

Comparison of Participatively-set and Assigned Goals in the Reduction of Alcohol Use

Brian E. Lozano

Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University in
partial fulfillment of the requirements for the degree of

**Doctor of Philosophy
In
Clinical Psychology**

Robert S. Stephens, Chair
George A. Clum
Lee D. Cooper
Neil Hauenstein

April 29, 2008

Blacksburg, VA

Keywords: goal setting; alcohol; college drinking; social cognitive theory

Comparison of Participatively-set and Assigned Goals in the Reduction of Alcohol Use

Brian E. Lozano

(Abstract)

The effects of setting goals on goal commitment and goal achievement in the context of an alcohol use intervention were examined using an experimental design in which participants were randomly assigned to participatively-set goals, assigned goals, and no goal conditions. The current study provides information regarding the links between degree of participation in goal setting, goal commitment, self-efficacy for one's goal, subsequent alcohol use, and goal achievement. It was hypothesized that: 1) Goal setting and participation in goal setting would significantly predict alcohol use outcomes: a) having a goal for alcohol consumption would cause lower quantity and frequency of alcohol use relative to not having a goal; b) participation in goal setting, rather than being assigned a goal, would influence goal achievement such that participation in goal setting would cause greater success in achieving one's goal. 2) Participation in goal setting would influence goal commitment such that participation in goal setting would cause greater goal commitment. 3) Goal commitment would influence goal achievement such that greater goal commitment would be predictive of greater success in achieving one's goal. 4) The facilitative effect of participation in goal setting on subsequent goal achievement would be mediated by goal commitment. 5) Self-efficacy for one's goal would influence goal achievement such that greater self-efficacy for one's goal would be predictive of greater success in achieving one's goal.

One hundred and twenty-six binge-drinking college students received a single cognitive-behavioral assessment/intervention session and completed measures of goal commitment, self-

efficacy for goal achievement, and alcohol use. Results were consistent with, and expanded upon, previous research by demonstrating that having a goal for alcohol consumption was predictive of lower quantity and frequency of alcohol use relative to not having a goal; however, participation in goal setting did not result in significantly better alcohol use outcomes or greater goal achievement relative to when goals were assigned. Participation in goal setting yielded greater goal commitment and self-efficacy for goal achievement than assigned goals. Lastly, goal commitment and self-efficacy contributed unique variance to the prediction of goal achievement across follow-up as well as changes in quantity and frequency of alcohol use at follow-up after controlling for baseline use.

Table of Contents

Abstract.....	ii
List of Tables	vi
Introduction.....	1
The Proposed Study	9
Method	10
Participants.....	10
Design	11
Procedure	11
Measures	18
Results	25
Preliminary Analyses	25
Sample Characteristics.....	26
Alcohol Use Goals	27
Manipulation Check.....	28
Check of Potential Extraneous Variables	28
Effect of Goal Setting on Alcohol Use	30
Effect of Participation in Goal Setting on Alcohol Use.....	31
Effect of Participation in Goal Setting on Goal Commitment and Self-Efficacy	32
Relationship of Goal Commitment and Alcohol Use	33
Relationship of Self-Efficacy for Goal Achievement and Alcohol Use	34
Relationship of Goal Commitment and Self-Efficacy for Goal Achievement	35

Multivariate Effects of Goal Commitment and Self-Efficacy on Alcohol Use	35
Discussion.....	36
References.....	47
Appendix A, Informed Consent Form	66
Appendix B, Demographic Information	70
Appendix C, Contact and Locator Information.....	72
Appendix D, Modified Daily Drinking Questionnaire	74
Appendix E, TimeLine Followback.....	76
Appendix F, Alcohol Use – Weekly Follow-up.....	79
Appendix G, Rutgers Alcohol Problem Index.....	81
Appendix H, Alcohol Dependence Scale	84
Appendix I, Stages of Change and Treatment Eagerness Scale	90
Appendix J, Goal Statement Questionnaire	93
Appendix K, Controlled Drinking Self-Efficacy Scale	96
Appendix L, Goal Commitment Questionnaire	99
Appendix M, Manipulation Check for Participation in Goal Setting.....	102
Appendix N, Check of Potential Extraneous Variables (all conditions).....	104
Appendix O, Check of Potential Extraneous Variables (PG condition).....	106
Appendix P, Check of Potential Extraneous Variables (AG condition)	108
Appendix Q, Experimenter Supportiveness	110
Appendix R, Self-Monitoring Cards	112
Appendix S, Compliance Check for Self-Monitoring.....	116

List of Tables

Table 1: Demographics, Alcohol Use, and Stages of Change at Initial Assessment.....	57
Table 2: Percentages of Participants with Corresponding Upper Goal Limits.....	58
Table 3: Means and Standard Deviations of Items Used for Checks of Potential Extraneous Variables and Manipulation Check: Goal Setting Conditions.....	59
Table 4: Means and Standard Deviations of Items Used for Checks of Potential Extraneous Variables: All Conditions	60
Table 5: Drinks Per Drinking Day and Drinking Days Per week.....	61
Table 6: Means and Standard Deviations for Goal Commitment and Self-Efficacy for Goal Achievement	62
Table 7: Correlations of Goal Commitment and Self-Efficacy for Goal Achievement with Alcohol Use Variables	63
Table 8: Standardized Multiple Regression Coefficients Predicting Drinks Per Drinking Day and Drinking Days Per Week at Follow-up.....	64
Table 9: Standardized Multiple Regression Coefficients Predicting Goal Achievement	65

Comparison of Participatively-set and Assigned Goals in the Reduction of Alcohol Use

Introduction

There is substantial empirical support for the capacity of attainable challenging goals to enhance and sustain motivation for a variety of tasks across numerous contexts (Locke & Latham, 1990; Mento, Steele, & Karren, 1987; Latham & Lee, 1986). These experimental studies have demonstrated several important principles in the effective use of goals. The present study investigated one of these principles, the differential effects of participatively-set goals versus assigned goals in the very different and important context of alcohol use goals. As a basis for investigating the effects of participation in goal setting the constructs of goal commitment and self-efficacy will be described as they relate to the goal-performance relationship. Subsequently, a review of the literature on participation in goal setting will be presented, followed by a brief review of the literature on the effects of goals in the alcohol field.

The facilitative effects of goals on performance are the result of four mechanisms: direction, effort, persistence, and task strategy (Locke & Latham, 2002). Accepted goals serve to direct attention and action toward goal-relevant activities and away from goal-irrelevant activities (Locke & Latham, 1990). Goals have also been shown to mobilize intensity of effort as well as sustain direction and effort in the service of goal-relevant behavior (Locke & Latham, 1990). Finally, goals serve to activate task relevant strategies for goal attainment that have been learned previously and stored in memory. A central concept in goal setting theory has been that commitment is crucial for the facilitative effect of goals on performance (Locke & Latham, 1990). Although the terms *goal commitment* and *goal acceptance* have often been used interchangeably, current conceptualizations view them as related but separate constructs. Specifically, goal commitment refers to the duration of effort expenditure to achieve a goal,

coupled with an unwillingness to abandon or lower the goal, whereas goal acceptance refers to the initial use of an assigned goal (Hollenbeck & Klein, 1987; Hollenbeck, Klein, O'Leary, & Wright, 1989). The terms goal commitment and acceptance will be used according to this delineation throughout the paper, except when describing results of studies in which this distinction was not made (e.g., Erez and colleagues). Commitment has been proposed to moderate the relationship between difficult goals and performance such that higher commitment leads to a stronger relationship between goals and performance (Klein, Wesson, Hollenbeck, & Alge, 1999). Without commitment to goals they are unlikely to have a motivating influence on future behavior (Locke, Latham, & Erez, 1988; Bandura, 1986). In addition, Erez and colleagues have suggested that participation in goal setting may enhance goal acceptance by increasing one's perceived control over the goal setting process (Bandura, 1977; Erez & Kanfer, 1983).

The social cognitive theory construct of self-efficacy is also a crucial moderator of the goal-performance relation. Self-efficacy is conceptualized as judgments of perceived confidence in one's ability to effectively mobilize efforts to exercise control over situational challenges (Bandura, 1997). Self-efficacy beliefs have been shown to positively and directly affect the level of goals set, commitment to goals (Bandura & Cervone, 1986; Locke, Frederick, Lee, & Bobko, 1984; Bouffard-Bouchard, 1990), intensity and duration of effort expenditure (Cervone & Peake, 1986; Cervone, 1985; Peake & Cervone, 1989), effective use of task strategies (Bouffard-Bouchard, 1990; Wood & Bandura, 1989), and performance outcomes (Bandura & Cervone, 1986; Locke, Frederick, Lee, & Bobko, 1984; Bouffard-Bouchard, 1990).

The moderating effect of self-efficacy beliefs on the goal-performance relation are exemplified in the outcomes of the self-referent process of comparing personal goals and performance. As such, negative discrepancies between one's current and desired state are

motivating or discouraging depending on one's self-efficacy for goal attainment (Bandura, 1991). There is data supporting the contention that individuals with low self-efficacy are more likely to become discouraged in response to failure, whereas those with greater confidence in their ability to achieve their goals are more likely to intensify their efforts (Bandura & Cervone, 1983). Locke et al. (1984) found that self-efficacy was significantly related to commitment for self-set goals, but not assigned goals. Locke and colleagues suggested that little variability in commitment to assigned goals precluded any significant effects of self-efficacy on commitment.

Given the utility of goals for enhancing performance and the central importance of commitment and self-efficacy beliefs in fueling the motivational effects of goals, there has been interest understanding contextual factors that may influence the effect of goals on performance (Earley, 1985). An aspect of goals posited to influence commitment and therefore performance, is whether goals are self-set, participatively-set, or assigned; however, research investigating the relative effectiveness of participation in goal setting has not consistently supported the contention that participation yields greater commitment and performance. Latham and colleagues investigated the effects of participatively-set and assigned goals and found that participation in goal setting did not result in greater goal acceptance or goal attainment compared to when goals were assigned (Latham & Yukl, 1976; Latham, Mitchell, & Dossett, 1978; Latham & Saari, 1979; Latham & Steele, 1983).

The majority of support for the facilitative effects of participation in goal setting has come out of the work by Erez and colleagues. There is empirical support for the contention that participation in goal setting is instrumental in enhancing commitment to goals and that increased commitment consequently yields higher levels of performance (Erez et al., 1985; Earley & Kanfer, 1985; Erez & Arad, 1986; Erez, 1986). Erez has proposed that participation in goal

setting is likely to result in greater goal acceptance when goal difficulty is high and there is reason to suspect that goal commitment is generally low. Thus, variance in goal acceptance is necessary for obtaining differential effects of participation in goal setting on subsequent performance (Erez & Zidon, 1984; Erez et al., 1985). Interestingly, resistance to goals has rarely been a problem in goal setting studies and this is supported by consistently high levels of goal acceptance obtained in goal setting studies (Locke & Latham, 1984; Locke et al., 1981).

Latham, Erez, and Locke (1988) conducted a series of experiments to address the methodological differences and inconsistent findings from these two research groups. Results obtained in study 2 (Latham et al., 1988) indicated that as goal difficulty and perceived task unimportance increased there was a corresponding decrease in commitment when goals were assigned; however, there was no differential effect of goal setting on performance. In study 3 Latham et al. (1988) reported that goals set participatively and goals assigned with a rationale (i.e., tell and sell) yielded higher levels of commitment, self-efficacy, and performance compared to goals assigned without a rationale (i.e., tell); however, assigned (tell and sell) and participatively-set goals did not differentially influence these variables. Additional analyses revealed that self-efficacy strength was likely confounded with instructions for increasing self-efficacy embedded with the rationale for goal setting. Latham et al. (1988) concluded that assigned and participatively-set goals do not differ significantly in their motivational effects on commitment, self-efficacy, or performance provided that the rationale for assigned goals is given. However, more recently Latham, Winters, and Locke (1994) found that participation in goal setting resulted in higher goal commitment and self-efficacy compared to when goals were assigned, but the enhanced commitment and self-efficacy failed to yield differential goal effects on performance.

While there has been considerably more attention to comparing the effects of participatively-set and assigned goals, empirical studies have demonstrated the effectiveness of self-set goals; however, much of the findings and conclusions parallel those found in studies on participatively-set goals. Regarding the relative effects of self-set and assigned goals on performance, Earley (1985) found that participants given high choice in goal setting along with effective task strategies performed better than those not provided a choice. Similarly, Earley and Kanfer (1985) found that provision of goal choice and strategy to achieve one's goal yielded higher goal acceptance, satisfaction, and performance compared to assigned goals and strategies. Schuldt and Bonge (1979) also demonstrated significantly higher performance outcomes for participants who selected their own goals compared to those assigned goals. However, other investigators have failed to consistently find enhanced effects of self-set goals on commitment or performance when compared to assigned or participatively-set goals (Hollenbeck, Williams, & Klein, 1989; Latham & Marshall, 1982).

Some studies report that when goal setting is left up to participants they set goals too low to produce goal setting effects (White, Kjelgaard, & Harkins, 1995; Harkins & Lowe, 2000). Based on findings from a meta-analysis of the self-set goal literature, Harkins and Lowe (2000) suggest that self-set goal effects are obtained under two conditions. First, prior experience in performing the task is important because it provides information regarding past performance which fosters challenging goal setting. However, even with sufficient experience, they indicate that goal effects would not be observed without experimenters having access to participants' goals and performances. This second condition suggests that potential self-evaluation by others is crucial for self-set goal effects. An empirical test of these conditions confirmed that self-set goal effects are largely determined by one's capacity to set challenging goals and by the added

potential for evaluation by others (Harkins & Lowe, 2000). Similarly, Sashkin (1976) has suggested that participation in goal setting is beneficial when the task is meaningful and the individual is provided sufficient information to make informed choices. Thus, information about requirements for successful task performance and the potential for evaluation by others appear to be necessary provisions for yielding challenging self- and participatively-set goals and subsequent goal effects.

Taken together, goal setting studies indicate negligible differences in motivational effects generated by assigned, self-set, or participatively-set goals, provided that the rationale for assigned goals is given. However, recent reports have indicated that participation in goal setting may differentially enhance self-efficacy and goal commitment but that these motivational effects have not been substantial enough to yield significantly differential goal effects on performance in the populations studied. While goal setting studies do not clearly support the contention that participation in goal setting result in significantly more motivation to achieve them, the hypothesized motivational effects of participation remain to be examined in the context of alcohol use goals.

In general, resistance to accepting or committing to goals in goal setting studies has been relatively rare; this is contrasted with the oft resistant or unmotivated client encountered in alcohol treatment. In fact, there is evidence to support the belief that many clients in alcohol interventions may be resistant and often reject suggested guidelines in favor of personally set goals (Sanchez-Craig et al., 1984). This is noteworthy given the empirical evidence suggesting that goal conflict undermines commitment. Specifically, studies have shown that rejecting assigned goals or setting a personal goal prior to being assigned or participatively setting a goal consistently yield decreased goal commitment (Erez et al., 1985; Latham et al., 1988). Based on

the contention that participation in goal setting is likely to result in greater goal commitment when there is reason to suspect that goal commitment is generally low, there may be more appreciable effects of participation in goal setting in the context of alcohol treatment given the arguably lower levels of motivation and varying commitment to assigned goals among alcoholic clients. Some researchers and professionals in the alcohol field contend that the client's choice of goal has implications for commitment and subsequent motivation in working toward treatment goals (Miller, 1985). Additionally, Miller (1986/1987) has proposed that participation in choice of goals and treatment strategies would attract more drinkers to treatment, enhance motivation for compliance with strategies, and reduce attrition. This perspective relies on aspects of social cognitive theory, which predict that persons will be more motivated to achieve goals that they select rather than goals imposed by others (Sobell, Sobell, Bogardis, Leo, & Skinner, 1992; Bandura, 1986).

In an attempt to address issues regarding appropriate substance abuse treatment goals, some authors have emphasized the importance of matching clients to outcome goals that are consistent with their abilities and beliefs (Marlatt, 1983; Miller, 1985; Rosenberg, 1993). Sobell et al. (1992) investigated problem drinkers' preferences for self- or therapist-set treatment goals and found that 58% and 27% of drinkers preferred self- and therapist-set goals, respectively. Thus there is reason to suspect that self- or participatively-set goals may provide added benefit for persons attempting to make changes in their alcohol consumption. However, as noted by Sobell and colleagues (1992) research has not investigated the hypothesized motivational benefits of participation in treatment planning as part of alcohol interventions.

