LEARNING GOALS FOR EMOTION REGULATION:

A RANDOMIZED INTERVENTION STUDY

A dissertation submitted by

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Abstract

A consistent finding from research on motivation is that when people pursue learning versus performance goals (i.e., seek to improve rather than prove their ability), they are more likely to respond constructively to stressful situations. The current study investigates the effectiveness of a workshop designed to foster learning goals for emotion regulation. Fifty participating college students (ages 18 to 21) were randomly assigned to either an intervention or a waitlist control condition and completed measures at baseline and post-test (approximately four weeks later). The intervention consisted of a three-session workshop in which participants explored hands-on activity stations, each based on an area of current research in emotion regulation. The intervention applied principles from goal orientation theory to promote learning goals, including focusing on personally meaningful tasks, engaging participants in making choices, and providing recognition for experimenting and practice rather than judging results. Outcome variables included emotion regulation strategies, emotion regulation competence beliefs, physiological and experiential responses to an emotional induction, depressive symptoms, and college grades. The results of this randomized control trial indicated that relative to control participants, intervention participants showed increased use of new emotion regulation strategies and greater reflection on emotions at post-test. The findings are discussed in light of related research suggesting that, in addition to promoting constructive strategies, it may also be important to address individuals' goals for managing their emotions.

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Learning Goals For Emotion Regulation: A Randomized Intervention Study

Goal orientation theory examines what motivates people in school, work, and other settings (e.g. Dweck, 1986; Elliot, 1999; Elliot & Dweck, 2005; Nicholls, 1984). The most common distinction made by goal orientation theorists is between learning goals and performance goals (Ames & Archer, 1988; Dweck & Leggett, 1988; Kaplan & Maehr, 2007). Learning goals are focused on seeking to improve or develop one's ability (Dweck, 1999).[1] In contrast, performance goals are focused on seeking to prove or demonstrate one's ability or avoid proof of lack of ability.

A consistent finding from decades of goal orientation research is that people with greater learning goals are more likely to respond adaptively to failure and other stressful situations (e.g,. see reviews by Dweck, 1999; Kaplan & Maehr, 2007). Findings from learning goal research have been applied to promote constructive strategies in classrooms (Maehr & Midgley, 1991) and workplace environments (Seijts & Latham, 2005; van Hooft & Noordzij, 2009).

The current study applies findings from goal orientation research to the design of a preventive mental health intervention. This randomized controlled intervention study investigates whether promoting learning goals fosters the development of effective emotion regulation in college students, ages 18 to 21. The intervention consists of a three-session workshop in which students explore activities and discuss concepts from the science of emotion regulation.

This dissertation reports on the design and testing of this new intervention. The first section introduces previous research that informed the study, bringing together

[1] Learning goals are also commonly referred to as "mastery" goals (Kaplan & Maehr, 2007).

findings from the literature on emotion regulation and goal orientation theory. The next section describes the approach of the study, presenting the conceptual framework for the intervention and hypotheses to be tested. The Method section describes the study procedures and measures as well as pilot studies. The Results section presents statistical analyses for the pre- and post- measures and summarizes participants' responses to a workshop evaluation survey. The final section discusses the findings and suggests possibilities for integrating the intervention within existing youth programs. The appendices provide a fuller description of the intervention, detailed responses from the evaluation survey, and examples of posters and other articles created by participants during the workshops.

The section below begins by providing background on goal orientation theory and then reviews key findings from research on emotion regulation strategies. It provides an overview of existing therapeutic interventions designed to address difficulties in emotion regulation and provides a rationale for applying learning goals to promote constructive emotion regulation strategies.

Previous Research on Learning and Performance Goals

Goal orientation theory grew out of research seeking to understand why some students respond to failure and other obstacles by working harder while others respond by giving up or avoiding further challenges (Dweck & Leggett, 1988). Dweck and colleagues (Diener & Dweck, 1978, 1980) found that students showed two different sets of responses to negative feedback on a task: some worked through the problem and improved, while others attributed their difficulties to low ability and deteriorated in their work on the task. These students also displayed different emotions: those who were

focused on improving their skill showed sustained or increased positive emotion, while those attributing failure to low ability displayed negative emotion.

Based on previous work (e.g., Nicholls & Dweck, 1979), Dweck hypothesized that the differences between the students were due to different goals. In a follow-up study, Elliott & Dweck (1988) conducted an investigation where fifth-grade students chose either a learning goal (seeking to learn while making mistakes) or a performance goal (seeking to show how well they could perform) on a set of pattern recognition tasks. Each student received identical negative feedback. Those who chose the learning goal responded with increased problem solving and seeking further challenge, regardless of their perceived ability, while those who chose to pursue the performance goal avoided further challenges that might show their mistakes. Those with performance goals who were led to believe that their ability was low showed increased negative affect and gave up problem solving.

Similarly, within the domain of social interactions, Erdley, Cain, Loomis, Dumas-Hines, and Dweck (1997) found that fifth and sixth grade students instructed to focus on learning goals (i.e., potential learning opportunities) responded more constructively to negative feedback from pen pals than students focused on performance goals (i.e., anticipating evaluation of their efforts). The findings suggested that the students with performance goals responded defensively, attempting to protect themselves from further evaluation, whereas those with learning goals were willing to share additional information to improve their chances of developing a relationship and learning from the exchange.

Dweck & Leggett (1988) provided a model for how learning versus performance goals relate to views of ability and to adaptive versus maladaptive patterns of behavior. Individuals who believe that ability can improve through effort and practice are more likely to adopt learning goals and to exhibit task persistence, whereas individuals who believe ability is fixed are more likely to adopt performance goals and to exhibit task avoidance. Over the past thirty years, there have been numerous studies investigating how learning and performance goals relate to different patterns of beliefs and behavior across multiple settings. Table 1 summarizes some of the key aspects of learning and performance goals, based on goal orientation theory and research findings.

Learning goals consistently have been found to foster cognitive openness, problem solving, and remediation in response to failure (see reviews by Kaplan & Maehr, 2007; Rusk & Rothbaum, 2010). Students higher in learning goals have been found to experience greater enjoyment and lower boredom in school, as well as lower levels of anxiety (e.g., Daniels et al., 2009).

Most of the research on performance and learning goals has focused on students in classroom settings, from elementary school through college. Goal orientation theory has also been applied to the domains of athletics (Duda & Nicholls, 1992), social interactions (Horst, Finney, & Barron, 2007; Ryan & Shim, 2008), and work (Button, Mathieu, & Zajac, 1996; Vandewalle, 1997). Despite consistent findings on the adaptiveness of learning goals in stressful situations, findings on learning goals have yet to be applied to promote adaptive emotion regulation.

Table 1

Comparison of Learning and Performance Goals, Based on Goal Orientation Theory and Research

Aspect for Comparison	Learning Goal	Performance Goal
What is the goal?	Seeking to *improve* or *develop* ability; to learn and grow	Seeking to *prove* or *demonstrate* ability; to judge whether ability is high or low
View of ability	People can improve their ability with practice (incremental view)	People have fixed ability (entity view)
View of effort	Effort is needed to improve	Effort indicates lack of natural ability
View of failure or negative feedback	Challenge; opportunity to learn; useful information for improvement	Threat; evidence of lack of ability and low self-worth
Strategies in response to failure	Constructive, self-improving strategies (e.g., seek support; openness to information; problem-solving)	Defensive, self-protective strategies (e.g., hide weaknesses; devalue task; express boredom; give up; avoid)
Response to mistakes	Learn from mistakes	Avoid mistakes; deny or ruminate on mistakes
Focus	Process; understanding	End product; score; comparison to others
When is it most adaptive?	When faced with a difficult or new challenge	When faced with a familiar task for which one has high perceived ability

Note. Based on findings and summaries by Ames & Archer, 1988; Dweck (1999); Dweck & Leggett (1988); Dykman (1998); Kaplan & Maehr, (2007); and Seijts & Latham (2005).

The Role of Emotion Regulation

Learning to effectively manage emotions is recognized as key to mental health and functioning in school (e.g., Graziano, Reavis, Keane, & Calkins, 2007), work (Härtel, Zerbe, & Ashkanasy, 2005), and relationships (Gross & John, 2003; Mikulincer & Shaver, 2007). The ability to regulate emotions has been identified as a protective factor associated with lowered risk of depression (Nolen-Hoeksema, Stice, Wade, & Bohon, 2007), substance abuse (Skitch & Abela, 2008), and other mental and physical health problems (e.g., Denollet, Gidron, Vrints, & Conraads, 2010; Kring & Sloan, 2010).

Emotion science has emerged as a burgeoning area of interdisciplinary research (Gross, 2010). In the introduction to the *Handbook of Emotion Regulation*, Gross (2007) describes the recent growth in research on emotion regulation. Figure 1 provides a graph illustrating this growth, showing the number of peer-reviewed articles with the keyword phrase "emotion regulation" from the PsycINFO database[2]. As noted by Gross, research on emotion regulation currently spans a variety of fields, including developmental, personality, social, physiological, and clinical psychology.

The study of emotion regulation has its roots in the literature on coping, as well as attachment theory and emotion theory (Gross & Thompson, 2007). Emotion regulation researchers acknowledge areas of overlap with coping literature (e.g., cognitive reappraisal; Lazarus & Folkman, 1984) but also highlight distinctions between the two areas. Coping research examines a broader range of strategies for dealing with difficult life situations, often over extended periods of time, such as obtaining instrumental help or making a plan of action (Carver, Scheier, & Weintraub, 1989). In contrast, the emotion

[2] The American Psychological Association's PsycINFO database provides systematic coverage of psychological literature.

regulation literature focuses on strategies that people use to influence their emotional experience or expression, and include modulating positive as well as negative emotions (Gross & Thompson, 2007).

