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RESEARCH PAPER

Can Hope be Changed in 90 Minutes? Testing the Efficacy of a Single-Session Goal-Pursuit Intervention for College Students

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Abstract Despite extensive research demonstrating relationships between hope and well being, little work addresses whether hope is malleable. We test a single-session, 90-min intervention to increase college students' hopeful goal-directed thinking (as defined by Snyder et al. in, Pers Soc Psychol 60:570–585, 1991). To date, this study represents the only test of hope's malleability in fewer than five sessions and contributes to the small but growing literature regarding positive-psychology interventions. This intervention is especially relevant to college students, given the increasing psychological distress and lack of perceived control noted among this population (Lewinsohn et al. in, J Abnorm Psychol 102:110–120, 1993; Twenge et al. in, Pers Soc Psychol Rev 8:308–319, 2004). Ninety-six participants were assigned to the hope intervention or one of two comparison/control conditions—progressive muscle relaxation or no intervention. Assessment occurred prior to intervention (pre-test), following intervention (post-test), and at one-month follow-up. Participants in the hope intervention showed increases in measures of hope, life purpose, and vocational calling from pre- to post-test relative to control participants. They also reported greater progress on a self-nominated goal at one-month follow-up. Counterintuitively, although hope predicted goal progress, hope did not mediate the relationship between intervention condition and goal progress. Implications of these findings and future directions are discussed.

Keywords Hope theory · Goals · Goal-specific hope · Single-session intervention · Positive-psychology intervention · College students · Purpose in life

The college years should be among the most hopeful in students' lives, yet recent years have witnessed unprecedented levels of distress among American college students (Lewinsohn et al. 1993; Twenge 2000). Record numbers are seeking counseling (Michael et al. 2006), and experiencing lowered academic achievement, inability to make important

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decisions, and increased dependence on parents (NSSE 2007; Hofer et al. 2008). Moreover, today's college student has a more external locus of control than 80% of those in the 1960s (Twenge et al. 2004).

We argue that many of these difficulties can be traced to low "hope" (see next section for the definition used in this study). Research has demonstrated that lower hope is associated with depression and anxiety (Feldman and Snyder 2005), whereas higher hope is associated with use of constructive, problem-focused coping (Snyder et al. 1991) and growth from adversity (Tennen and Affleck 1999). More relevant to the present study, high-hope college students enjoy better grades, higher graduation rates (Snyder et al. 2002), and better sports performance (Curry et al. 1997) than their low-hope counterparts. Moreover, higher-hope college students tend to achieve their goals, whatever they may be, more often than lower-hope students (Feldman et al. 2009). Perhaps because of this greater goal attainment, higher-hope students even report greater meaning and purpose in life than their lower-hope counterparts (Feldman and Snyder 2005). In fact, the relationships between measures of hope and perceived life meaning are among the strongest in the respective literatures of these two constructs, with correlations ranging from .52 to .77 (Feldman and Snyder 2005; Kim et al. 2005; Mascaro and Rosen 2005, 2006).

Despite this array of research on the benefits of hope, relatively few studies have addressed the topic of whether hope is malleable (Cheavens et al. 2006; Herth 2001; Klausner et al. 1999; Lapierre et al. 2007; Rustøen and Hanestad 1998; Staats 1991). Moreover, though one of these articles (Rustøen and Hanestad 1998) described what looks to be a promising intervention, it did not contain a test of the efficacy of this intervention. Additionally, all of these studies have concerned interventions that are relatively lengthy (8–12 sessions), primarily because most have been developed for clinical populations (e.g., depressed older adults, individuals with suicidal ideation, patients with cancer). Even the only study concerning a hope intervention for a non-clinical population (i.e., older adults) involved five sessions offered over a 5-month period (Staats 1991).

Despite the fact that hope levels vary widely in non-clinical samples (such as general samples of college students; Snyder et al. 1991), it is unlikely that such individuals will present for multiple sessions of therapy, raising the question of whether a shorter intervention could be effective in increasing hope. Additionally, although a central tenet of Hope Theory (Snyder 1994) is that hope leads to successful pursuit of goals, only one study to date addresses whether hope longitudinally predicts goal attainment (Feldman et al. 2009). That study found that only one of the two major components of Hope Theory (i.e., agency) predicted such attainment. The present study seeks to shed light on these issues. First, it represents a rare attempt to raise hope in a "normal" population, specifically in college students. Second, it represents the first test of a single-session hope intervention in the literature. Third, it tests the hypotheses that hope will prospectively predict goal attainment and that the hope-based intervention will increase the probability of goal attainment.

