The Effect of a Brief Goal-skills Group Intervention on Homework Compliance
and Depressive Symptom Severity

Thesis

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By

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Abstract

Previous research has shown that depressed clients who engage in more homework activity during the course of psychotherapy tend to improve more than clients who engage in less homework. A significant portion of what homework compliance consists of is the progress one makes on short-term, often weekly, goals that are set in session and pursued in the interim between sessions. This study explored whether a brief two-session goal-focused intervention would improve goal progress during two behavioral homework assignments and reduce symptoms of depression. A total of 103 introductory psychology students with elevated depressive symptoms and low levels of hope signed up for group sessions, with groups randomized to a goal-focused intervention or a control condition. Participants in the intervention learned skills to improve their goal setting and goal pursuit, whereas participants in the control condition were only encouraged to visualize the success of their goal pursuits. Conditions did not differ in goal progress at either assessment, nor in the rate of change in depressive symptoms over the two weeks. Similarly, conditions did not differ in rate of improvement on state hope or state anxiety. However, there was a significant hope by condition interaction in predicting rate of change in depressive symptoms such that participants with low hope experienced greater symptom change in the intervention.
group. There was also an interaction between hope and condition in predicting goal progress (but only during the first week). The findings of this study have implications for psychotherapies that place importance on assigning homework. Though further research is needed, these results raise the possibility that enhanced focus on goal skills may facilitate homework compliance and treatment outcome for low hope clients.
Dedication

This thesis is dedicated to my parents,

who have always been supportive of my goal pursuits.
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Chapter 1

Introduction

In recent years, increased interest has been shown in two areas related to the treatment of Major Depressive Disorder: understanding how to improve the efficacy of existing psychotherapies such as Cognitive Therapy (CT; Beck, Rush, Shaw, & Emery, 1979) and exploring new interventions to help facilitate the recovery of depressed individuals. One way in which researchers have expressed interest in improving the efficacy of existing psychotherapies is by improving clients’ compliance with between-session activities or “homework assignments,” as they are commonly called (Garland & Scott, 2002; Tompkins, 2002). The majority of psychotherapists, across different theoretical orientations, utilize homework assignments at least to some degree (Kazantzis, Lampropoulos, & Deane, 2005), and patient’s compliance with these homework assignments has been found to be related to outcome (see Kazantzis, Deane, & Ronan, 2000 for a review).

Although homework assignments may differ across different psychotherapies for depression, they play an important role in the therapeutic process. They encourage clients to practice the skills learned in therapy and apply them to their everyday lives (Kazantzis & Lampropoulos, 2002). In addition, homework assignments can also help clients examine their thoughts, feelings, or behaviors outside of the session and can aid
the therapist and the client in obtaining valuable information about the client’s depression in order to optimize treatment (Kazantzis, Lampropoulos, & Deane, 2005; Beck, Rush, Shaw, & Emery, 1979; Beck, 1995). For example, if a client fills out a daily mood log as homework, the therapist can note situations where the client’s mood was higher or lower than usual. The therapist can then work with the client to generate hypotheses regarding what aspects of those different situations resulted in a mood change, thus providing important information for planning future strategies for behavioral intervention.

Another area of interest in depression treatment research is that of developing and testing new interventions for the effective treatment of depression. Two of these treatments, Goal-Focused Group Psychotherapy (Klausner et al., 1998) and Self-System Therapy (Vieth et al. 2003; Strauman et al., 2006) strongly emphasize helping clients improve their skill in setting and pursuing goals. Studies of these interventions have revealed some evidence that a goal-based treatment can be effective in reducing depressive symptoms in clinically depressed samples. There is some focus on goal setting and pursuit in CT for depression (Beck, 1995), but generally the focus is on forming treatment-specific goals and finding ways to accomplish each goal within the cognitive framework. When setting goals for treatment, Beck suggests helping the client to “specify a global goal (“I’d like to be happier, feel better”) in behavioral terms” (p. 33). Therapists also assist clients in planning and scheduling activities and examining what negative thoughts and other obstacles might hinder goal pursuit. However, additional strategies for improving the setting of goals for treatment, as well as more general life goals, are not discussed as much as in some of the newer interventions such
as Goal-Focused Group Psychotherapy, Self-System Therapy, and Hope Therapy (Cheavens et al., 2006). Hope therapy, although it was not designed as a treatment for depression specifically, is another intervention designed to help clients learn strategies for improving goal pursuit.

The current study aimed to contribute to these lines of research by exploring whether a brief two-session goal-focused intervention would improve compliance with behavioral homework assignments and reduce symptoms of depression. A significant portion of what homework compliance consists of is the progress one makes on short-term, usually weekly, goals that are set in session and pursued in the interim between sessions. For example, behavioral homework assignments frequently consist of increasing the number of a person’s pleasurable or mastery experiences by setting goals such as “spend time with friends twice this week” or “organize my desk at work.” The goal skills targeted in the intervention were drawn from research in social cognition.

Before discussing the specific hypotheses and the methods of the study in more detail, I will first provide an overview of research on homework in psychotherapy (specifically CT), ways in which depressive symptoms and homework compliance may be improved and recent support for goal-focused interventions for depression.

*Cognitive Therapy and Behavioral Activation*

The cognitive or cognitive-behavioral perspective is the most common theoretical orientation of practicing psychologists, with approximately 43 percent of practicing psychologists reporting this perspective as their primary theoretical orientation (Addis & Krasnow, 2000). This perspective gained popularity in the 1950s and 1960s.
Psychologist Albert Ellis developed Rational-Emotive Behavior Therapy during this time, which is considered to be one of the first cognitive therapies (Farley, 2009). Aaron Beck, who developed CT for depression (Beck et al., 1979), was inspired by Ellis and his approach to understanding psychopathology (Beck, 2005).

The foundation of Beck’s CT is the cognitive model of depression, which stipulates that some people process information they encounter in a systematically biased way, leading to a negative view of themselves, their world, and their futures. This style of thinking makes these individuals vulnerable to developing depression when they face negative life events such as a job loss or a divorce (Beck, 2005). The goal of CT is to help these individuals form more realistic (and therefore generally more positive) beliefs and ways of viewing themselves, their world, and their futures.

The efficacy of CT as a treatment for individuals with Major Depressive Disorder has been well established (for a review, see Strunk & DeRubeis, 2001). CT can be divided into three general components: behavioral activation (BA), the identification and correction of unrealistic automatic thoughts and the modification of core beliefs (Jacobson et al., 1996). In the current study, the homework assignment for which compliance will be assessed is associated with the BA component of CT.

BA consists of interventions aimed at encouraging depressed clients to increase their level of activities that are pleasurable or promote a sense of achievement and mastery (Beck et al., 1979). Between-session activities are an integral part of BA. Jacobson and colleagues (1996) proposed that BA improves clients’ access to positive reinforcement in their daily lives, which serves to decrease depressive symptoms.
BA has shown some promise as a stand-alone treatment. Jacobson and colleagues (1996) found that depressed clients who received only the BA component of CT had comparable treatment outcomes to clients who received the full CT treatment (i.e., all three components as described above). Similarly, Dimidjian and colleagues (2006) found that an expanded version of Jacobson’s BA treatment performed comparably to CT among a subset of clients who were less severely depressed. Among their clients who were more severely depressed, BA significantly outperformed CT.

Homework assignments in CT

As previously mentioned, homework assignments are commonly used in many types of psychotherapy. However, they appear to be utilized to a greater extent in cognitive and behavioral therapies such as CT, where homework assignments typically involve scheduling and engaging in activities to promote a sense of accomplishment or pleasure, monitoring one’s automatic thoughts and devising rational responses to these thoughts, or engaging in behavioral “experiments” designed to test beliefs (Beck et al. 1979; Beck, 1995). In a survey of 221 practicing New Zealand psychologists, those who identified themselves as primarily using a cognitive-behavioral approach to therapy reported using homework in 66% of therapy sessions. In contrast, therapists who identified themselves as having another primary theoretical orientation to therapy (e.g. humanistic, interpersonal, and psychodynamic) reported using homework in only 48% of their sessions (Kazantzis & Deane, 1999). Similar results have been found when surveying practicing psychologists in the United States (Kazantzis et al., 2005).
Depressed clients who engage in more homework activity during the course of therapy tend to improve more than clients who engage in less homework (Kazantzis et al., 2000; Burns & Spangler, 2000). When analyzing two separate samples of depressed participants using structural equation modeling, Burns and Spangler found that a one-unit increase in homework compliance (measured on a 0-4 scale) was related to a 4.35 point decrease on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). Therefore, according to the model, participants who received the maximum score of four on the homework compliance scale (defined as more than three days a week, on average) during 12 weeks of cognitive-behavioral therapy would be expected to experience a reduction of approximately 17.4 points on the BDI after controlling for initial severity. At the other end of the spectrum, participants who, on average, complete no homework during the course of therapy would be expected to experience very little change in their depressive symptoms. Burns and Spangler also found that homework compliance was not affected by initial severity and did not appear to be a proxy for a third variable, such as motivation.

Improving homework compliance: Suggestions from clinical psychology

With the understanding that homework compliance is related to better therapy outcomes, some researchers have shown an interest in understanding ways of improving compliance (Garland & Scott, 2002; Tompkins, 2002; Kazantzis, Pachana & Secker, 2003). Many of the suggestions that have been made to improve homework compliance are based on clinical intuition and still await formal empirical testing. Two examples
include assigning manageable amounts of homework and assigning homework that is relevant to the goals of the session (Garland & Scott, 2002; Tompkins, 2002).

Other techniques and strategies for improving homework compliance have garnered some, albeit limited, empirical support. For example, providing a strong rationale for treatment and addressing client’s concerns about treatment may help improve compliance. Addis and Jacobson (2002) found that depressed clients who accept the rationale for treatment tended to have better homework compliance both early in treatment (sessions 4-6) and later in treatment (sessions 10-12). Though significant, the effect sizes for these relationships were relatively small ($r = .18$ and $r = .17$ for early and late compliance, respectively).

Checking clients’ attitudes about the homework assignment during the session in which the homework is assigned is also related to better compliance (Worthington, 1986). By asking clients what they think and feel about the homework assignment, clients must explicitly think about their attitudes, potentially becoming more aware of how positively or negatively they feel toward the assignment. If clients express a negative attitude toward the homework assignment, their therapists then can address this attitude before it impedes the clients’ ability to complete the homework as assigned.

Finally, providing written instructions for homework may also produce better compliance with homework assignments than merely providing the assignments verbally. Clinical intuition has suggested this is the case, but Cox, Tisdelle, and Culbert (1988) systematically manipulated the way in which homework was assigned and found better
homework performance and greater compliance when behavioral suggestions (e.g., listen
to relaxation tapes) were written rather than given verbally.

Kazantzis and Deane (1999), in addition to surveying the extent to which
psychotherapists used homework in their sessions, also gathered information about the
extent to which therapists utilized different techniques when assigning homework. Two
of the techniques mentioned above (checking client attitudes and providing written
instructions) were included in this survey. The 221 psychotherapists who responded
reported that they checked clients’ initial attitudes about the homework in an average of
80.0% ($SD = 28.7$) of the sessions. Providing written instructions of the homework
assignment was a technique that was used less frequently, during an average of 59.4%
($SD = 33.3$) of the sessions. Therapists who used cognitive and behavioral approaches to
therapy reported providing written instructions more frequently (66.6% of sessions, $SD =
30.7$) than those therapists who did not (48.1% of sessions, $SD = 34.3$). However, the
sizes of the standard deviations indicate that there is considerable variability among
psychologists in the extent to which they utilize different techniques in therapy. Clearly,
there is still room for improvement in helping therapists use beneficial techniques to
improve homework compliance.