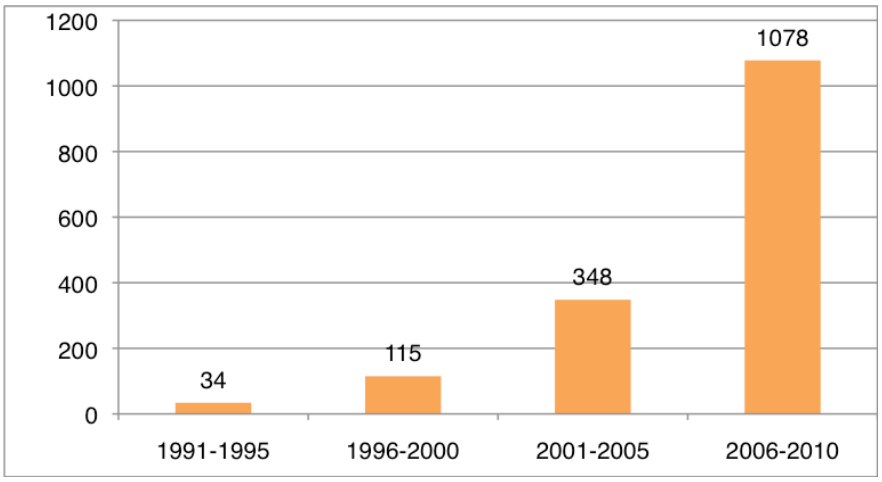

Figure 1. Number of peer-reviewed articles on emotion regulation by five-year period, based on PsycINFO data.

Researchers have offered differing definitions of emotion regulation (e.g., see Campos, Frankel, & Camras, 2004). The current study adopts the definition of emotion regulation as the processes by which people seek to change their emotional experience or expression (Gross, 2001). Emotions are considered to be response tendencies with subjective, physiological, and behavioral dimensions, based upon an individual's appraisal of a situation (Mauss, Levenson, McCarter, Wilhelm, & Gross, 2005). This fits with a functionalist view of emotions as evolutionarily adaptive, helping to regulate interactions between individuals and their social and physical environment (Campos, Campos, & Barrett, 1989; Darwin, 1872/1998). More specifically, some researchers of

human motivation view emotions as providing valuable feedback about one's progress or problems in reaching a desired state (e.g., Baumeister, Vohs, DeWall, & Zhang, 2007; Carver & Scheier, 2000).

Emotion Regulation Strategies

A notable development in recent years is that many researchers from across different literatures have adopted a shared conceptual framework for describing the ways people regulate emotions. This framework, referred to as the *process model of emotion regulation* (Gross, 1998, p. 271) describes five categories of emotion regulation strategies. These five categories of strategies, as described by Gross and colleagues (Gross, 1998, 2001; Gross & Thompson, 2007), are: (a) *situation selection*, (b) *situation modification*, (c) *attentional deployment*; (d) *cognitive change*, and (e) *response modulation*. That is, people can regulate their emotions by: selecting a different situation; modifying their current situation; shifting the focus of their attention, changing their perspective on a situation, or modulating their emotional response (including their physical expression of emotion). The five categories are listed in order of timing—from early in the emotion appraisal process (e.g., situation selection) to after the onset of the emotion (i.e., response modulation).

Defensive and constructive emotion regulation strategies. Emotion regulation theorists generally agree that the adaptiveness of any emotion regulation strategy depends on the context in which an individual applies it (Gross & Thompson, 2007). For example, although the strategy of emotional suppression has been found to backfire and increase emotional distress (e.g., Campbell-Sills, Barlow, Brown, & Hofmann, 2006), it may be adaptive when used in emergency situations (Dunn, Billotti, Murphy, & Dalgleish, 2009).

Some researchers argue that adaptive emotion regulation centers on the ability to respond flexibly depending on the demands of the situation (e.g., Kashdan & Rottenberg, 2010; Westphal, Seivert, & Bonanno, 2010).

While all strategies may be useful at certain times, habitual use of particular emotion regulation strategies, such as brooding rumination, are associated with depression and other mental health problems (Nolen-Hoeksema et al., 2007; Wegner & Zanakos, 1994). Brooding rumination involves repetitive focusing on the causes and consequences of distressing emotions. Brooding rumination can be considered a defensive emotion regulation strategy, as it focuses an individual's attention on reasons to avoid taking action in an apparently aversive environment (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Brooding rumination has been found to prospectively predict and increase depression and anxiety in youth and adults (Nolen-Hoeksema et al., 2007, 2008).

Another habitual strategy that has been found to be associated with and predictive of depression is chronic thought suppression (Beevers, Wenzlaff, A. M. Hayes, & Scott, 1999). Thought suppression can be considered a defensive emotion regulation strategy as it involves attempting to avoid thoughts that may cause emotional distress (Wenzlaff, Wegner, & Roper, 1988).[3] When faced with a high cognitive load or increased stress, thought suppression often fails, leading to increased negative affect (Wenzlaff & Luxton, 2003). While manifestly opposite, brooding (i.e., continuously thinking about) and suppression (i.e., trying to avoid negative thoughts) are moderately correlated with one

[3] Thought suppression can be seen as closely related to but is operationalized differently from emotional suppression (Campbell-Sills et al., 2006), with the former centered on attempting to block unwanted thoughts and the latter focused on attempting to avoid distressing emotions. Another related concept is expressive emotional suppression (Gross & John, 2003), which focuses on attempting not to show one's emotions to others.

another. There is experimental evidence that, under prolonged stress, thought suppression breaks down and leads to brooding (Wenzlaff & Wegner, 2000).

One of the most extensively studied emotion regulation strategies that can lessen negative affect is cognitive reappraisal. Cognitive reappraisal involves shifting perspective on a situation in order to change how one feels (Gross & John, 2003). Frequent use of reappraisal to reduce negative affect is associated with low levels of depressive symptoms and high levels of well-being factors, including more positive social relationships and greater life satisfaction (John & Gross, 2004).

Another emotion regulation strategy that has been studied in lab and clinical settings is acceptance of thoughts and emotions (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Acceptance involves non-judgmental awareness and openness to experiencing distressing emotions (S. Hayes, Strosahl, & Wilson, 1999; Roemer & Orsillo, 2007). Acceptance, in contrast to experiential avoidance of thoughts and emotions, has been found to help lessen rumination, anxiety, and physiological distress (e.g., Campbell-Sills et al., 2006; Liverant, Brown, Barlow, & Roemer, 2008).

Both cognitive reappraisal and non-judging acceptance of emotions can be considered constructive emotion regulation strategies. These emotion regulation strategies enable individuals to pursue valued actions despite distressing situations and have been found to lessen rather than exacerbate negative emotions over time (e.g., John & Gross, 2004; Roemer & Orsillo, 2007).

Interventions to Promote Effective Emotion Regulation

Given the increased recognition of the importance of emotion regulation to mental health and functioning, a number of researchers have been developing and testing

interventions to promote effective emotion regulation. Some of these interventions are therapeutic interventions designed to treat particular mood disorders (discussed below), while others are preventive interventions (discussed in the next section).

The therapeutic interventions, which have been developed for adults as well as children and adolescents, seek to change ineffective habitual responses to negative emotions. These interventions introduce alternative strategies for managing emotions as well as addressing problematic behavioral patterns. Table 2 lists three therapeutic interventions with a focus on emotion regulation that have been tested in randomized control trials for adults and are widely disseminated through published manuals. Each of these therapies can be seen as applying ideas from emotion science research.

Table 2

Established Evidence-Based Therapies Informed by Emotion Science Research

Intervention	Target Population	Emotion Related Focus
Acceptance-Based Behavior Therapy[a]	Individuals with Generalized Anxiety Disorder	Acceptance of emotions. Taking actions based on one's values, even when painful emotions arise.
Dialectical Behavior Therapy[b]	Individuals with Borderline Personality Disorder	Engaging in functional behaviors, even in presence of intense emotions. Learning about different emotions and ways to manage them.
Unified Protocol for the Treatment of Emotional Disorders[c]	Individuals with anxiety, depression, and other unipolar emotional disorders	Changing antecedent cognitive appraisals. Reducing behavioral and emotional avoidance.

a: Roemer and Orsillo (2007). b: Lynch, Chapman, Rosenthal, Kuo and Linehan (2006). c: Barlow et al. (2011).

Acceptance-based behavior therapy (Roemer & Orsillo, 2007) was developed as a treatment for adults with generalized anxiety disorder. The therapy focuses on (a) increasing mindfulness and acceptance (rather than avoidance) of distressing emotions and other internal experiences and (b) pursuing actions based on one's values. The therapy incorporates aspects of other related therapies, including Acceptance and Commitment Therapy (S. Hayes et al., 1999).

Dialectical behavior therapy (DBT; Linehan, 1993; Lynch et al., 2006) is perhaps the most established intervention to focus on emotion regulation strategies as a central element. Originally developed for treating individuals diagnosed with borderline personality disorder, DBT also has been applied to treat other mood disorders, including pilot studies for treatment of depression (e.g., Feldman, Harley, Kerrigan, Jacobo, & Fava, 2009). DBT explicitly teaches clients about different emotions and ways to regulate them. Clients are introduced to a variety of emotion regulation strategies, including mindfulness, positive distraction, and other techniques (Linehan, Bohus, & Lynch, 2007).