Before describing and testing this intervention, however, it may be useful to discuss the hope construct on which it is based.

1 Hope Theory

This study uses the C. R. Snyder et al. (1991) conceptualization of hope, known as Hope Theory. During the past two decades, Hope Theory has been the most extensively utilized model of hope in the psychology research literature. According to this model, hope is a

cognitive, goal-directed phenomenon. Goals are defined as the targets of mental action sequences, and all purposive behavior is said to be goal-directed (Snyder 1994, 2000; Snyder et al. 1999). As such, goals can vary widely in size and difficulty of attainment, with some consisting of mundane, easy-to-achieve objectives and others requiring years or even decades to achieve. Within this context, hope consists of two interrelated cognitive components: pathways thinking and agency thinking.

The first component of hope, pathways thinking, reflects the perceived capacity to generate cognitive routes to one's goals. People engage in pathways thinking when they plan ways to reach their objectives. It is important to stress, however, that the subjective experience of hope is not necessarily dependent upon individuals actually having charted concrete pathways to goals, but upon a perception or belief that pathways could be produced if desired (Snyder et al. 1999).

The second component of hope, agency thinking, is defined as "the thoughts that people have regarding their ability to begin and continue movement on selected pathways toward those goals" (Snyder et al. 1999, p. 180). Such agentic cognition motivates and sustains individuals in their pursuit of goals. The combination of agency and pathways thinking is theorized to lead individuals to actively pursue their goals (Snyder 1994).

The *Merriam-Webster* ("Hope", 2011a) and *Oxford English* ("Hope", 2011b) dictionaries define hope as, "to desire with expectation of obtainment" and "desire combine with expectation," respectively. Hope Theory represents one attempt at an operationalization of hope broadly consistent with these definitions. Nonetheless, Hope Theory is not the only model of hope that has been developed. Because "hope" is a word frequently used in common parlance, its particular meanings are quite varied. Given this, it should be no surprise that different models of hope run the gamut, encompassing factors including confidence, cognitive skills, relationships, spiritual beliefs and values, active involvement, future orientation, and goals (Herth 2001; Nowotny 1991; Rustøen and Hanestad 1998). We have chosen to use Hope Theory in the present study because its goal-directed nature seems particularly suited to the development of a brief intervention for college students. Thus, this is the particular conceptualization of hope to which we will refer in the remainder of this article.

2 A Single-Session Hope Intervention

Concerned with the increasing levels of stress and emotional difficulties in college students, researchers have proposed a variety of interventions (e.g., Eisen et al. 2008; Seligman et al. 2007). Typically, these interventions have been focused on correcting problems (e.g., anxiety, depression, alcohol abuse) rather than promoting strengths. In contrast, we developed a hope intervention to build students' strengths in generating pathways and agency toward achieving personally relevant goals. In this vein, Misra and McKean (2000) found that students who could plan, set goals, and who felt in control of their time experienced significantly lower stress and anxiety than students without these skills.

As mentioned previously, whereas past intervention research primarily has been concerned with raising hope in clinical populations with multi-session interventions, the present research concerns a single-session intervention for the general college population. This intervention makes use of a "hope visualization" exercise based on research in the realm of mental rehearsal. This exercise previously had been used as one component (i.e., in part of one session only) of a larger 8-session hope-based intervention package

(Cheavens et al. 2006). Though the efficacy of mental rehearsal as a hope intervention has never been investigated outside of the aforementioned larger package intervention (Cheavens et al. 2006), basic research supports the notion that mental practice is an effective tool to improve performance on specific behaviors (see Druckman 2004; Driskell et al. 1994) in the domains of sports (Biddle 1985; Feltz and Landers 1983; Grouis 1992; Murphy 1990a, b; Peynircioglu et al. 2000; Whelan et al. 1991), musical performance (Lim and Lippman 1990; see Sisterhen 2004), teaching (Romeo 1985), work skill acquisition (Wohldmann et al. 2008), and rehabilitation (Farley 1985).