*Improving homework compliance and mood: Suggestions from social cognitive research*

Research commonly associated with another area of psychology—Social
Cognition—may be of assistance when devising strategies for improving homework
compliance. Research in this area may provide empirical evidence for techniques used
(but perhaps not formally tested) in clinical research or may provide ideas for new
techniques. The following sections will discuss promising evidence for the use of four techniques in improving homework compliance in therapy: utilizing mental simulations, creating implementation intentions, setting concrete goals (but maintaining a commitment to the abstract goal), and striving to set goals that facilitate simultaneous goal pursuit.

1. Utilizing mental simulations

The idea that people can improve goal success by mentally working through the steps of a particular goal pursuit has been part of CT for depression since its inception, but, until recently, had not been explicitly tested. Beck and colleagues (1979) referred to this mental simulation as “cognitive rehearsal” (pg. 135), and suggested that it could be used during a session to help the client identify what steps need to be taken in order to pursue a goal and what obstacles may arise in the process. The therapist could then help the client think of ways of working around the obstacles should they arise. More recently, however, researchers in Social Cognition have provided some empirical support of the benefits of mental simulation on performance.

Mental simulations increase the confidence that imagined events will occur, for example, the confidence that one’s team will win a game (see Koehler, 1991, for a review). In addition, mental simulations can increase the likelihood of behaviors related to the imagined events, such as practicing for the upcoming game (Gregory, Cialdini, & Carpenter, 1982, Study 4). Individuals’ mental simulations for goal pursuit generally consist of specific settings and concrete actions that have “video-like flow” (pg. 430, Taylor, Pham, Rivkin, & Armor, 1998). In fact, one technique for producing mental
simulations involves directing clients to imagine they are watching a movie of themselves performing the steps of the goal they want to accomplish (Walter & Peller, 1992).

With respect to goal pursuit, there are two types of mental simulation that have been compared for efficacy: outcome-based and process-based (Taylor et al., 1998; Pham & Taylor, 1999). Outcome-based mental simulation involves imagining the outcomes of the achievement of a goal, which may serve to motivate individuals to initiate goal pursuit. Process-based mental simulation, on the other hand, involves imagining the steps that one needs to take in order to achieve the goal. Pham and Taylor compared the effects of different types of mental simulation on exam performance. Their study consisted of four conditions: outcome-based simulation, process-based simulation, an outcome and process-based combination group, and a control group. The experimental groups performed a simulation exercise in the lab where they either imagined how they would study to get a high grade on the exam (process simulation group), imagined receiving the high grade and how they would feel (outcome simulation group), or both simulation exercises (combination group). The experimental groups were also asked to engage in their respective mental simulation exercise for five minutes each day. All groups were asked how long they planned to study and to complete daily diaries where they logged how long they actually studied.

Compared to those who performed the outcome-based mental simulations, those who completed process-based mental simulations (in the process-only or the combined group) studied significantly longer for the exam (approximately 40% more) and had a smaller discrepancy between planned studying and actual studying. Those in the process-
only group also scored significantly higher on the exam (an average of eight points higher) than those in the outcome-only group. When examining how well the simulation groups performed on the exam with respect to the overall class, those in process-only group performed an average of six points higher than the class mean whereas the outcome-only group performed an average of two points lower than the class mean. Compared to the control group, the outcome-only group studied approximate 5 hours fewer and scored approximately 5 points lower on the exam. Even though these differences were non-significant, the direction of the effects indicates that there is less of a chance that outcome-only mental simulation can enhance goal pursuit. Instead, there is a greater chance that only mentally simulating goal outcomes may slightly impair goal pursuit (consistent with Oettingen, 1995).

These findings suggest that mental simulation exercises conducted during the course of therapy may be beneficial to the client if the process of goal pursuit is emphasized. Explicitly instructing the use of process-based mental simulation for improving the chances of goal achievement may aid clients in pursuing both treatment-related goals (e.g., as related to homework assignments) and personal goals not addressed in treatment. Mental simulation may be especially helpful when used in combination with creating implementation intentions, which will be discussed next.

2. Creating implementation intentions

People’s intentions related to goals consist of two types: goal intentions and implementation intentions (Gollwitzer, 1993, 1996, 1999). A goal intention is the intent to pursue a particular goal (“I intend to achieve x”). Implementation intentions are
intentions related to the initiation of goal pursuit and the planning of goal pursuit (“I intend to do y when situation z occurs”) (Gollwitzer & Brandstätter, 1997, pgs. 186,187). These intentions specify the where, when, and how of goal pursuit (Gollwitzer 1993, 1999). Implementation intentions can also be used to address possible obstacles during goal pursuit (Gollwitzer, Fujita, Oettingen, 2004). For example, if someone’s goal is to run every day, and she generally prefers to run outside, a helpful implementation intention may be “I intend to run on the treadmill at the gym if it is raining outside.”

Creating implementation intentions has shown to be helpful in increasing goal-attainment rates of health-related behaviors such as physical exercise (Milne, Orbell, & Sheeran, 2002), breast self-examinations (Orbell, Hodgkins, & Sheeran, 1997), cervical cancer screenings (Sheeran & Orbell, 2000), vitamin intake (Study 1 and 2; Sheeran & Orbell, 1999), and eating healthy foods (Verplanken & Faes, 1999; Kellar & Abraham, 2005). Implementation intentions have also been shown to increase the likelihood of achieving goals such as composing a curriculum vitae (Oettingen, Hönig, & Gollwitzer, 2000; Brandstätter, Lengfelder, & Gollwitzer, 2001) or writing a report during an inconvenient time period (Study 2; Gollwitzer & Brandstätter, 1997). The use of implementation intentions also has been found to have benefits such as completing a goal more closely to the desired time, within a shorter amount of time, and with fewer distractions (Oettingen et al., 2000). They also help an individual to discontinue using a goal strategy that is not beneficial, for example, disengaging from a test-taking strategy that did not enhance test performance (Henderson, Gollwitzer & Oettingen, 2007).
In addition to enhancing the ability of individuals to attain experimenter-assigned goals, implementation intentions also facilitate the pursuit of individually specified goals (Study 1; Gollwitzer & Brandstätter, 1997; Study 1; Koestner, Lekes, Powers & Chicoine, 2002). Individuals who were instructed to use implementation intentions reported significantly better progress on three specified weekend goals (an average of 68% completion of their goals) compared to those who were not instructed to use implementation intentions (an average of 55% completion; Study 1; Koestner et al., 2002). However, there was a significant interaction involving goal difficulty. Forming implementation intentions was more predictive of goal progress for more difficult goals than for easier goals. Gollwitzer and Brandstätter (1997—Study 1) also found that goal difficulty was a moderator of the effectiveness of implementation intentions. They asked participants to list two goals they wanted to complete over their Christmas break: one easy goal and one difficult goal. They found that forming implementation intentions for difficult goals resulted in approximately three times the goal completion compared to when implementation intentions were not formed (62% versus 22%, respectively). Forming implementation intentions for easy goals, in contrast, resulted in a smaller and non-significant improvement compared to when implementation intentions were not formed (84% goal completion versus 78%, respectively). Easy goals, in general, were more likely to be completed regardless of the use of implementation intentions.

Overall, the results of studies conducted on the use of implementation intentions have generally been positive. Koestner and colleagues (2002), in a meta-analysis of 13 studies that utilized implementation intentions, found an overall effect of $d = 0.54$ (CI
suggesting that individuals who use implementation intentions are significantly more likely to make successful progress on their goals than those who do not use implementation intentions. These findings have potential implications for both improving homework compliance in therapy and assisting depressed clients in making progress on their personal goals. Implementation intentions are most helpful for goals that an individual perceives to be fairly difficult. An individual in a depressive episode may feel overwhelmed by relatively simple goals such as taking a shower and getting dressed for the day, let alone more challenging goals encountered in homework assignments (e.g., identifying and challenging negative automatic thoughts). Thus, implementation intentions may be especially helpful to this group of individuals for improving homework compliance. In addition, the use of implementation intentions might also have some effect on mood. Koestner and colleagues found that goal progress during a weekend was significantly related to improved affect at the end of the weekend (β = .30, p < .001). This finding suggests that increasing an individual’s exposure to goal progress and success might, at least temporarily, result in a more positive mood.

As mentioned briefly in the previous section, using both mental simulation and implementation intentions may be especially helpful. Mental simulation can theoretically be used without creating explicit implementation intentions; however, adding implementation intentions appears to have additional benefits in improving compliance (Oettingen et al., 2000). Through the use of mental simulation, one can identify the steps to take in goal pursuit along with potential obstacles and distractions that may arise. Once the steps and obstacles have been identified, then implementation intentions can be
used to explicitly specify the conditions under which goal-directed action will take place and help establish a commitment to the pursuit of the goal—thus facilitating the active pursuit of the goal.

The use of implementation intentions appears to improve both compliance with homework activities and also mood as a result (Koestner et al., 2002). The next two techniques for improving goal setting and goal pursuit may also be helpful for reducing depressive symptoms, but have not shown as much evidence for improving compliance as the first two suggestions that were already discussed.

3. Setting concrete goals, but maintaining commitment to the abstract goal

Goals can be arranged in a hierarchical fashion with varying levels of abstraction (Powers, 1973; Carver & Scheier, 1982). Goals that are higher in abstraction are more loosely defined and are not achievable within a specified amount of time (for example, “be a caring person”) (Street, 2002). Goals that are more concrete tend to be more well-defined, specific, and have a discrete endpoint (for example, “volunteer at the soup kitchen this Saturday”) (Street, 2002). As goals become more concrete, it becomes clearer what particular course of action will satisfy that goal.

Powers (1973) described three levels of abstraction relevant to goal setting: System Concept, Principle Control, and Program Control. Powers’ most abstract level is called the System Concept, which includes goals about characteristics that are part of an individual’s idealized self-image. Powers’ example for this level was the goal of being a responsible person. The next, slightly more concrete, level is called Principle Control. Goals at this level consist of general principles that will help guide behavior. When one
thinks of what a responsible person generally does, the answers would likely fall at the level of Principle Control, such as keeping promises to others and completing tasks with minimal help from others. The most concrete of the three levels is called Program Control. Goals at this level consist of specific behavioral scripts that, if one carries out successfully, can help make progress on more abstract goals. In order to pursue the goal of keeping promises to others (and being a responsible person), a student might make an effort to get to a date on time or complete a favor that someone has asked of him.