Barlow and colleagues (Barlow, Allen, & Choate, 2004) have developed and disseminated a therapy called Unified Protocol for the Transdiagnostic Treatment of Emotional Disorders. The Unified Protocol is designed to treat depression, anxiety, and other unipolar disorders. It is explicitly based on research findings from the emotion regulation literature, and focuses on reducing behavioral and emotional avoidance as well as promoting cognitive reappraisal (Barlow et al., 2011).

Table 3 lists therapeutic interventions focusing on emotion regulation designed for children or adolescents. Contextual Emotion-Regulation Therapy (CERT; Kovacs et al., 2006) was developed as a treatment for depression for children, ages 7 to 12, to

Table 3

Therapies for Children and Adolescents that Focus on Emotion Regulation

Intervention	Target Population	Emotion Related Focus
Contextual Emotion-Regulation Therapy (CERT)[a]	Individual children, ages 7-13, with depression	Identifying and replacing habitual maladaptive responses to stressful situations with alternative responses that lessen negative mood.
Emotion-Focused Cognitive-Behavioral Therapy (ECBT) [b]	Individual children, ages 7-13, with anxiety disorders	Identifying and discussing emotions; brainstorming and trying new emotion regulation strategies in response to individualized anxiety exposure tasks.
Unified Protocol – Youth (UP-Y) [c]	Individual adolescents, 12-17, with emotion-related disorders	Awareness and understanding of emotional experiences; identifying and evaluating automatic interpretations; reducing avoidance of uncomfortable emotions.

a: Kovacs et al. (2006). b: Suveg, Kendall, Comer, and Robin (2006). c: Ehrenreich, Goldstein, Wright, and Barlow (2009).

improve children's self-regulation of distress triggered by stressful events. Emotion-Focused Cognitive-Behavioral Therapy (ECBT; Suveg, Kendall, Comer, & Robin, 2006) integrates a focus on emotion understanding and emotion regulation skills into a previously established CBT protocol for anxious youth (Kendall & Southam-Gerow, 1996). The Unified Protocol-Youth (UP-Y; Ehrenreich, Goldstein, Wright, & Barlow 2009) is based on the Unified Protocol for adults and has been adapted and pilot-tested for use with adolescents, ages 12 to 17, with anxiety, depression, and other unipolar mood disorders. Each of these interventions builds on established cognitive-behavioral therapies while seeking to reduce problematic responses to distressing emotions.

The evidence-based interventions discussed above all include a focus on decreasing problematic habitual responses to negative emotions and increasing adaptive responses. Some of these interventions include a component that addresses motivation for engaging in therapy. For example, the United Protocol for Youth includes an optional motivational interviewing component intended for adolescents who come to therapy with low motivation to change (Trosper, Buzzella, Bennett, & Ehrenreich, 2009). However, none of these interventions are conceptualized as focusing on promoting goals that may underlie the use of constructive versus defensive emotion regulation strategies.

Rationale for a Learning Goal Intervention

The current study seeks to investigate the effect of promoting learning goals within the domain of emotion regulation. There are several sources of evidence suggesting that promoting learning goals may foster the development and adoption of constructive emotion regulation strategies.

First, learning goals are associated with positive coping strategies, such as positive reinterpretation, and negatively associated with behavioral disengagement (Dykman, 1998). In contrast, performance goals have been found to predict denial and dwelling on failures or other setbacks (Grant & Dweck, 2003).

Second, preliminary research suggests that individual differences in learning goals across settings (i.e., global learning versus performance goals) are positively associated with constructive emotion regulation strategies and negatively associated with defensive emotion regulation strategies. Using standardized survey measures of goal orientation and emotion regulation strategies, Rusk, Tamir, and Rothbaum (2011) found that college

undergraduates with greater global learning relative to performance goals reported greater cognitive reappraisal and lower brooding and thought suppression.

Although emotion regulation researchers have not investigated the effects of inducing learning goals on emotion regulation, previous research has shown that inducing a specific goal or particular orientation towards emotion regulation influences which emotion regulation strategies people use. For example, Tamir and colleagues (e.g., Tamir, Mitchell, & Gross, 2008) have shown that individuals may increase their negative emotions in order to achieve a social or instrumental goal, such increasing their anger when preparing for a confrontation (see review by Tamir, 2009). McFarland and colleagues (McFarland, Buehler, von Ruti, Nguyen, & Alvaro, 2007) found that inducing a reflective orientation as compared with a ruminative orientation towards negative emotions led to more positive (mood-incongruent) thoughts.

Finally, learning versus performance goals have been associated with lower depressive symptoms and anxiety in stressful situations. Dykman (1998) found that college students with greater learning versus performance goals across situations (which he called *growth* versus *validation* seeking) experienced lower levels of depression and anxiety. These findings have been replicated by other researchers (e.g., Lindsay & Scott, 2005). Global and avoidant forms of performance goals have been found to be particularly problematic and predictive of depression (e.g., Sideridis, 2005). However, research suggests that approach forms of performance goals, although they are effective in individuals with high perceived ability, may shift to performance-avoidance goals after failure, uncertainty, and low perceived competence (e.g., Darnon, Harackiewicz, Butera, Mugny, & Quiamzade, 2007).

Although learning and performance goals are often studied as individual difference variables, goal orientation theorists also emphasize that students' goals are a function of their setting (Ames, 1992; Urdan & Schoenfelder, 2006). Goal orientation theorists have identified multiple aspects of environments that promote learning goals, contrasting them with aspects that promote performance goals (Ames & Archer, 1988). For example, educational settings that provide positive recognition when students take risks and learn from mistakes are more likely to promote learning goals, whereas settings that provide recognition primarily for excelling with little effort and making few mistakes are more likely to promote performance goals. (Kaplan & Midgley, 1999).

The current intervention applies findings from goal orientation research to create an environment that promotes learning goals for emotion regulation. The approach and framework for the intervention are described in the next section, along with hypotheses for the study.

The Current Study: Approach, Framework, and Hypotheses

The goal of the current study is to investigate the effectiveness of a preventive intervention designed to foster learning goals for emotion regulation in students, ages 18 to 21. This section first discusses the need for a preventive intervention for this age group, then explains the framework and approach for the learning goal intervention, and concludes with a description of the hypotheses for the study.

The study can be seen as incorporating concepts and approaches from four areas of research: (a) emotion regulation; (b) mental health interventions; (c) goal orientation theory; and (d) informal science learning environments (illustrated in Figure 2). Some of these research areas overlap—particularly emotion regulation and mental health interventions (e.g., Kring & Sloan, 2010)—but the four have not been explicitly explored in combination.

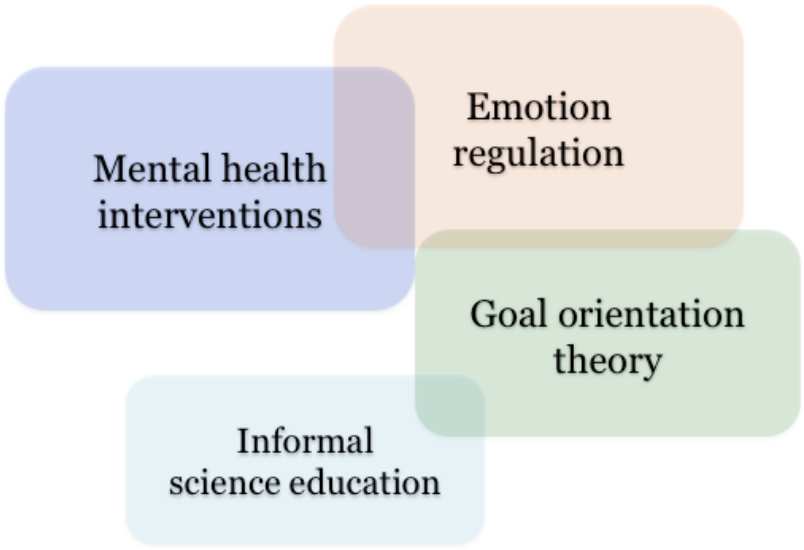

Figure 2. Four areas of research that have informed the current study.

Preventive Interventions to Foster Adaptive Emotion Regulation

Currently, more than 51% of college students report that mental or emotional difficulties hurt their academic performance in the past month, and 30% of students feel they need help for these difficulties (Eisenberg, Golberstein, & Gollust, 2007). College mental health professionals are calling for increased support for students to learn to manage emotional distress (Kadison, 2008).

In a study of college students' daily emotion regulation strategies, Gross, Richards, and John (2006) noted that it was a novel experience for many young adults to think explicitly about their goals and strategies for emotion regulation. In their conclusion, Gross and colleagues suggest that one form of preventive intervention for high school and college students would be to increase their awareness of ideas from contemporary research on emotion regulation.

There are currently few preventive interventions introducing older adolescents or young adults to effective approaches to emotion regulation.[4] There are a small number of interventions for adolescents focused specifically on teaching mindfulness skills (e.g., Learning to BREATHE; Broderick & Metz, 2009). These mindfulness-based educational initiatives are an important application of one area of emotion regulation research, but do not introduce the broader range of strategies (such as situation selection and cognitive reappraisal) found effective in emotion research and represented in the process model of

[4] There are preventive interventions to promote emotional knowledge and skills in younger children, such as the program by Izard, King, et al. (2008) to promote emotional utilization in preschoolers and the RULER feeling words curriculum by Brackett, Rivers, Reyes, & Salovey (in press) to promote emotional literacy in children from Kindergarten through eighth grades. These school-based programs address emotion-related topics that are developmentally appropriate for a younger age group than the focus of the current study.

emotion regulation. These interventions introduce strategies but do not focus on addressing the goals that may influence which emotion regulation strategies individuals choose to pursue.[5]

Developmental perspective. From the perspective of cognitive and emotional development, late adolescence may provide an important window of opportunity for reflecting on and learning new emotion regulation strategies (Giedd, 2008). In the past decade, neuroimaging studies have revealed that from adolescence to young adulthood, the prefrontal cortex, which plays a major role in regulating emotions, is undergoing important restructuring and development (Johnson, Blum, & Giedd, 2009). These changes in brain structure and function in later adolescence and emerging adulthood parallel increased potential for cognitive reflection on thoughts and emotions (Zelazo, Carlson, & Kesek, 2008; Yurgelun-Todd, 2007).