As noted previously, commitment and self-efficacy are necessary for the facilitative effects of goals on performance. Further support for the importance of commitment in clinical

contexts is provided by research indicating that commitment strength predicts substance use outcomes (Amrhein et al., 2003; Hall, Havassy, & Wasserman, 1990) and adherence to medical regimens (Putnam et al., 1994). Similarly, a number of studies have demonstrated the predictive validity of situational self-efficacy judgments in relation to future substance use for alcohol (Sitharthan, T., Sitharthan, G., Hough, M.J., & Kavanagh, D.J., 1997; Kavanagh, D.J., Sitharthan, T., & Sayer, G.P., 1996; Sitharthan & Kavanagh, 1990), cigarettes (Baer, Holt, & Lichtenstein, 1986; Condiotte & Lichtenstein, 1981; Gooding & Glasglow, 1985), and marijuana (Lozano, Stephens, & Roffman, 2006; Stephens, Wertz, & Roffman, 1995; Stephens, Wertz, & Roffman, 1993). Despite converging evidence across domains of research on the utility of self-efficacy beliefs for understanding behavioral outcomes, there have not been studies adequately assessing whether self-efficacy and goal systems operate as purported by goal setting and social cognitive theory in the context of alcohol interventions.

While there has generally been an underutilization of goal setting in alcohol treatment, research on goals in alcohol treatment has provided supportive evidence for the utility of goals in attaining improved drinking outcomes. Long-term follow-ups indicate that stable abstinence or moderate outcomes are infrequent and that individuals typically fluctuate between abstinence, problematic, and nonproblematic drinking (Polich, Armor, & Braiker, 1981; Miller et al., 1992). Randomized controlled trials have revealed similar long-term rates of improvement among individuals assigned either abstinence or controlled drinking goals (Graber & Miller, 1988; Sanchez-Craig, et al., 1984; Rychtarik, et al., 1987; Pomerleau, et al., 1978). Lastly, despite a lack of evidence clearly supporting either abstinence or moderation as a superior treatment goal, a number of studies have indicated an association between treatment goal and subsequent achievement of that goal (Lozano, et al., 2006; Maisto, Sobell, & Sobell, 1980; Booth, Dale, &

Ansari, 1984; Elal-Lawrence, Slade, & Dewey, 1986; 1987). In light of these findings, some recent approaches to alcohol treatment have been directed at fostering greater client involvement in treatment planning through goal setting and minor strategy development (e.g. Hester, 2003; Sobell & Sobell, 1993; Miller & Rollnick, 1991). While these treatments have yielded positive outcomes, the motivational mechanisms of goal setting, such as commitment and self-efficacy, have not been adequately addressed in relation to treatment effects.

The Proposed Study

The purpose of this study is to replicate and extend the findings from current research on goal setting and substance abuse interventions. The primary aim of this study is to investigate the differential effects of participatively-set goals and assigned goals on goal commitment and goal achievement using an experimental design in which participants are randomly assigned to participatively-set, assigned, and no goal conditions. In addition, the study will examine theoretically driven hypotheses regarding the effect of goal commitment on subsequent goal achievement. Lastly, this study will seek to replicate findings regarding the effect of self-efficacy for one's goal in relation to goal achievement. To that end, the following hypotheses were proposed:

- (1) Goal setting and participation in goal setting would significantly enhance alcohol use outcomes:
 - a) Having a goal for alcohol consumption would cause lower quantity and frequency of alcohol use relative to not having a goal.
 - b) Participation in goal setting, rather than being assigned a goal, would influence goal achievement such that participation in goal setting would cause greater success in achieving one's goal.

- (2) Participation in goal setting would influence goal commitment such that participation in goal setting would cause greater goal commitment.
- (3) Goal commitment would influence goal achievement such that greater goal commitment would be predictive of greater success in achieving one's goal.
- (4) The facilitative effect of participation in goal setting on subsequent goal achievement would be mediated by goal commitment.
- (5) Self-efficacy for one's goal would influence goal achievement such that greater self-efficacy for one's goal would be predictive of greater success in achieving one's goal.

Method

Participants

Participants were 126 binge-drinking college students who represented a subset of 185 individuals who were screened for participation. Eligible participants had to be at least 18 years of age, report typically drinking at least 5 drinks (for men) or 4 drinks (for women) on at least 1 day per week over the past month and report at least one alcohol-related problem during the past 2 months as measured by the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989). Of the 185 screened participants, 149 (80.6%) were eligible. All ineligible participants ($n = 36$) reported typically drinking fewer than the minimum 5 drinks (men) or 4 drinks (women) on any given day during the month prior to screening. Of the 149 eligible participants, 17 failed to schedule or attend the baseline assessment/intervention session, 4 were excluded from analyses because they were not matched to another participant, and 2 were excluded due to improper implementation of research protocols. Eligible participants who failed to attend the baseline assessment/intervention session were less likely to be taking steps to reduce drinking compared

to those who agreed to participate. Otherwise, eligible-enrolled and eligible-nonenrolled participants appeared similar on demographic and alcohol use variables.

Design

The overall design was a 3 (Condition: participatively-set goal, assigned goal, no goal) X 5 (Time) matched group design. Eligible participants were randomly assigned to one of three intervention conditions: 1) Participatively-set Goal (PG; $n = 45$); 2) Assigned Goal (AG; $n = 45$); or 3) No Goal (NG; $n = 36$). Each condition consisted of a single assessment/intervention session delivered individually. Participants in each condition completed weekly follow-up assessments via email during a period of four weeks after the assessment/intervention session.

Procedure

Recruitment. Recruitment strategies included brief presentations to students in psychology courses; flyers posted throughout the psychology department; and the use of an on-line departmental experiment management system. In order to reduce demand characteristics, the study was entitled “Self-Monitoring of Alcohol Use” and was described as an investigation of different ways of monitoring one’s drinking designed for students who were thinking about making a change in their drinking or wanted to learn more about their drinking. Descriptions of the study indicated that participation would involve completing baseline questionnaires in-person and weekly follow-up questionnaires via email for a period of four weeks. Students were also informed that upon completing each weekly follow-up they would be entered into a \$20 lottery for that follow-up, there were a total of four weekly lotteries. Upon completing four out of four weekly follow-ups, participants were eligible for a \$25 bonus lottery. Students in psychology courses could also receive up to four extra credit points that could be applied to their grades in psychology courses.

Screening Assessment. Interested students met with the experimenter individually or in small groups to complete a consent form, demographic information, and a series of self-report questionnaires that assessed severity of alcohol dependence, stage of change, goal setting for one's alcohol use in the past month, and eligibility based on the criteria mentioned earlier. Participants deemed eligible based on the screening assessment were scheduled for a baseline assessment/intervention session. Ineligible participants were not informed of the reasons for their ineligibility.

Information on gender and typical peak quantity of alcoholic drinks consumed on a given day during the month prior to screening was used to match participants across conditions. In addition, participants in the AG and NG conditions were yoked to a participant in the PG condition using these same variables. Six strata based on ranges of typical peak quantity of alcoholic drinks were used to randomly assign participants to condition, separately for males and females. Strata ranged from "5-6 drinks" to "13 or more drinks" (males) and "4-5 drinks" to "12 or more drinks" (females). For each PG/AG yoked pair, the participant in the AG condition did not complete the baseline session until after the participant in the PG condition had completed the baseline session and established their alcohol use goal. In an effort to keep goal difficulty constant the alcohol use goals (quantity and frequency) were the same for each PG/AG yoked pair. Thus, the alcohol use goal set by the participant in the PG condition was used as the assigned goal for the yoked participant in the AG condition.

Baseline Assessment/Intervention. Individual baseline assessment/intervention sessions lasted approximately one hour and were conducted by either a male graduate student or male undergraduate research assistant. Experimenters trained together over a two-month period using

a written manual, role play, and piloting. Experimenters met daily to review checklists of completed session activities and debrief previous sessions to facilitate treatment fidelity.

Alcohol use was assessed using the Timeline Followback (TLFB; Sobell & Sobell, 1992) for the 30 days prior to baseline assessment. At the conclusion of the TLFB interview, participants were provided with a brief summary of their average number of drinking days per week and average number of drinks per drinking day. Subsequently, participants were presented with general information regarding the physiological and psychological effects of alcohol at varying BAC levels and were given a wallet-sized card that displayed the number of alcoholic drinks corresponding to a BAC of ≤ 0.06 based on weight and hours spent drinking.

Intervention Conditions. After reviewing the general information regarding the effects of alcohol at various BAC levels, participants in the Participatively-set Goal (PG) condition, were introduced to the idea of setting a goal for their alcohol use and were provided a rationale for setting goals, namely, that:

Setting challenging but attainable goals for your drinking can be useful in helping you make changes in your drinking. So, in an effort to assist you with making changes in your alcohol use, I'd like to spend some time working together to help you set a goal for your alcohol consumption over the next 4 weeks.

After informing participants of the rationale for goal setting, the experimenter provided information about moderate drinking guidelines and compared the participant's recent alcohol use to these guidelines. Empirically based guidelines for moderate drinking provided by Hester (2003) and Sanchez-Craig et al. (1995) informed the guidelines communicated in the current study; however, they were modified slightly by reducing the peak daily number of drinks to

further encourage participants in the PG condition to set challenging, yet attainable goals.

Guidelines for moderate drinking communicated to participants were as follows:

While there is no known risk-free level of alcohol use, research indicates that people are less likely to experience alcohol-related problems if they drink at levels of no more than 3 drinks in a given day and no more than 12 drinks per week' (men); and '...no more than 2 drinks in a given day and no more than 8 drinks per week' (women).

Next, participants in the PG condition were asked to visualize and describe at least two drinking situations that occurred during the previous 30 days. Participants were asked to describe aspects of their drinking (e.g., type of alcohol, rate of drinking) and aspects of the situation (e.g., number of people, drinking games, etc.) in an effort to assist them in making more informed decisions regarding their alcohol use goal.

After the visualization procedure, participants were asked to think of the goal they would like to set for their drinking across all types of situations over the next 4 weeks. Specifically, the experimenter said:

So, thinking now about the type of change you would like to make regarding your drinking over the next 4 weeks, and imagining yourself in the drinking situations we've just discussed, what goal would you like to set for your drinking across all situations over the next 4 weeks? Are you thinking that you would like to not drink at all, or to drink alcohol moderately?

If participants indicated a desire to pursue a goal "to drink alcohol moderately", the experimenter indicated that for goals to be most effective they should be specific and asked participants to specify a limit on the number of standard drinks they do not want to exceed on any given day

(quantity limit). In addition, participants were asked to specify a limit on the number of drinking days they do not want to exceed per week (frequency limit). Participants were specifically encouraged to consider the average quantity and frequency of their drinking in the past month when setting their alcohol use goal. If participants set a moderation goal that was above the stated moderate drinking guidelines (or above their average quantity or frequency of drinking in the past month), the experimenter encouraged participants to set a challenging yet attainable goal by saying:

Keep in mind, for your goal to be most effective and for you to get the most benefit it should be challenging, but attainable. Does your goal fit with that condition?

If participants indicated that the goal was not challenging, the experimenter reminded participants of their average quantity and frequency of drinking in the past month and encouraged them to think about setting a more challenging goal. If participants believed their goal to be challenging, the experimenter accepted the chosen goal. Once an alcohol use goal was agreed upon, the experimenter asked participants to record the quantity and frequency limits of their alcohol use goal on a form.

Following the goal setting procedure, the experimenter reviewed cognitive-behavioral strategies for avoiding (heavy) drinking and gave a hand-out containing these strategies to participants. Participants were informed that other college students had reported finding the information and strategies helpful in controlling drinking. Subsequently, participants were provided with a description of the utility of self-monitoring and received instruction on how to monitor their alcohol use over the next 4 weeks using self-monitoring cards to record daily quantity and weekly frequency of alcohol consumption. The top of each self-monitoring card

included a reminder statement of the participant's alcohol use goal. Information to be recorded on the cards included the date, number of standard drinks and duration of drinking for each day of the week. Participants were provided with enough cards to last for several weeks and were instructed to record relevant drink information on the card prior to beginning each drink. Participants were advised to reconstruct their drinking behavior as best they could, rather than not record anything if they happened to forget to record their drinks prior to each drink. The experimenter inquired about and reviewed participants' anticipated barriers to using the cards as instructed.

At the end of the baseline session (i.e., post-intervention), participants were asked to complete a series of self-report questionnaires that assessed perceived participation in setting their alcohol use goal, interest in the activity of self-monitoring and working toward their goal, perceived goal difficulty, goal commitment, self-efficacy for achieving their goal, and perception of the experimenter's supportiveness. In an effort to reduce demand characteristics, the experimenter encouraged participants to be honest when responding to the questionnaires by stating that:

We may often receive goals that are unreasonably difficult or too easy, and deep down we may reject those goals. I encourage you to give your honest opinion to the following questions you will be answering about your alcohol use goal over the next 4 weeks.

The Assigned Goal (AG) condition was identical to the Participatively-set Goal (PG) condition, except that the experimenter assigned the goal to each participant. For each participant in the AG condition, the assigned goal was identical to the one set by their yoked counterpart in

the PG condition. The experimenter informed participants of the rationale for setting goals by stating that:

Setting challenging but attainable goals for your drinking can be useful in helping you make changes in your drinking. So, in an effort to assist you with making changes in your alcohol use, I am going to assign you a goal for your alcohol consumption over the next 4 weeks.

In addition, the AG condition differed in that the visualization procedure was not conducted and participants were presented with their assigned goal already recorded on a form instead of recording it themselves. Post-intervention self-report questionnaires and instructions prior to completing the questionnaires were the same as in the PG condition.

The procedure for the No Goal (NG) condition was the same as for the PG and AG conditions except that there was no discussion of setting goals for one's alcohol use. Participants were encouraged to use the cognitive-behavioral strategies and self-monitoring cards to reduce or limit their drinking during the follow-up period. The self-monitoring cards used by participants in the NG condition included instructions for self-monitoring instead of a reminder statement about an alcohol use goal. At the end of the baseline session, participants were asked to complete self-report questionnaires that assessed interest in the activity of self-monitoring and perception of the experimenter's supportiveness.

Follow-up Assessment. Follow-up assessments were completed weekly via email during weeks 1 through 4 after the baseline assessment/intervention session. In response to an e-mail from the experimenter at the end of each assessment week, participants reported drinking information recorded on their self-monitoring cards. Participants completed a measure sent as an electronic attachment that assessed number of standard drinks consumed per drinking day,

number of drinking days during the week, and the number of hours during which drinks were consumed each day. Participants in the PG and AG conditions also completed weekly measures of goal commitment and self-efficacy for goal achievement. Upon receiving each completed follow-up assessment, the experimenter responded via e-mail to indicate successful completion of the assessment and provide individualized, typed and graphic feedback illustrating the participant's number of alcoholic drinks consumed per drinking day and number of drinking days in the week. For participants in the PG and AG conditions, feedback was also presented in relation to progress toward their alcohol use goal.

Measures

Demographic Information. Demographic information was collected from each participant during initial screening. Information included items such as age, gender, race, weight, and academic status (see Appendix B).

Contact and Locator Information. The Contact and Locator Information (see Appendix C) was completed by participants prior to the assessment measures directly related to the study. Participants were asked to provide an e-mail address and a phone number at which they could be contacted for reminders about upcoming assessments and informing them about the outcome of the lotteries.

Alcohol Use. Participants' typical number of drinking days per week and number of drinks per drinking day over the past month were assessed at screening using a modified version of the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985); (see Appendix D). The DDQ asks participants to fill in boxes representing each day of the week with the number of drinks they typically consume on that day and over how long of a time period (in hours). Participants were informed that one standard drink is defined as one 12-ounce beer, 1.5 ounces

liquor, or one 5-ounce drink of wine, prior to reporting their typical drinking quantity and frequency. Bivariate correlations on participant reports of quantity and frequency of alcohol assessed at screening with the DDQ and at baseline with the Timeline Followback (TLFB) suggest good convergent validity (.71-.84).