The hope intervention used in the present study consisted of a single, 90-min session (including completion of study measures). The agenda of the session was as follows: (1) the choosing of a personal goal, (2) psychoeducation regarding hope, (3) a hope-based goal mapping exercise, and (4) the hope visualization exercise. At the beginning of the session, students were asked to choose a goal that they would like to accomplish within the next 6 months. They were encouraged to choose any goal that seemed personally relevant to them. They then wrote this goal down and filled out all pre-test study measures (see Sect. 4 for details).

Second, 20 min of the intervention were dedicated to teaching participants about the components of hope. Topics included the definition of hope, the importance of setting clear, concrete goals, and tips regarding the generation of pathways and agency. This section of the intervention was didactic in nature, consisting mainly of lecture, though participants were invited to ask questions at any time.

Third, participants were guided through a 20-min "goal mapping" exercise. In this exercise, they engaged in proactive hope-based planning by filling out a worksheet addressing the components of hope theory. They wrote down their goal on the right side of the page. To the left of this goal, running across the page, they wrote down three steps that they could take along their pathway to achieving this goal. Below each of these steps, they wrote an obstacle that possibly could hamper their ability to take the step as well as an alternative pathway around the obstacle. They also wrote down ways that they could maintain their agency through the process of goal pursuit.

Last, using this worksheet as a guide, participants underwent the hope visualization exercise. In this 20-min exercise, participants were verbally guided to close their eyes and imagine taking each step on their mapping worksheet, encountering each obstacle listed, and motivating themselves to circumnavigate each obstacle. An important aspect of this exercise is its realism; thus, participants were instructed to make the visualization as vivid as possible. Verbal prompts encouraged participants to experience the visualization using all five senses. At the end of this exercise, they were guided to see themselves accomplishing their goal and feeling the positive emotions and increased agency that result.

At the conclusion of the session, participants were asked to fill out the post-test measurement packet (see Sect. 4).

3 The Present Study

The present research consists of a randomized controlled trial testing the efficacy of the aforementioned single-session intervention in increasing hope levels and facilitating goal attainment in college students. After filling out a packet of questionnaires on which they nominated a goal that they wished to accomplish within the next 6 months, participants were randomly assigned to undergo the hope-based intervention or one of two comparison/control conditions—a standard progressive muscle relaxation intervention (Goldfried and

Davison 1994) or no intervention. Immediately following the intervention and at 1-month follow-up, participants again filled out questionnaires.

We propose four hypotheses. First, participants in the hope intervention condition should manifest increased levels of hope, vocational calling, and purpose in life relative to participants not receiving this intervention. Second, participants in the hope intervention condition should report greater progress on their self-nominated goal at 1-month follow-up relative to participants not in the hope intervention group. Third, participants' hope levels should predict goal progress 1-month later. Last, the relationship between condition (i.e., hope intervention, relaxation control, or no treatment control) and goal progress should be mediated by levels of hope regarding that goal.

4 Method

4.1 Participants

Participants were 96 college students (27 males and 69 females) from a university in Northern California who took part in the study as one means of fulfilling the requirements of their introductory psychology courses. Participants ranged in age from 18 to 22, with a mean of 18.71 (SD = .85). Sixty-seven students identified as Caucasian, 12 identified as Latino, 10 identified as Asian or Asian American, 4 identified as African American, and 3 identified as "other." No significant gender, age, or ethnic differences were found on any of the study measures.

4.2 Procedure

Participants were randomly assigned to one of three conditions. As mentioned previously, participants in the experimental group receive the hope intervention, participants in the relaxation comparison condition received a progressive muscle relaxation intervention, and participants in the control group received no intervention.

All experimental sessions were held in conference rooms or small classrooms, where 6–8 students sat around a conference table. Upon arriving, they were asked to fill out a pre-test measurement packet consisting of a demographics questionnaire, Goal-Specific Hope Scale (GSHS), Purpose in Life Test (PILT) and Vocation Identity Questionnaire (VIQ; see Measures section for details on these instruments and rationales for their inclusion). This packet also prompted participants to nominate a goal that they would like to accomplish within the next 6 months and rate the personal importance of this goal. A 6-month window was chosen in order to encourage participants to choose medium-size goals, rather than very short-term or very long-term goals. We believed that medium-size goals would yield the greatest variance at the 1-month follow-up assessment, minimizing ceiling or floor effects on the measure of goal progress. After filling out the measurement packet, participants in the no-treatment control condition were dismissed for the day. Those in both the hope and relaxation conditions then received their respective interventions.

