the time you got up until lunchtime?" (Do not include what was drank with lunch) (Record on PI Steady Pattern Chart 1)

"Now how about weekday afternoons, including what you drank <u>with</u> lunch, up through the afternoon until (right <u>before</u>) *dinner time -- what did you normally drink on weekday afternoons, Monday through Friday?"* (Record on P1)

"And how about weekday evenings? What did you normally drink <u>with</u> dinner, up through the rest of the evening, until the time you went to sleep?" (Record on P1)

Repeat these same instructions for weekend days, and record on P1.

P1 STEADY PATTERN CHART 1

	Afternoon	Evening	TOTAL Standard Drinks
Morning			
M O N			_____._____
T U E			_____._____
W E D			_____._____
T H U			_____._____
F R I			_____._____
S A T			_____._____
S U N			_____._____

Enter the standard drinks for each day of this pattern onto the calendars.
If the above pattern (P1) does not describe all drinking weeks, ask:

"Now on the other weeks when you were drinking, was your drinking at all the same from week to week?" (If YES, continue below. If NO, proceed to page 9.)

P2 STEADY PATTERN CHART 2

	Morning	Afternoon	Evening	TOTAL Standard Drinks
M O N				_____._____
T U E				_____._____
W E D				_____._____
T H U				_____._____
F R I				_____._____
S A T				_____._____
S U N				_____._____

Enter the standard drinks for each day of this pattern onto the calendars.

If the above pattern (P2) does <u>not</u> describe all the rest of the days on the calendar, then continue below. If each day of the baseline period is now accounted for on the calendars, skip to the middle of page 10 (you're skipping all episodic pattern charts) and continue the interview.

EPISODIC PATTERN CHARTS

INSTRUCTIONS WHEN PAGE 7 (or 7 & 8) HAS BEEN COMPLETED:
"Now that we have your regular pattern, I'd like you to tell me about times during this time period we've marked on the calendars when your drinking was different from this. Look at the calendars again, and think back over this period. When were times that you had more or less than your regular amount to drink?"

INSTRUCTIONS WHEN PAGE 7 & 8 HAVE BEEN SKIPPED (NO REGULAR PATTERN):
"If you didn't have a regular pattern from week to week, tell me about times when you did drink during this time period we've marked on the calendars."

FOLLOW-THROUGH FOR ALL CLIENTS (When a particular episode is identified):

"Did that happen more than once during this period?"

If NO, record standard drink data <u>directly</u> on the calendar.

If YES, record as Episode Type 1 below, and continue: *"Now, using the calendars, which were the days when your drinking was about like that?"*

Continue to probe in this manner for up to two other episode types: "E-2" and "E-3" days below.
If no repeated episode types can be identified, proceed to fill in the calendars day-by-day.

_____

E1 -- Episode Type 1
List beverages and amounts (query about alcohol proof, domestic vs. import beers, and size of glasses):

46.	Total number of Standard Drinks per episode:	FN46	# of SD E1	

Length of time to consume: _____

_____

_____

E2 -- Episode Type 2
List beverages and amounts (query about alcohol proof, domestic vs. import beers, and size of glasses):

47.	Total number of Standard Drinks per episode day:	FN47	# of SD E2	

Length of time to consume: _____ (hours)

_____

E3 -- Episode Type 3

List beverages and amounts (query about alcohol proof, domestic vs. import beers, and size of glasses):

48.	Calculate Total number of Standard Drinks per episode:	FN48	# of SD E3	

Length of time to consume: _____
Record on calendars as "E3".

_____

Proceed to fill in any other drinking days on calendars not accounted for by P or E codes, making sure every calendar day lists the amount of standard drinks consumed. If the client cannot remember the specific type or amount of alcohol she consumed on a certain day, work hard to help jog her memory, and if necessary, to get her best guess.

When the calendars are complete, find the heaviest drinking day, and say to the client, *" This day*
_____ / _____ / ____, *looks like it was your heaviest drinking day in this period. Does that seem right?"* (If the client disagrees, work to find the heaviest drinking day, and make corrections if necessary.)

49.	Date of heaviest drinking day in Baseline period	FN49	mm/dd/yy	

Then establish the time period that the drinking occurred in, on that heaviest drinking day.
Ask,
   "What time did you start drinking that day?" _____ Circle: AM or PM

   "What time did you stop drinking that day?" _____ Circle: AM or PM

CURRICULUM VITAE
Dorian Hunter Reel

EDUCATION

2006-present	Doctoral Student, Rutgers University Clinical Psychology Ph.D. program
2000-2003	Bachelor of Science in Psychology Degree awarded: March 2003 University of Washington, Seattle, WA

CLINICAL EXPERIENCE

2008- present	**Clinical Practicum at Rutgers University Anxiety Clinic** Supervisor: Jan Mohlman
2007-2008	**Clinical Practicum at Rutgers University Program for Addiction Consultation and Treatment (PACT)** Supervisors: Elizabeth E. Epstein, Thomas Hildebrandt
2007-present	**Clinical Practicum at Rutgers University Psychological Clinic** Supervisor: Don Morgan
2006-present	**Treatment and Assessment of Women with Alcohol Use Disorders (SCID-DSM-IV)**
2005- 2006	**Assessor of Chronic Public Inebriates**
2003- 2006	**Motivational Interviewing Therapist** Supervisors: Mary E. Larimer, Debra Kaysen
2003	**DBT Consultation Team at the Behavioral Research and Therapy Clinics**
2002-2003	**Coding DBT Skills Group Therapy Sessions**
2001	**Typing Summaries of Clinical Interviews**
2001	**Seattle Mental Health Clinical Intern**

RESEARCH EXPERIENCE

2006-present	**Graduate Research Interviewer and Clinician**, PI: Dr. Barbara McCrady
2003 - 2006	**Treatment Coordinator**, PI: Dr. Marsha Linehan
2003 - 2006	**Research Therapist**, PI: Dr. Mary Larimer
2003 - 2006	**Research Interviewer**, PI: Dr. Alan Marlatt
2003	**Research Assistant Project Manager**, PI: Dr. Marsha Linehan
2001-2003	**Undergraduate Research Assistant**, PI: Dr. Marsha Linehan
2001	**Undergraduate Research Assistant**, PI: Dr. Jonathan Brown.

TEACHING/SUPERVISION EXPERIENCE

2008	**Drugs, Society and Human Behavior**
2007	**"Getting Into Graduate School" Seminar**
2007	**Gateway General Psychology Instructor**
2007 - 2008	**Supervision of Honors Theses**, PI: Elizabeth Epstein
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2001	**Undergraduate Teaching Assistant**, Professor: Dr. Christy Kimpo

PUBLICATIONS

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