Individuals differ in the level of abstractness in which they tend to frame their goals (Little, 1989). There is some evidence to suggest that the severity of depressive symptoms is related the level of abstractness of the goals people tend to set. One study of three different samples found that individuals who pursue goals that are framed in a more abstract manner tend to have higher levels of negative affect and depressive symptoms. Similarly, individuals who pursue goals framed in more concrete terms tend to have lower levels of negative affect and depressive symptoms (Emmons, 1992). However, within these three studies, there was some variability in the strength of the relationships between the variables. Even though the directions of the effects were all in the expected direction, Emmons failed to find significant correlations for negative affect in one of the three samples and a significant correlation for depression in one of the two samples. Emmons’ study suggests that setting concrete goals may have some relationship with mood, but the relationship may not be robust. In addition, one cannot know from these correlations whether setting more concrete goals will improve mood.
Setting concrete goals may aid goal pursuit in some ways (more specific steps and outcome) and may increase the likelihood of succeeding at one’s goals. People frequently set concrete subgoals to facilitate the achievement of a more abstract or superordinate goal. This strategy is viewed as an adaptive means of self-regulation (Carver & Scheier, 1990; Gollwitzer, 1999; Shah & Kruglanski, 2003; Vallacher & Wegner, 1987). However, focusing on the success of a concrete goal pursuit may reduce the motivation to pursue a related concrete goal. Keeping one’s superordinate goals in mind during subgoal pursuit may improve goal commitment and increase the likelihood that one will view additional subgoals as complementary pursuits rather than as substitutes. Fishbach, Dhar, and Zhang (2006) performed a series of experiments designed to test whether priming a more abstract goal (e.g. being healthy) would increase interest in performing a complementary subgoal (e.g. exercise at the gym) when an individual perceived himself to have already succeeded at another subgoal (e.g. eat a healthy dinner). They found that if participants were primed to think about the more abstract goal, they were more likely to show greater intent to pursue a complementary subgoal (Studies 1 and 2) than when they were not primed to think about the more abstract goal. For example, if an individual exercised in the afternoon, they would show a greater intent to eat a healthy dinner if they viewed the exercise as showing commitment to their more abstract, superordinate goal of being healthy than if they viewed their exercise as a subgoal success. In addition to showing greater intent, participants also showed greater persistence on a complementary subgoal (a second academic test) when they had been primed to view the success of an
initial subgoal pursuit (the first academic test) as being committed to the abstract goal of academic achievement (Study 3).

What do the results of Fishbach and colleagues (2006) suggest for improving compliance on a homework assignment in therapy? When attempting to do a BA assignment, for example, clients should keep in mind their abstract goal or goals (e.g., feel happier, be an active person) while pursuing the subgoals they have set for themselves (e.g. take a walk in the park, call a friend on the phone). If they do this, they would potentially be able to complete more activities than if they had not thought about their abstract goals because they view each additional activity as a complementary pursuit. Completing more activities might then translate into greater improvements in the client’s mood.

4. Striving to set goals (or subgoals) that facilitate simultaneous goal pursuit.

Individuals do not generally pursue one goal to the exclusion of all others. However, individual goal pursuits can vary in the extent to which they facilitate or interfere with the pursuit of other goals. For example, goals can interfere with each other in terms of time, energy, or financial constraints, in addition to incompatible goal pursuit strategies. In addition, goals can facilitate each other by sharing goal pursuit strategies and using the same goal-directed behaviors to make progress on both goals (Riediger & Freund, 2004). For example, taking a walk with a friend can make progress on both an exercise-related goal in addition to a relationship-related goal.

Riediger and Freund (2004) conceptualized goal facilitation and interference as two distinct characteristics, with each having its own specific effects. Goal interference
was negatively related to subjective well-being, whereas goal facilitation had a positive effect on goal pursuit. Emmons and King (1988) reported significant relationships between goal interference and measures of negative affect, anxiety, and depression. More goal interference was related to higher scores on these variables. Though not much research has been conducted on the facilitation or interference of goals, helping individuals to take advantage of simultaneous goal pursuit opportunities and helping them attempt to minimize goal interference may have some favorable effects on their mood and their goal pursuit.

*Goal-focused interventions for improving depressive symptom severity*

Though research applying findings from goal research to clinical populations has been limited (but, see Cheavens et al., 2006; Klausner et al., 1998; Strauman et al., 2006), this work has shown generally promising findings regarding their efficacy for improving depressive symptoms. Two of the interventions that will be discussed (Cheavens et al., 2006; Klausner et al., 1998) are group treatments, whereas the therapy used by Strauman et al. (2006) is implemented as a treatment for individual clients.

Cheavens and colleagues (2006) devised a group intervention to assist participants in improving their state levels of hope. In this study, the investigators’ conceptualization of hope is the one proposed by C.R. Snyder (1994, 1995). Snyder described hope as a cognitive process, not as an emotion. This process consists of setting goals (the goal component), creating strategies for attaining these goals (the pathways component), and developing and maintaining motivation for goal pursuit (the agency component). Individuals who are low in hope have difficulty setting goals for themselves, finding
ways to accomplish their goals, and have difficulty generating and maintaining the motivation to pursue their goals.

The sample consisted of 32 participants who were interested in improving their ability to accomplish goals. Eighteen of the participants met DSM-IV criteria for a current episode of an anxiety or mood-related Axis-I disorder: major depressive disorder (n=8), social phobia (n=4), specific phobia (n=3), dysthymic disorder (n=1), panic disorder (n=1), and generalized anxiety disorder (n=1) as their primary diagnosis. Fourteen of these participants did not meet criteria for any current Axis I disorder as assessed by the Structured Clinical Interview for the DSM-IV (First, Spitzer, Gibbon, & Williams, 1995).

The intervention consisted of eight two-hour group sessions. In addition to helping participants set concrete, realistic goals, creating strategies for goal attainment, and improving motivation for goal pursuit, the intervention was designed to help participants think of potential obstacles in goal pursuit and to plan around them if possible, increase positive self-talk, create subgoals, and encourage the visualization of goal steps.

Cheavens (2006) found that participants in the intervention group improved significantly more on the agency subscale of the hope measure than the control group. However, the two groups did not significantly differ in their change in overall hope or the pathways subscale from pre- to post-assessment, though the condition by time interaction for overall hope was at the level of a non-significant trend. In addition, the intervention group improved significantly more on their level of state anxiety than the control group.
The effect of treatment on depression was not as strong, and was at the level of a non-significant trend.

Goal-Focused Group Psychotherapy for depression is another therapy based on Snyder’s conceptualization of hope. Klausner and colleagues (1998) conducted a study on a sample of 13 older adults (55 years and over) who had residual symptoms of a major depressive episode. The participants were randomized into the experimental treatment or a reminiscence-based control treatment, where participants recalled memories from different periods in their lives to facilitate discussion. Both treatments consisted of a one-hour session once per week for 11 weeks. Unlike Cheavens et al. (2006), Klausner and colleagues did find a significant difference between conditions in how much participants improved on depression (as assessed by the Hamilton Rating Scale for Depression; HRSD; Hamilton, 1960). Participants in the goal-focused intervention improved an average of 15 points on the HRSD ($d = 2.51$), whereas participants in the reminiscence-based treatment improved an average of 4.6 points ($d = .57$). However, there was no significant difference between the treatments on how much the participants improved on hope ($d = .91$ and $d = 1.04$ for the experimental and control condition, respectively) or the BDI ($d = .83$ and $d = 1.03$ for the experimental and control condition, respectively).

Both group psychotherapies discussed above have shown some promise as a treatment for depression. However, both treatments had some limitations that make it difficult to adequately assess the efficacy of each treatment. For example, Cheavens and colleagues’ (2006) study of Hope Therapy was not intended to assess the efficacy of this therapy on depression. However, a quarter of the sample presented with current Major
Depression, and the average score on the Center for Epidemiologic Studies-Depression Scale at the initial assessment was a 26.06, where a score of 16 or higher is considered an elevated score (Radloff, 1977; Weissman, Sholomskas, Pottenger, Prusoff, & Locke, 1977). Klausner and colleagues (1998) did test participants with current Major Depression, but their total sample was very small (N = 13).

Another psychotherapy that has gained some support for its efficacy in treating depression is called Self-System Therapy (SST), and it draws from a somewhat different set of literature than the previous two therapies discussed (Vieth et al., 2003). SST is heavily influenced by Higgins, Shah, and Friedman’s (1997) theory of self-regulation, which proposes two systems of human motivation: promotion (i.e., “making good things happen”) and prevention (i.e., “keeping bad things from happening”) (pg. 152, Vieth et al., 2003). If an individual possesses a strong promotion focus, that individual is primarily concerned with aspirations and advancement. The achievement of promotion goals is related to feeling happy and satisfied, whereas failing to achieve promotion goals is related to feeling dejected and discouraged. In contrast, an individual with a strong prevention focus is primarily concerned with safety and fulfilling obligations. The attainment of prevention goals is associated with feeling calm or relaxed whereas failing to achieve prevention goals is associated with feeling anxious and uneasy (Higgins et al., 1997).

Based on Higgins and colleagues (1997), if individuals who have a strong promotion focus also perceive that they are persistently failing at their promotion goals, they will feel chronically dejected and discouraged. Vieth and colleagues (2003)
proposed that an inability to effectively pursue and achieve one’s promotion goals can result in depression, and they devised a treatment called Self-System Therapy (SST) that was aimed at providing these depressed individuals with skills to improve their promotion goal pursuit. SST consists of an average of 20-25 sessions, during which there are three general phases: the orientation phase, the exploration phase, and the transformation phase.

In the orientation phase of SST, clients are first introduced to the rationale for treatment. They learn about the role that promotion goals play in depression, and are encouraged to start re-engaging in promotion-focused activities. Through in-session discussions and take-home worksheets, the therapist and client work to establish a formulation of the problems that led to the depression and develop treatment goals to address the problems.

In the exploration phase, the therapist and client attempt to uncover characteristic ways in which the client tries to achieve promotion goals and how the outcomes are experienced emotionally. In addition, the therapist and client investigate the client’s beliefs about himself in relation to others, and begin addressing the accuracy and consequences of such beliefs. After this phase, the therapist and client may revise the initial problem formulation if necessary.

In the transformation phase, the therapist attempts to modify maladaptive aspects of self-regulation or help the client compensate for changes that cannot be made. Therapists can attempt modification by helping the client address inaccuracies in their beliefs or by helping clients with goal setting and pursuit. Therapists may help clients set
more realistic goals or strengthen skills (such as social skills or assertiveness skills) to aid in the pursuit of particular goals. In the event that some characteristics of the client cannot be sufficiently modified, the therapist can discuss ways to compensate for the client’s limitations. For example, if a client is unable to effectively interact with an overbearing manager, the therapist may discuss ways for the client to minimize or eliminate interactions with the manager (e.g., working another shift, moving to a different department, or applying for a job with another company). At the end of therapy, the therapist’s goal is to summarize the presenting problems of the client and the solutions that were discovered, and discuss how the client can apply what was learned in therapy to future problems that may arise.

Strauman and colleagues (2006) compared the effectiveness of SST to CT in a randomized trial of forty-five individuals who were diagnosed with Major Depressive Disorder, Dysthmic Disorder, or had a score of 16 or more on the BDI. Strauman and his fellow investigators found that SST and CT were similarly efficacious when comparing the two groups overall. However, as expected, SST outperformed CT for clients who presented with the lowest scores (-1 SD) on the promotion history subscale of the Regulatory Focus Questionnaire (RFQ; Higgins et al., 2001). The promotion history subscale assesses a client’s history of construing goals in a promotion focus. Theoretically, clients with a low promotion history would not have learned to effectively pursue promotion goals when they were growing up. These clients would be poised to benefit most from a therapy designed to help them more effectively pursue their promotion goals. When post-treatment depressive symptom severity (as assessed by the
HRSD) was adjusted for initial severity, clients with a low promotion history improved more when they received SST (HRSD decrease from 20.2 to 4.8) compared to similar clients who received CT (HRSD decrease from 21.2 to 12.1). There were no significant differences between treatments for clients with moderate or high promotion history.

The aim of the current intervention was similar to the three psychotherapies that have been discussed: improving skills related to goal setting and goal pursuit. The strategies used were more in line with Snyder’s (1994,1995) conceptualization of goal skill and motivation, which underlie Hope Therapy and Goal-Focused Group Psychotherapy, than Higgins and colleagues’ (1997) theory of self-regulation represented in SST. However, these therapies, along with SST, are designed to be full-length treatments and would not, in their current form, be a time-efficient addition to well-established treatments such as CT. Hope Therapy consists of eight two-hour sessions and Goal-Focused Group Psychotherapy consists of eleven one-hour sessions (Cheavens et al., 2006; Klausner et al., 1998). Participants undergoing Self-System Therapy, which did not have a set number of sessions, attended an average of 21.7 sessions (Strauman et al., 2006). The current study was a preliminary attempt to explore whether a two-session intervention (one didactic session and one discussion-based booster session) could improve the goal skills of participants, which, due to the brief nature of this intervention, might be a better candidate as an add-on to CT for depression for improving homework compliance.