As mentioned previously, students in the hope intervention condition received psychoeducation about the three components of hope (i.e., goals, pathways, and agency) and were given an explanation of the "hope visualization" exercise detailed previously. They then were guided in developing a hope-based mapping diagram for accomplishing the goal that they nominated. Next, using this diagram as a guide, participants underwent the hope

visualization exercise. Last, they filled out the post-test packet consisting of the same measures as the pre-test packet, with the exception that the demographics questionnaire was omitted.

In the relaxation condition, students received psychoeducation about the nature of stress and how it can interfere with their lives. They then were given an explanation of progressive muscle relaxation and its relevance to stress management. Next, they were instructed in the monitoring of stress using the Subjective Units of Discomfort (SUDS) scale, a 1–100 scale ranging from no stress to the most stress imaginable and practiced using this scale. Last, they were led through a standard 20-min progressive muscle relaxation exercise taken from Goldfried and Davison (1994). As in the hope intervention condition, participants filled out the post-test measurement packet at the end of the session. We chose the relaxation intervention as a comparison condition because its elements superficially paralleled those of the hope intervention, beginning with a period of psychoeducation and ending with a guided meditation-like exercise. The sessions for both the experimental and relaxation conditions lasted approximately 90 min (including measures) and were co-conducted by the authors of this study.

Follow-up data were obtained through an online survey. One month after the initial session, participants in all three conditions were contacted via email and invited to visit a web site to complete all of the measures again, this time also adding the goal-attainment measure. For visiting the follow-up survey web site, they were mailed a check for $15.00.

4.3 Measures

4.3.1 Goal Survey

At the pre-test time-point, participants were asked to write down a goal that they would like to accomplish during the next 6 months. To encourage participants to name a goal that is personally meaningful, they were not given any limitations regarding the type of goal to nominate. Participants' goals reflected diverse areas of life. Representative examples are, "Re-learn the flute," "Buy a new car," "Eat healthier and workout more to have a healthy lifestyle," and "Be in a meaningful, healthy, and loving romantic relationship." To ensure that goals were personally relevant to participants, they also were asked to respond on a 0 (*not at all important*) to 6 (*extremely important*) scale to the item, "How important is this goal to you personally?"

4.3.2 Goal-Specific Hope Scale (GSHS)

The GSHS (Feldman et al. 2009) is a measure of hope for a particular goal at a particular time. In the present study, participants filled out the GSHS with reference to the goal they nominated on the goal survey. The GSHS contains 6 items divided equally into agency and pathways subscales. Respondents rate each item on a scale ranging from 1 (*definitely false*) to 8 (*definitely true*). An example agency item is, "I energetically pursue this goal," and an example pathways item is, "I can think of many ways to achieve this goal." Scores can range from 3 to 24 for the agency and pathways subscales and from 6 to 48 for total hope. Feldman et al. (2009) provide evidence supporting the psychometric properties of the GSHS. In the present sample, the GSHS was administered at all three time-points, with Cronbach's alphas of .76, .85, and .84.

4.3.3 Purpose in Life Test (PILT)

The PILT (Crumbaugh and Maholick 1964) is a 20-item measure of perceived life meaning/purpose. Respondents rate items on seven-point Likert-type scales with anchors that differ from item to item. Items include, "In thinking of my life, I …", with a rating scale ranging from 1 (*often wonder why I exist*) to 7 (*always see a reason for my being here*), and "I regard my ability to find a meaning, purpose, or mission in life as …", with a rating scale ranging from 1 (*practically none*) to 7 (*very great*). Scores can range from 20 to 140. This measure was chosen for use in the present study on both theoretical and empirical grounds. On theoretical grounds, scholars have proposed that working toward personal goals is a central way people find meaning and purpose in life (Feldman and Snyder 2005; Kasser and Sheldon 2004). On empirical grounds, as mentioned previously, past research has documented robust associations between hope and meaning/purpose in life (Feldman and Snyder 2005; Mascaro and Rosen 2005, 2006), and a lengthier hope intervention (Cheavens et al. 2006) has been shown to impact PILT scores, in particular. Research supports the psychometric properties of the PILT (Crumbaugh 1968; see Hutzell 1988 for a review). In the present sample, the PILT was administered at all three time-points, with Cronbach's alphas of .84, .89, and .50.