Brief interventions. Although evidence-based mental health interventions for youth with mood disorders typically extend 12 sessions or more (Weisz, Jensen-Doss, & Hawley, 2006), there is precedence for preventive interventions to consist of a small number of sessions. For example, Stice and colleagues (Stice, Shaw, Burton, & Wade, 2006) have developed and tested an eating disorder intervention informed by psychological science, including experimental research on cognitive dissonance theory. Their four-session intervention began as a small, non-randomized trial and then was tested in a series of rigorous and larger randomized controlled trials (Stice, 2001; Stice, Shaw, et al., 2006). It is now disseminated more broadly as part of the *Treatments that*

[5] Mindfulness-based practices can be understood as seeking to lessen avoidance and judging of emotion. At the same time, they are often conceptualized as "non-striving" (Shapiro, Carlson, Astin, & Freedman, 2006, p. 377), seeking awareness of rather than seeking to change one's emotional experience.

Work programs for practitioners working with adolescents (Stice & Presnell, 2007). In addition, evidence-based interventions for adults designed to foster motivation for change often have brief durations (e.g., motivational interviewing; Miller & Rose, 2009).

Principles for Promoting Learning Goals

The framework for designing the learning goal intervention for the current study is based on research on application of goal orientation theory in classrooms and other settings. Ames (1990) conducted a study in which teachers of second through sixth grade were coached in fostering learning goals in their classrooms. At the end of a year, children in these classrooms had greater learning goals than those in control classrooms. In addition, previously low-performing students showed a stronger preference for challenging work, had higher perceived ability, were more intrinsically motivated, and used more effective learning strategies than did students in the control classrooms (Ames, 1990; Urdan & Midgley, 2003).

Kaplan and Maehr, in their 2007 review of goal orientation research, provide a chart that lists aspects of environments that foster learning goals in contrast to those that foster performance goals. The chart uses the acronym TARGET, a framework for describing characteristics of classrooms, which was originally adopted by Ames and Archer (1988) to identify key aspects of learning goal environments.

Table 4 provides an abbreviated version of the TARGET chart, adapted from Kaplan and Maehr (2007). The TARGET acronym stands for six aspects of educational environments: the type of *tasks* (T); who holds *authority* (A); which type of behaviors are *recognized* (R); how students are *grouped* (G); how students are *evaluated* (E); and how *time* is managed (T). Goal orientation researchers have found that learning goals are more

likely in environments in which individuals: (a) pursue personally meaningful tasks; (b) have the authority to choose which strategies they will use for completing the task; (c) are recognized for taking creative risks and learning from mistakes; (d) are grouped to maximizing collaborative learning rather than grouped only by ability; (e) are evaluated for improvement rather than in comparison to others; and (f) can work at their own pace (Ames, 1990; Ames & Archer, 1988; Kaplan & Maehr, 2007).

Examples of Learning Goal Environments

Youth sports. An example of a domain in which learning goals have been applied beyond classrooms is youth sports (Duda, 2005). Smith, Smoll, and Cumming (2007) conducted a one-session intervention for 20 coaches of youth basketball, and compared outcomes for children (ages 10 to 14) on teams with coaches who participated in the intervention with those in control condition whose coaches had no additional training. The intervention focused on defining success as expending effort and improving (rather outperforming others), and providing positive encouragement for learning from mistakes (rather than criticism or punishment). The intervention resulted in a significant decrease in performance anxiety for youth in the intervention group from preseason to late season, while youth in the control group experienced an increase in performance anxiety during that time. Similar studies have shown positive increases in youth retention in sports as well as increases in overall self-esteem (e.g., N. Barnett, Smoll, & Smith, 1992).

Table 4

Aspects of Environments that Foster Learning Versus Performance Goals, Adapted from TARGET Chart by Kaplan and Maehr (2007)

Aspect of Environment	Aspects that Promote Learning Goals	Aspects that Promote Performance Goals
Task	Tasks are designed to be useful and personally meaningful to individuals.	Tasks are the same for all participants and are designed primarily to evaluate ability.
Authority	Individuals decide about means and strategies for engaging in the tasks.	Individuals follow external rules for performing the task and do not have authority to use alternative strategies.
Recognition	Recognition is given for extending effort; taking risks; being creative; sharing ideas; learning from mistakes.	Recognition is given for demonstrating ability with minimal effort; following rules; not making mistakes.
Grouping	Groups are formed to support learning from one other rather than by ability.	Groups are formed based on level of ability, with competition between groups.
Evaluation	Individuals are evaluated for progress and learning of skills.	Individuals are evaluated for completing tasks and in comparison to others.
Time	Individuals work at their own pace.	Individuals must complete work based on a rigid time schedule.

Note. Adapted from "The Contributions and Prospects of Goal Orientation Theory," by A. Kaplan and M. L. Maehr, 2007, *Educational Psychology Review, 19,* p. 159.

Work. Learning goals have also been applied with adults in work and employment contexts. For example, van Hooft and Noordzij (2009) conducted a study

of more than 100 unemployed job seekers, randomly assigning them to a workshop that induced (a) a learning goal orientation, (b) a performance goal orientation, or (c) an active control condition (exploration of one's personality). The results showed that the workshop focusing on learning goals led to increased job-seeking behaviors and higher reemployment probabilities. Other experimental research has shown that promoting learning goals for complex tasks increases self-efficacy and use of effective task strategies and improves performance (Winters & Latham, 1996; Seijts & Latham, 2001).

Informal science learning environments. Another environment outside of classrooms that can be seen as fostering learning goals are informal science learning centers such as science museums. Although goal orientation theory has yet to be studied within science museums and other informal science learning environments (Bell, Lewenstein, Shouse, & Feder, 2009), the characteristics of these settings are often described in terms that match with aspects of learning versus performance goals described in the TARGET framework. As documented in a recent consensus report from the National Research Council (Bell et al., 2009), the activities in informal science learning environments are typically designed to interest learners of diverse ages and backgrounds. The learning process in informal learning environments has been described as "active, voluntary, self-discovering, self-determined, open-ended, non-threatening, enjoyable, and explorative" (Boekaerts & Minnaert, 1999, p. 536).

One of the approaches found to engage learners in science museums is the use of interactive exhibits, also known as *hands-on activity stations*. These stations are designed to foster learning by encouraging exploration, providing direct experience with phenomena, and sparking conversation (Humphrey & Gutwill, 2005). This kind of self-

directed activity that fosters experimentation and investigation can be seen as fostering a learning goal orientation.

Promoting Learning Goals for Emotion Regulation

The intervention in the current study was designed to promote learning goals by applying by the TARGET framework (Kaplan & Maehr, 2007). As discussed above, the TARGET framework identifies aspects of environments that have been shown to foster learning goals in previous research (Ames & Archer, 1988; Kaplan & Maehr, 2007; Urdan & Midgley, 2003). Table 5 summarizes how the intervention applies each aspect of the TARGET framework in order to promote learning goals in the domain of emotion regulation. Each of these six aspects is described below.

Task. The emphasis in the workshop is for participants to develop emotion regulation strategies not in order to feel happy and relaxed all the time, but rather to help pursue what they each find meaningful in life. This approach borrows from acceptance-based therapies, which emphasize that the goal is not to strive for positive emotions all the time, but rather "pursuing valued activities knowing that painful thoughts, feelings, and emotions may arise" (Roemer & Orsillo, 2007, p. 79). In the workshop, participants identify their personal values and identify which strategies they find useful. Participants explore a variety of emotion regulation strategies through the use of hands-on activity stations (described in the Method section).

Authority. The intervention is designed to give participants authority for making decisions. Participants decide which activity stations they will try as well as making choices within each activity. They also choose which strategies they will try between sessions.

Table 5

Application of the TARGET Framework to Promote Learning Goals for Emotion Regulation

Aspect of Environment	Aspects that Promote Learning Goals (Kaplan & Maehr, 2007)	Application in the Current Intervention to Promote Learning Goals for Emotion Regulation
Task	Tasks are designed to be useful and personally meaningful to individuals (rather than being standardized and primarily for evaluation).	The focus is on learning to manage emotions in order to pursue what is personally meaningful (rather seeking positive emotions). Participants identify their values and explore different strategies they can use.
Authority	Individuals decide about means and strategies for engaging in the tasks.	Participants decide which activity stations they will try as well as making choices within each activity.
Recognition	Recognition is given for extending effort, taking risks, being creative, sharing ideas, learning from mistakes.	Recognition is given for trying new emotion regulation strategies, sharing their observations, and learning from difficulties.
Grouping	Groups are formed to support learning from one other rather than by ability.	Groups include students with a range of emotion regulation skills so they can learn from each other.
Evaluation	Individuals are evaluated for progress and learning of skills.	Participants are encouraged to reflect on different strategies they have learned and tried.
Time	Individuals work at their own pace.	Participants work at their own pace at stations, deciding when they will shift from station to station.

Recognition. Recognition in the group discussions is given for trying new emotion regulation strategies, sharing of observations, and learning from difficulties. The focus is on noticing and learning from use of various emotion regulation strategies.