Focus of the current study

The primary goals of the current study were to assess whether a two-session goal-
skills intervention would improve goal progress during behavioral homework assignments and whether it would also improve the depressive symptoms of an analogue sample of undergraduate participants. In addition, the current study examined whether other related variables were improved by the intervention. State hope and state anxiety have both been examined in previous research. Change in hope has been examined as a target of intervention and change in state anxiety has been examined as a function of change in hope (Cheavens et al., 2006). Therefore, to make contact with the existing literature, measures of these constructs were included in this study to examine the extent to which these variables showed an improvement.

The intervention drew mainly from the goal-related research in social cognition that was discussed previously. The goal-skills intervention consisted of a one-hour didactic intervention delivered in a group format (Time 1) followed a week later by a discussion-based booster session (Time 2) to reiterate the skills learned and to discuss ways to utilize the skills learned to further improve goal pursuit in the upcoming week. A final assessment occurred one week later (Time 3). The goal-skills intervention was compared to a control condition in which the focus was on goals, but there was no discussion of goal setting or goal pursuit. Instead, in the control condition, participants are asked to think about their goals and to engage in outcome-based mental simulation—a procedure that has not shown to be effective in enhancing goal pursuit (Pham & Taylor, 1999). Although research has not shown outcome-based mental simulation to be effective in enhancing goal pursuit, such mental simulation has been used in the self-help literature (Lakein, 1973; Schwartz, 1983). The outcome-based mental simulation control
condition was used in an effort to equate the groups in the expectations for change that each group might foster.

For both the experimental and control conditions, participants were assigned BA activities for the coming week at both Time 1 and Time 2. For these assignments, participants first identified goals that they would like to pursue in the upcoming week, and then kept track of the extent to which they completed each of their goals (i.e., goal progress). In addition, for each between-session activity, participants logged information relevant to each condition: the goal skills used in the pursuit of each goal (experimental condition) and the amount of time spent engaging in outcome-based mental simulation (control condition).

Hypotheses

My first hypothesis was that participation in the goal-skills intervention would be associated with improved outcomes compared to the control condition over the course of the study (from Time 1 to Time 3). I predicted that the experimental group would have greater decreases on assessments of depression and state anxiety than the control group. In addition, I predicted that those in the experimental group would have greater increases on assessments of state hope compared to those in the control group.

My second hypothesis was that compared to the control condition, goal-skill participants would show a greater degree of goal progress during the BA between-session activities (as defined by the average percentage of goal completion for the first four goals listed).
My third hypothesis was that if the predicted difference in depressive symptom improvement were found, goal progress would mediate the relationship between condition and depressive symptom improvement from Time 1 to Time 3.

My fourth hypothesis was that goal-relevant personal characteristics such as dispositional hope and promotion history would moderate the effect of the goal-skills intervention on symptoms of depression from Time 1 to Time 3. Participants with a greater deficit in their goal skills (as measured by low levels of dispositional hope) would likely experience a greater improvement in their depressive symptoms from learning goal skills than participants who endorse already knowing some goal skills. For participants in the control condition, it would be expected that those who endorsed lower levels of dispositional hope would experience less improvement in their depressive symptoms than participants with a similar level of dispositional hope in the experimental condition because they are not learning skills to improve goal setting and pursuit. In addition, given the findings from Strauman and colleagues (2006), I predicted that participants in the experimental condition who endorsed higher levels of promotion history would experience greater improvement in their depressive symptoms than participants who endorsed lower levels of promotion history. Of the two measures of goal-relevant personal characteristics, dispositional hope was hypothesized to have a stronger moderation effect for two reasons. Firstly, the intervention was more similar to Hope Therapy with respect to the goal skills that were covered during the initial session. Secondly, individuals were selected to be included in this study based on lower scores on this measure, not on promotion history. Dispositional hope might then be a better
construct to capture an interaction between goal-relevant personal characteristics and condition on changes in depression over the course of the study.

I also planned to examine the relationship between concurrent change in variables across the study in a series of secondary analyses. Such a correlation would be consistent with the possibility that changes in hope might lead to changes in depression and anxiety. Cheavens and colleagues (2006) examined the correlations between state hope and symptoms of depression and anxiety at the pre- and post-assessments separately. Given the three time-points of this study, I am able to examine how change in hope is related to changes in symptoms of depression and anxiety over time. I predicted that an increase in state hope would be related to a decrease in depressive symptoms and state anxiety—a prediction consistent with the direction of effects that Cheavens and colleagues found.
Chapter 2

Methods

Participants

Individuals with elevated symptoms of depression and lower levels of hope were recruited to participate in a study entitled “Striving for Personal Goals: A Study of Individual Differences in Goal Pursuit.” All participants were undergraduate students at The Ohio State University enrolled in an introductory psychology class. A total of 3,074 students were prescreened using the BDI and the Adult Dispositional Hope Scale (ADHS; Snyder, 1991). There were 321 individuals (10.4% of those prescreened) who scored in the mild to severely depressed range on the BDI (10 or above) and in the lower third of all those prescreened with the ADHS (45 or lower). These individuals were invited via email to participate in the study.

A total of 110 individuals signed up to participate (34.6% of those invited). Of the 110, 103 participants (93.6%) attended the Time 1 assessment. Each potential participant signed up for a group session. Each group (consisting of 2-8 individuals, \( M = 4.90, SD = 1.92 \)) was randomly assigned to the experimental or control condition. Slightly more than half of the sample was female (55.3%, \( n = 57 \)) and a large majority of the sample was Caucasian (78.6%, \( n = 81 \)). The racial/ethnic background of the rest of
the sample consisted of African-American (2.9%, \( n = 3 \)), Asian-American (8.7%, \( n = 9 \)), Hispanic/Latino (3.9%, \( n = 4 \)), and other (5.8%, \( n = 6 \)).

Of the 103 people who entered the study (by attending their first study session), a total of 81 participants (79%) completed the entire study—45 in the experimental group and 36 in the control group. Fifteen participants dropped out of the study between Time 1 and Time 2 and five participants dropped out between Time 2 and Time 3. Of these 20 participants, 11 dropped out of the experiment for unknown reasons, seven missed a session and were unable to attend another session or reschedule, and two dropped out of the study for personal reasons [death in the family (\( n = 1 \)) and difficulty coping with Seasonal Affective Disorder (\( n = 1 \))]. In addition, two participants missed their Time 2 booster session but attended their Time 3 session. Analyses were conducted with and without the participants who missed their Time 2 session. Results were largely the same with and without these participants, so all analyses will be reported with these participants included to use all the data relevant to addressing each hypothesis. Given that there were participants who dropped out or were missing data for one reason or another, the number of participants included in each analysis varies slightly.

Measures

*Adult Dispositional Hope Scale (ADHS).* The ADHS was employed to assess the level of participants’ hope as defined by Snyder (1991). This scale is composed of two subscales assessing participants’ skill in pursuing their goals (pathways) and their motivation to do so (agency). The ADHS is a 12-item self-report scale: 4 items reflect pathways, 4 items reflect agency, and 4 items are distracters. Participants rated each item
on a 1 (Definitely False) to 8 (Definitely True) Likert scale. The pathways and agency items can be summed to create a total Hope score, with possible scores ranging from 8 to 64. A confirmatory factor analysis has supported the pathways and agency subscales reflecting two distinct entities, but they are highly related and can be tied to a higher-order factor, hope (Babyak, Snyder, & Yoshinobu, 1993). The ADHS has been shown to have adequate convergent, discriminant, and predictive validity (Snyder, 1991; Snyder, Cheavens & Michael, 1999).

Adult State Hope Scale (ASHS). The ASHS (Snyder et al., 1996) is a 6-item self-report scale (response range of 1 = Definitely True to 8 = Definitely False) that assesses goal-directed thinking in a given moment. Half of the items assess agency and half assess pathways. It has strong support for internal reliability (Snyder et al., 1996). This scale has moderate to strong correlations with the State Self-Esteem Scale (Heatherton & Polivy, 1991), and the positive affect subscale of the State Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). ASHS and the ADHS scores were found to be correlated at $r = .79$, and scores on the ASHS have been found to increase following successful goal pursuit and decrease after unsuccessful goal pursuit (Snyder et al., 1996).

Beck Depression Inventory (BDI). The BDI (Beck et al., 1961) is a reasonably reliable and well-validated measure of depression symptoms (Beck, Steer, & Garbin, 1988). Test-retest reliabilities for a week interval are .60 for an undergraduate sample (Hatzenbuehler, Parpal, & Matthews, 1983) and .65 for a depressed sample (Bailey & Coppen, 1976). It is a 21-question self-report scale with items ranging in value from 0 to
3. Items are summed yielding total scores ranging from 0 (minimal depression) to 63 (high depression).

**Beck Depression Inventory - 2nd Edition (BDI-II).** The BDI-II (Beck, Steer, & Brown, 1996) is the most current revision of the BDI (see above). It is a 21-item self-report instrument used to assess the severity of depressive symptoms according to the Diagnostic and Statistical Manual of Mental Disorders - Fourth Edition (DSM-IV; American Psychiatric Association, 1994). Scoring procedures are nearly identical to those used for the BDI. While the BDI-II is somewhat preferred over the BDI, the BDI will be used as during prescreening as that measure has and continues to be used for pre-screening among REP participants. The small differences in the BDI and BDI-II do not appear to justify the additional burden to subjects of completing an additional measure.

**Follow-up to Goal Assignment (FGA).** This brief questionnaire was created for this study to elicit information about the success of participants’ between-session goal pursuits. Participants were asked to list each of the goals they chose to pursue in the past week and were asked to respond to the following question about goal progress:

“Compared to what you set out to do this past week, how much progress did you actually make on your goal this week? Write down a percentage from 0% (no progress) to 100% (completed your goal).”

**Regulatory Focus Questionnaire (RFQ).** The RFQ is a 22-item self-report measure that assesses participants’ orientation toward promotion or prevention goals (Higgins et al., 2001). There are four subscales in this measure: Promotion Pride, Promotion History, Prevention Pride, and Prevention History. The history subscales are
assessed with 5 items each and the pride subscales are measured with 6 items each. Merrill, Dolcos, Cabeza, and Strauman (2006) reported good internal consistency for each subscale (a range of coefficient alphas from .74 to .81). Merrill and colleagues (2006) found no relationship between the history subscales \( r = .08 \), but did find a moderate relationship between the pride subscales \( r = .41 \).

*State Trait Anxiety Inventory-State (STAIS).* The STAIS (Spielberger, 1983) is a measure of state anxiety levels. This 20-item self-report questionnaire asks respondents to indicate how well each of 20 traits related to state anxiety (e.g., I feel calm) describe them at the moment on a scale from 1 to 4. The scale descriptors range from (1) “not at all” to (4) “very much so.” Tanaka-Matsumi and Kameoka (1986) report that the state version of the STAI is related to other measures attempting to measure the same construct, such as the Zung Self-Rating Anxiety Scale (1971; \( r = .60 \)) and the Taylor Manifest Anxiety Scale (1953; \( r = .53 \)).