At baseline, self-reported quantity and frequency of alcohol use during the past 30 days was assessed using the Timeline Followback (TLFB; Sobell & Sobell, 1992); (see Appendix E). The experimenter used calendars to record various activities the participant may have engaged in during the past 30 days (e.g., birthdays, parties, football games, and holidays) and then recorded the participant's alcohol use during the past 30 days. Participants were reminded that one standard drink is defined as one 12-ounce beer, 1.5 ounces liquor, or one 5-ounce drink of wine. Several studies have indicated that the TLFB has sound psychometric properties (see Sobell & Sobell, 1996 for a review). In a study with a college population, test-retest reliability was $\geq .92$ (Sobell, Sobell, Klajner, Pavan, & Basian, 1986). The TLFB also demonstrates good validity when compared with urine screens and collateral informants' reports (see Sobell & Sobell, 1996 for a review). The following quantity and frequency information was calculated for the purpose of data analyses: 1) average number of drinks per drinking day and 2) average number of drinking days per week.

At each weekly follow-up, self-reported alcohol consumption during the past week was assessed using a modified version of the Daily Drinking Questionnaire (DDQ); see Appendix F. Participants were asked to report the number of standard drinks consumed each day and the duration of drinking each day (in hours). The following quantity and frequency information were calculated at each follow-up for the purpose of data analyses: 1) average number of drinks per drinking day and 2) number of drinking days per week. In addition, dichotomous variables were

created to capture whether PG and AG participants were successful in achieving their quantity goal, frequency, or both quantity and frequency goals each week.

Alcohol Problems and Dependence Symptoms. Severity of problems during the past 2 months was assessed at initial screening using a 60-day version of the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989); (see Appendix G). The RAPI consists of 23 self-report items that ask the respondent to indicate problems related to alcohol use, such as “Went to work or school high or drunk,” “Felt that you had a problem with alcohol,” and “Kept drinking when you promised yourself not to.” Each item has a 5-point Likert response option, with a modified scale ranging from (1) “Never” to (5) “More than 5 times”. Scores on the RAPI were computed as the number of problems reported occurring at least 1 time; scores could range from 0 to 23. The obtained alpha coefficient for the RAPI was .85.

Severity of physical dependence symptoms during the past 2 months was assessed at initial screening using the Alcohol Dependence Scale (ADS; Skinner & Allen, 1982); (see Appendix H). The ADS is a well-established unidimensional measure designed for clinical screening of severity of physical dependence symptoms. The ADS consists of 25 self-report items derived via principal components analysis with the total score ranging from 0-47. Marlatt and colleagues (1998) used a cut-off score of 11 (Ross et al., 1990) to distinguish college students reporting mild alcohol dependence from those with little or no apparent symptoms of dependence 2 years posttreatment. In the current study, the obtained alpha coefficient for the ADS was .79.

Stages of Change. Stage of change was assessed at the baseline assessment using the Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES; Miller & Tonigan, 1996); (see Appendix I). The SOCRATES is a 19-items self-report measure designed to assess

client motivation to change drinking-related behavior and requires individuals to rate each item using a 5-point Likert response option, ranging from (1) “Strongly Disagree” to (5) “Strongly Agree”. The items comprise three subscales: problem recognition, ambivalence, and taking steps. The obtained mean alpha coefficients were .87, .78, and .90, for the problem, ambivalence, and taking steps subscales, respectively. The SOCRATES was included for the purpose of characterizing participants’ motivation for changes in alcohol consumption prior to entering the study.

Goals Prior to Screening. At screening, participants responded to a series of self-report questions that inquired about whether they had been working to achieve personal goals for reducing their drinking during the past month. Participants were asked to indicate what their goals were (i.e., abstinence or moderation; specific quantity and/or frequency limits) and the approximate date the goals were set (see Appendix I, end of page).

Participatively-set and Assigned Alcohol Use Goals. Alcohol use goals in the PG and AG conditions were recorded using a goal statement questionnaire administered at baseline. Specific upper limits were set for number of alcoholic drinks on any given day (quantity) and number of drinking days per week (frequency). A separate goal statement document was used for participants in the PG and AG conditions (GS-PG; GS-AGM; see Appendix J).

Goal Self-Efficacy. Self efficacy for goal achievement was assessed post-intervention and at the 1-, 2-, and 3-week follow-ups, using a modified version of the Controlled Drinking Self-Efficacy Scale (CDSSES; Sitharthan et al., 1996; Sitharthan et al., 1997); (see Appendix K). The original CDSSES consists of 20 self-report items constructed using Marlatt and Gordon’s (1985) list of high risk situations. The CDSSES assesses confidence in drinking moderately in various intra- and interpersonal difficult situations (e.g., “How confident are you that will not drink more

than [6 standard drinks] when you are at a party with friends?") as well as the confidence to reduce overall consumption and reduce the frequency of drinking (e.g., "How confident are you that you can stop drinking alcohol at least [three days] a week?"). All items are rated using a Likert scale ranging from 0 (not at all confident) to 100 (very confident).

In the current study, the CDSSES was modified by substituting the original wording regarding standard drink and weekly frequency limits with the alcohol consumption quantity and frequency limits that were set during the goal setting procedure for participants in the PG and AG conditions. For example, if a participant has a participatively-set or assigned goal limit of drinking no more than 4 drinks in a day, the modified item was worded as "[Over the next week] How confident are you that will not drink more than [4 standard drinks] when you are at a party with friends?", instead of the original item wording noted in the example above. In addition, some original CDSSES items assessing confidence to reduce overall frequency of drinking were not included in the current measure due to redundancy once the item wording was modified. The final version of the CDSSES used in the current study consisted of 15 items that assessed confidence in drinking no more than the specified number of drinks (i.e., quantity goal limit) in various intra- and interpersonal difficult situations and 2 items that assessed confidence in achieving the specified quantity or frequency goal limit over the course of the subsequent week. Scores on the CDSSES were computed as an average score across the 17 items; scores could range from 0 to 100 (mean alpha = .93).

Goal Commitment. Commitment to one's goal was assessed separately for participants in the PG and AG conditions post-intervention and at each follow-up assessment using a set of 7 items identified by Hollenbeck, Klein, O'Leary and Wright (1989) as representing a unidimensional measurement of goal commitment (see Appendix L). Each item has a 5-point

Likert response option, ranging from (1) “Strongly Disagree” to (5) “Strongly Agree,” with negative items recoded so that a high score on the scale is indicative of high goal commitment. Scores on the commitment measure were computed as an average score across the 7 items; scores could range from 0 to 5 (mean alpha = .83).

Goal Difficulty. A single item assessing the degree to which PG and AG participants’ perceive their goal as challenging was included at the end of the goal commitment measure at each assessment (see Appendix L; GC_PG, GC_AG, item 8). Participants responded to the statement, “This is a challenging goal for me,” using a 5-point Likert type scale ranging from (1) “Strongly Disagree” to (5) “Strongly Agree”. An additional item assessed participants’ perceptions of the difficulty of their goal (item 9). Participants responded to the following question, “How difficult do you perceive the goal set at the baseline session to be?”, using a 9-point Likert response option ranging from (1) “Not at all Difficult” to (9) “Very Difficult”. These items were not computed as part of the goal commitment score, but were used as separate indices of perceived challenge and difficulty of goals across yoked participants in the PG and AG conditions.

Manipulation Check. A manipulation check of degree of perceived participation in goal setting was performed post-intervention using modified versions of items reported in goal setting studies (e.g., Latham et al., 1994; Latham et al. 1988); items were modified so that they referred to one’s ‘alcohol use goal’.

Participants in the PG and AG conditions completed a three-item self-report questionnaire on perceived participation in goal setting (i.e., “How much influence did you have over the alcohol use goal set during the baseline session?” “Compared to the experimenter, how much influence did you have over the alcohol use goal set during the baseline session?” “During

the baseline session, how much say did you have in determining the alcohol use goal that was set?"); (see Appendix M). Participants rated each item using a 5-point Likert response option, ranging from (1) "No Influence" to (5) "Complete Control". Scores on the measure of perceived participation were computed as an average score across the 3 items ($\alpha = .92$).

Check of Potential Extraneous Variables. In an effort to assess potential extraneous variables associated with the baseline assessment/intervention, participants in all three conditions were asked to complete a questionnaire containing items intended to assess their attitudes regarding the amount of time dedicated to reviewing alcohol use-related information and instructions for self-monitoring, importance of self-monitoring, interest in self-monitoring, and beliefs about participant compliance, using a 7-point Likert-type response scale, ranging from ranging from (1) "Strongly Disagree" to (7) "Strongly Agree" (see Appendix N). Participants in the PG and AG conditions responded to additional items intended to assess attitudes regarding the importance of working to achieve one's alcohol use goal, interest in working toward their goal, and perceptions of the amount of time dedicated to setting their alcohol use goal (see Appendix O; Appendix P). Items included as a checks of potential extraneous variables were modified versions of items reported in goal setting studies (e.g., Latham et al., 1994; Latham et al. 1988); items were modified so that they referred to self-monitoring of alcohol use or one's 'alcohol use goal'.

At the end of the baseline session, participants in all three conditions completed an 11-item, 8-point semantic differential questionnaire asking them to rate the supportiveness of the experimenter (see Appendix Q). The experimenter stepped out of the office and allowed participants to complete the measure in private. Participants were instructed to seal the completed measure in an envelope so that the experimenter would not see their ratings. Scores on

the experimenter supportiveness measure were computed as an average score across the 11 items ($\alpha = .90$).

Self-Monitoring Compliance. Toward the end of the baseline assessment/intervention session, participants were provided with self-monitoring cards to record daily quantity and weekly frequency of alcohol consumption during the follow-up period (see Appendix R). Compliance with instructions for self-monitoring was assessed at the 4-week follow-up using a five-item, 5-point Likert-type questionnaire that asked participants to indicate how often they recorded their alcohol use information at various intervals in relation to their drinking (see Appendix S).

Results

Preliminary Analyses

Preliminary analyses revealed no significant differences between conditions on demographic, alcohol use, problem or dependence severity, alcohol use goals prior to entering the study, or motivational measures. The follow-up rates at the 1-week, 2-week, 3-week, and 4-week assessments were 100%, 99%, 97%, and 95%, respectively. Rates of attrition from follow-up were low and did not differ significantly by condition, except at the 4-week follow-up in which more participants in the AG condition (11.1%) failed to complete the follow-up compared to those in the PG (2.2%) and NG (0%) conditions. Preliminary analyses of all baseline demographic and alcohol use characteristics revealed no significant condition by follow-up completion interactions. In the reported analyses, an expectation-maximization (EM) algorithm was used to replace missing data at follow-up with imputed values based on all relevant information available at baseline and follow-up for all participants. Results were highly similar when participants with missing data points were excluded entirely. The similarity of finding

across different methods of handling missing data provides confidence that the results are not due to systematic attrition.

Sample Characteristics

Table 1 presents demographic, alcohol use information, and stages of change for the 126 randomized participants. Participants were primarily white and averaged 20 years of age (18-34). There were similar proportions of male and female participants. Thirty-eight percent of participants identified themselves as freshman, 23% as sophomores, 18% as juniors, and 21% as seniors.

Fifty-four percent of participants reported that they had a goal for limiting their alcohol use at some point in the month prior to screening. In the 30 days prior to baseline, participants reported drinking an average of 2.47 days per week and 6.56 drinks per drinking day. Participants reported an average of 11 drinking-related problems during the past 60 days and had an average score of 13.49 on the ADS; approximately 70% of participants obtained an ADS score above a cut-off of 11 used to distinguish college students reporting mild alcohol dependence from those with little or no apparent symptoms of dependence. Participants reported an average of 15.01, 10.12, and 22.17, for the Recognition, Ambivalence, and Taking Steps subscales of the SOCRATES, respectively. These scores fall within the “low” to “very low” range relative to people presenting to alcohol treatment (Project MATCH Research Group, 1997) and suggest that, on average, participants denied that alcohol had been causing them serious problems, did not express a desire for change, and had not made changes in their drinking recently.

Alcohol Use Goals

Of participants randomized to the Participatively-set Goal (PG) condition ($n=45$), 100% chose 'moderation' as their alcohol use goal at baseline. Participants further specified their goal by setting upper limits for the quantity and frequency of their drinking. Alcohol use goals set by participants in the PG condition were used as assigned goals for yoked participants in the AG condition. Table 2 shows the proportion of participants with corresponding upper limits for drinking days per week (frequency) and drinks per drinking day (quantity), separately for males, females, and combined. Overall, the majority of participants (85%) defined their frequency limit as drinking on no more than 2 days in a week ($M = 1.82$; $SD = 0.74$) and approximately 62% specified their quantity limit as drinking no more than 4 drinks on any given day ($M = 4.47$; $SD = 2.00$).

Ratings of subjective perceptions of goal difficulty at baseline did not differ significantly between PG ($M = 5.62$; $SD = 1.33$) and AG ($M = 5.67$; $SD = 1.68$) conditions. Similarly, there were no significant differences between PG ($M = 3.80$; $SD = .89$) and AG ($M = 3.67$; $SD = 1.11$) conditions on perceptions of whether their goals were challenging. These data suggest that participants in both goal setting conditions perceived their alcohol use goals as moderately difficult and somewhat agreed that the goals were challenging. Variables intended to provide objective measures of goal difficulty were computed by subtracting participants' upper goal limits for drinks per drinking day (quantity) and drinking days per week (frequency) from their corresponding baseline values of alcohol use (i.e., average drinks/drinking day and average drinking days/week). In essence, the objective goal difficulty variables capture the amount of reduction in alcohol use represented by participants' quantity and frequency goals. Independent *t*-tests were used to compare PG and AG participants on objective difficulty of quantity and

frequency goals. There were no significant differences between conditions on any variable. On average, quantity goals represented a reduction of 2.23 ($SD = 1.58$) and 1.94 ($SD = 2.17$) drinks per drinking day for PG and AG participants, respectively. Frequency goals represented an average reduction of .65 ($SD = .71$) and .71 ($SD = 1.16$) drinking days per week for PG and AG participants, respectively.

Manipulation Check

Independent t -tests compared participants in the PG and AG conditions on items that assessed perceived participation in setting alcohol use goals. Table 3 contains means and standard deviations for the measure of perceived participation. A significant difference was found ($t = 12.30, p < .001$) such that, participants in the PG condition reported experiencing significantly greater participation in setting their alcohol use goals compared to those in the AG condition ($d = 2.64$).

Check of Potential Extraneous Variables

Independent t -tests compared participants in the PG and AG conditions on items that assessed potential extraneous variables associated with the goal setting procedure: attitudes regarding amount of time dedicated to setting their goals, importance of working toward one's goal, interest in working toward one's goal, and level of goal challenge and difficulty. Means and standard deviations are presented in Table 3. There were no significant differences between the PG and AG conditions.

Participants in all three conditions completed items that assessed potential extraneous variables associated with the intervention session in general. A series of oneway ANOVAs were used to compare participants on items that assessed attitudes regarding the amount of time dedicated to reviewing alcohol use-related information and instructions for self-monitoring,

importance of self-monitoring, interest in self-monitoring, participant compliance, and a measure of experimenter supportiveness. Means and standard deviations are presented in Table 4. The ANOVA on attitudes regarding time spent reviewing self-monitoring instructions (item 3) was significant, $F(2, 125) = 3.62, p < .05$. Post hoc comparison using Fisher's LSD showed that participants in the AG condition were more likely to perceive instructions for self-monitoring as being delivered too quickly compared to those in the PG condition ($p < .05$); no other differences between conditions were significant, although the difference between the AG and NG conditions approached conventional levels of significance. The ANOVA on interest in self-monitoring (item 7) was also significant, $F(2, 125) = 9.10, p < .001$. Post hoc comparisons showed that participants in the AG condition reported significantly less interest in monitoring their drinking compared to those the PG condition, which reported less interest than those in the NG condition, $ps < .05$. There were no significant differences on other items related to self-monitoring or the measure of experimenter supportiveness.

Taken together, participants in the AG condition perceived less participation in setting their alcohol use goal than did participants in the PG condition as intended. Participants in all three conditions did not appear to differ in their perceptions of non-specific aspects such as experimenter supportiveness, alcohol information, or demand for compliance. Further, PG and AG participants did not differ on indices of the importance of goal setting, time spent setting the goal, or the perceived difficulty and challenge of the goal. It is not clear why those in the AG condition reported less time reviewing instructions for self-monitoring, but the lower interest in monitoring their drinking may be related either to this perception or to the fact that they did not participate as much in setting their goals. Those in both the PG and AG conditions reported significantly less interest in monitoring their drinking compared to those in the NG condition,

which may be a function of delivering the self-monitoring rationale and instructions in the absence of the goal setting activities. Unfortunately, objective indices of the amount of time spent delivering self-monitoring instructions are not available. It should be noted that despite these statistical differences between conditions, absolute values indicate that participants in all conditions viewed the activities of self-monitoring and/or working toward one's goal as important and interesting, and that sufficient time was allowed for reviewing relevant information and instructions in the baseline session.