Grouping. The groups in the workshops include students ranging from no depressive symptoms to moderate depressive symptoms. Students come with a range of emotion regulation strategies and skills, and share them in the process of group discussion. This fits with Ames (1992) recommendation of mixed ability groups as part of supporting learning goals, as well as findings on greater learning among low ability students in heterogeneous than homogeneous groups (e.g., Saleh, Lazonder, & DeJong, 2005).

Evaluation. Participants are asked to recall and reflect on strategies they have learned and explored. In keeping with an emphasis on learning versus performance goals, participants are not asked to judge how good or stressed they are feeling but rather what they tried and what they noticed during the workshop and during the week.

Time. Participants work at their own pace at stations, and decide when they will shift from station to station. This flexible timing is similar to exploration of hands-on activity stations within science museums and fits with the TARGET concept of time being flexible and individuals learning at their own pace (Kaplan & Maehr, 2007).

Overall, the approach for promoting learning goals in the current intervention provides multiple entry points, incorporates hands-on activities and interactive technologies, and supports small group discussion. This approach may be particularly appropriate for the current generation of students (sometimes referred to as the "Millennial generation") who are accustomed to active modes of learning that allow for

choice and tailoring of learning experiences, using digital technologies to support learning, and sharing knowledge with peers (Ito, 2010). The topic of emotion science lends itself to fostering learning goals, as it is a new and growing field that recognizes the value of subjective experience and is personally relevant to students' lives.

Hypotheses for the Current Study

The current study examines a variety of outcome variables to assess potential effects of the intervention. Following recommendations by leading emotion regulation researchers (Mauss & Robinson, 2009), assessment of outcomes for the study includes use of physiological and behavioral measures in addition to experiential (i.e., self-report) measures. As outlined below and described further in the Method section, the outcome variables for the study are emotion regulation strategies, emotion regulation competence beliefs, and indicators of overall functioning, including levels of depressive symptoms and grade point averages from college transcripts.

Emotion regulation strategies. The first set of hypotheses address participants' use of emotion regulation strategies. Participants in the learning goals intervention condition, as compared to those in the waitlist control condition, are anticipated to show greater use of constructive emotion regulation strategies and decreased use of defensive emotion regulation strategies.

In addition, participants in the intervention condition are expected to exhibit greater ability to effectively apply cognitive reappraisal in response to an emotional induction.

Emotion regulation competence beliefs. The second set of hypotheses examine individuals' beliefs about their ability to regulate emotions. These beliefs have been

found to predict depressive symptoms, above and beyond the influence of rumination and other emotion regulation or coping strategies (e.g., Drwal, 2008; Kassel, Bornovalova, & Mehta, 2007). Participants in the intervention group are expected to have greater self-efficacy for emotion regulation, lower perceived difficulties regulating emotions, and greater adaptive responses to negative emotions.

Functioning. The third set of hypotheses to be tested examine whether participants in the intervention condition show (a) lower depressive symptoms; and (b) higher end-of-semester grade point average (GPA) at post-test that those in the control condition. The prediction for lower depressive symptoms is based on studies of individual differences in global learning versus performance goals (Dykman, 1988; Lindsay & Scott, 2005) but has not been tested for manipulation of these goals. Grade point average is a more distal behavioral outcome that is seldom reported in relation to individual differences in emotion regulation in college students, but has been shown to improve as a result of other brief psychological interventions (e.g., Walton & Cohen, 2007).

Method

Pilot Studies

Prior to the main study, two small pilot studies were conducted to provide a preliminary evaluation of the workshop approach, format, activities, and measures. The procedures for the pilot studies were first reviewed and approved by the Tufts University Internal Review Board (IRB). The pilot studies involved a total of 7 undergraduate students (86% female), ages 18 to 20. Students were recruited via an announcement to help evaluate a workshop on managing stressful emotions posted on the university student website. Students were asked to read and sign an informed consent form prior to participation. The first group of participants ($N = 4$) attended two workshop sessions (total of 4 hours) plus two 1-hour meetings to complete pre- and post- measures (including an evaluation survey), and each was paid $20 for completing the measures. The second group of participants ($N = 3$) attended three workshop sessions (total of 4.5 hours) and were paid $10 each for completing the evaluation survey.

The pilot studies provided useful and encouraging feedback on the workshop activities, and led to revisions that were implemented in the main study. Four activity stations were tested in the pilot studies. The activity station based on self-compassion research underwent major revisions during the pilot studies, based on feedback from the participants. In the initial pilot study, the activity involved participants in creating an animation expressing understanding and compassion (based on principles from self-compassion research; Neff, 2003; Leary, Tate, Adams, A. B. Allen, & Hancock, 2007). Participants reported that this activity of creating an animation was too complex. Successive iterations in the second pilot study resulted in the Self-Talk Activity Station

described below, in which participants simply choose from a set of phrases printed on paper, with the option of writing in their own phrases. Other changes based on feedback from participants in the pilot study were: (a) extending the workshop to three rather than two sessions; (b) starting with group discussion rather than a video clip; (c) playing background music to create an inviting atmosphere; and (d) omitting use of introductory presentation slides in order to maintain an informal learning environment.

On the evaluation survey, all 7 participants reported finding the workshop helpful or very helpful; that they would likely or definitely recommend it to other students; and described a variety of strategies they had learned. Most (5 out of 7) reported having made use of the strategies they had learned.

The pilot studies provided initial evidence of the feasibility of the workshop approach. The survey and observations of participants indicated engagement and interest in the workshop activities. Different students indicated preferences for different activities (e.g., biofeedback). The setup of the environment allowed students to explore and choose from a variety of activities and strategies.

After the pilot studies, a decision was made to add an activity station on mindfulness. The Mindfulness Activity Station was added based on increasing emphasis and evidence in the emotion regulation literature of the benefits of mindfulness exercises (e.g., Chambers, Gullone, & N. B. Allen, 2009; Davidson, 2010; Goldin & Gross, 2010).

Participants

Participants in the main study included 50 undergraduate students ranging in age from 18 to 21 years (M = 19.0, SD = 1.1).[6] Students self-identified ethnicity according to the following categories: White or Caucasian (not Hispanic), 52%; Asian or Asian American, 34%; African American or Black, 14%; Hispanic or Latino, 4%, American Indian or Pacific Islander, 2%; Other (specified Indian/South Asian Indian), 4%.[7]

Recruitment took place through a variety of channels in order to recruit a diverse group of undergraduate students. Of the students who indicated where they heard about the study (n = 37), 41% heard through an announcement made in a course, 19% from an announcement on the university website for student activities; 16% through a poster or flyer; and the remaining students reported a variety of sources, including university staff (athletic coach; college dean; academic resource center staff; counseling staff) and a student organization mailing list.

The announcement for the study was written based on feedback from participants in the pilot studies. The study title used in the announcement was "Stress Management Workshop Study." The description invited undergraduate students to participate in order to explore new ways to deal with stress, to experience hands-on activities and new technologies, and to contribute to research on emotions and stress.

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[6] As shown in Figure 3, there were 7 additional participants who withdrew prior to post-test. They did not differ from those who completed the study in demographic characteristics or depressive symptoms. Of these, 3 did not respond to emails after the pre-test, 2 withdrew due to time conflicts. Only 2 withdrew after starting the workshops: one after Session 1 without providing an explanation; and the other expressed intention to make up Session 3 but did not follow through.

[7] Three participants identified with more than one ethnicity, thus totals for ethnicity add up to more than 100%.

The wording of the announcement highlighted managing stress as well as emotions, given that "stress management" is a more familiar and socially acceptable phrase than "emotion regulation" among college students. A brief survey was conducted with a separate group of students ($N = 65$) to confirm that students from this university associate the experience of stress with negative emotions. The survey was adapted from questions from the American Psychological Association's Stress in America 2009 survey. The results of the current survey showed that 88% of the students indicated having experienced negative emotions in the last month as a result of stress (including: *feeling nervous or anxious; irritability or anger;* and/or *feeling depressed*). Thus, the results provided support for the observation from the pilot studies that students associate stress with negative emotions (see Appendix D for the survey and Appendix E for the full results).

Procedures

The research design for the main study is illustrated in Figure 3. As described below, the study began with participants individually completing pre-test measures and then being randomly assigned to the intervention or waitlist control condition. The intervention consisted of three workshop sessions. Upon the completion of the intervention (i.e., approximately four weeks later), participants in both conditions were assessed individually with post-test measures. All procedures and measures were reviewed and approved by the Tufts University IRB prior to launching the study.

Administering pre-tests, screening, and random assignment. All interested undergraduates students within the age range for the study were individually scheduled to complete the pre-test measures. Each participant first read and signed an informed

consent form. The informed consent included a *yes* or *no* question requesting permission to access academic transcripts for end-of-semester GPA.

The participants were screened based on the pre-tests to ensure they did not have severe depression or suicidal intention, and all met criteria (i.e., were below 29 on the Beck Depression Inventory-II [BDI-II; Beck, Steer, & Brown, 1996] and rating below 2 on the BDI-II item asking about suicidality). After initial screening, participants were randomly assigned using block randomization either to the intervention or to the waitlist control condition.