*Overall Procedures*

Participants completed three study sessions, with one session per week over a three week period. During the first session (Time 1), the experimenter gave an overview of the study’s procedures and participants provided informed consent. In order to protect individual privacy, participants were not informed of the specific reasons for which they were invited to participate in the experiment (i.e., higher depressive symptoms and low hope). However, participants were informed that the study aimed to investigate the relationship between goals and how they feel. After consent was obtained, all participants completed a demographics form and the following self-report questionnaires:
ADHS, ASHS, BDI-II, RFQ, and the STAIS. After participants completed the questionnaires, they either participated in the goal-skills intervention or the activities associated with the control group (refer to the next two sections for details). At the end of Time 1, all participants chose a minimum of four goals to pursue in the upcoming week and were given a log to fill out information relevant to their goal pursuits [i.e. goal progress, time spent pursuing each goal, and the goal skills used (experimental condition) or the amount of time spent visualizing the outcome of their goal pursuits (control condition), see Handouts 1 and 2].

During the booster session (Time 2), participants’ between-session materials were collected. All participants were asked to complete the following self-report questionnaires: ASHS, BDI-II, FGA, RFQ, and the STAIS. Participants received a review of the goal pursuit information they received at Time 1 (i.e., information related to the experimental condition or the control condition), which was followed by a 20-minute group discussion of their goal successes and challenges and a generation of ideas about how to use the goal pursuit information they learned to improve their goal pursuit in the following week. Participants were asked to set new goals for the upcoming week and complete the logs again. At the end of the session, participants again chose a minimum of four goals to pursue in the upcoming week.

During the third session (Time 3), participants’ between-session materials were collected and all participants were asked to complete the following self-report questionnaires: ASHS, BDI-II, FGA, and STAIS. Debriefing information was provided to participants at the end of the study.
**Goal-Skills Intervention**

At Time 1, participants in the experimental condition learned about the relationship between goals and mood (i.e., that the accomplishment of goals can lead to an increase in mood, and that the failure of a goal pursuit can lead to a decrease in mood) and were told they would be learning some suggestions to improve their goal setting and the success of their goal pursuits. First, participants learned about different areas (e.g., academic, work, social relationships, personal well-being, etc.) in which goals could be set and came up with examples of goals in different areas. Participants learned two skills related to goal setting (setting concrete and realistic goals, which might necessitate setting subgoals in some cases) and generated a list of four to six goals that they wanted to accomplish in the upcoming week. Second, participants were introduced to four skills related to goal pursuit: visualizing the process of goal pursuit, setting implementation intentions, pursuing multiple goals simultaneously, and focusing on abstract goals to aid motivation in pursuing related concrete goals. During the discussion of each skill, participants played a role in generating examples of how to apply each skill to pursue a goal. At the end of the session, the experimenter introduced the between-session activity for the experimental condition. In the week between the Time 1 and Time 2 sessions, participants were asked to make an effort to use the goal skills they learned on their personal goals and to log the skills used and their progress on each goal.

**Control Group Activities**

At Time 1, participants in the control condition also learned about the relationship between goals and mood and were told they would be learning a technique that might
make it more likely that they will achieve their personal goals. Participants generated a list of four to six goals that they would like to accomplish in the upcoming week. Participants then learned about the technique of visualizing the achievement and outcomes of their goals (not the process) in order to motivate goal pursuit. Participants were encouraged to vividly imagine the situation, thoughts, and emotions they would experience if they achieved each goal. At the end of the session, the experimenter introduced the between-session activity for the control condition. In the week between the Time 1 and Time 2 sessions, participants were to make an effort to spend a few minutes each day visualizing the outcome of their goal pursuits and to log the amount of time they spent each day using this technique. Participants were also asked to log the progress of each of their goals.
Chapter 3

Results

Depressive Symptoms and Hope in the Sample

At the initial assessment (Time 1), the average BDI-II score was 17.58 ($SD = 8.73$) and the average ADHS score was 43.84 ($SD = 6.84$). A total of 40 percent of the participants scored in the minimal range of the BDI-II (0-13), 23 percent scored in the mild range (14-19), 24 percent scored in the moderate range (20-28) and 13 percent scored in the severe range (29-63). Fifty-two percent of the sample maintained a score of 45 or below on the ADHS at the first assessment.

Overall Data Analytic Strategy

To examine the primary hypotheses, hierarchical linear modeling (HLM) was used because HLM is particularly well-suited to analyzing data from a longitudinal study (Raudenbush & Bryk, 2002). Two and three-level HLM models were implemented given the nature of the study design, which was an intervention conducted with participants in groups over a series of three assessments. The software used to run all HLM models was HLM 6 (Raudenbush, Bryk, Cheong, & Congdon, 2004).

Many of the primary hypotheses involved examining changes over time. The analyses of change over three time points were conducted using three-level HLM models. For these three-level models, level one contained the longitudinal data. Time was entered
as a predictor at level 1. These measurements were then nested within each person at level two, and each person was then nested within their small group at level three. Although I did not hypothesize an effect due to the small groups participants were in (subsequently referred to as “group” or “groups”), the inclusion of this factor as a level in the analyses was strongly considered for two reasons: (1) participants were nested in groups; and (2) there could be an unanticipated effect of the group. In addition, experimental condition, the primary independent variable of interest, was randomly assigned to each group, so it will examined as a level three predictor.

Some of the analyses involved goal progress at one time-point as an outcome variable. Two-level HLM analyses were conducted because there was no longitudinal component to the analyses in question. Goal progress was examined at level one as a person variable with condition as a group variable at level two. In addition, the tests of randomization that follow were also conducted using two-level HLM analyses due to the lack of a longitudinal component.

Tests of Randomization

Eleven small groups (54 participants total) were randomized to the experimental condition, whereas ten small groups were randomized to the control condition (49 participants total). To examine whether randomization was successful, two-level HLM analyses were conducted with each variable of interest added separately as a dependent variable at level 1 (the individual level) and condition (0 = control; 1 = experimental) added at level 2. Results of these analyses indicated there were no significant differences between the control and the experimental conditions in age ($M = 20.4, SD = 6.4$ and $M =$
20.3, $SD = 5.1$, respectively, $t(19) = -.12 \ p = .908, \ d = .02$), gender (57.1% and 51.8%
female, respectively, $t(19) = -.35 \ p = .728$), Time 1 BDI-II scores ($M = 18.8, SD = 8.7$ and
$M = 16.5, SD = 8.7$, respectively, $t(19) = -1.24 \ p = .229, \ d = .26$), or Time 1 ADHS scores
($M = 43.9, SD = 6.9$ and $M = 43.8, SD = 6.8$, respectively, $t(19) = -.05, \ p = .961, \ d = .01$).
To examine potential differences between conditions in the sizes of the groups, t-tests
were used (as group size was a group-level variable). No significant differences between
the control and experimental condition in group size were found ($M = 4.90$, range = 3 –
8, and $M = 4.82$, range = 2 – 8, respectively, $t(19) = .10, \ p = .922, \ d = .04$).

Primary Analyses

Do participants who participate in the goal-skills intervention have improved hope,
depressive symptoms, and anxiety symptoms compared to the control condition?

Three-level HLM models were used to examine this hypothesis because each
outcome variable was measured at all three time-points of the study (refer to Table 1 for
the descriptive statistics of each of the outcome variables). In addition, the intraclass
correlation coefficients, which describe the proportion of the total random variation in
responses due to the variance of the random group effects, showed there were some
small, but significant, effects of group. The intraclass correlation coefficients were .13
for the ASHS, .06 for the STAIS, and .04 for the BDI-II ($ps < .05$). Although these
coefficients were relatively small, they support the possibility that group could be a
relevant factor to include in the HLM analyses.

When conducting the three-level HLM analyses, the first step was to run
individual growth models with time included at level one (for the general equations
associated with the individual growth models, see HLM Equation 1). For each outcome variable \( Y_{ij} \), time (with values 0, 1, and 2) was entered into the equation as a level-one variable. Results from these analyses showed significant linear effects of time for all three outcome variables. Specifically, as expected, depressive symptoms and state anxiety exhibited significant decreases over the three assessments, whereas state hope exhibited a significant increase (see Table 2). Additionally, the variances \( r_{ij} \) for the level-two slopes were all significant (see Table 2), indicating there is significant variability in the slopes across individuals. This suggests identifying potential predictors of variability in slopes is warranted.

Next, conditional models were run with condition (0 = control; 1 = experimental) added into the HLM models at level three (for the general equations associated with the conditional models, see HLM Equation 2). There were no significant effects of condition on the average initial status for each group \( \gamma_{00i} \), indicating that there were no significant differences between the experimental and control conditions on the three outcome variables at the initial assessment. In addition, there were no significant effects of condition on the mean predicted outcome variable slope for each group \( \gamma_{10i} \), indicating that there were no significant differences between the experimental and control conditions on outcome improvement over the three assessments (See Table 3). Therefore, the hypothesis that participants who receive the goal-skills intervention would have improved outcomes compared to the control condition was not supported.

*Do participants who receive the goal-skills intervention have a higher level of goal progress compared to the control condition?*
Goal progress was defined as the average of the percentages listed for how much progress participants had made in pursuing their first four goals listed on the FGA. Goal progress was measured at Time 2 and Time 3. At Time 2, the average goal progress was 68.24% \( (SD = 22.76, n = 47) \) for the experimental condition and 60.58% \( (SD = 22.58, n = 39) \) for the control condition. At Time 3, the average goal progress was 68.90% \( (SD = 18.08, n = 47) \) for the experimental condition and 67.12% \( (SD = 22.81, n = 36) \) for the control condition (See Figure 1 for a graph of these percentages).

Goal progress was examined separately at each time-point, given that the sessions that preceded each assessment of goal progress had distinct content. The main manipulation in which the participants learned the goal skills was before their first between-session activity (the progress of which was examined at Time 2) and the booster session was before their second between-session activity (the progress of which was examined at Time 3). Two-level HLM analyses were conducted separately at each time-point (for the general equations associated with the conditional models, see HLM Equation 3). For goal progress measured at Time 2, condition (a level two variable) was not a significant predictor of goal progress, but was at the level of a non-significant trend, \( \gamma_{01} = 9.26, SE = 5.26, t(18) = 1.76, p = .095, d = .83 \). The experimental condition experienced approximately nine percent greater average completion of their goals at Time 2. For goal progress measured at Time 3, condition was not a significant predictor, \( \gamma_{01} = 1.95, SE = 5.69, t(18) = .34, p = .735, d = .16 \). Given that there were no significant differences found between conditions on the level of goal progress and on depression, this precluded analyses examining whether goal progress was a mediator of the
relationship between condition and depressive symptom improvement from Time 1 to Time 3 (the third hypothesis).

*Do goal-relevant personal characteristics moderate the relationship between condition and change in depressive symptoms?*

To examine this hypothesis, two separate HLM analyses were conducted using ADHS scores and RFQ-promotion history scores. Before entry into the analyses, both measures were centered on the grand-mean. Dispositional hope, the main moderator of interest, will be discussed first in detail. Promotion history will be examined in the same manner as dispositional hope.

*Disposition Hope*

ADHS scores were added as a level two variable into the model with BDI-II scores as the outcome variable, time as a level one predictor, and condition as a level three predictor (See HLM Equation 4). By including both dispositional hope (at level two) and condition (at level three) in the model, the cross-level interaction between dispositional hope and condition could be examined. The coefficients for condition at level three indicated the difference between the control and experimental conditions on level two variables. Because dispositional hope was included in the model (as a level two variable), the influence of condition on the effect of dispositional hope on the slope of BDI-II scores over the course of the study could be explored (i.e., the interaction of dispositional hope, condition, and time).