Data on compliance with self-monitoring instructions suggests that in general participants failed to monitor their drinking in close proximity to actual drinking. Approximately 11% of participants reported that they often recorded their alcohol use prior to each drink, 22% often recorded their drinking at the end of the drinking day, 33-36% reported doing so within 24-48 hours of drinking, and about 32% indicated that they often recorded their drinking information all at one time at the end of the week. There were no significant differences between conditions on self-monitoring compliance.

Effect of Goal Setting on Alcohol Use

In order to test the hypothesis that having a goal for alcohol consumption would cause lower quantity and frequency of alcohol use, 3 (Condition: participatively-set vs. assigned goal vs. no goal) \times 5 (Time) Mixed Model ANOVAs compared conditions on measures of average number of drinks per drinking day and number of drinking days per week. Self-reported alcohol use at baseline and each of the four weekly follow-up assessments formed the within-subjects factor of Time. A significant interaction effect of Condition was expected such that PG and AG participants would report fewer drinks per drinking day and fewer drinking days during the 7 days preceding each follow-up compared to participants in the NG condition. Main effects for

Condition and Time on each alcohol measure (all $ps < .01$) were qualified by significant Condition \times Time interactions for average number of drinks per drinking day, $F(8, 242) = 2.60, p < .05$ and number of drinking days per week, $F(8, 242) = 3.18, p < .01$. Consistent with predictions, planned contrasts showed that participants in the PG and AG conditions reported significantly fewer drinks per drinking day ($ps < .005$) and fewer drinking days per week ($ps < .05$) compared to those in the NG condition at each follow-up (see Table 5). Effect sizes (d) ranged from .53 to .71 for drinks per drinking day and .43 to .74 for drinking days per week.

Effect of Participation in Goal Setting on Alcohol Use

In order to test the hypothesis that participation in goal setting would cause greater success in achieving one's goal two approaches were used. First, greater goal achievement should yield less frequent drinking and lower quantity of consumption per drinking day. Thus, following the significant interaction effects for Condition and Time in the previous 3×5 ANOVAs, planned comparisons of means for PG and AG participants were expected to show that participants in the PG condition used alcohol less frequently and in lower quantities per drinking day than participants in the AG condition. However, except for the number of drinking days in week 4, there were no significant differences between PG and AG participants on number of drinks per drinking day or number of drinking days per week at any assessment point.

Second, in order to characterize goal achievement in relationship to the specific and idiosyncratic goals of participants, a dichotomous variable was created at each follow-up (Weeks 1-4) to capture whether PG and AG participants were successful or unsuccessful in achieving the goal set at baseline (i.e. unsuccessful = 0; successful = 1). Participants were considered successful only if their reported alcohol use for the week preceding the follow-up was consistent with the goal set at baseline. Thus, participants were considered successful only if, for the week

preceding the follow-up, their reported number drinks per drinking day and number of drinking days did not exceed the goal limits set at baseline. The dichotomous outcome variable at each follow-up was summed across follow-ups in order to create a continuous variable that captures the total number of weeks in which participants were successful or unsuccessful in achieving their baseline goal (range = 0-4). It was expected that PG participants would be successful in achieving their alcohol use goal on significantly more weeks than AG participants. A *t*-test compared participants in the PG and AG conditions on total number of weeks successful in achieving their goal. There was no significant difference between the PG ($M = 2.13$; $SD = 1.27$) and AG ($M = 1.91$; $SD = 1.29$) conditions on total number of weeks successful in achieving their goal ($t = .82, p > .05; d = .17$).

For exploratory purposes, the analysis of goal achievement was repeated separately on variables that capture the total number of weeks participants were successful in achieving either their quantity or frequency goal (range = 0-4). There was no significant difference between PG ($M = 2.38$; $SD = 1.28$) and AG ($M = 2.31$; $SD = 1.43$) participants on the number of weeks achieved the quantity goal ($t = .23, p > .05; d = .05$). Similarly, there was no significant difference between PG ($M = 2.96$; $SD = 1.17$) and AG ($M = 2.73$; $SD = 1.25$) participants on the number of weeks achieved the frequency goal ($t = .87, p > .05; d = .18$).

Effect of Participation in Goal Setting on Goal Commitment and Self-Efficacy

To test the influence of participation in goal setting on goal commitment, a 2 (Condition: participatively-set vs. assigned goal) \times 5 (Time) Mixed Model ANOVA compared conditions on goal commitment assessed post-intervention and at each follow-up. A main effect of Condition was expected such that at each assessment point PG participants would have greater goal commitment compared to AG participants. The main effect for Time was significant ($F(4, 85) =$

4.98, $p < .01$), as was the main effect for Condition ($F(1, 88) = 3.98, p < .05$). The Condition \times Time interaction was not significant. Means and standard deviations for goal commitment at each assessment are presented in Table 6. Consistent with predictions, participants in the PG condition reported significantly greater goal commitment across time compared to those in the AG condition; effect sizes ranged from .24 to .49.

For exploratory purposes, the influence of participation in goal setting on self-efficacy for goal achievement was examined by conducting a 2 (Condition: participatively-set vs. assigned goal) \times 4 (Time) Mixed Model ANOVA that compared conditions on self-efficacy for goal achievement assessed post-intervention and at follow-up weeks 1-3. The main effect for Time was significant ($F(3, 86) = 6.58, p < .01$), as was the main effect for Condition ($F(1, 88) = 8.96, p < .01$). The Condition \times Time interaction was not significant. Table 6 presents means and standard deviations for self-efficacy at each assessment point. Participants in the PG condition reported significantly greater self-efficacy for goal achievement across time compared to those in the AG condition; effect sizes ranged from .50 to .62.

Relationship of Goal Commitment and Alcohol Use

In order to test the hypothesis that goal commitment would be predictive of alcohol use outcomes, bivariate correlations were computed between post-intervention commitment ratings and quantity and frequency of alcohol consumption at follow-up and the total number of weeks that goals were successfully achieved across follow-up. Negative correlations were expected between goal commitment and quantity and frequency of alcohol use whereas a positive correlation was expected with the total number of weeks of successful goal achievement. Participants assigned to the NG condition were excluded from these analyses because goal setting was not part of their intervention and therefore did not complete the measure on goal

commitment. Six of 8 correlations between goal commitment and indices of drinking quantity and frequency showed the predicted relationships with significant correlations ranging from -.21 to -.38. Results are presented in Table 7. With respect to goal achievement, there were significant positive correlations as expected between post-intervention goal commitment and number of weeks achieved quantity goal ($r = .39; p < .001$), frequency goal ($r = .25; p < .05$), and total goal ($r = .40; p < .001$).

Results indicate that participation in goal setting enhanced goal commitment and goal commitment was shown to be significantly related to alcohol use outcomes; however, there was no direct effect of participation in goal setting on alcohol use outcomes. Thus, analysis of goal commitment as a potential mediator of the effect of participation in goal setting on outcomes was not pursued.

Relationship of Self-Efficacy for Goal Achievement and Alcohol Use

Similar bivariate correlations were computed between post-intervention self-efficacy for goal achievement and quantity and frequency of alcohol use in order to test the hypothesis that confidence in achieving goals would be predictive of outcomes. Negative correlations were expected between self-efficacy and quantity and frequency of alcohol use whereas a positive correlation was expected with the total number of weeks of successful goal achievement. Participants assigned to the NG condition were excluded from these analyses for the same reasons noted earlier. Similar to the findings on commitment, correlations between self-efficacy and indices of drinking quantity and frequency showed the predicted relationships with significant correlations ranging from -.27 to -.50. One exception was the non-significant correlation between post-intervention self-efficacy and number of drinking days at 4-weeks. Results are presented in Table 7. With respect to goal achievement, there were significant

positive correlations between self-efficacy for goal achievement assessed post-intervention and number of weeks achieved quantity goal ($r = .46; p < .001$), frequency goal ($r = .37; p < .001$), and total goal ($r = .45; p < .001$).

Relationship of Goal Commitment and Self-Efficacy for Goal Achievement

In order to examine the relationship between goal commitment and self-efficacy, a bivariate correlation was computed between post-intervention goal commitment and post-intervention self-efficacy for goal achievement. Results indicate that goal commitment and self-efficacy were significantly and positively correlated ($r = .36; p < .001$).

Multivariate Effects of Goal Commitment and Self-Efficacy on Alcohol Use

Exploratory multiple regression analyses were conducted in order to examine additive contributions of goal commitment and self-efficacy for goal achievement to changes in alcohol use at follow-up. Regression analyses were performed separately for quantity and frequency of drinking at each follow-up, with alcohol use at follow-up regressed on the corresponding baseline use variable, post-intervention goal commitment, and post-intervention self-efficacy. All analyses explained significant amounts of variance in follow-up drinking ranging from 12% to 43%. Baseline drinking was consistently the strongest predictor, but goal commitment contributed unique variance to drinks per drinking day at the 1- and 3-week follow-ups and drinking days per week at the 2- and 4-week follow-ups after controlling for baseline use (see Table 8 for beta weights associated with each predictor and the total amount of variance explained). Self-efficacy for goal achievement contributed unique variance to drinks per drinking day at the 2- and 3-week follow-ups and drinking days per week at the 1-week follow-up. However, with the exception drinks per drinking day at the 3-week follow-up, goal commitment and self-efficacy did not have independent effects on alcohol use at follow-up. Similar regression

analyses were performed separately for number of weeks achieved quantity, frequency, and total goal. Results indicated that post-intervention goal commitment and self-efficacy independently contributed unique variance to number of weeks achieved quantity goal and total goal; although, only self-efficacy contributed unique variance to number of weeks achieved frequency goal (see Table 9 for beta weights associated with each predictor and the total amount of variance explained).

Discussion

The current study investigated goal setting principles in the context of a brief intervention for reducing alcohol consumption in a sample of heavy drinking college students. In accordance with previous finding in the goal setting literature, goal setting enhanced performance outcomes. Participants in the Participatively-set Goal (PG) or Assigned Goal (AG) conditions reduced their alcohol consumption across follow-up relative to those in the No Goal (NG) condition. However, participation in goal setting did not result in significantly better alcohol use outcomes or greater success in achieving one's goal relative to when goals were assigned. Participation in goal setting did, however, influence goal commitment such that greater participation resulted in greater commitment to one's alcohol use goal. An unexpected finding was that greater participation in goal setting also resulted in greater self-efficacy for achieving one's goal. Furthermore, goal commitment was related to goal achievement and drinking outcomes such that greater goal commitment was associated with greater success in achieving one's goal and less alcohol use across follow-up. Similarly, self-efficacy for goal achievement was related to outcomes such that greater efficacy for goal achievement was associated with greater success in achieving one's goal and less alcohol use across follow-up. Interestingly, goal commitment and self-efficacy contributed unique variance to the prediction of goal achievement across follow-up

as well as changes in quantity and frequency of alcohol use at follow-up after controlling for baseline use.

Consistent with the hypothesis that setting a goal for alcohol consumption would cause lower quantity and frequency of alcohol use, participants in the PG and AG conditions reported fewer drinks per drinking day and drinking days per week across follow-up compared to those in the NG condition. These findings are in accord with the extensive literature supporting the utility of goal setting to enhance performance, but more importantly, they extend the relevance of goal setting to the context of an alcohol use intervention. For the most part, participants in the PG and AG conditions tended to reduce their drinking across the entire 4-week follow-up, however, most of the reduction occurred by the 2-week follow-up. Overall the magnitude of the reductions were on the order of 2.5 to 3 drinks less per drinking day and just under 1 less day of drinking per week on average. These reductions are noteworthy, particularly in light of a single assessment/intervention session delivered in the context of the college environment in which heavy drinking is considered acceptable and reduced use may not be valued. Furthermore, the reduced drinking levels achieved in the current study are comparable to those obtained with other brief (LaBrie, Pedersen, Earleywine, & Olsen, 2006) and more intensive interventions with college students (Baer et al., 1992). The lack of even modest reductions in alcohol consumption in the NG condition suggests that in the absence of specific goals for reducing alcohol use, self-monitoring had very little impact on subsequent drinking.

Contrary to what was predicted, greater participation in goal setting did not result in significantly better alcohol use outcomes or greater success in achieving one's goal. With the exception of 4-week follow-up in which participants in the PG condition reported fewer drinking days per week than those in the AG condition, there were no significant differences between PG

and AG conditions on quantity or frequency measures of alcohol use at follow-up. Similarly, participants did not differ significantly on the total number of weeks successful in achieving their alcohol use goals. The means for goal achievement were in the expected direction with participants in the PG condition successfully achieving their goal on slightly more weeks than those in the AG condition, but the nonsignificant effect size was small ($d = .17$). Studies with other behavioral targets in the goal setting literature have similarly failed to find differential effects of assigned and participatively-set goals on performance so long as a rationale for assigned goals was provided (Latham et al., 1988; Latham et al., 1994). Larger differences may have been found had assigned goals in the AG condition been presented dogmatically with little explanation. However, such an intervention would not likely be generalizable to the real world.

It is also possible that had the difficulty of assigned goals been greater and required a greater reduction in drinking, the effect of participation would have been more substantial. Efforts were made in the participative condition to steer goals toward greater reductions when possible, but it was not possible to impose even more challenging goals without compromising the nature of the participative process. We explored the relationship of goal difficulty to outcomes by examining subgroups of participants with more versus less stringent goals and by including the objective index of goal difficulty as a covariate in analyses, but neither approach revealed greater effects of the participative versus assigned conditions. Nevertheless, future studies might explore the issue of goal difficulty by varying the allowable maximum number of drinks across the participative and assigned conditions.

That greater participation in goal setting enhanced goal commitment is consistent with hypotheses. Compared to participants in the AG condition, those in the PG condition reported greater commitment to their goals. Mean ratings of goal commitment were consistently higher

among participants in the PG condition at each assessment compared to those in the AG condition; however, the effect of participation on goal commitment appeared most robust post-intervention and up to the 2-week follow-up. Effect sizes for participation in goal setting on goal commitment were in the small to medium range (0.41 to 0.49) at early time points and were smaller and non-significant at later follow-ups (0.24 to 0.30). Thus, the motivational effect of participation in goal setting on commitment to goals appears to have worn off relatively quickly. Real world interventions might consider booster sessions in which goals are revisited and commitment restored. Nonetheless, the current findings are in accord with those of Latham and colleagues (1994) and provide empirical support for the motivational effects of participation in goal setting on commitment to goals in the context of an alcohol use intervention.

The finding that self-efficacy for goal achievement was enhanced by participation in goal setting was unexpected. Mean ratings of self-efficacy for goal achievement were consistently higher among participants in the PG condition at each assessment compared to those in the AG condition and these differences appeared robust across the entire follow-up period; effect sizes were in the medium range (0.50 to 0.62). While these findings were unexpected, they are corroborated by reports of similar findings in the goal setting literature (Latham et al., 1994; Latham et al., 1988). Consistent with Bandura's views on sources of self-efficacy judgments (Bandura, 1997), Latham and colleagues (1994) suggested that discussion of the level of performance goal that is achievable may serve as a form of persuasion in that it implicitly communicates a sense of confidence from the experimenter. However, it stands to reason that the same could be said of goals that are assigned. In fact, it has been suggested that assigned goals convey normative expectations for one's behavior and consequently have a cognitive anchoring effect on efficacy judgments (Cervone & Peake, 1986; Meyer & Gellatly, 1988). It should be

noted that experimenters in the current study were careful not to offer differential statements of encouragement across conditions that could potentially confound observed effects on self-efficacy.

An alternative explanation for the facilitative effects of participation in goal setting on self-efficacy in the current study may involve a form of perceived control generated via the participative goal setting procedure. It has been suggested that perceptions of perceived controllability of social environments can influence self-efficacy beliefs (Bandura & Wood, 1989). Participation in goal setting has been posited to enhance goal acceptance by increasing one's perceived control over the goal setting process (Bandura, 1977; Erez & Kanfer, 1983), perhaps self-efficacy is similarly influenced by participation in goal setting. Lastly, it may be that participants who participated in setting their goals were overly optimistic of their capacity to achieve their goals; however, it is interesting to note that even after initial attempts to achieve goals during the first follow-up period, participants in the PG condition maintained higher efficacy judgments for goal achievement. Taken together, the precise mechanisms by which participation in goal setting may enhance efficacy judgments relative to when goals are assigned remain unclear, and as such, the effect of participation on self-efficacy observed in the current study is somewhat tenuous. However, given the central role of self-efficacy beliefs in the goal-performance relationship and their utility for predicting substance use outcomes, effects of participation in goal setting on self-efficacy judgments warrant further attention in substance use research.