4.3.4 Vocation Identity Questionnaire (VIQ)

The VIQ (Dreher et al. 2007) is a 9-item measure of vocational calling, which the authors of this instrument define as the degree of personal meaning or purpose perceived in one's work. Items include "I have a calling that enables me to develop my skills and talents and use them in a meaningful way," and "Most of the time I genuinely enjoy the work I do," which respondents rate on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scores can range from 9 to 45. The scale's instructions direct students to count their academic pursuits as "work" for the purposes of answering the items. Given that our participants are college students and thus are engaging in daily academic tasks as they prepare for their futures, we wished to assess any impact of our intervention on the degree of meaning or purpose perceived in this work. Dreher et al. (2007) provide evidence supporting the psychometric properties of the VIQ. In the present sample, the VIQ was administered at all three time-points, with Cronbach's alphas of .67, .67, and .78.

4.4 Goal Attainment Survey

At 1-month follow-up, participants were asked to provide two ratings of their success in pursuing the goal nominated at pre-test. The first item was, "Have you accomplished this goal completely?" to which participants responded "yes" or "no." The second item was, "How much progress have you made toward accomplishing this goal?" to which participants responded on a 1 (*no progress at all*) to 5 (*extreme progress*) scale. Because only 4 participants indicated that they had accomplished their goal completely, only the second item was used as an outcome measure in the present study.

5 Results

We hypothesized that participants in the hope intervention condition would manifest increased levels of hope, vocational calling, and purpose in life relative to participants who

did not receive the intervention. A series of 2 (Condition: hope intervention, relaxation control) × 3 (Time: pre-test, post-test, follow-up) mixed ANOVAs were used to test these hypotheses. Only the hope intervention and relaxation conditions were used in these analyses because we collected data at all three time-points only for participants in these two conditions. Unexpectedly, these interactions did not reach significance with regard to predicting PILT scores ($\Lambda = .94$, F (2, 41) = 1.29, $p = .29$), VIQ scores ($\Lambda = .95$, F (2, 45) = 1.19, $p = .31$), or scores on the Agency subscale of the GSHS ($\Lambda = .96$, F (2, 44) = .96, $p = .39$). Only the analysis predicting scores on the Pathways subscale of the GSHS approached significance, $\Lambda = .89$, F (2, 43) = 2.48, $p = .09$, partial $\eta^2 = .10$.

An examination of the scale means (see Table 1) may provide the reason why none of the previous analyses were significant. Scores on the measures of hope, vocational calling, and life purpose appeared to increase from pre- to post-test in the hope intervention group then decrease again by 1-month follow-up. This is perhaps not surprising given that the intervention consisted of only a single 90-min session. This decrease may have washed out the significance of any initial increase. In addition, 24.7% of participants did not respond to the 1-month follow-up survey. Although this attrition rate is relatively modest (Murphy 1990a, b) and did not vary across conditions (X^2 (2, $N = 96$) = 1.62, $p = .44$) it nonetheless reduces statistical power and increases the probability of Type II error. For these reasons, we reanalyzed the data using a series of 2 (Condition: hope intervention, relaxation control) × 2 (Time: pre-test, post-test) mixed ANOVAs to test for an effect of the hope intervention from pre- to post-test relative to the relaxation condition. The interactions were significant in all of these analyses (see Table 2). An examination of the means (see Table 1) reveals that scores on all outcome measures increased to a greater degree for participants in the hope intervention condition than those in the relaxation condition.