The results of the analysis with ADHS showed a significant three-way interaction between condition, dispositional hope, and time, $\gamma_{111} = .39$, $SE = .12$, $t(19) = 3.53$, $p =$
.004, \( r = .63 \). According to the model, the control group’s change in BDI-II scores over time did not differ as a function of dispositional hope; however, the slope for the control group was significant, \( \gamma_{100} = -3.06, S.E. = .74, t(19) = -4.14, p = .001, r = -.69 \). This result signifies that the control group, regardless of ADHS score, experienced a reduction of approximately 6.12 points on the BDI-II over the course of the study. The experimental group, on the other hand, experienced a more complex interaction with dispositional hope. For individuals with lower scores on the ADHS than average, their BDI-II scores decreased 5.33 points more for each standard deviation their score was lower than the average ADHS score. The 5.33 points is in addition to the 6.12-point BDI-II decrease experienced by the control group. Therefore, for individuals in the experimental condition with lower dispositional hope than average, their BDI-II scores experienced a greater decrease than the control group. For individuals with higher dispositional hope than average, their BDI-II scores decreased 5.33 points less than the 6.12 point BDI-II decrease for each standard deviation their score was higher than the average ADHS score. Therefore, for individuals with higher dispositional hope in the experimental condition, the model predicted that these individuals would not experience as much of an improvement in their depressive symptoms. (See Figure 2 for a graphical depiction of this interaction).

*Promotion History*

RFQ-promotion history scores were entered into the HLM equation in the same manner as ADHS described above. The results of the three-way interaction with RFQ-promotion history were not significant, \( \gamma_{111} = .93, SE = 1.10, t(19) = .90, p = .381, r = \)
RFQ-promotion history was not found to be a moderator of the relationship between condition and the change in depressive symptoms over time. Therefore, the hypothesis that goal-relevant personal characteristics would moderate the changes in depressive symptoms across condition was only partially supported.

Secondary analyses

Is there concurrent change between state hope and symptoms of depression and anxiety?

To examine this hypothesis, the Empirical Bayes residuals were outputted from the conditional three-level HLM analyses that were conducted for the first primary hypothesis (i.e., the analyses with time as a level one predictor and condition as a level three predictor, see HLM Equation 2). The Empirical Bayes residuals of interest were the deviations of the Empirical Bayes estimates of the randomly varying level-one slopes from the predicted value of the slope based on the level-two model. As predicted, an increase in state hope was significantly related to a decrease in depressive and anxiety symptoms, $r(101) = -0.52$ and $r(101) = -0.53$, respectively, $p < .0001$.

Exploratory Analyses

Do goal-relevant personal characteristics moderate the relationship between condition and goal progress?

Although not originally hypothesized, because I predicted that dispositional hope and promotion history might affect how participants’ depressive symptoms changed over time, I conducted some exploratory analyses to examine whether the difference between the intervention and control conditions might have only been evident among participants with higher scores on the measures assessing these constructs. Goal progress was once
again examined by time-point in a two-level HLM analysis. ADHS and RFQ-promotion history were grand mean-centered and separately entered as a level two variable into the model with condition as a level three predictor (See HLM Equation 5 for model details and Table 4 for results). Most notably, dispositional hope was found to be a significant moderator of Time 2 goal progress across conditions (see Figure 3 for a graphical depiction of this interaction). For individuals with higher levels of dispositional hope, their average percentage of goal completion was higher in the experimental condition than in the control condition. For individuals with lower levels of dispositional hope, the percentage of goal completion was more similar across the experimental and control conditions. None of the other three models examining whether ADHS or RFQ-promotion history were moderators of condition differences in goal progress (i.e., ADHS at Time 3, or RFQ-promotion history at Times 2 and 3) were significant (all \( p < .389 \)). Therefore, there was some evidence that goal-relevant personal characteristics (i.e., hope) moderated the relationship between condition and goal progress.

*Does goal progress predict changes in hope and symptoms of depression and anxiety?*

I also conducted exploratory analyses examining whether goal progress was a predictor of symptom change. I would hypothesize that goal progress would be associated with greater improvement in symptoms. To examine this hypothesis, I calculated residualized change scores for the ASHS, STAIS, and BDI-II for changes that occurred between each session. Residualized change scores for Time 1 to Time 2 change were obtained from a regression model in which the Time 2 variable was entered as the dependent variable and the Time 1 variable served as the independent variable.
Residualized scores for Time 2 to Time 3 change were obtained in a similar fashion. The residualized scores for Time 2 were entered as the outcome variable in a two-level HLM model with person at level one and group at level two. Goal progress over the first week (at Time 2) was grand-mean centered and entered as level one predictor. These analyses indicated that Time 2 goal progress was a significant predictor of ASHS residualized change scores (change from Time 1 to Time 2), $\gamma_{10} = 0.08, SE = 0.02, t(20) = 3.49, p = 0.003, r = 0.62$. Goal progress in the first week was not found to be a significant predictor of residualized change in BDI-II and STAIS scores over that week. In addition, Time 3 goal progress was not found to be a significant predictor of change in any of the outcome variables (see Table 5).
Chapter 4

Discussion

The results of the present study did not support the hypothesis that participants in the goal-skills intervention would experience a greater degree of goal progress on the two homework assignments or report a greater change in depressive symptoms. However the hypothesis that dispositional hope would moderate the relationship between condition and change in depressive symptom was supported. For participants with lower than average dispositional hope, the goal-skills intervention did help to reduce depressive symptoms more than the control condition. In addition, exploratory analyses found the intervention helped the low hope participants to experience a greater degree of goal progress during the first week-long behavioral homework assignment. Further exploratory analyses found that greater goal progress in the first week (regardless of condition) predicted an improvement in state hope during the same period of time.

In summary, no significant differences were found between the experimental and control conditions on the level of goal progress during the homework assignments or improvement in depressive symptoms, state anxiety, or state hope, although there was a trend toward better goal progress in the experimental condition one week after the initial session. The participants’ levels of dispositional hope were found to be important in understanding for whom the intervention appears to be most effective. Promotion
history, on the other hand, was not found to be a significant moderator of the intervention’s effects on depressive symptoms or goal progress.

In this study, the main effects of condition on outcome variables were small and non-significant, with the possible exception of a non-significant, but large effect for the difference between conditions on goal progress at Time 2. However, two significant moderation effects emerged: (1) dispositional hope moderated the relationship between condition and goal progress after one week; and (2) dispositional hope also moderated depressive symptom improvement over two weeks. However, the question remains: Are these moderation effects sufficiently large to suggest that they would be important clinically? Although data on dispositional hope in a clinically depressed sample are not available, Snyder and colleagues (1991) did collect information regarding the average level of hope for an outpatient sample of individuals seeking treatment at a traumatic stress center. The average score was 45.20 (SD = 8.70), which was slightly higher than the average ADHS score observed in the current study. For this outpatient sample, the HLM models obtained from this study would predict that those with lower than average hope (by one standard deviation) would exhibit an 11.84-point decrease on the BDI-II by participating in the experimental condition compared to a 6.12-point decrease by participating in the control condition. The HLM model’s prediction of average Time 2 goal progress for low-hope individuals in this outpatient sample would be 76.26% in the experimental condition compared to 61.36% in the control condition. Although future studies certainly need to examine the efficacy of a brief, goal-based intervention on depressive symptom improvement and goal progress in a clinical sample (particularly a
clinically depressed sample), the levels of dispositional hope observed in Snyder and colleagues’ outpatient sample are consistent with the possibility that large, meaningful effects might be obtained in a clinically depressed sample low in hope.

One reason that there were not significant main effects of condition on the outcome variables may have been the higher levels of dispositional hope reported by the participants at their initial assessment. Although efforts were made to recruit individuals with a score of 45 or below on the ADHS (representing the lower third of all those prescreened), 48 percent of the sample had an ADHS score above 46 at their first session. The finding that dispositional hope was a significant moderator of the effects of the intervention provide some support for the hypothesis that higher than expected levels of hope in the sample might be a factor in not finding overall differences between conditions.

Unlike dispositional hope, promotion history was not found to be a moderator of the effects of condition on either the rate of change in depressive symptoms or goal progress at each of two time-points. Although statistically significant, the relationship between the two measures of goal-relevant personal characteristics is relatively low, $r(101) = .21, p = .037$, suggesting these measures tap into relatively different characteristics. This intervention was tailored to examine individuals with low hope rather than low promotion history. It appears this intervention is more helpful to individuals with low dispositional hope than individuals with low promotion history. One reason for this might be that the ADHS can capture deficits in an individual’s motivation to pursue one’s goals and the ability to find ways to solve problems and reach
goals—two areas of focus of the intervention. The RFQ-promotion history scale, on the other hand, is designed to assess the level of an individual’s history of parental reinforcement for pursuing and reaching goals, which relates to the extent that an individual would be able to pursue promotion goals effectively (Strauman et al., 2006). For individuals with low promotion history, Strauman and colleagues’ (2006) study suggests their weaknesses in pursuing goals would likely be strengthened by Self-System Therapy, which has a more specific focus on promotion goal pursuit.

As reported, the experimental and control conditions did not differ in goal progress at Time 3. Both groups were within two percentage points with respect to their average goal completion at this time-point. In addition, no moderation effects of dispositional hope were found at Time 3. One question that follows from these results is how the booster session at Time 2 could be improved to be more effective in increasing the level of goal progress, especially for those individuals who have low dispositional hope. One possibility is that it may be more beneficial for the booster session to be an individual session instead of a group session. It may give individuals a better opportunity to discuss how they could better implement the techniques to improve their successful goal pursuit in the upcoming week. Due to the group nature of the intervention as it is currently designed, it may be more difficult for each person to have an adequate opportunity to discuss their goal-related successes and challenges in the past week and work through how to use what they learned in the previous week to optimize their goal pursuit in the upcoming week. For example, each participant in the group may have been able to discuss a couple techniques related to pursuing one of his or her goals for the
upcoming week, but there was insufficient time for each participant to discuss all of their upcoming goals and how to implement multiple strategies to optimize goal pursuit. In addition, the group format gave participants the opportunity to minimize interacting with the experimenter if they desired, even though the experimenter made an effort to elicit feedback from each participant at least once. Changing the group format to an individual format might help address each of these problems and might enhance the effects of the intervention.

Limitations

The current study was a preliminary investigation into whether a brief goal-focused intervention could improve goal progress in a behavioral homework assignment and depressive symptoms. Rather than piloting the intervention with treatment-seeking clinically depressed participants, this study was a first-step designed to gain insight into whether a brief intervention focused on goal skills drawn from basic research in social cognition could facilitate goal progress and improve depressive symptoms in an analogue sample. While the study displayed strengths such as a carefully designed control condition, there were some limitations that must be acknowledged.

The first limitation of this study was that a larger than desired percentage of participants who enrolled in the study did not exhibit as high of depressive symptom severity as when they were prescreened. As mentioned previously, 40 percent of the sample reported depressive symptoms in the minimal range at their Time 1 assessment. This problem is understandable when there is a time delay between prescreening and Time 1 participation. Invitations to participate in the study were sent out as soon as
prescreening had concluded, but the required prescreening period for the introductory psychology classes lasted approximately 1.5 to 2 weeks. A decrease in depressive symptoms over time has been found by other researchers as well. For example, Zimmerman (1986) found that of his sample of undergraduate college students who scored a 10 or above on the BDI, approximately 51.1% scored in the nondepressed range a week later. One would be tempted to use Time 1 depressive symptom severity as a moderator to address the question of whether there would have been a difference between conditions on change in depressive symptoms had the sample exhibited a greater severity of depressive symptoms. However, this data analytic strategy would not be recommended due to problems with multicollinearity associated with including depressive symptoms as a moderator when it is also the outcome variable (Dimidjian et al., 2006). Future studies could avoid the problems associated with depressive symptom change over time by allowing potential participants to enter the study only if their symptoms remained elevated at the initial assessment. However, this technique has the potential to extend the amount of time it takes to obtain a sufficient sample for analyses.