Regarding the influence of goal commitment on alcohol use outcomes, negative correlations were observed between goal commitment assessed post-intervention and quantity and frequency of drinking at follow-up, suggesting that the greater an individual's goal

commitment post-intervention, the less he/she consumed alcohol at follow-up. As predicted, post-intervention goal commitment was positively correlated with total weeks successful in achieving one's goal, suggesting that the greater one's goal commitment post-intervention, the more one was successful in achieving his/her alcohol use goals at follow-up. The significant relationships between commitment and outcomes observed in the current study are consistent with those reported in goal setting studies involving very different tasks (Earley, 1985; Earley & Kanfer, 1985; Erez et al., 1985; Hollenbeck et al., 1989; Latham et al., 1988; Locke et al., 1984), and are perhaps more directly in accord with reports in the substance abuse literature that commitment to an abstinent goal was significantly related to positive outcomes following treatment for alcohol, opiate, or nicotine abuse (Hall, Havassy, & Wasserman, 1990), and cocaine (Hall, Havassy, & Wasserman, 1991).

Similar to the findings on goal commitment and outcomes, negative correlations were observed between self-efficacy assessed post-intervention and quantity and frequency of drinking across follow-up such that the greater one's self-efficacy for goal achievement, the less he/she consumed alcohol at follow-up. Furthermore, significant positive correlations were observed between self-efficacy for goal achievement and subsequent goal achievement across follow-up, suggesting that the greater one's self-efficacy for goal achievement, the more one was successful in achieving his/her alcohol use goals at follow-up. These findings are consistent with those reported in goal setting studies (e.g., Bandura & Cervone, 1986; Locke et al., 1984; Bouffard-Bouchard, 1990; Latham et al., 1994) and replicate findings on the utility of self-efficacy judgments to predict outcomes for alcohol consumption (Sitharthan et al., 1996; Sitharthan et al., 1997; Sitharthan & Kavanagh, 1990) and successful goal achievement in the substance abuse literature (Lozano et al., 2006).

Goal commitment and self-efficacy for goal achievement assessed post-intervention were significantly correlated such that greater self-efficacy was associated with greater commitment to goals. Interestingly, goal commitment and self-efficacy contributed unique variance to goal achievement across follow-up. In this sample of heavy drinking college students, the greater one's commitment and self-efficacy for goal achievement post-intervention, the more he/she was successful in achieving his/her alcohol use goal across follow-up, even after controlling for baseline alcohol use. Contributions of goal commitment and self-efficacy to the prediction of changes in quantity and frequency indices of alcohol use were less clear. Goal commitment and self-efficacy intermittently contributed additional variance to alcohol use at follow-up such that the greater one's commitment and self-efficacy for goal achievement post-intervention, the less he/she was drinking at follow-up, even after controlling for baseline use. However, with the exception drinks per drinking day at the 3-week follow-up, goal commitment and self-efficacy did not independently contribute variance to change in alcohol use at follow-up.

The reasons for the somewhat different pattern that emerged in the prediction of changes in quantity and frequency of drinking are unclear. Goal commitment has been conceptualized as reflecting the duration of effort to achieve one's goal and an unwillingness to abandon or lower the goal (Hollenbeck & Klein, 1987), whereas, self-efficacy is conceptualized as judgments of one's ability to effectively enact strategies to exercise control over situational challenges (Bandura, 1997). Furthermore, self-efficacy is thought to be central to maintaining commitment to goal-directed behavior and has been shown to positively and directly affect commitment (Bandura & Cervone, 1986; Locke et al., 1984). Despite the apparent overlap of goal commitment and efficacy, the constructs appear to have potential for independent and complimentary effects on goal-oriented behavior. Perhaps, in the current study, goal achievement

variables more accurately captured individuals who were more efficacious and made concerted efforts to achieve their goals and therefore were more strongly related to both commitment and self-efficacy, whereas, the quantity and frequency indices may have reflected general reductions in drinking and therefore were less consistently associated with commitment and self-efficacy.

As in other studies investigating participative versus assigned goals, effects of participation in goal setting on commitment and self-efficacy were simply not strong enough to yield a significant direct effect of participative goal setting on performance outcomes. It should be noted that in the current study, goals were assigned using an approach that included a rationale for goal setting. Studies in which goals were assigned using a curt approach that did not include a rationale for goal setting have typically found significant performance effects due to participation in goal setting (Latham et al., 1988). Perhaps a valid comparison condition in future studies on participative versus assigned goals in substance use interventions would be one in which goals are assigned without a rationale for goal setting. While assigning goals without a rationale may not be ecologically valid, such a comparison may elucidate aspects of goal setting that are most important for commitment and change in the context of substance use.

This study was a first step in investigating motivational effects of participation in goal setting on goal achievement in the context of an alcohol use intervention, and as such, much of the supporting literature is derived from goal setting studies that involve very different behaviors than the focus of the current study. Nonetheless, principles of goal setting and social cognitive theories have demonstrated utility for understanding mechanisms of change in substance use behaviors. That said, there are a number of limitations of the research design that need to be acknowledged. Most importantly, the matching procedures in the current study were not ideal. Participants were matched based on gender and typical peak quantity of alcoholic drinks

consumed on a given day during the month prior to screening, however, alcohol use goals were set at least partly in reference to participants' average quantity and frequency of drinking assessed for the month prior to baseline. While the baseline assessment/intervention session was typically completed no more than a couple days after screening, there were instances in which matched participants who reported the same typical peak quantity of alcoholic drinks at screening reported differing amounts of drinking at baseline. Thus, in some cases participatively-set and assigned goals represented differing amounts of change relative to baseline drinking for a given PG-AG yoked pair. Perhaps a more effective matching procedure to be employed in subsequent studies would involve a more detailed assessment of alcohol use at screening so that participants could be matched on average quantity of drinks per drinking day or some combination of quantity and frequency of drinking.

Another limitation pertains to the level of goals set in the current study. When compared to baseline drinking levels, alcohol use goals represented, on average, a reduction of approximately 2 drinks per drinking occasion and slightly less than 1 drinking day per week. Based on self-reported perceptions of goal difficulty, participants in the goal setting conditions generally viewed their goals as 'moderately' difficult. It has been suggested that participation in goal setting is likely to yield greater goal commitment, and therefore performance, when goal difficulty is high (Erez & Zidon, 1984; Erez et al., 1985). The present data indicate that the while many participants set alcohol use goals consistent with moderate drinking guidelines (e.g., Hester, 2003; Sanchez-Craig et al., 1995), there was a subgroup of individuals who set goals for drinking at reduced amounts but at a level that may continue to be harmful. Perhaps performance enhancing effects of participation in goal setting would be found under conditions in which more challenging alcohol use goals are set.

Reported compliance with daily self-monitoring instructions was limited. Given the importance of self-monitoring for increasing awareness of one's behavior and providing immediate feedback regarding performance in relation to goals, the lack of self-monitoring may have limited the effect size of the intervention. Concerns regarding the lack of feedback are somewhat mitigated by the fact that individualized graphic feedback on participants' quantity and frequency of drinking was provided weekly across follow-up. Nonetheless, lack of self-monitoring in close proximity to actual drinking casts uncertainty on the validity of self-reported alcohol consumption at follow-up. Lastly, the review of cognitive and behavioral strategies for avoiding heavy drinking in the current study was brief and the extent to which participants acquired and implemented these strategies was not determined. Despite these limitations, participants in the goal setting conditions achieved respectable reductions in their alcohol use, which is notable, particularly in the college environment where reduced drinking may not be valued.

In conclusion, the results of the current study are encouraging and underscore the utility of substance use interventions that incorporate goal setting as a means to facilitate outcomes. Furthermore, the findings are noteworthy in that they provide empirical support for motivational effects of participation in goal setting on goal commitment and self-efficacy for goal achievement and further support the effects of goal commitment and self-efficacy on positive substance use outcomes. That participation in goal setting was shown to positively affect self-efficacy is particularly interesting and offers insight to what may be unrealized motivational benefits of participative goal setting, particularly in the context of clinical interventions. Taken together, these findings support the underlying philosophy of many client-centered approaches to alcohol and drug abuse treatment, namely that provision of choice and participation in treatment

planning serves to enhance motivation and commitment to change. There is a need for controlled treatment trials to improve on the methodology of the current study and further investigate the motivational effects of participative goal setting in other substance abuse populations. Despite limited evidence in the addictions field supporting the effectiveness of matching clients to specific treatment approaches, research on participation and personal choice in goal setting may uncover useful means of facilitating client-treatment matching.

References

- Amrhein, P.C., Miller, W.R., Yahne, C.E., Palmer, M., & Fulcher, L. (2003). Client commitment language during motivational interviewing predicts drug use outcomes. *Journal of Consulting and Clinical Psychology, 71*(5), 862-878.
- Baer, J.S., Holt, C.S., & Lichtenstein, E. (1986). Self-efficacy and smoking reexamined: Construct validity and clinical utility. *Journal of Consulting and Clinical Psychology, 54*, 846-852.
- Baer, J.S., Marlatt, G.A., Kivlahan, D.R., Fromme, K., Larimer, M.E., & Williams, E. (1992). An experimental test of three methods of alcohol risk reduction with young adults. *Journal of Consulting and Clinical Psychology, 60* (6), 974-979.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1991). Self-regulation of motivation through anticipatory and self-regulatory mechanisms. In R.A. Dienstbier (Ed.), *Perspectives on motivation: Nebraska symposium on motivation* (Vol. 38, pp. 69-164). Lincoln: University of Nebraska Press.
- Bandura, A., & Cervone, D. (1983). Self-evaluative and self-efficacy mechanisms governing the motivational effects of goal systems. *Journal of Personality and Social Psychology, 45*(5), 1017-1028.
- Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. *Organizational Behavior and Human Decision Processes, 38*, 92-113.

- Bandura, A., & Wood, R. (1989). Effect of perceived controllability and performance standards on self-regulation of complex decision making. *Journal of Personality and Social Psychology, 56*(5), 805-814.
- Booth, P.G., Dale, B., & Ansari, J. (1984). Problems drinkers' goal choice and treatment outcome: A preliminary study. *Addictive Behaviors, 9*, 357-364.
- Bouffard-Bouchard, T. (1990). Influence of self-efficacy on performance in a cognitive task. *Journal of Social Psychology, 130*, 353-363.
- Cervone, D. (1985). *Self-efficacy judgment under uncertainty: Availability biases in perceived self-efficacy and behavior*. Unpublished doctoral dissertation, Stanford University.
- Cervone, D., & Peake, P.K. (1986). Anchoring, efficacy, and action: The influence of judgment heuristics on self-efficacy judgments and behavior. *Journal of Personality and Social Psychology, 50*, 492-501.
- Collins, R.L., Parks, G.A., & Marlatt, G.A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology, 53*, 189-200.
- Conditte, M.M., & Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. *Journal of Consulting and Clinical Psychology, 49*, 648-658.
- Early, P.C. (1985). Influence of information, choice and task complexity upon goal acceptance, performance, and personal goals. *Journal of Applied Psychology, 70*(3), 481-491.
- Earley, P.C., & Kanfer, R. (1985). The influence of component complexity and role models on goal acceptance, goal satisfaction, and performance. *Organizational Behavior and Human Decision Processes, 36*, 378-390.

- Elal-Lawrence, G., Slade, P.D., & Dewey, M.E. (1986). Predictors of outcome type in treated problem drinkers. *Journal of Studies on Alcohol*, 47(1), 41-47.
- Elal-Lawrence, G., Slade, P.D., & Dewey, M.E. (1987). Treatment and follow-up variables discriminating abstainers, controlled drinkers, and relapsers. *Journal of Studies on Alcohol*, 48(1), 39-46.
- Erez, M. (1986). The congruence of goal setting strategies with sociocultural values, and its effect on performance. *Journal of Management*, 12, 83-90.
- Erez, M., & Arad, R. (1986). Participative goal setting: social, motivational, and cognitive factors. *Journal of Applied Psychology*, 71, 591-597.
- Erez, M., Earley, P.C., & Hulin, C.L. (1985). The impact of participation on goal acceptance and performance: A two-step model. *Academy of Management Journal*, 28, 50-66.
- Erez, M., & Kanfer, F.H. (1983). The role of goal acceptance in goal setting and task performance. *Academy of Management Review*, 8, 454-463.
- Erez, M., & Zidon, I. (1984). Effect of goal acceptance on the relationship of goal difficulty to performance. *Journal of Applied Psychology*, 69, 69-78.
- Gooding, P.R., & Glasglow, R.F. (1985). Self-efficacy and outcome expectations as predictors of controlled smoking status. *Cognitive Therapy and Research*, 9, 583-590.
- Graber, R.A., & Miller, W.R. (1988). Abstinence or controlled drinking goals for problem drinkers: A randomized clinical trial. *Psychology of Addictive Behavior*, 2(3), 20-33.
- Hall, S.M., Havassy, B.E., & Wasserman, D.A. (1990). Commitment to abstinence and acute distress in relapse to alcohol, opiates, and nicotine. *Journal of Consulting and Clinical Psychology*, 58(2), 175-181.

- Hall, S.M., Havassy, B.E., & Wasserman, D.A. (1991). Effects of commitment to abstinence, positive moods, stress, and coping on relapse to cocaine use. *Journal of Consulting and Clinical Psychology, 59*, 526-532.
- Harkins, S.G., & Lowe, M.D. (2000). The effects of self-set goals on task performance. *Journal of Applied Social Psychology, 30*, 1-40.
- Hester, R.K. (2003). Behavioral self-control training. In R.K. Hester, & W.R. Miller (Eds.), *Handbook of alcoholism treatment approaches* (pp. 152-164). Boston MA: Allyn & Bacon.
- Hollenbeck, J.R., & Klein, H.J. (1987). Goal commitment and the goal setting process: Problems, prospects, and proposals for future research. *Journal of Applied Psychology, 72*, 212-220.
- Hollenbeck, J.R., Klein, H.J., O'Leary, A.M., & Wright, P.M. (1989). Investigation of the construct validity of a self-report measure of goal commitment. *Journal of Applied Psychology, 74*(6), 951-956.
- Hollenbeck, J.R., Williams, C.R., & Klein, H.J. (1989). An empirical examination of the antecedents of commitment to difficult goals. *Journal of Applied Psychology, 74*, 18-23.
- Kavanagh, D.J., Sitharthan, T., & Sayer, G.P. (1996). Prediction of results from correspondence treatment for controlled drinking. *Addiction, 91*, 1539-1545.
- Klein, H.J., Wesson, M.J., Hollenbeck, J.R., & Alge, B.J. (1999). Goal commitment and the goal setting process: Conceptual clarification and empirical synthesis. *Journal of Applied Psychology, 84*(6), 885-896.

- LaBrie, J.W., Pedersen, E.R., Earleywine, M., & Olsen, H. (2006). Reducing heavy drinking in college males with the decisional balance: Analyzing an element of Motivational Interviewing. *Addictive Behaviors, 31*, 254-263.
- Latham, G.P., Erez, M., & Locke, E.A. (1988). Resolving scientific disputes by the joint design of crucial experiments by the antagonists: Application to the Erez-Latham dispute regarding participation in goal setting. *Journal of Applied Psychology, 73*(4), 753-772.
- Latham, G.P., & Lee, T.W. (1986). Goal setting. In E.A. Locke (Ed.), *Generalizing from laboratory to field settings*. Lexington, MA: Lexington Books.
- Latham, G.P., & Marshal, H.A. (1982). The effects of self-set, participatively set and assigned goals on the performance of government employees. *Personnel Psychology, 35*, 399-404.
- Latham, G.P., Mitchell, T.R., & Dossett, D.L. (1978). The importance of participative goal setting and anticipated rewards on goal difficulty and job performance. *Journal of Applied Psychology, 63*, 163-171.
- Latham, G.P., & Saari, L.M. (1979). The effects of holding goal difficulty constant on assigned and participatively set goals. *Academy of Management Journal, 22*, 163-168.
- Latham, G.P., & Steele, T.P. (1983). The motivational effects of participation versus goal setting on performance. *Academy of Management Journal, 26*, 406-417.
- Latham, G.P., Winters, D.C., & Locke, E.A. (1994). Cognitive and motivational effects of participation: a mediator study. *Journal of Organizational Behavior, 15*, 49-63.
- Latham, G.P., & Yukl, G.A. (1976). The effects of assigned and participative goal setting on performance and job satisfaction. *Journal of Applied Psychology, 61*, 166-171.
- Locke, E.A., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals, and task strategies on task performance. *Journal of Applied Psychology, 69*, 241-251.