We also hypothesized that our intervention would increase goal progress 1-month later. To test this hypothesis, we performed a 3 (Condition: hope intervention, relaxation,

Table 1 Means of outcome measures by condition and time-point

	Pre-test		Post-test		Follow-up	
Outcome measure	M	SD	M	SD	M	SD
Hope intervention						
Hope agency	18.42	3.65	20.27	2.66	17.79	3.91
Hope pathways	18.64	3.92	20.81	3.20	19.18	3.55
Purpose in life	105.22	11.95	111.87	10.46	88.48	5.69
Vocational ident.	32.46	5.71	33.84	5.05	31.39	4.95
Relaxation control						
Hope agency	19.63	4.09	20.33	3.37	18.25	4.87
Hope pathways	19.60	3.52	19.90	3.66	19.58	3.37
Purpose in life	107.10	15.37	110.60	17.50	88.71	9.45
Vocational Ident.	34.40	4.55	34.43	4.57	34.40	6.50
No treatment control						
Hope agency	17.83	3.70	–	–	18.83	3.33
Hope pathways	18.10	3.83	–	–	17.70	3.94
Purpose in life	102.17	10.36	–	–	89.22	8.33
Vocational identity	32.72	4.11	–	–	30.77	5.55

Participants in the no-treatment control condition did not fill out post-test measures

Table 2 Results of 2 (Condition: hope intervention, relaxation control) × 2 (Time: pre-test, post-test) mixed model ANOVAs testing for an effect of condition from pre- to post-test

Outcome	Λ	*F*	DV_1	DV_2	*p*	η^2
Hope agency	.93	4.72	1	64	.03	.07
Hope pathways	.87	9.67	1	64	.003	.13
Purpose in life	.94	4.34	1	65	.04	.06
Vocational identity	.94	4.06	1	65	.05	.06

The parameters reported for each outcome measure represent the test of the condition × time interaction

no-treatment control) × 2 (Importance of goal: high, low) between-subjects ANOVA. For ease of analysis, we created a dichotomous importance variable by performing a median split on importance ratings. Recall that, at the beginning of the experimental session, each participant wrote down a goal that he or she wished to accomplish in the next 6 months. Anecdotally, it appeared that some participants struggled with finding such a goal and, in order not to delay the session, simply picked whatever goal came to mind. Of course, our intervention should have an effect on goal progress only to the extent that participants nominate goals about which they actually care. For "false goals," our intervention should have no effect because these goals do not actually represent desired states. This is the reason that we included a measure of the personal importance of participants' nominated goals. We hypothesized that the hope intervention should increase goal progress at 1-month follow-up relative to the relaxation and no-treatment control conditions only for goals rated high in importance. As expected, the interaction was significant, F (2, 65) = 4.06, p = .02, partial η^2 = .12.

To clarify these results, we performed a one-way ANOVA in both the sub-sample of participants who rated their goal as of high importance and the sub-sample of participants who rated their goal as of low importance. In these analyses, condition (hope intervention, relaxation, no-treatment control) served as the independent variable, and goal progress at 1-month follow-up served as the dependent variable. For participants who rated their goals as low in importance, condition had no effect on goal progress, F (2, 29) = .69, p = .54. As expected, however, for participants who rated their goals as high in importance, condition significantly predicted goal progress, F (2, 36) = 5.70, p = .01, partial η^2 = .24. Follow-up tests were conducted to evaluate pairwise differences among the mean progress ratings in the three conditions. Given the significant omnibus test and the small number of comparisons, we elected to use Fisher's Least Significant Difference method to conduct these tests (see Table 3). In the high-goal-importance sub-sample, participants in the hope intervention condition showed significantly greater goal progress than those in the relaxation and no-treatment control conditions. No significant difference was found between the relaxation and no-treatment conditions.

Table 3 Follow-up pairwise comparisons by condition among the mean goal progress ratings of participants who rated their goals as of high importance

Condition	M	SD	Relaxation	No treatment
Hope intervention	3.64	.84	.04	.001
Relaxation	3.08	.95	–	.07
No treatment	2.58	.52	.07	–

Figures in the final two columns represent *p*-values for the pairwise comparisons