The second limitation was that this study did not include a control condition where only goal setting was conducted and no techniques were introduced. Only one control condition was chosen due to a concern about obtaining a sufficient sample size for analyses. The control condition included in this study was designed to minimize the likelihood of possible confounding variables such as participant expectations and time spent in contact with the experimenter. Introducing what seemed to be an active intervention would be more likely to create the expectation for improvement in
depressive symptoms and goal progress than a “goal-setting only” condition would be equipped to provide. In addition, the control condition selected allowed for an equal length of time for each intervention. Had there been a difference in the lengths of the conditions, each condition would have garnered a different number of points in the introductory classes from which the participants were selected. This might have created an unintentional self-selection bias. The goal was to make the two conditions as similar as possible. However, the selection of the control condition used for this study created a few limitations in understanding the resulting findings. Having a condition where no goal-pursuit techniques were introduced would have better allowed for the observation of the level of goal progress when goals were pursued naturalistically. The possibility existed that participants in the control condition did gain some benefit from visualizing the outcome of their goal pursuits, therefore making the effects of the experimental condition more difficult to detect.

The third limitation was that the population from which the sample was selected may limit the generalizability of these findings. The population was a non-treatment-seeking, non-clinical population of undergraduate students. Therefore, it is difficult to make predictions about how well this intervention would work for depressed participants who are motivated to seek and participate in psychotherapy. However, lower dispositional hope is related to higher depressive symptom severity, \( r(101) = -.54, p < .001 \). Given that the intervention worked best for individuals with lower levels of dispositional hope, there is the possibility that for clinically depressed individuals with
low hope, the intervention would help to increase goal progress and improve depressive symptoms for these individuals as well.

The fourth limitation was that goal progress was assessed by participants’ responses to a one-item measure (i.e., “Compared to what you set out to do this past week, how much progress did you actually make on your goal this week?”). Generally, single-item measures are discouraged, due to an inability to calculate internal reliability (Nunnally, 1978). However, although this measure consists of one-item, this item was asked of each of the four goals that the participants chose to pursue. Each of the participant’s responses were averaged together, creating a measure of goal progress that drew information from several goal pursuits. One way to improve this measure for future studies would be to ask multiple questions for each goal that a participant intends to pursue, to assess multiple aspects of goal progress (e.g., time involved in each goal pursuit, the level of effort directed toward each goal pursuit, etc.).

**Conclusions**

The brief goal-focused intervention improved goal progress during the first week, but only for those individuals in the study with lower than average levels of dispositional hope. Similarly, those in the intervention with lower than average levels of dispositional hope experienced a greater reduction in their depressive symptoms than the control condition. Across condition, higher than average goal progress during the first week predicted greater changes in state hope during the first week. Future research should examine the methods by which increased goal progress during homework assignments can be sustained for more than a week. In addition, future research should examine the
efficacy of this intervention for improving treatment outcomes in clinically depressed individuals who are participating in a psychotherapy that places importance on assigning homework. Perhaps by improving one’s ability to make progress on one’s goals, this intervention can enhance the outcomes of the psychotherapy to which it is applied.
References


Appendix A: Tables
Table 1

Descriptive Statistics for Measures of Outcome Variables

<table>
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<tr>
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<th>Control</th>
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<td></td>
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Notes. ASHS = Adult State Hope Scale, BDI-II = Beck Depression Inventory – Second Edition, and STAIS = State Trait Anxiety Scale—State Subscale. See HLM Equation 2 for the model associated with this analysis.
Table 2

Level 1 Slopes ($\pi_{1ij}$) and Variability ($r_{1ij}$) in Level 2 Slopes from Three-Level HLM Models Examining Changes in the Outcome Variables over Time

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<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>S.E.</th>
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Notes. ASHS = Adult State Hope Scale, BDI-II = Beck Depression Inventory – Second Edition, and STAIS = State Trait Anxiety Scale—State Subscale. Positive coefficients in part A refer to an increase in scores over the three assessments, whereas negative coefficients refer to a decrease in scores. All of the above slopes indicate a significant ($p < .05$) improvement of the outcome variables over time (i.e. an increase in positive variables, such as ASHS and a decrease in negative variables, such as BDI-II). See HLM Equation 1 for the model associated with this analysis.
Table 3
The Effect of Condition on the Initial Status and Change over Time of the Outcome Variables

<table>
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<td></td>
<td>$\gamma_{101}$</td>
<td>-.30</td>
<td>1.03</td>
<td>19</td>
<td>-.29</td>
<td>.773</td>
</tr>
<tr>
<td>STAIS</td>
<td>$\gamma_{001}$</td>
<td>-3.28</td>
<td>2.12</td>
<td>102</td>
<td>-1.54</td>
<td>.139</td>
</tr>
<tr>
<td></td>
<td>$\gamma_{101}$</td>
<td>1.10</td>
<td>1.18</td>
<td>19</td>
<td>.93</td>
<td>.356</td>
</tr>
</tbody>
</table>

Notes. $\gamma_{001}$ = effect of condition on the initial status of the outcome variables, $\gamma_{101}$ = effect of condition on the slopes of the outcome variables. The coefficients refer to the difference between the experimental and control conditions on initial status and change over time. The coefficients can be interpreted to mean the experimental condition had slightly lower scores on ADHS, BDI-II, and STAIS scores at Time 1 and experienced a slightly greater reduction in these scores over the course of the study. ASHS = Adult State Hope Scale, BDI-II = Beck Depression Inventory – Second Edition, and STAIS = State Trait Anxiety Scale—State Subscale. See HLM Equation 2 for the model associated with this analysis.
Table 4

The Interaction between Goal- Relevant Personal Characteristics and Condition on Time 2 and Time 3 Goal Progress

<table>
<thead>
<tr>
<th>Outcome Variable</th>
<th>Goal Characteristic</th>
<th>Coefficient</th>
<th>S.E.</th>
<th>df</th>
<th>T-ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 2 Goal Progress</td>
<td>ADHS</td>
<td>-2.03</td>
<td>.84</td>
<td>19</td>
<td>-2.40</td>
<td>.027</td>
</tr>
<tr>
<td></td>
<td>RFQ-pro</td>
<td>-5.56</td>
<td>6.30</td>
<td>19</td>
<td>-.88</td>
<td>.389</td>
</tr>
<tr>
<td>Time 3 Goal Progress</td>
<td>ADHS</td>
<td>-.39</td>
<td>.66</td>
<td>18</td>
<td>-.59</td>
<td>.564</td>
</tr>
<tr>
<td></td>
<td>RFQ-pro</td>
<td>2.36</td>
<td>5.78</td>
<td>18</td>
<td>.41</td>
<td>.688</td>
</tr>
</tbody>
</table>

*Notes.* The fixed effect being reported in these analyses is $\gamma_{11}$. The coefficients refer to the difference between the experimental and control conditions in the goal progress associated with each point the client scores lower than average on each characteristic. The coefficients that are negative refer to an increase in goal progress because characteristic scores that are lower than average are negative numbers; thus, the two negative numbers make for a positive increase in goal progress. See HLM Equation 5 for the model associated with this analysis.
Table 5

Week 1 Goal Progress as a Predictor of Changes in Outcome Variables from Time 1 to Time 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed Effect</th>
<th>Coefficient</th>
<th>S.E.</th>
<th>df</th>
<th>T-ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASHS</td>
<td>$\gamma_{10}$</td>
<td>.08</td>
<td>.02</td>
<td>20</td>
<td>3.49</td>
<td>.003</td>
</tr>
<tr>
<td>BDI-II</td>
<td>$\gamma_{10}$</td>
<td>-.03</td>
<td>.03</td>
<td>20</td>
<td>-1.17</td>
<td>.257</td>
</tr>
<tr>
<td>STAIS</td>
<td>$\gamma_{10}$</td>
<td>-.06</td>
<td>.04</td>
<td>20</td>
<td>-1.47</td>
<td>.156</td>
</tr>
</tbody>
</table>

Week 2 Goal Progress as a Predictor of Changes in Outcome Variables from Time 2 to Time 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed Effect</th>
<th>Coefficient</th>
<th>S.E.</th>
<th>df</th>
<th>T-ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASHS</td>
<td>$\gamma_{10}$</td>
<td>.004</td>
<td>.03</td>
<td>19</td>
<td>.11</td>
<td>.912</td>
</tr>
<tr>
<td>BDI-II</td>
<td>$\gamma_{10}$</td>
<td>.06</td>
<td>.03</td>
<td>19</td>
<td>2.05</td>
<td>.054</td>
</tr>
<tr>
<td>STAIS</td>
<td>$\gamma_{10}$</td>
<td>-.02</td>
<td>.05</td>
<td>19</td>
<td>-.36</td>
<td>.724</td>
</tr>
</tbody>
</table>

Notes. $\gamma_{10} =$ effect of goal progress on the residualized change scores of the outcome variables (from Time 1 to 2 and from Time 2 to 3). The coefficients refer to the effect of goal progress on the residualized change scores for each 1-unit change in goal progress. Goal progress is grand-mean centered. ASHS = Adult State Hope Scale, BDI-II = Beck Depression Inventory – Second Edition, and STAIS = State Trait Anxiety Scale—State Subscale.
Appendix B: Figures
Figure 1: Goal Progress at Each Time-Point Separated by Condition

Goal progress is defined as the average percentage of goal progress for the first four goals.
Time, condition, and the 25th and 75th percentile scores of ADHS were entered into the model to illustrate the interaction between dispositional hope and experimental group on changes in depressive symptoms over the three time-points of the study. Time indicators (0-2) translate into Time 1 to Time 3. ADHS scores are centered on the grand mean. Negative scores indicate lower hope than average, and positive scores indicate higher hope than average.
Condition, goal progress, and the range of dispositional hope encountered in the sample were entered into the model to illustrate the interaction between hope and condition on goal progress at Time 2. ADHS scores are centered on grand mean. Negative scores indicate lower hope than average, and positive scores indicate higher hope than average.
Appendix C: Handouts
Goal Log

Please list the goals you intentionally pursue for the purposes of this assignment (that will bring you a sense of pleasure or achievement). In addition, please list the total time spent pursuing each goal and indicate which goal skills you used for that particular goal. In the final column, indicate the progress made on the goal compared to the progress you set out to make during the week. For example, if you make half of the progress you expected to make on a goal, you would write “50%” in the last column.

Remember: You do not need to pursue as many goals as there are spaces below (unless, of course, you want to). If you do need more space, feel free to use the back of this sheet.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Time spent on goal</th>
<th>Visualized Goal Process</th>
<th>Considered multiple ways of pursuing goal</th>
<th>Set subgoals</th>
<th>Anticipated and planned for obstacles</th>
<th>Formed “If, then” plans</th>
<th>Attempted simultaneous goal pursuit</th>
<th>Goal Progress (%)</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
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Questions to ask yourself when setting and pursuing your goals: 1) Are my goals realistic? 2) Are my goals specific enough so that I know what actions to take and when my goal will be accomplished? 3) Have I created specific plans for pursuing my goals?
Handout 2: Log for Control Condition

Log of Goals and Visualization Exercises

Please list the goals you intentionally pursue for the purposes of this assignment (that will bring you a sense of pleasure or achievement). In addition, please list the total time spent pursuing each goal, the time each day spent doing the visualization exercises, and the progress made on the goal compared to the progress you set out to make during the week. For example, if you make half of the progress you expected to make on a goal, you would write “50%” in the last column.