- Locke, E.A., & Latham, G.P. (1984). *Goal setting: A motivational technique that works*. Englewood Cliffs, NJ: Prentice-Hall.
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice Hall.
- Locke, E.A., & Latham, G.P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, 57(9), 705-717.
- Locke, E.A., Latham, G.P., & Erez, M. (1988). The determinants of goal commitment. *Academy of Management Review*, 13, 23-39.
- Locke, E.A., Shaw, K.M., Saari, L.M., & Latham, G.P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin*, 90, 125-152.
- Lozano, B.E., Stephens, R.S., & Roffman, R.A. (2006). Abstinence and Moderate Use Goals in the Treatment of Marijuana Dependence. *Addiction*, (in press).
- Maisto, S.A., Sobell, M.B., & Sobell, L.C. (1980). Predictors of treatment outcome for alcoholics treated by individualized behavior therapy. *Addictive Behaviors*, 5, 259-264.
- Marlatt, G.A. (1983). The controlled-drinking controversy: A commentary. *American Psychologist*, 38, 1097-1110.
- Marlatt, G.A., Baer, J.S., Kivlahan, D.R., Dimeff, L.A., Larimer, M.E., Quigley, L.A., Somers, J.M., Williams, E. (1998). Screening and brief intervention for high-risk college student drinkers: Results from a 2-year follow-up assessment. *Journal of Consulting and Clinical Psychology*, 66 (4), 604-615.
- Marlatt, G.A., & Gordon, J.R. (1985). *Relapse prevention*. New York: Guilford Press.

- Mento, A.J., Steel, R.P., & Karren, R.J. (1987). Meta-analytic study of the effects of goal setting on task performance: 1966-1984. *Organizational Behavior and Human Decision Processes*, 39, 52-83.
- Meyer, J.P., & Gellatly, I.R. (1988). Perceived performance norm as a mediator in the effect of assigned goal on personal goal and task performance. *Journal of Applied Psychology*, 73, 410-420.
- Miller, W.R. (1985). Motivation for treatment: A review with special emphasis on alcoholism. *Psychological Bulletin*, 98, 84-107.
- Miller, W.R. (1986/1987). Motivation and treatment goals. *Drugs and Society*, 1, 133-151.
- Miller, W.R., Leckman, A.L., Delaney, H.D., & Tinkom, M. (1992). Long-term follow-up of behavioral self-control training, *Journal of Studies on Alcohol*, 53(3), 249-261.
- Miller, W.R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. New York: Guilford.
- Miller, W.R., Tonigan, J.S. (1996). Assessing drinkers' motivation for change: The Stages of Change and Readiness and Treatment Eagerness Scale (SOCRATES). *Psychology of Addictive Behaviors*, 10 (2), 81-89.
- Peake, P.K., & Cervone, D. (1989). Sequence anchoring and self-efficacy: Primacy effects in the consideration of possibilities. *Social Cognition*, 7(1), 31-50.
- Polich, J.M., Armor, D.J., & Braiker, H.B. (1981). *The course of alcoholism: Four years after treatment*. New York: Wiley.
- Pomerleau, O., Pertschuk, M., Adkins, D., & d'Aquili, E. (1978). Treatment for middle income problem drinkers. In P.E. Nathan, G.A. Marlatt, & T. Loberg (Eds.), *Alcoholism: New directions in behavioral research and treatment*. New York: Plenum Press.

- Project MATCH Research Group. (1997). Matching alcoholism treatments to client heterogeneity: Project MATCH post-treatment drinking outcomes. *Journal of Studies on Alcohol, 58*, 7-29.
- Putnam, D.E., Finney, J.W., Barkley, P.L., & Bonner, M. (1994). Enhancing commitment improves adherence to a medical regimen. *Journal of Consulting and Clinical Psychology, 62*, 191-194.
- Rosenberg, H. (1993). Prediction of controlled drinking by alcoholics and problems drinkers. *Psychological Bulletin, 113*(1), 129-139.
- Ross, H.E., Gavin, D.R., & Skinner, H.A. (1990). Diagnostic validity of the MAST and the Alcohol Dependence Scale in the assessment of *DSM-III* alcohol disorders. *Journal of Studies on Alcohol, 51*, 506-513.
- Rychtarik, R.G., Foy, D.W., Scott, T., Lokey, L., & Prue, D.M. (1987). Five-six year follow-up of broad-spectrum behavioral treatment for alcoholism: Effects of training controlled drinking skills. *Journal of Consulting and Clinical Psychology, 55*(1), 106-108.
- Sanchez-Craig, M., Annis, H.M., Bornet, A.R., & MacDonald, K.R. (1984). Random assignment to abstinence and controlled drinking: Evaluation of a cognitive-behavioral program for problem drinkers. *Journal of Consulting and Clinical Psychology, 52*(3), 390-403.
- Sanchez-Craig, M., Wilkinson, A., & Davila, R. (1995). Empirically based guidelines for moderate drinking: 1-year results from three studies with problem drinkers. *American Journal of Public Health, 85*(6), 823-828.
- Sashkin, M. (1976). Changing toward participative management approaches: A model and methods. *Academy of Management Review, July*, 75-86.

- Schuldt, W.J., & Bonge, D. (1979). Effects of self-imposition and experimenter imposition on achievement standards and performance. *Psychological Reports, 45*, 119-122.
- Sitharthan, T., & Kavanagh, D.J. (1990). Role of self-efficacy in predicting outcomes from a programme for controlled drinking. *Drug and Alcohol Dependence, 27*, 87-94.
- Sitharthan, T., Kavanagh, D.J., & Sayer, G. (1996). Moderating drinking by correspondence: An evaluation of a new method of intervention. *Addiction, 91*, 345-355.
- Sitharthan, T., Sitharthan, G., Hough, M.J., & Kavanagh, D.J. (1997). Cue exposure in moderation drinking: A comparison with cognitive-behavior therapy. *Journal of Consulting and Clinical Psychology, 65*, 878-882.
- Skinner, H.A., & Allen, B.A. (1982). Alcohol dependence syndrome: Measurement and validation. *Journal of Abnormal Psychology, 91*, 199-209.
- Sobell, L.C. & Sobell, M.B. (1992). Timeline Follow-Back, A technique for assessing self-reported alcohol consumption. In Litten, R. & Allen, J. (Eds.), *Measuring Alcohol Consumption* (pp. 41-72). New Jersey: The Humana Press Inc.
- Sobell, L.C. & Sobell, M.B. (1996). *Timeline followback: User's guide*. Ontario, Canada: Addiction Research Foundation.
- Sobell, M.B., & Sobell, L.C. (1993). *Problem drinkers: Guided self-change treatment*. New York: Guilford Press.
- Sobell, M.B., Sobell, L.C., Bogardis, J., Leo, G.I., & Skinner, W. (1992). Problems drinkers' perceptions of whether treatment goals should be self-selected or therapist-selected. *Behavior Therapy, 23*, 43-52.
- Sobell, M.B., Sobell, L.C., Klajner, F., Pavan, D., & Basian, E. (1986). The reliability of a timeline method for assessing normal drinker college students' recent drinking history:

- Utility for alcohol research. *Addictive Behaviors, 11*, 149-161.
- Stephens, R.S., Wertz, J.S., & Roffman, R.A. (1993). Predictors of marijuana treatment outcomes: The role of self-efficacy. *Journal of Substance Abuse, 5*, 341-353.
- Stephens, R.S., Wertz, J.S., & Roffman, R.A. (1995). Self-efficacy and marijuana cessation: A construct validity analysis. *Journal of Consulting and Clinical Psychology, 63*(6), 1022-1031.
- White, P.H., Kjelgaard, M., & Harkins, S. (1995). Testing the contribution of self-evaluation to goal setting effects using the social loafing paradigm. *Journal of Personality and Social Psychology, 69*, 69-79.
- White, H. R., & Labouvie, E. W. (1989). Towards the assessment of adolescent problem drinking. *Journal of Studies on Alcohol, 50*, 30-37.
- Wood, R.E., & Bandura, A. (1989). Impact of conceptions of ability on self-regulatory mechanisms and complex decision-making. *Journal of Personality and Social Psychology, 56* (3), 407-415.

Table 1. Demographics, Alcohol Use, and Stages of Change at Initial Assessment

Variable	PG n=45	AG n=45	NG n=36	Total Sample n=126
Age (in years)	19.47 (1.39)	19.49 (1.42)	19.97 (2.73)	19.62 (1.88)
Sex (Female)	51.1%	51.1%	52.8%	51.64%
Race (White)	71.1%	84.4%	86.1%	80.2%
Alcohol use goal prior to entering study	60.0%	57.8%	41.7%	54.0%
Average No. of drinks per drinking day	6.70 (2.80)	6.41 (2.28)	6.57 (3.02)	6.56 (2.67)
Average No. of drinking days per week	2.47 (1.09)	2.54 (1.08)	2.40 (0.82)	2.47 (1.01)
RAPI	10.62 (4.05)	11.47 (4.78)	10.39 (3.99)	10.86 (4.30)
ADS	12.98 (6.28)	14.38 (5.80)	13.03 (5.28)	13.49 (5.83)
SOCRATES				
Recognition	15.00 (5.29)	14.98 (5.19)	15.06 (5.42)	15.01 (5.25)
Ambivalence	10.27 (3.64)	9.82 (3.94)	10.31 (3.29)	10.12 (3.63)
Taking Steps	23.04 (7.00)	20.98 (7.10)	22.58 (5.86)	22.17 (6.74)

Note. RAPI = Rutgers Alcohol Problem Index; ADS = Alcohol Dependence Scale; SOCRATES = Stage of Change Readiness and Treatment Eagerness Scale.

Table 2. Percentage of participants with corresponding upper goal limits.

	Male (n=44)	Female (n=46)	Total (n=90)
Alcohol Use Goals at Baseline			
<u>Drinking days per week</u>			
1	22.7%	47.8%	35.6%
2	50.0%	47.8%	48.9%
3	22.7%	4.3%	13.3%
4	4.5%	-----	2.2%
<u>Drinks per drinking day</u>			
2	9.1%	13.0%	11.1%
3	9.1%	30.4%	20.0%
4	27.3%	34.8%	31.1%
5	22.7%	13.0%	17.8%
6	9.1%	-----	4.4%
7	18.2%	4.3%	11.1%
8	4.5%	-----	2.2%
13	-----	4.3%	2.2%

Table 3. Means and standard deviation of items used for checks of potential extraneous variables and manipulation check: goal setting conditions

	PG (n=45)		AG (n=45)		Total (n=90)	
	Mean	SD	Mean	SD	Mean	SD
<i>Potential Extraneous Variables/Manipulation Check</i>						
1. Working to achieve my alcohol use goal is a very important activity in that it involves helping me perform an important function.	5.82 ^a	1.25	5.64 ^a	1.03	5.73	1.14
2. Working to achieve my alcohol use goal seems like a fairly routine activity with no real significance to me.	2.84 ^a	1.45	2.93 ^a	1.50	2.89	1.47
3. The amount of time dedicated to setting my alcohol use goal in the baseline session was too brief.	1.60 ^a	1.14	1.91 ^a	1.08	1.76	1.12
4. I think it will be interesting to work toward achieving my alcohol use goal.	6.13 ^a	1.08	5.80 ^a	.92	5.97	1.01
5. I am <u>not</u> looking forward to working to achieve my alcohol use goal.	2.20 ^a	1.22	2.53 ^a	1.22	2.37	1.22
6. This is a challenging goal for me.	3.80 ^a	.89	3.67 ^a	1.11	3.74	2.00
7. How difficult do you perceive the goal set during the baseline session to be?	5.62 ^a	1.34	5.67 ^a	1.68	5.65	1.51
Perceived Participation (3-item measure)	4.34 ^a	.53	2.59 ^b	.80	3.46	.66

Note. PG = Participatively-set Goal; AG = Assigned Goal

Means in the same row with different superscripts differ significantly; $p < .001$.

Table 4. Means and standard deviation of items used for checks of potential extraneous variables: all conditions

	PG (n=45)		AG (n=45)		NG (n=36)		Total (n=126)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Potential Extraneous Variables</i>								
1. Self-monitoring of my drinking is a very important activity in that it involves helping me perform an important function.	5.69 ^a	1.08	5.60 ^a	1.12	5.44 ^a	1.11	5.59	1.10
2. Self-monitoring of my drinking seems like a fairly routine activity with no real significance.	3.20 ^a	1.40	3.13 ^a	1.53	3.28 ^a	1.30	3.20	1.41
3. Instructions for monitoring my drinking were given so fast I could barely follow what was going on.	1.09 ^a	.29	1.36 ^b	.71	1.14 ^{ab}	.35	1.20	.51
4. I think the alcohol use-related information provided in the baseline session was thorough and complete.	6.44 ^a	.76	6.33 ^a	.74	6.56 ^a	.65	6.44	.72
5. The amount of time reviewing instructions for monitoring my drinking was too brief.	1.27 ^a	.45	1.51 ^a	.70	1.36 ^a	.64	1.38	.61
6. I think it will be interesting to work on monitoring my drinking.	6.02 ^a	1.10	5.71 ^a	.99	6.14 ^a	1.07	5.94	1.06
7. I am <u>not</u> looking forward to monitoring my drinking.	2.44 ^a	1.29	3.04 ^b	1.30	1.92 ^c	.87	2.51	1.26
8. Students who participate in an experiment should comply with the instructions from the experimenter	6.22 ^a	1.09	6.07 ^a	1.01	6.61 ^a	1.08	6.28	1.07
Experimenter Supportiveness (11-item measure)	7.24 ^a	.69	7.27 ^a	.57	7.34 ^a	.80	7.28	.68

Note. PG = Participatively-set Goal; AG = Assigned Goal; NG = No Goal
Means in the same row with different superscripts differ significantly, $p < .05$.

Table 5. Drinks per drinking day and Drinking days per week

Condition	<i>n</i>	Assessment									
		Baseline		1-week		2-weeks		3-weeks		4-weeks	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Drinks per drinking day											
PG	45	6.70 ^a	2.80	4.73 ^a	2.81	4.15 ^a	3.34	3.73 ^a	3.19	3.57 ^a	2.81
AG	45	6.41 ^a	2.28	4.67 ^a	3.46	3.94 ^a	3.09	3.98 ^a	2.99	3.83 ^a	2.72
NG	36	6.57 ^a	3.02	6.82 ^b	3.45	5.94 ^b	3.39	6.17 ^b	4.04	6.06 ^b	4.18
Drinking days per week											
PG	45	2.47 ^a	1.09	2.24 ^a	1.05	1.64 ^a	1.19	1.55 ^a	1.18	1.50 ^a	1.03
AG	45	2.54 ^a	1.08	2.11 ^a	1.32	1.72 ^a	1.18	1.64 ^a	1.18	1.99 ^b	1.25
NG	36	2.40 ^a	0.82	2.64 ^a	1.25	2.44 ^b	1.27	2.39 ^b	1.49	2.33 ^b	1.22

Note. Data at baseline and follow-up are presented for the complete sample ($N = 126$). At a given assessment, means with different superscripts for the same variable are significantly different at $p < .05$. PG = Participatively-set Goal; AG = Assigned Goal; NG = No Goal.

Table 6. Means and standard deviations for goal commitment and self-efficacy for goal achievement

		Assessment									
		<u>Post-Intervention</u>		<u>1-week</u>		<u>2-weeks</u>		<u>3-weeks</u>		<u>4-weeks</u>	
Condition	<i>n</i>	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Goal Commitment											
PG	45	4.11	0.39	3.91	0.57	4.04	0.56	4.03	0.48	4.05	0.52
AG	45	3.88	0.55	3.65	0.71	3.73	0.75	3.88	0.78	3.85	0.80
Self-Efficacy for Goal Achievement											
PG	45	76.61	11.65	75.07	15.01	77.97	15.93	79.20	16.70	-----	-----
AG	45	68.62	14.24	65.80	16.12	67.85	16.51	70.73	17.18	-----	-----

Note. PG = Participatively-set Goal; AG = Assigned Goal. Dashes indicate that Self-Efficacy was not assessed at the follow-up.