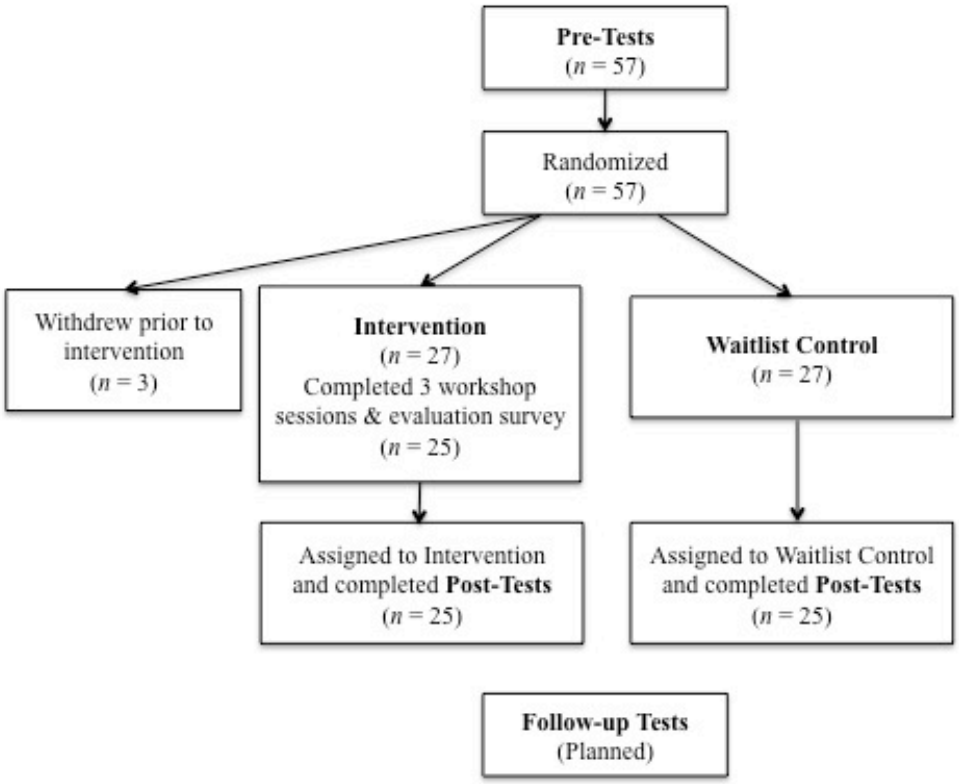


Figure 3. Flow diagram of participants' progress through the study.

Scheduling. The participants in the intervention condition were scheduled to participate in a workshop group with approximately 6 participants each. The intervention consisted of three weekly 70-minute sessions, for a total of 3.5 hours. If participants missed a session, they needed to make it up in order to continue participation, either by attending another group or with an individual 15-minute meeting (as in other randomized control trials of group mental health interventions, e.g., Burton, Stice, Bearman, & Rohde, 2007).[8]

Administering measures and payment. Research assistants scheduled the participants individually to complete the pre-test measures before random assignment and the post-test measures approximately four weeks later. The measures were administered to each participant in a separate building from the intervention. Extensive efforts were taken to ensure that the research assistants conducting the pre and post-tests were unaware of group assignment (i.e., whether or not the participants had participated in the intervention), including the facilitator using a separate email account to correspond with participants about the workshop sessions.

In addition to the pre-tests and post-tests, all participants in the intervention group completed an evaluation survey as part of the final session of the workshop. The evaluation survey was conducted anonymously in order to encourage candid responses on their opinions and suggestions for the workshop.

Participants were paid $30 upon completion of the post-test. An additional $10 gift certificate will be given to participants following completion of follow-up surveys

[8] A total of 4 participants arranged an individual make-up session (each for session two) and 3 arranged to attend another group session, due to illness, travel, or other conflict.

online. The follow-up measures will be administered 12 weeks following the post-test. The results of the follow-up measures will be analyzed and reported in a future paper.

Intervention

The intervention consisted of three workshop sessions (70 minutes each) offered once a week to small groups (ranging from 4 to 8 students each). As mentioned in the previous section, the intervention was designed to promote learning goals, including fostering exploration, offering choice, encouraging experimentation, and other aspects summarized in the TARGET chart (see Table 5).

Each session began and ended with a group discussion, with most of the time dedicated to hands-on exploration of the activity stations. Each session is summarized below, followed by a description of the activity stations.

Facilitation. The workshops were led by the author, a doctoral candidate studying emotion regulation with expertise facilitating informal science education workshops that integrate hands-on activities and applications of digital technologies. A research assistant (an undergraduate or masters level student with research experience in psychology) was available to help as needed with the workshop activities.

Session 1: Exploring and noticing strategies. The first session was designed to interest participants in different ways to manage emotions. In order to generate interest in managing emotions, the session began with the question of when emotions can be helpful and when emotions can get in the way. To raise awareness of the variety of emotion regulation strategies they and others use, participants were asked to write down two or three things they do when they are feeling stressed or upset. To encourage an accepting and nonjudging approach, this exercise was introduced by saying we all have a variety of

ways to manage emotions, some healthier strategies than others, including survival strategies to get us through difficult times. Participants then shared with the group the strategies they each had written, with the facilitator briefly noting related findings from emotion science research when relevant (e.g., positive distraction being helpful if eventually return to the issue at hand [Nolen-Hoeksema et al., 2008]; social support depending on the nature of the support [Rimé, 2007]; and the influence of music on emotions [Johnson-Laird & Oatley, 2008]).

Participants were then introduced to the five activity stations, each of which introduces a different area of research on emotion regulation (described below). It was explained that, similar to exploring exhibits in a science museum, they were free to explore the activity stations in any order, and could return to a station if someone else was using it at the moment. They then were invited to start exploring. The facilitator and research assistant helped briefly as needed (e.g., helping students start the biofeedback program). Before the end of the session, the group gathered together to discuss briefly what they noticed. Participants were given an exercise to try before the next session: to notice a time when they are feeling stressed or upset and record what steps they take. They were given a small card to remind them of this take-home activity, as well as the date and time of the next session.

Session 2: Identifying values and choosing strategies. The second session began with sharing observations from the previous week's exercise of what they noticed about steps they took when feeling stressed or negative emotions, in order to help them become more aware of their strategies and to begin to consider different possibilities. Next, participants were prompted to think about and then write down on a list one or

more of their personal values. (Examples of values that students listed in the workshops are included in Appendix H.) Several different prompts were used to help them identify their values, including thinking of an experience that was meaningful to them and to consider what they valued about it. As an alternative, they could think about a situation that may have been upsetting because it went against their values. After writing their list, participants shared one or more of the values they had written. The discussion introduced the idea that you can be aware of negative emotions and thoughts, and still pursue what is meaningful to you. Additionally, the idea was raised that sometimes emotions tell us about whether a situation is aligned with or is going against our values (e.g., Baumeister et al., 2007).

Participants were then given time to explore the activity stations, and encouraged to visit stations they had not tried yet. Participants were asked to think of a new strategy to try for the upcoming week. They were told it could be something simple, such as one of the strategies from the Scripts Station (described below). At the end of the session, students wrote down the strategy they had chosen on a small reminder card to take home.

Session 3: Practicing strategies. The session started with participants sharing observations about the strategy they had chosen and anything they noticed. The idea of practice was introduced, describing how changes in habits, including managing emotions and stress, take many weeks of practice to develop. They were given the example of mindfulness exercises, which have been shown to change the brain and improve ability to manage stress over years of daily practice. (The idea of practice to develop emotional ability is aligned with the concept from learning goal research of developing ability through effort and practice.)

They then were asked to work in pairs or groups of three students each, and to pick a strategy for managing emotions or stress that they would recommend to other students. Each subgroup created a small poster describing the strategy they identified, and then briefly presented their posters (see Appendix J for a summary and example of the posters created by workshop participants).

The participants then were given a final opportunity to interact with the activity stations of their choice. The session concluded by asking participants to each write down one strategy they might continue to practice going forward, which they then shared with the group. Participants were then asked to fill out the evaluation survey to offer their thoughts and suggestions.

Activity stations. The workshop involved participants in exploring and interacting with five activity stations, each providing an experience in an area of emotion science research, including: 1) the process model of emotion regulation; 2) biofeedback; 3) attention training; 4) self-compassion; and 5) mindfulness. During each workshop session, participants were given time to interact with the activity stations. The stations were set up similar to interactive exhibits in science museums, where participants can move from one station to another. Participants reflected on their experiences and observations as a group, with the facilitator guiding the discussion.

1. Scripts Station. At the Scripts Station, participants created "scripts" for dealing with distressing emotions. Participants put together scripts by choosing and filling in statements that describe different ways of handling emotions. The statements were printed on colorful stickers that participants could select from and arrange on a piece of heavyweight paper to make their scripts.

The statements were color-coded and grouped in three categories: (a) changing the **situation**; (b) shifting **attention**; and (c) reframing **meaning**. These categories are based on the process model of emotion regulation (Gross, 2001, 2007). A goal of building scripts is for participants to become aware of their current strategies and to consider expanding their repertoire for managing emotions.

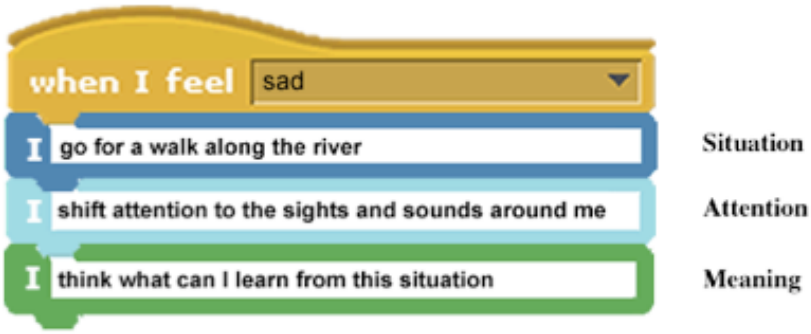


Figure 4. Example of an emotion regulation script. The statements represent three types of emotion regulation: changing situation, attention, and meaning.