Recall that we expected that goal-specific hope would mediate the effect of our intervention on goal progress at 1-month follow-up for participants who considered their goal to be of high importance. According to Baron and Kenny (1986), to demonstrate mediation there must be: (1) a relationship between the independent variable (condition) and the mediator (GSHS), (2) a relationship between the mediator (GSHS) and the dependent variable (goal progress), and (3) a relationship between the independent and the dependent variables that is reduced or eliminated by statistically controlling for the mediator. With reference to the first requirement, there was a significant relationship between the independent variable (i.e., condition) and the variables that will be used as mediators—the GSHS pathways subscale (F (2, 49) = 3.60, p = .04, partial η^2 = .13) and agency subscale (F (2, 49) = 4.46, p = .02, partial η^2 = .15). Please note that the analysis addressing the second requirement for mediation will simultaneously be a test of our third study hypothesis, that GSHS pathways and agency scores will prospectively predict goal progress at 1-month follow-up. These relationships were significant, r (39) = .31, p = .03 and r (39) = .28, p = .04 for pathways and agency, respectively. To address the third requirement for mediation, we performed an ANCOVA to test whether the previously established relationship between our intervention and goal progress is reduced or eliminated by covarying GSHS scores. As in the previous analysis, condition (hope intervention, relaxation, no-treatment control) served as the independent variable and goal progress served as the dependent variable; we simultaneously covaried both GSHS pathways and agency scores. Counter to expectations, the relationship between condition and goal progress remained significant after covarying GSHS scores, indicating a lack of full mediation, F (2, 34) = 3.88, p = .03, partial η^2 = .19. Though the size of the effect of condition on goal progress was attenuated somewhat by covarying GSHS scores, a Sobel Test (MacKinnon and Dwyer 1993; Preacher and Hayes 2004) revealed no significant partial mediation, Z = 1.12, p = .26. As such, although hope was shown to prospectively predict goal progress, it did not mediate the effect of the intervention on goal progress.

6 Discussion

The present study was designed primarily to address whether a single-session intervention could increase hope (defined as the combination of pathways and agency thinking; Snyder 2002) and facilitate goal progress in college students. A secondary purpose was to test whether hope would prospectively predict goal progress. The results provide substantial, though not unqualified, support for our hypotheses.

First, in comparison to participants who underwent the relaxation intervention, those who received the hope intervention showed greater increases from pre- to post-test in hope (both agency and pathways) regarding a self-nominated goal, as well as in sense of life purpose and vocational calling. These immediate increases were not maintained at 1-month follow-up, however. As mentioned previously, this is perhaps not surprising given the single-session nature of this study. In order to address whether hope can be increased in a more long-lasting way, it may be necessary to offer a longer-term intervention. Future studies might address whether offering more sessions spaced out over several weeks might increase the maintenance of gains. Regardless of whether a greater number of sessions is offered, homework could be assigned to encourage participants to extend hope-based skills into daily life, or "check-in" emails could be used to remind participants to practice skills. Of note, only one of the previous studies of multi-session Hope Theory interventions for

clinical populations included follow-up assessment after completion of treatment (i.e., Lapierre et al. 2007), so further work is clearly needed in this regard.

Because most research on Hope Theory has not examined the agency and pathways components separately (see Chang 2003), we analyzed these two subscales of the Goal-Specific Hope Scale separately whenever possible in order to test for any differing effects. Of note, both agency and pathways scores increased from pre- to post-test as a result of the hope intervention. Nonetheless, the effect size was larger for the change in pathways (partial $\eta^2 = .13$) than agency (partial $\eta^2 = .07$). This is likely the result of the differential emphasis placed upon these components during the hope intervention. Although both agency and pathways were discussed with participants, both the goal mapping and hope visualization exercises primarily focused on planning and envisioning the pathway to one's goal.

The second and perhaps most notable finding was that participants who received the hope intervention reported making significantly more progress on their goals at 1-month follow-up in comparison with those in both the no-treatment control condition and the relaxation condition. This result is particularly meaningful given the extremely brief duration of the intervention. Although descriptions of single-session treatments are common in the literature, empirical studies of such interventions that include control groups are relatively rare (Bloom 2001; Cameron 2007).

Last, hope scores regarding participants' self-nominated goals predicted goal progress at 1-month follow-up. This finding thus provides evidence of hope's ability to predict goal attainment, a central tenet of Hope Theory (Snyder 1994). These results are informative given the overwhelmingly cross-sectional, correlational nature of the literature on hope. To date, only one study has previously tested such a longitudinal relationship of this construct of hope with goal progress (i.e., Feldman et al. 2009). However, these researchers found evidence only of the ability of agency to predict goal progress; the present study is the first to demonstrate such prediction for both agency and pathways.