Table 7. Correlations of goal commitment and self-efficacy for goal achievement with alcohol use variables

Alcohol Use Variables	Follow-up assessments			
	1-week	2-weeks	3-weeks	4-weeks
	Goal Commitment			
Avg drinks/drinking day	-.33**	-.20	-.38**	-.09
Avg drinking days/week	-.21*	-.28**	-.23*	-.25*
Self-Efficacy for Goal Achievement				
Avg drinks/drinking day	-.34**	-.50**	-.47**	-.27*
Avg drinking days/week	-.49**	-.31**	-.35**	-.15

Note. Correlations are based on Goal Commitment and Self-Efficacy for Goal Achievement assessed post-intervention. * $p < .05$. ** $p < .01$.

Table 8. Standardized Multiple Regression Coefficients (β_s) Predicting Drinks Per Drinking Day and Drinking Days Per Week at Follow-Up

Predictor	1-week (n=90)	2-weeks (n=90)	3-weeks (n=90)	4-weeks (n=90)
Drinks Per Drinking Day				
Baseline drinks per drinking day	0.41***	0.42***	0.25**	0.23*
Goal commitment	-0.22*	0.00	-0.23*	0.02
Self-efficacy	-0.15	-0.39***	-0.31**	-0.21
Total R²	0.32***	0.42***	0.33***	0.12*
Drinking Days Per Week				
Baseline drinking days per week	0.46***	0.48***	0.37***	0.46***
Goal commitment	-0.05	-0.22*	-0.13	-0.24*
Self-efficacy	-0.31**	-0.05	-0.17	0.10
Total R²	0.43***	0.33***	0.25***	0.26***

Note. Regression coefficients (β_s) for Goal commitment and Self-efficacy are based on goal commitment and self-efficacy for goal achievement assessed post-intervention. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 9. Standardized Multiple Regression Coefficients (β_s) Predicting Goal Achievement

Predictor	Weeks Achieved Quantity Goal ¹	Weeks Achieved Frequency Goal ²	Weeks Achieved Total Goal ³
Baseline drinking	-0.10	-0.11	-0.19
Goal commitment	0.25*	0.13	0.26**
Self-efficacy	0.34**	0.29*	0.28**
Total R²	0.27***	0.16**	0.29***

Note. Baseline drinking corresponds to Average Drinks Per Drinking Day¹; Average Drinking Days Per Week²; Average Drinks Per Week³. Regression coefficients (β_s) for Goal commitment and Self-efficacy are based on goal commitment and self-efficacy for goal achievement assessed post-intervention.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix A
Informed Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants of Investigative Projects

Title of Project: Self-Monitoring of Alcohol Use

Investigators: Brian E. Lozano, M.S.
 Robert S. Stephens, Ph.D.

I. The Purpose of this Project

The purpose of this project is to learn more about different ways of monitoring one's drinking and is designed for students who want to make changes in their current drinking.

II. Procedures

You will be asked to complete questionnaires containing items pertaining to your use of alcohol, experiences you may have had as a result of alcohol use. You will also be asked to record your quantity of alcohol consumption on a daily basis for a period of 8 weeks. You will be asked to complete a brief web-based follow-up assessment once per week during this 8 week period to report your alcohol use and complete a similar set of questionnaires.

III. Risks

Few risks are involved with participation in this study. If there are any questions that make you feel uncomfortable, you may refuse to answer those questions or discontinue your participation in the study without penalty.

IV. Benefits of this Project

You may benefit from participating in this study by learning about your alcohol use. In addition, you may benefit by learning how psychological research is conducted. If you are interested in receiving information on the results of this study following its completion please indicate so in the box at the end of the next page and provide an e-mail address where you would like to receive this information. *Agreeing to receive this information will in no way affect the confidentiality of your responses today.*

V. Extent of Anonymity and Confidentiality

All responses will be kept strictly confidential. The consent form, demographic information, and contact and locator information will be labeled with the same unique code number on your questionnaire responses but the identifying information will be stored separately from your responses in a locked cabinet that is accessible only to members of the research team.

VI. Compensation

When you complete each weekly follow-up you will be entered into a \$20 lottery for that follow-up; there will be a total of 8 weekly lotteries. Upon completing 4 out of 4 weekly follow-ups during the first month of the study you will be eligible for a \$25 bonus lottery. Similarly, when you complete at least 4 out of 4 weekly follow-ups during the second month you will be eligible for an additional \$35 bonus lottery. Because less than 120 individuals are expected to participate in the follow-up assessments, your odds of winning at least one of the lotteries is better than one in twelve. In addition, students taking a psychology course will be eligible to receive a total of three extra credit points (1 point for completing the baseline assessment, 1 point for completing follow-ups Week 1 through Week 4, and 1 point for completing follow-ups Week 5 through Week 8) towards your psychology grade for participation in this study.

VII. Freedom to Withdraw

If at any time during the study you become uncomfortable, you are free to withdraw your participation without penalty. You will still be eligible for the lotteries up to the point you withdrew. You may also choose not to answer specific questions without penalty.

VIII. Approval of Research

This research project has been approved (IRB# 06-545), as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University and by the Human Subjects Committee of the Department of Psychology.

IX. Participant's Responsibilities

I voluntarily agree to participate in this study. I will be responsible for completing several questionnaires that ask about my use of alcohol and experiences I may have had as a result of alcohol use. I will also be responsible for recording my quantity of alcohol consumption on a daily basis for a period of 8 weeks. Lastly, I will be responsible for completing a brief web-based follow-up assessment once per week during this 8 week period to report my alcohol use and complete a similar set of questionnaires.

X. Participant's Permission

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project. If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Printed Name	Signature	Date
--------------	-----------	------

Should I have any questions about this research or its conduct, I may contact:

Brian E. Lozano, M.S.	231-7631	blozano@vt.edu
Robert S. Stephens, Ph.D.	231-6304	stephens@vt.edu

IRB Representatives:			
David Harrison, Ph.D.	231-4422	Dr. David Moore	231-4991
Chair, Psychology Human	dwh@vt.edu	Chair, IRB	moored@vt.edu
Subjects Committee		CVM Phase II	

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants of Investigative Projects

Title of Project: Self-Monitoring of Alcohol Use

Investigators: Brian E. Lozano, M.S.
Robert S. Stephens, Ph.D.

Participant's Responsibilities

I voluntarily agree to participate in this study. I will be responsible for completing several questionnaires that ask about my use of alcohol and experiences I may have had as a result of alcohol use. I will also be responsible for recording my quantity of alcohol consumption on a daily basis for a period of 8 weeks. Lastly, I will be responsible completing a brief web-based follow-up assessment once per week during this 8 week period to report my alcohol use and complete a similar set of questionnaires.

Participant's Permission

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project. If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Printed Name

Signature

Date

If you are interested in receiving information on the results of this study please check the box below and provide an e-mail address. This information will be sent out when the study is completed – expect to receive an e-mail sometime in the Fall of 2008.

Yes, I would like to receive this information at the following e-mail address:

Appendix B
Demographic Information

BLPID ____/____/____

DATE: Month _____ Day _____ Year

DE/V: _____

Demographic Information Form

1. What is your sex?

 (0) Female (1) Male

2. To which ethnic or racial group do you belong?

 (0) White, not of Hispanic origin (1) Black, not of Hispanic origin (2) Hispanic (3) Asian or Pacific Islander (4) American Indian / Alaskan Native (5) Other _____

3. What is your academic status?

 (0) Freshman (1) Sophomore (2) Junior (3) Senior

4. What is your age?

 years old

5. What is your weight?

 lbs.

Appendix C
Contact and Locator Information

Contact and Locator Information

BLPID ____/____/____	DATE: Month _____ Day _____ Year
----------------------	----------------------------------

Your Name: _____

An e-mail address you can be reached at on a weekly basis: _____

Telephone (Home or Cell): _____

If we happen to lose touch with you because of a change of email address or phone number we will still want to be able to contact you so that may complete the follow-up assessments. Also, we will want to contact you to claim the lottery prize(s), should you win any of the lotteries. Even if you haven't changed your e-mail or phone number, if we are unable to get in touch with you we would like to telephone someone who can help us to contact you. For these reasons, we would like to have the name of someone who might be able to help us locate you. This person should be someone who does not live with you and who has lived at the same address for a long time (e.g., two or more years). This person could be a relative such as a brother, sister, parent, aunt, uncle, or grandparent, or could be a close friend. Importantly, we will only contact the locator in the event we cannot contact you through other means, and we will not disclose any of the information you provided for this study to the locator. Also, the locator information you provide will not be stored with your data and will be kept in a locked filing cabinet.

Able to provide locator ____ Yes ____ No

Locator Name: _____

E-mail: _____

Address: _____

City: _____ State: _____

Telephone: (Home) _____

Relationship to participant: _____

Special instructions for telephoning/contacting locator: _____

Appendix D
Modified Daily Drinking Questionnaire

DDQ

BLPID ____/____/____

DATE: Month ____ Day ____ Year ____

IID ____/____

SESSION ____ (10) SC

DE ____ V ____

Instructions: Thinking about your drinking during the **past month**, please fill in a number for each day of the week indicating the **typical number of standard drinks** you usually consume on that day, and the **typical number of hours** you usually drink on that day.

Our definition of one standard drink is **one 12 ounce beer, one 5 ounce wine, or 1 ½ ounces of liquor** (straight or in a drink).

Drink Equivalencies:

12 oz. beer = 5 oz. wine = 1 ½ oz. liquor

**Typical Alcohol Consumption During the Past Month**

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
# of standard drinks							
# of hours							

Appendix E
TimeLine Followback

October 2006

Sunday Oct. 1 st	Monday Oct. 2 nd	Tuesday Oct. 3 rd	Wednesday Oct. 4 th	Thursday Oct. 5 th	Friday Oct. 6 th	Saturday Oct. 7 th
Yom Kippur begins						
Sunday Oct. 8 th	Monday Oct. 9 th	Tuesday Oct. 10 th	Wednesday Oct. 11 th	Thursday Oct. 12 th	Friday Oct. 13 th	Saturday Oct. 14 th
	Columbus Day (US)					
Sunday Oct. 15 th	Monday Oct. 16 th	Tuesday Oct. 17 th	Wednesday Oct. 18 th	Thursday Oct. 19 th	Friday Oct. 20 th	Saturday Oct. 21 st
Sunday Oct. 22 nd	Monday Oct. 23 rd	Tuesday Oct. 24 th	Wednesday Oct. 25 th	Thursday Oct. 26 th	Friday Oct. 27 th	Saturday Oct. 28 th
Sunday Oct. 29 th	Monday Oct. 30 th	Tuesday Oct. 31 st				
		Halloween				

BLPID ___/___/___ Date: ___/___/___ IID ___/___ Session ___ (0) BL

November 2006

			Wednesday Nov. 1 st	Thursday Nov. 2 nd	Friday Nov. 3 rd	Saturday Nov. 4 th
Sunday Nov. 5 th	Monday Nov. 6 th	Tuesday Nov. 7 th	Wednesday Nov. 8 th	Thursday Nov. 9 th	Friday Nov. 10 th	Saturday Nov. 11 th
Sunday Nov. 12 th	Monday Nov. 13 th	Tuesday Nov. 14 th	Wednesday Nov. 15 th	Thursday Nov. 16 th	Friday Nov. 17 th	Saturday Nov. 18 th
Sunday Nov. 19 th	Monday Nov. 20 th	Tuesday Nov. 21 st	Wed Nov. 22 nd	Thursday Nov. 23 rd	Friday Nov. 24 th	Saturday Nov. 25 th
				Thanksgiving (US)		
Sunday Nov. 26 th	Monday Nov. 27 th	Tuesday Nov. 28 th	Wednesday Nov. 29 th	Thursday Nov. 30 th		

BLPID ___/___/___ Date ___/___/___ IID ___/___ Session ___ (0) BL) DE ___ VER ___

Appendix F
Alcohol Use – Weekly Follow-up

DDQ

BLPID ____/____/____	DATE: Month ____ Day ____ Year ____
IID ____/____	SESSION: ____ (1) 1-week ____ (2) 2-week ____ (3) 3-week ____ (4) 4-week

Instructions: Please enter the following information that you recorded on the self-monitoring card each day over the **past week**: *number of standard drinks*, and *the number of hours during which you were drinking*. **Simply type the information in the appropriate box for the dates indicated in the table below.**

Remember, our definition of one standard drink is **one 12 ounce beer, one 5 ounce wine, or 1 ½ ounces of liquor** (straight or in a drink).

Drink Equivalencies:

12 oz. beer = 5 oz. wine = 1 ½ oz. liquor



Alcohol Consumption During the Past Week

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
# of standard drinks							
# of hours							

Appendix G
Rutgers Alcohol Problem Index

RAPI

BLPID ____/____/____	DATE: Month ____ Day ____ Year ____
IID ____/____	SESSION ____ (10) SC

Instructions: Different things happen to people while they are drinking alcohol or as a result of their alcohol use. Some of these things are listed below. In the space provided, use the scale below to indicate the ONE number from 1 to 5 that corresponds to how often each of the following has happened to you **during the last 60 days** while you were **drinking alcohol** or as the **result of your alcohol use**.

(1) = Never (2) = Once (3) = 2-3 times (4) = 4-5 times (5) = More than 5 times

During the past 60 days, how often has each of the following things happened to you while you were drinking alcohol or as the result of your alcohol use.	
1. Got into fights, acted bad or did mean things.	_____ (response)
2. Not able to do your homework or study for a test.	_____ (response)
3. Missed out on other things because you spent too much money on alcohol.	_____ (response)
4. Went to work or school high or drunk.	_____ (response)
5. Caused shame or embarrassment to someone.	_____ (response)
6. Neglected your responsibilities.	_____ (response)
7. Relatives avoided you.	_____ (response)
8. Felt that you needed more alcohol than you used to use in order to get the same effect.	_____ (response)
9. Tried to control you drinking by trying to drink only at certain times of the day or places.	_____ (response)
10. Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking.	_____ (response)
11. Noticed a change in your personality.	_____ (response)
12. Felt that you had a problem with alcohol.	_____ (response)

(1) = Never (2) = Once (3) = 2-3 times (4) = 4-5 times (5) = More than 5 times

During the past 60 days, how often has each of the following things happened to you while you were drinking alcohol or as the result of your alcohol use.	
13. Missed a day (or part of a day) of school or work.	_____ (response)
14. Tried to cut down or quit drinking.	_____ (response)
15. Suddenly found yourself in a place that you could not remember getting to.	_____ (response)
16. Passed out or fainted suddenly.	_____ (response)
17. Had a fight, argument or bad feelings with a friend.	_____ (response)
18. Had a fight, argument or bad feelings with a family member.	_____ (response)
19. Kept drinking when you promised yourself not to.	_____ (response)
20. Felt you were going crazy.	_____ (response)
21. Had a bad time.	_____ (response)
22. Felt physically or psychologically dependent on alcohol.	_____ (response)
23. Was told by a friend or neighbor to stop or cut down drinking.	_____ (response)

Appendix H
Alcohol Dependence Scale

ADS

BLPID ____/____/____	DATE: Month ____ Day ____ Year ____
IID ____/____	SESSION ____ (10) SC
DE ____ V ____	

Instructions: Carefully read each of the following questions and *answer each item by placing an “X” next to the ONE choice that is most true for you.* The word “drinking” in a question refers to “drinking of alcoholic beverages.”

The following questions are about you use of alcohol during the **past 2 months**.

During the past 2 months...

1. How much did you drink the last time you drank?

- ___ 1) Enough to get high or less
 ___ 2) Enough to get drunk
 ___ 3) Enough to pass out

2. Do you often have hangovers on Sunday or Monday mornings?

- ___ 1) No
 ___ 2) Yes

3. Have you had the “shakes” when sobering up (hands tremble, shake inside)?

- ___ 1) No
 ___ 2) Sometimes
 ___ 3) Almost every time I drink

4. Do you get physically sick (e.g., vomit, stomach cramps) as a result of drinking?

- ___ 1) No
 ___ 2) Sometimes
 ___ 3) Almost every time I drink

During the past 2 months...