Figure 4 shows a prototypical script consisting of one of each type of statement: situation, attention, and meaning.[9] Participants could fill in any feeling word and use as many statements as they wanted in any combination. (See Appendix F for a further description of the Scripts Stations and Appendix G for examples of scripts created by participants.)

2. Biofeedback Station. At this station, participants used biofeedback technology to notice how changing their thoughts and attention affects their physiological state. The biofeedback station provided two types of biofeedback devices for participants to try—

[9] The graphical design and the concept of creating scripts are from Scratch software, a graphical programming language developed by the Lifelong Kindergarten Group at the MIT Media Lab (http://scratch.mit.edu).

one on a personal computer and the other on a handheld device (shown in Figure 5). The participant rested an index finger on a fingertip sensor that measures pulse rate. The biofeedback software calculates the amount of time in between beats, known as heart rate variability (HRV), and presents it as a wave pattern on a computer screen, along with other visual and auditory feedback. Participants were given instructions for experimenting to see what makes the wave pattern smoother, including regular breathing.

The personal computer version is called Freeze-Framer (from HeartMath) and the handheld device is called StressEraser. Both are designed for individuals at home and in schools to learn to reduce stress and manage emotions. Higher HRV has been associated with lower rates of anxiety and depression, as well as improved cardiovascular health (Beevers, Ellis, & Reid, in press; Lehrer, 2007).

Figure 5. Biofeedback Station. The station offers two versions of heart-rate variability biofeedback activities: FreezeFramer biofeedback software on a laptop computer (left) and StressEraser handheld devices (right).

3. MindHabits Station. This station featured a set of computer games called MindHabits that can improve the way people implicitly respond to emotional situations, particularly perceived social rejection (available at http://www.mindhabits.com). For example, the goal in one game is to find the smiling face in a grid of frowning faces (see Figure 6). Mindhabits is based on software designed and tested by Mark Baldwin and colleagues at McGill University (Dandeneau, Baldwin, Baccus, Sakellaropoulo, & Pruessner, 2007). These attention-training games have been shown to improve self-esteem, self-confidence, and work performance and to decrease threat response (as measured by salivary cortisol), even after brief training periods (Dandeneau & Baldwin, 2004; Dandeneau et al., 2007).

Figure 6. Sample screen from the MindHabits software. The instructions for this attention-training game are to find and click on the smiling face amid the frowning faces.

4. Self-Talk Station. At the Self-Talk Station, participants select phrases they would find supportive after experiencing failure or rejection. The activity is based on

research on benefits of practicing a self-compassionate attitude (e.g., Leary et al., 2007; Neff, 2003). The words are printed on cardstock paper in the form of voice balloons, and participants place stars on the two or three phrases they would prefer. In addition to the pre-printed phrases, blank voice balloons are provided with the option for participants to fill in phrases they tell themselves and find helpful.

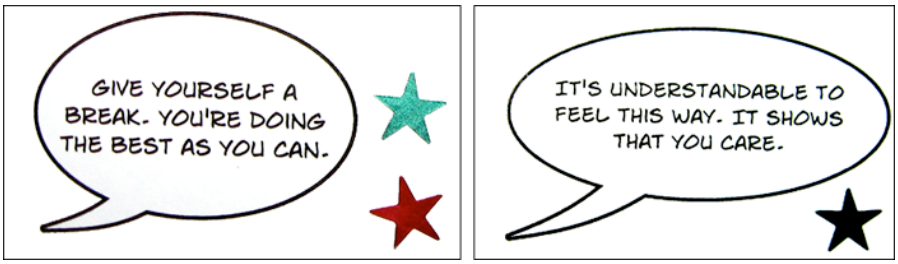


Figure 7. Example phrases from the Self-Talk Station. The stars are stickers participants used to indicate which phrases they preferred.

Because this activity does not take long to complete, during each week an additional element was added to the Self-Talk Station. In Session 2, a set of quotes were added that others have found offer a helpful perspective during difficult times. In Session 3, a clipboard was added, and participants were invited to write down the name of a song they have found helpful for getting through a difficult time. (See Appendix I for examples of phrases, quotes, and songs chosen by participants during the workshops.)

5. Mindfulness Station. The Mindfulness Station provided three options for exploring mindfulness. The first two options were audio recordings of guided meditations: (a) a walking meditation and (b) a meditation on sounds. These were available in audio format on a portable digital music player, along with optional printed instructions. The walking meditation is by Sharon Salzberg (Salzberg & Goldstein, 2001) and the meditation on sounds is a classic recording by Alan Watts (1973). These

recordings were selected as they were designed for those new to meditation and involve mindfulness exercises that students might find intriguing (walking and listening). Students could make use of the small outdoor courtyard or the indoor hallway, depending on weather (see Figure 8).

Figure 8. Images of the Mindfulness Station. Audio device containing the guided meditations (left) and courtyard available for practicing walking and listening meditation (right).

The third option at the mindfulness station was a simple software program that provided visual pacing for breathing rate (see Figure 9).[10] This option was included for raising awareness of breath as a first step in mindfulness. The instructions were to breathe in as the green circle moved up and to breathe out as the circle moved down. The only option is to move the slider on the screen to adjust the pace for breathing. (This simple program differs from the biofeedback in that there is no sensor and no feedback provided; it simply provides a visual display.)

[10] This software was programmed by the author using the images and concept from Coherence Coach software from HeartMath, but without their audio instructions, which emphasize striving for positive emotions, and other additional features and options.

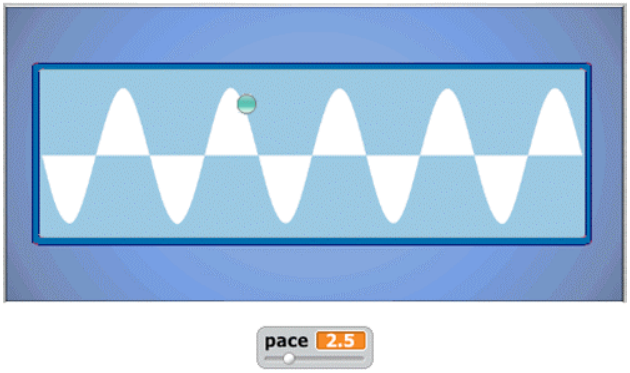


Figure 9. Breathing pacer software for the Mindfulness Station.

Measures

Participants completed a variety of survey measures at pre-test and post-test. In addition, at post-test they completed a task designed to assess their ability to use cognitive reappraisal in response to an emotional induction (based on Troy, Wilhelm, Shallcross, & Mauss, 2010). These outcome measures are summarized in Table 6. These measures and the evaluation survey are described below.

Global learning versus performance goals. The Goal Orientation Inventory (Dykman, 1998) contains 36 items that assess a person's global learning versus learning goals (also known as "growth-seeking" and "validation-seeking"). The scale contains 18 items that assess global learning goals (e.g., "I approach difficult life situations knowing that I can accept failure or rejection as long as I learn and grow from the experience"; α = .95) and 18 items that assess global performance goals (e.g., "I tend to view difficult or stressful situations as all-or-none tests of my basic worth as a person."; α = .96). Each question is answered on a 7-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*). Previous studies (Dykman, 1998) have provided evidence that a total goal orientation score, calculated by first adding the items for the subscales, and then subtracting the

learning goal score from the performance goal score, has higher predictive value than the subscales alone. In the current study the total score was calculated so that performance goals were subtracted from learning goals, given the current study's focus on promoting and measuring learning goals. Thus higher scores in this study indicate higher global learning versus performance goals.

Cognitive reappraisal. Self-reported cognitive reappraisal was measured using the 6-item subscale of the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003; Cronbach's α =.82 in the current study). The reappraisal items, which are each rated on a 7-point scale (1 = *strongly disagree* to 7 = *strongly agree*), assess the extent to which individuals typically attempt to change their thoughts in order to change how they feel (e.g., "When I want to feel more positive emotion, I change the way I'm thinking about the situation").

Acceptance of negative emotion. Acceptance was measured using the nonacceptance subscale of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Romer, 2004; see description of full scale, below). The nonacceptance subscale contains six items, all worded in terms of nonaccepting, negative reactions to negative emotions (e.g., "When I'm upset, I feel ashamed with myself for feeling that way"). This subscale has been found to have high internal consistency and adequate construct and predictive validity (Gratz & Roemer, 2004; α = .85 in the current study). Lower scores represent greater acceptance of negative emotion.

Table 6

Outcome Measures by Construct

Construct	Measure	Items
	Emotion Regulation Strategies	
Cognitive reappraisal	Emotion Regulation Questionnaire (ERQ; Gross & John, 2003); Reappraisal subscale	6 items (e.g., "I control my emotions by changing the way I think about the situation I'm in.")
Acceptance of negative emotion	Difficulties with Emotion Regulation Scale (DERS; Gratz & Roemer, 2004); Non-acceptance subscale	6 items (e.g., "When I'm upset, I become embarrassed for feeling that way.")
Reflection	Ruminative Responses Scale (RRS; Treynor et al., 2003); Reflection subscale	5 items (e.g., "Write down what I am thinking and analyze it.")
Brooding	Ruminative Responses Scale (RRS; Treynor et al., 2003); Brooding subscale	5 items (e.g., "Think 'What am I doing to deserve this?'")
Thought suppression	White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994)	14 items (e.g., "I wish I could stop thinking of certain things.")
	Emotion Regulation Competence Beliefs	
Emotion regulation self-efficacy	Negative Mood Regulation scale, (NMR; Catanzaro & Mearns, 1990)	30 items (e.g., "Planning how I'll deal with things will help.")
Difficulties with emotion regulation	Difficulties with Emotion Regulation Scale (DERS, Gratz & Roemer, 2004)	36 items (e.g., "When I'm upset, I have difficulty controlling my behavior.")
Adaptive responses to negative emotions	Reverse-coded items from four DERS subscales: Goals, Awareness, Strategies, Clarity	10 items (e.g., "When I'm upset, I can still get things done"; "I care about what I am feeling.")