Given these positive findings, it is counterintuitive that hope was not shown to mediate the effects of the intervention on goal progress at 1-month follow-up. The variance in goal progress accounted for by goal-specific hope scores overlapped by 27.6% with the variance accounted for by condition. As such, much of what may have led the intervention to increase goal progress is unaccounted for by hope. One possible explanation for this remaining variance may be a practice effect. In addition to increasing individuals' agency and pathways thinking, the hope visualization exercise utilized in this study may have given participants practice executing the specific behaviors necessary to achieve their goals. As cited previously, mental practice has been shown to improve performance on specific behaviors (Biddle 1985; Druckman 2004; Driskell et al. 1994; Farley 1985; Murphy 1990a, b; Romeo 1985; Sisterhen 2004; Wohldmann et al. 2008). The present study extends these findings into the realm of general goal pursuits involving a chain of behaviors/steps rather than the execution of a single circumscribed behavior.

It is important to note limitations of the present study. First, the same individuals delivered both the hope and relaxation interventions. The advantage of this procedure is that it eliminates any effects of different experimenters across conditions. As such, there was no need to analyze for or statistically control for experimenter effects. The disadvantage, however, is that this procedure potentially introduces researcher allegiance effects. Allegiance effects are not well understood and are notoriously difficult to control; such effects materialize even in the highest quality studies. In their noted meta-analytic analysis of treatment efficacy studies, for instance, Luborsky et al. (1999) found no relationship between methodological quality and the size of the allegiance effect. Nonetheless,

Thase (1999) argues that the allegiance effect is a proxy for the expertise of the researchers and the lower integrity of the control condition. To minimize these factors in the present study, both interventions were carefully scripted and the group leaders had prior experience delivering both relaxation and hope-based techniques. Nonetheless, appropriate caution should be utilized when interpreting the results. Additionally, researchers should consider implementing researcher-blinded procedures in future studies.

Second, though the present study included three conditions—hope intervention, relaxation intervention, and no-treatment control—only the first two conditions made use of pre-test, post-test, and 1-month follow-up measures. Because participants in the no-treatment control received no intervention, they filled out only the pre-test measurement packet and were dismissed from the session, later filling out the 1-month follow-up measure along with participants in the other conditions. As a result, in some analyses, we were limited to comparing the hope intervention condition with the relaxation condition only. Because the hope intervention was shown to be superior to the relaxation condition in these analyses, it likely also would have been superior to no treatment. In analyses where all three conditions could be included, the hope intervention indeed was superior to both the relaxation and no-treatment control conditions, which were not significantly different from one another. Nonetheless, if future studies make use of a no-treatment control group, researchers should include a post-test for this group. Additionally, future studies could compare the present hope intervention to other types of goal-setting interventions or interventions derived from other models of hope.

Third, our measure of goal progress was self-report and thus subject to reporting biases. Although such self-report measures are common in the literatures concerning goal-directed cognition (e.g., Burger 1985; Hynie et al. 2006; Wrosch et al. 2003), it would be useful to measure goal pursuit with more objective methods in future research. One advantage of using self-reports of goal progress, however, is the freedom to allow participants to nominate a wide variety of goals. This freedom may provide a more representative sampling of the participant population's typical goals, increasing generalizability of the results. A disadvantage of this method, however, is that researchers have little control over the content or type of goals that participants nominate. Researchers cannot guarantee, for instance, that all goals chosen by participants are equally personally significant. We attempted to remedy this, in part, by assessing the personal importance of the goals and by using this rating as a moderator variable. If researchers wish to measure goal progress more objectively or to exercise greater control over the content of goals used, it may be necessary to restrict the focus of studies (and the generalizability of the results) to particular goals (e.g., achieving a good grade, obtaining a job, etc.).

7 Conclusion

Despite two decades of research demonstrating associations between Hope Theory and higher well being, little work has addressed the question of whether hope is malleable. The present study offers some evidence that a single-session intervention can increase hope in the short term as well as lead to greater levels of goal progress as much as a month later. From a more pragmatic standpoint, it offers hope that even a brief intervention can help a stressed generation of college students find greater direction.

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