5. Have you had the “DTs” (delirium tremens) – that is, seen, felt or heard things not really there; felt very anxious, restless, and over excited?

- 1) No
- 2) Once
- 3) Several times

6. When you drink, do you stumble about, stagger, and weave?

- 1) No
- 2) Sometimes
- 3) Often

7. As a result of drinking, have you felt overly hot and sweaty (feverish)?

- 1) No
- 2) Once
- 3) Several times

8. As a result of drinking, have you seen things that were not really there?

- 1) No
- 2) Once
- 3) Several times

9. Do you panic because you fear you may not have a drink when you need it?

- 1) No
- 2) Yes

10. Have you had blackouts (“loss memory” without passing out) as a result of drinking?

- 1) No, never
- 2) Sometimes
- 3) Often
- 4) Almost every time I drink

During the past 2 months...**11. Do you carry a bottle with you or keep one close at hand?**

- 1) No
- 2) Some of the time
- 3) Most of the time

12. After a period of abstinence (not drinking), do you end up drinking heavily again?

- 1) No
- 2) Sometimes
- 3) Almost every time

13. In the past 2 months, have you passed out as a result of drinking?

- 1) No
- 2) Once
- 3) More than once

14. Have you had a convulsion (fit) following a period of drinking?

- 1) No
- 2) Once
- 3) Several times

15. Do you drink throughout the day?

- 1) No
- 2) Yes

16. After drinking heavily, has your thinking been fuzzy or unclear?

- 1) No
- 2) Yes, but only for a few hours
- 3) Yes, for one or two days
- 4) Yes, for many days

During the past 2 months...

17. As a result of drinking, have you felt your heart beating rapidly?

- 1) No
- 2) Once
- 3) Several times

18. Do you almost constantly think about drinking and alcohol?

- 1) No
- 2) Yes

19. As a result of drinking, have you heard “things” that were not really there?

- 1) No
- 2) Once
- 3) Several times

20. Have you had weird and frightening sensations when drinking?

- 1) No
- 2) Once or twice
- 3) Often

21. As a result of drinking, have you “felt things” crawling on you that were not really there (e.g., bugs, spiders)?

- 1) No
- 2) Once
- 3) Several times

22. With respect to blackouts (loss of memory):

- 1) Have never had a blackout
- 2) Have had blackouts that last less than an hour
- 3) Have had blackouts that last for several hours
- 4) Have had blackouts that last for a day or more

During the past 2 months...**23. Have you tried to cut down on your drinking and failed?**

- 1) No
- 2) Once
- 3) Several times

24. Do you gulp drinks (drink quickly)?

- 1) No
- 2) Yes

25. After taking one or two drinks, can you usually stop?

(Notice that the response scale has changed)

- 1) Yes
- 2) No

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

SOCRATES

BLPID ___/___/___	DATE: Month ___ Day ___ Year ___
IID ___/___	SESSION: ___ (10) SC
DE ___ V ___	

Instructions: Please read each of the following statements carefully. Each one describes a way that you might (or might not) feel *about your drinking*. In the space provided, use the scale below to indicate the ONE number from 1 to 5 that corresponds to how much you **AGREE** or **DISAGREE** with each statement *right now*.

(1) = Strongly Disagree (2) = Disagree (3) = Undecided/Unsure (4) = Agree (5) = Strongly Agree

1. I really want to make changes in my drinking.	___ (response)
2. Sometimes I wonder if I am an alcoholic.	___ (response)
3. If I don't change my drinking soon, my problems are going to get worse.	___ (response)
4. I have already started making some changes in my drinking.	___ (response)
5. I was drinking too much at one time, but I've managed to change my drinking.	___ (response)
6. Sometimes I wonder if my drinking is hurting other people.	___ (response)
7. I am a problem drinker.	___ (response)
8. I'm not just thinking about changing my drinking, I'm already doing something about it.	___ (response)
9. I have already changed my drinking, and I am looking for ways to keep from slipping back to my old pattern.	___ (response)
10. I have serious problems with drinking.	___ (response)
11. Sometimes I wonder if I am in control of my drinking.	___ (response)
12. My drinking is causing a lot of harm.	___ (response)
13. I am actively doing things now to cut down or stop drinking.	___ (response)

(1) = Strongly Disagree (2) = Disagree (3) = Undecided/Unsure (4) = Agree (5) = Strongly Agree

14. I want help to keep from going back to the drinking problems that I had before.	_____ (response)
15. I know that I have a drinking problem.	_____ (response)
16. There are times when I wonder if I drink too much.	_____ (response)
17. I am an alcoholic.	_____ (response)
18. I am working hard to change my drinking.	_____ (response)
19. 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.	_____ (response)

Instructions: Please read each of the following items carefully and *provide your responses by placing an "X" in the space provided* next to the appropriate choice.

21. In the **past month**, had you been working to achieve a personal goal for quitting or reducing your alcohol consumption?

- _____ (0) No (stop here)
 _____ (1) Yes (continue to next question)

22. What were your **personal goal(s)** for your alcohol use over the **past month** and what was the **approximate date** you started working towards each goal? Please type the specific information in the space provided.

- _____ (0) to not drink at alcohol at all
 (a) Approximate date goal was set: _____ (m/d/y)

- _____ (1) to drink alcohol at a reduced level or control my drinking
 (a) Please specify goal: # of drinks per day _____
 (b) Please specify goal: # of drinking days per week _____
 (c) Approximate date goal was set: _____ (m/d/y)

Appendix J
Goal Statement Questionnaire

GS-PG

BLPID ____/____/____	DATE: Month ____ Day ____ Year ____
IID ____/____	SESSION ____ (0) BL
DE ____ v ____	

Instructions: On this form indicate **your goal now** regarding your alcohol consumption over the **next 4 weeks**. Do you intend **to not drink alcohol at all**, or **to drink alcohol moderately**?

My goal regarding my alcohol use over the next 4 weeks is:

_____ (0) TO NOT DRINK ALCOHOL AT ALL (i.e., abstinence)

_____ (1) IF I DRINK ALCOHOL, TO DRINK MODERATELY (i.e., moderation)

1a. On any given day during the week, if I choose to drink, my goal is to drink no more than _____ standard drinks.

1b. Over the course of a given week (7 days), if I choose to drink, my goal is to drink on no more than _____ days.

GS-AGM

BLPID ___/___/___	DATE: Month ___ Day ___ Year ___
IID ___/___	SESSION ___ (0) BL
DE ___ v ___	

Instructions: Your goal regarding your alcohol use over the next 4 weeks is:

_____ (1) IF YOU DRINK ALCOHOL, TO DRINK MODERATELY (i.e., moderation)

1a. On any given day during the week, if you choose to drink, your goal is to drink no more than _____ standard drinks.

1b. Over the course of a given week (7 days), if you choose to drink, your goal is to drink on no more than _____ days.

Appendix K
Controlled Drinking Self-Efficacy Scale

CDSES_M

BLPID ___/___/___	DATE: Month ___ Day ___ Year ___
IID ___/___	SESSION: ___ (0) BL ___ (1) 1-week
DE ___ V ___	___ (2) 2-week ___ (3) 3-week

Instructions: Think about the **NEXT WEEK**. Imagine you are in the following situations. **How confident are you that you will not drink more than _____ standard drinks in each situation?** In the space provided, use the scale below to indicate the ONE number that best describes your confidence at this time.

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
 Not all confident Moderately Confident Very Confident

Over the NEXT WEEK, how confident are you that you will not drink more than _____ standard drinks...	
1. when you are angry ?	_____ (response)
2. when you are depressed ?	_____ (response)
3. when you are physically tired ?	_____ (response)
4. when you are at a party with friends ?	_____ (response)
5. before a meal ?	_____ (response)
6. when you are bored ?	_____ (response)
7. when you are irritated ?	_____ (response)
8. when you are not relaxed in a social situation ?	_____ (response)
9. when you are watching TV (e.g., sports, movies, etc.) ?	_____ (response)
10. when you are worried ?	_____ (response)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
 Not all confident Moderately Confident Very Confident

Over the NEXT WEEK, how confident are you that you will not drink more than _____ standard drinks...	
11. when you are in a situation in which everyone in the group you are with is buying rounds of drinks for each other?	_____ (response)
12. when you are happy?	_____ (response)
13. when you want to feel more confident?	_____ (response)
14. when you are stressed?	_____ (response)
15. when someone offers to buy you free drinks?	_____ (response)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
 Not all confident Moderately Confident Very Confident

Think about the NEXT WEEK. How confident are you...	
16. that you do not have more than _____ drinks (your goal limit) on any given day that you have a drink?	_____ (response)
17. that you do not drink on more than _____ days (your goal limit) during the week?	_____ (response)

Appendix L
Goal Commitment Questionnaire

GC_PG

BLPID ___/___/___	DATE: Month ___ Day ___ Year ___
IID ___/___	SESSION: ___ (0) BL ___ (1) 1-week ___ (2) 2-week
DE ___ V ___	___ (3) 3-week ___ (4) 4-week

Instructions: Please read each of the following statements carefully. In the space provided, use the scale below to indicate the ONE number that best reflects the degree to which you **AGREE** or **DISAGREE** with each statement at this time. **The word “goal” in each statement refers to the alcohol use goal that you chose for yourself during the baseline session.**

(1) = Strongly Disagree (2) = Disagree (3) = Neutral (4) = Agree (5) = Strongly Agree

1. It's hard to take this goal seriously.	_____ (response)
2. It's unrealistic for me to expect to reach this goal.	_____ (response)
3. It's quite likely that this goal may need to be revised, depending on how things go.	_____ (response)
4. Quite frankly, I don't care if I achieve this goal or not.	_____ (response)
5. I am strongly committed to pursuing this goal.	_____ (response)
6. It wouldn't take much to make me abandon this goal.	_____ (response)
7. I think this goal is a good goal to shoot for.	_____ (response)
8. This is a challenging goal for me.	_____ (response)

****Notice that the labels on the scale for Question 9 are slightly different****

9. How difficult do you perceive **the goal you set** at the baseline session to be? _____ (response)

1	2	3	4	5	6	7	8	9
Not at all Difficult				Moderately Difficult				Very Difficult

GC_AG

BLPID ___/___/___	DATE: Month ___ Day ___ Year ___
IID ___/___	SESSION: ___ (0) BL ___ (1) 1-week ___ (2) 2-week
DE ___ V ___	___ (3) 3-week ___ (4) 4-week

Instructions: Please read each of the following statements carefully. In the space provided, use the scale below to indicate the ONE number that best reflects the degree to which you **AGREE** or **DISAGREE** with each statement at this time. **The word “goal” in each statement refers to the alcohol use goal that was assigned to you during the baseline session.**

(1) = Strongly Disagree (2) = Disagree (3) = Neutral (4) = Agree (5) = Strongly Agree

1. It's hard to take this goal seriously.	_____ (response)
2. It's unrealistic for me to expect to reach this goal.	_____ (response)
3. It's quite likely that this goal may need to be revised, depending on how things go.	_____ (response)
4. Quite frankly, I don't care if I achieve this goal or not.	_____ (response)
5. I am strongly committed to pursuing this goal.	_____ (response)
6. It wouldn't take much to make me abandon this goal.	_____ (response)
7. I think this goal is a good goal to shoot for.	_____ (response)
8. This is a challenging goal for me.	_____ (response)

****Notice that the labels on the scale for Question 9 are slightly different****

9. How difficult do you perceive **the goal you were assigned** at the baseline session to be?
 _____ (response)

1	2	3	4	5	6	7	8	9
Not at all Difficult				Moderately Difficult				Very Difficult

Appendix M
Manipulation Check for Participation in Goal Setting

MC_1

BLPID ___/___/___	DATE: Month ___ Day ___ Year ___
IID ___/___	SESSION ___ (0) Baseline
DE ___ V ___	

Instructions: Please read each of the following statements carefully. In the space provided, use the scale below to indicate the ONE number from 1 to 5 that corresponds to the degree to which you feel you were involved in setting your alcohol use goal during the baseline session.

(1) = No Influence (2) = Little (3) = Moderate Influence (4) = Considerable (5) = Complete Control

1. How much influence did you have over the alcohol use goal set during the baseline session?	___ (response)
2. Compared to the experimenter, how much influence did you have over the alcohol use goal set during the baseline session?	___ (response)
3. During the baseline session, how much say did you have in determining the alcohol use goal that was set?	___ (response)

Appendix N
Check of Potential Extraneous Variables (all conditions)

Appendix O
Check of Potential Extraneous Variables (PG condition)

Instructions: Please read each of the following statements carefully. **The word “goal” refers to the alcohol use goal that you chose for yourself during the baseline session.** In the space provided, use the scale below to indicate the ONE number that best reflects the degree to which you **AGREE** or **DISAGREE** with each statement at this time.

1 2 3 4 5 6 7
 Strongly Neutral Strongly
 Disagree Agree

9. Working to achieve my alcohol use goal is a very important activity in that it involves helping me perform an important function.	<input type="text"/> (response)
10. Working to achieve my alcohol use goal seems like a fairly routine activity with no real significance to me.	<input type="text"/> (response)
11. The amount of time dedicated to setting my alcohol use goal in the baseline session was too brief.	<input type="text"/> (response)
12. I think it will be interesting to work toward achieving my alcohol use goal.	<input type="text"/> (response)
13. I am <u>not</u> looking forward to working to achieve my alcohol use goal.	<input type="text"/> (response)

Appendix P
Check of Potential Extraneous Variables (AG condition)

Instructions: Please read each of the following statements carefully. **The word “goal” refers to the alcohol use goal that was assigned to you during the baseline session.** In the space provided, use the scale below to indicate the ONE number that best reflects the degree to which you **AGREE** or **DISAGREE** with each statement at this time.

1 2 3 4 5 6 7
 Strongly Neutral Strongly
 Disagree Agree

9. Working to achieve my alcohol use goal is a very important activity in that it involves helping me perform an important function.	<input type="text"/> (response)
10. Working to achieve my alcohol use goal seems like a fairly routine activity with no real significance to me.	<input type="text"/> (response)
11. The amount of time dedicated to setting my alcohol use goal in the baseline session was too brief.	<input type="text"/> (response)
12. I think it will be interesting to work toward achieving my alcohol use goal.	<input type="text"/> (response)
13. I am <u>not</u> looking forward to working to achieve my alcohol use goal.	<input type="text"/> (response)

Appendix Q
Experimenter Supportiveness

Appendix R
Self-Monitoring Cards

Self-monitoring card for participants in the participatively-set goal condition.

<p>The <u>goal you set for yourself</u> is: if you choose to drink, to drink no more than ____ drinks/day, and to drink on no more than ____ days per week. On days you do not drink, please record the date and indicate “0” for no drinks that day. If you drink, please record drink related information prior to each drink or as soon as you can after drinking.</p>							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date							
# of std. drinks							
# of hours							

Self-Monitoring card for participants in the assigned goal condition.

The goal assigned to you is: if you choose to drink, to drink no more than _____ drinks/day, and to drink on no more than _____ days per week.
 On days you do not drink, please record the date and indicate “0” for no drinks that day. If you drink, please record drink related information prior to each drink or as soon as you can after drinking.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date							
# of std. drinks							
# of hours							

Self-Monitoring card for participants in the no goal condition.

On days you do not drink, please record the date and indicate “0” for no drinks that day. If you drink, please record drink related information prior to each drink or as soon as you can after drinking.							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Date							
# of std. drinks							
# of hours							

Appendix S
Compliance Check for Self-Monitoring

CC

BLPID ___/___/___

DATE: Month ___ Day ___ Year ___

IID ___/___

SESSION ___ (4) 4-week

Instructions: The following questions refer to your use of the **self-monitoring cards** during the **past month**. In the space provided, use the scale below to indicate the ONE number from 1 to 5 that corresponds to how often you did each behavior **during the past month**.

(1) = Never (2) = Rarely (3) = Sometimes (4) = Often (5) = Always

Over the past month, how often did you record your alcohol use information (i.e., number of drinks, days you drank, and hours spent drinking), on the self-monitoring cards...

1. all at one time at the end of the week?	_____ (response)
2. within 48 hours of drinking?	_____ (response)
3. within 24 hours of drinking?	_____ (response)
4. at the end of the day/night in which you drank?	_____ (response)
5. prior to each drink?	_____ (response)