Remember: You do not need to pursue as many goals as there are spaces below (unless, of course, you want to). If you do need more space, feel free to use the back of this sheet.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Time spent pursuing goal</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Goal Progress (%)</th>
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</table>

**For the visualization exercise: vividly imagine what your life would be like if you have achieved each goal and how you would feel if each goal has been achieved.
Appendix D: HLM Equations
HLM Equation 1: General Three-Level Linear Growth Model

Level 1 model:

\[ Y_{tij} = \pi_{0ij} + \pi_{1ij} (\text{TIME})_{tij} + e_{tij}, \]

where

- \( Y_{tij} \) is the score on the outcome variable at TIME \( t \) for the \( i \)th person in the \( j \)th group (where the outcome variable represents ASHS, BDI-II, or STAIS);
- \( \pi_{0ij} \) is the predicted outcome variable score at TIME = 0 (i.e., initial status) for person \( ij \);
- \( \pi_{1ij} \) is the linear rate of change of the outcome variable for person \( ij \); and
- \( e_{tij} \) is the error at TIME \( t \) for person \( ij \).

Level 2 model:

\[ \pi_{0ij} = \beta_{00j} + r_{0ij} \]
\[ \pi_{1ij} = \beta_{10j} + r_{1ij}, \]

where

- \( \beta_{00j} \) is the mean of the outcome variable at TIME = 0 (i.e., average initial status) for the \( j \)th group;
- \( r_{0ij} \) is the random effect of person \( ij \) on the outcome variable at TIME = 0;
- \( \beta_{10j} \) is the mean predicted outcome variable slope for the \( j \)th group; and
- \( r_{1ij} \) is the random effect of person \( ij \) on the outcome variable slope.

Level 3 model:

\[ \beta_{00j} = \gamma_{000} + u_{00j} \]
\[ \beta_{10j} = \gamma_{100} + u_{10j} \]
where

$\gamma_{000}$ is the overall mean initial status of participants across group;

$u_{00j}$ is the random effect of group $j$ on the overall mean initial status;

$\gamma_{100}$ is the overall mean predicted outcome variable slope of participants across group; and

$u_{10j}$ is the random effect of group $j$ on the overall mean predicted outcome variable slope.
HLM Equation 2: General Conditional Model of the Effect of Condition on the Change in Outcome Variables Across Time

Level 1 model (same as the general three-level linear growth model):

\[ Y_{ij} = \pi_{0ij} + \pi_{1ij}(\text{TIME})_{ij} + e_{ij}, \]

where

\( Y_{ij} \) is the score on the outcome variable at TIME \( t \) for the \( i \)th person in the \( j \)th group (where the outcome variable represents ASHS, BDI-II, or STAIS);

\( \pi_{0ij} \) is the predicted outcome variable score at TIME = 0 (i.e., initial status) for person \( ij \);

\( \pi_{1ij} \) is the linear rate of change of the outcome variable for person \( ij \); and

\( e_{ij} \) is the error at TIME \( t \) for person \( ij \).

Level 2 model (same as the general three-level linear growth model):

\[ \pi_{0ij} = \beta_{00j} + r_{0ij} \]

\[ \pi_{1ij} = \beta_{10j} + r_{1ij}, \]

where

\( \beta_{00j} \) is the mean of the outcome variable at TIME = 0 (i.e., average initial status) for the \( j \)th group;

\( r_{0ij} \) is the random effect of person \( ij \) on the outcome variable at TIME = 0;

\( \beta_{10j} \) is the mean predicted outcome variable slope for the \( j \)th group; and

\( r_{1ij} \) is the random effect of person \( ij \) on the outcome variable slope.

Level 3 model:

\[ \beta_{00j} = \gamma_{000} + \gamma_{001}((\text{CONDITION})_j) + u_{00j} \]
$\beta_{10j} = \gamma_{100} + \gamma_{101}(\text{CONDITION})_j + u_{10j}$

where

$\gamma_{000}$ is the overall mean initial status of participants across group when $\text{CONDITION} = 0$;

$\gamma_{001}$ is the mean difference in the outcome variable between conditions at $\text{TIME} = 0$;

$u_{00j}$ is the random effect of group $j$ on the overall mean initial status;

$\gamma_{100}$ is the overall mean predicted outcome variable slope of participants across group when $\text{CONDITION} = 0$;

$\gamma_{101}$ is the mean difference in the predicted outcome variable slope between conditions;

and

$u_{10j}$ is the random effect of group $j$ on the overall mean predicted outcome variable slope.
HLM Equation 3: General Conditional Model for the Effect of Condition on Goal Progress at One Time-Point

Level 1 model:

\[ Y_{ij} = \beta_{0j} + r_{ij} \]

where

\( Y_{ij} \) is the goal progress for the \( i \)th person in the \( j \)th group
\( \beta_{0j} \) is the mean goal progress for the \( j \)th group;
\( r_{ij} \) is the random effect of person \( ij \) on goal progress

Level 2 model:

\[ \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{CONDITION})_j + u_{0j} \]

where

\( \gamma_{00} \) is the overall mean goal progress of participants across group when \( \text{CONDITION} = 0 \);
\( \gamma_{01} \) is the mean difference in goal progress between conditions;
\( u_{0j} \) is the random effect of group \( j \) on goal progress;
HLM Equation 4: Conditional Model for the Interaction between Condition and Goal-Relevant Personal Characteristics on Depressive Symptoms (BDI-II) from Time 1 to Time 3

Combined model:

\[ Y_{tij} = \gamma_{000} + \gamma_{001}(\text{CONDITION})_j + \gamma_{010}(\text{CHARACTERISTIC})_{ij} + \gamma_{011}(\text{CONDITION})_j(\text{CHARACTERISTIC})_{ij} + \gamma_{100}(\text{TIME})_{tij} + \gamma_{101}(\text{CONDITION})_j(\text{TIME})_{tij} + \gamma_{110}(\text{CHARACTERISTIC})_{ij}(\text{TIME})_{tij} + \gamma_{111}(\text{CONDITION})_j(\text{CHARACTERISTIC})_{ij}(\text{TIME})_{tij} + \epsilon_{tij} + r_{0ij} + r_{1ij} + u_{00j} + u_{01j} + u_{10j} + u_{11j} \]

Level 1 model (same as the general three-level linear growth model):

\[ Y_{tij} = \pi_{0ij} + \pi_{1ij}(\text{TIME})_{tij} + \epsilon_{tij}, \]

where

- \( Y_{tij} \) is the BDI-II score at TIME \( t \) for the \( i \)th person in the \( j \)th group;
- \( \pi_{0ij} \) is the predicted BDI-II score at TIME = 0 (i.e., initial status) for person \( ij \);
- \( \pi_{1ij} \) is the linear rate of change of BDI-II for person \( ij \); and
- \( \epsilon_{tij} \) is the error at TIME \( t \) for person \( ij \).

Level 2 model:

\[ \pi_{0ij} = \beta_{00j} + \beta_{01j}(\text{CHARACTERISTIC})_{ij} + r_{0ij} \]
\[ \pi_{1ij} = \beta_{10j} + \beta_{11j}(\text{CHARACTERISTIC})_{ij} + r_{1ij}, \]

where
\( \beta_{00j} \) is the mean BDI-II score at TIME = 0 (i.e., average initial status) for the \( j \)th group;

\( \beta_{01j} \) is the effect of CHARACTERISTIC on the mean BDI-II score at TIME = 0 for the \( j \)th group;

\( r_{0ij} \) is the random effect of person \( ij \) on the BDI-II at TIME = 0;

\( \beta_{10j} \) is the mean predicted BDI-II slope for the \( j \)th group; and

\( \beta_{11j} \) is the effect of CHARACTERISTIC on the mean predicted BDI-II slope for the \( j \)th group;

\( r_{1ij} \) is the random effect of person \( ij \) on the BDI-II slope.

**Level 3 model:**

\[
\begin{align*}
\beta_{00j} &= \gamma_{000} + \gamma_{001}(\text{CONDITION})_j + u_{00j} \\
\beta_{01j} &= \gamma_{010} + \gamma_{011}(\text{CONDITION})_j + u_{01j} \\
\beta_{10j} &= \gamma_{100} + \gamma_{101}(\text{CONDITION})_j + u_{10j} \\
\beta_{11j} &= \gamma_{110} + \gamma_{111}(\text{CONDITION})_j + u_{11j}
\end{align*}
\]

where

\( \gamma_{000} \) is the overall mean initial BDI-II status of participants across group when CONDITION = 0;

\( \gamma_{001} \) is the mean difference in BDI-II between conditions at TIME = 0;

\( u_{00j} \) is the random effect of group \( j \) on the overall mean BDI-II initial status;

\( \gamma_{010} \) is the effect of CHARACTERISTIC on the overall mean initial BDI-II status across group when CONDITION = 0;

\( \gamma_{011} \) is the difference in the effect of CHARACTERISTIC on the overall mean initial BDI-II status of participants between conditions;
$u_{0j}$ is the random effect of group $j$ on the effect of CHARACTERISTIC on the overall mean initial BDI-II status;

$\gamma_{100}$ is the overall mean predicted BDI-II slope across group when CONDITION = 0;

$\gamma_{101}$ is the difference in the overall mean predicted BDI-II slopes between conditions; and

$u_{10j}$ is the random effect of group $j$ on the overall mean predicted BDI-II slope.

$\gamma_{110}$ is the effect of CHARACTERISTIC on the overall mean predicted BDI-II slope across group when CONDITION = 0;

$\gamma_{111}$ is the difference in the effect of CHARACTERISTIC on the overall mean predicted BDI-II slope between conditions;

$u_{11j}$ is the random effect of group $j$ on the effect of CHARACTERISTIC on the overall mean predicted BDI-II slope.
HLM Equation 5: General Conditional Model for the Interaction between Condition and Goal-Relevant Personal Characteristics on Goal Progress at One Time-Point

Combined Model:

\[ Y_{ij} = \gamma_{00} + \gamma_{01}(\text{CONDITION})_j + \gamma_{10}(\text{CHARACTERISTIC})_{ij} + \gamma_{11}(\text{CONDITION})_j(\text{CHARACTERISTIC})_{ij} + r_{ij} + u_{0j} + u_{1j} \]

Level 1 model:

\[ Y_{ij} = \beta_{0j} + \beta_{1j}(\text{CHARACTERISTIC})_{ij} + r_{ij} \]

where

- \( Y_{ij} \) is the goal progress for the \( ith \) person in the \( jth \) group
- \( \beta_{0j} \) is the mean goal progress for the \( jth \) group
- \( \beta_{1j} \) is the effect of CHARACTERISTIC (where CHARACTERISTIC refers to ADHS or RFQ-promotion history scores) on goal progress for the \( jth \) group
- \( r_{ij} \) is the random effect of person \( ij \) on goal progress

Level 2 model:

\[ \beta_{0j} = \gamma_{00} + \gamma_{01}(\text{CONDITION})_j + u_{0j} \]
\[ \beta_{1j} = \gamma_{10} + \gamma_{11}(\text{CONDITION})_j + u_{1j} \]

where

- \( \gamma_{00} \) is the overall mean goal progress of participants across group when CONDITION = 0 holding CHARACTERISTIC constant;
\( \gamma_{01} \) is the mean difference in goal progress between conditions holding CHARACTERISTIC constant;

\( u_{0j} \) is the random effect of group \( j \) on goal progress holding CHARACTERISTIC constant;

\( \gamma_{10} \) is the effect of CHARACTERISTIC on goal progress when \( \text{CONDITION} = 0 \);

\( \gamma_{11} \) is the difference between conditions on the effect of CHARACTERISTIC on goal progress;

\( u_{1j} \) is the random effect of group \( j \) on the effect of CHARACTERISTIC on goal progress;