(*table continues*)

Table 6 (Continued)

Construct	Measure	Items
	Functioning	
Depressive symptoms	Beck Depression Inventory II (BDI-II; Beck et al., 1996)	21 items (e.g., "I feel sad much of the time."; "I find I can't concentrate on anything.")
Grade point average	Semester GPA from university online transcript	GPA from previous semester and from the semester in which the intervention occurred
	Cognitive Reappraisal Ability (Emotional Induction Task)	
Cognitive Reappraisal Ability – Self-reported sadness	Cognitive Reappraisal Ability - Sadness (CRA-SAD; Troy et al., 2010)	Change scores between self-reported sadness when applying reappraisal during a sad film clip and when viewing a baseline sad film
Cognitive Reappraisal Ability - Skin conductance level	Cognitive Reappraisal Ability –Skin Conductance Level (CRA-SCL; Troy et al., 2010)	Change scores in skin conductance level between the reappraisal and sadness baseline film clips

Brooding and reflection. Brooding and reflection were assessed using the Ruminative Responses Scale (RSS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003) which consists of 10 items, 5 of which have been distinguished as brooding ($\alpha = .73$), and 5 as reflection ($\alpha = .80$). Brooding items are defined as a repetitive focus on negative events, mood, or obstacles in a passive way, often comparing to an unachievable standard (e.g., "Think about a recent situation, wishing it had gone better"). Reflection items are defined as turning inward to purposefully consider one's negative emotions or mood (e.g., "Go

away by myself and think about why I feel this way."). Participants rated statements on frequency in the past two weeks (from 0 = *almost never* to 3 = *almost always*).

Thought suppression. Thought suppression was assessed using the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994; $\alpha = .90$), which consists of 14 items (e.g., "There are things that I try not to think about"), rated from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher ratings indicating higher levels of thought suppression.

Emotion regulation self-efficacy. Participants completed the 30-item Negative Mood Regulation (NMR) scale (Catanzaro & Mearns, 1990; $\alpha = .83$) which assesses beliefs about one's ability to regulate negative emotions using cognitive strategies (e.g., "I can feel better by thinking about more pleasant times"), behavioral strategies (e.g., "going out to dinner with friends will help"), and general beliefs (e.g., "I can find a way to calm down"). Each item was rated from 1 (*strongly disagree*) *to* 5 (*strongly agree*), with 16 of the items negatively worded and reverse-scored. Higher ratings on the total scale indicate greater emotion regulation self-efficacy.

Difficulties with emotion regulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item measure that assesses individuals' typical levels of problematic emotion regulation in six areas: nonacceptance of negative emotions, inability to engage in goal-directed behaviors when distressed, difficulties controlling impulsive behaviors when distressed, limited access to effective emotion regulation strategies, lack of emotional awareness, and lack of emotional clarity (e.g., "When I'm upset, I have difficulty getting work done."). Participants are asked to indicate how often the items apply to themselves, with responses ranging from 1 to 5,

where 1 is *almost never* (0–10%), 2 is *sometimes* (11–35%), 3 is *about half the time* (36–65%), 4 is *most of the time* (66–90%), and 5 is *almost always* (91–100%). Higher scores indicate greater difficulties in emotion regulation.

Adaptive responses to negative emotions. A subset of the items on the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) are positively worded items that indicate adaptive ways of responding to negative emotions (e.g., "When I'm upset, I can still get things done"; "I am clear about my feelings."). Due to the focus in the current study on improving emotion regulation, the 10 positively worded items from the four relevant subscales (Goals, Awareness, Strategies, and Clarity) were analyzed separately (in addition to the full DERS and nonacceptance subscale, described above), with higher scores indicating more adaptive responses to negative emotions.

Depressive symptoms. The Beck Depression Inventory II (BDI-II; Beck et al., 1996; $\alpha = .82$) yields a score for severity of symptoms based on 21 items, each of which is rated on a four-point scale, with a total ranging from 0 to 63. The BDI-II has been validated for use with normative samples of college students as well as with clinical populations (Beck et al., 1996).

Additional emotion regulation questions. In addition to the survey measures listed above, all participants were asked additional questions about their emotion regulation strategies. These questions were written by the author and tested in the pilot studies. One open-ended question asked, "Please list one or more ways you use to handle negative emotions. (For example, watching a movie or telling yourself things will get better.)" The other open-ended question asked, "Please list any new ways of handling emotions you have tried recently."

Grade point average (GPA). Participants were asked at pre-test to sign an authorization for the release of their college transcript to access their GPA for end-of-semester grades. Baseline GPA was taken from the previous completed semester, and thus was available only for non-freshmen. Post-test grades were examined for the semester in which the study took place (i.e., the end of the fall semester, which occurred approximately four weeks following the final workshop sessions).

Cognitive reappraisal ability (emotional induction task). Cognitive reappraisal ability (CRA), or the amount that individuals are able to decrease their level of sadness when given reappraisal instructions, was assessed at post-test using a behavioral challenge task developed by Troy et al. (2010). The task involves participants in applying reappraisal instructions while watching an emotional film clip. The ability to use cognitive reappraisal to reduce sadness is assessed with skin conductance level (CRA-SCL) and self-reported sadness (CRA-SAD), described below.

The two film clips used to induce sadness in the current study have been found to elicit sadness in previous studies and are described in procedures by Rottenberg, Ray, and Gross (2007). The clip from the 1979 movie "The Champ" shows a boy crying due to his father's death (2'51"). The other clip, from the 1994 animated movie "The Lion King," shows a lion cub mourning over his father's death (2'11"). The films were counterbalanced so that half the participants in each condition viewed "The Champ" clip as the baseline sadness film, the other half viewed "The Lion King" as the baseline sadness film. Following the baseline sadness film, participants watched the other clip while applying the reappraisal instructions provided by Troy et al. (p. 729), which give suggestions for the participant to try think about the situation the characters in the film

are facing in a more positive light. The two sad films were preceded and followed by film clips selected to be relatively emotionally neutral, "Alaska's Wild Denali" (5'02") and "Sticks: Noncommercial Screen Saver ("3'52"), also based on recommendations and previous testing by Rottenberg and colleagues (2007). All film clips were shown on a computer screen with instructions to press the spacebar to pause after each clip in order to fill out brief questions, described below.

Self-reported sadness (CRA-SAD). Self-reported sadness (CRA-SAD) was assessed by asking participants to rate emotions immediately after viewing film clips (Rottenberg et al., 2007; Troy et al., 2010). Participants rated, on a 9-point Likert scale, the greatest amount of 13 different emotions they experienced during the clip they just watched (0 = *not at all* to 8 = *extremely*). The rating scale contains 12 distracter items to prevent participants from guessing that the primary interest is changes in sadness. Change scores were calculated by subtracting sadness ratings given after a reappraised film clip from sadness ratings given after a baseline sad film. Thus a greater score indicates greater cognitive reappraisal ability.

Skin conductance level (CRA-SCL). Skin conductance level (SCL) is a measure of activation of the sympathetic nervous system. Increases in sadness have been found to be associated with decreases in SCL (e.g., Mauss et al., 2005). SCL was measured continuously during a baseline sadness film clip and a reappraisal film clip by applying a constant voltage via two grounded electrodes attached to the palmar side of the first and second fingers of the non-dominant hand, using a BIOPAC physiological data acquisition unit (BIOPAC MP45 with SS57L EDA leads and EDA electrodes pre-gelled with isotonic gel; BIOPAC Systems Inc., Santa Barbara, CA). The unit maintained a constant

voltage of 0.5 V across the electrodes. The signal was sampled at 66.5 Hz using a low pass filter. BIOPAC Pro software 3.7.5 was used to calculate a mean SCL score for each participant for each film clip (omitting the initial and ending segments, approximately 4 seconds each, with visible artifacts).

Greater cognitive reappraisal ability as measured by SCL (CRA-SCL) is defined by Troy et al. (2010) as "relatively greater change scores between the reappraisal and sadness baseline film clips" (p. 788). Following Troy et al., change scores were calculated by converting mean SCL to z-scores, and then subtracting SCL during the baseline sad film clip from SCL during the reappraised film clip. Higher scores (lesser decrease in SCL) denote greater CRA.

Evaluation survey. During the last session of the workshop participants completed an evaluation survey. The evaluation survey included a combination of forced-choice and open-ended questions to assess participants' attitudes towards the workshop. The survey included questions on participants' satisfaction, interest, learning, and suggestions for improving the workshop. The satisfaction items (e.g., "How helpful was the workshop to you") were rated on a 4-point scale and were based on client satisfaction measures from psychotherapy studies (e.g., Hawley & Weisz, 2005). The evaluation survey questions are listed in Appendix B.

Results

This section reports on the analyses for the outcome variables as well as summarizing results of the evaluation survey. The main hypotheses are tested by comparing post-test scores for the intervention and control groups while controlling for pre-test scores, as described below. Because of the exploratory nature of the study, related analyses are also noted, including significant changes from pre-test to post-test for each group. The section ends with a summary of key findings from the workshop evaluation survey.

Preliminary Analyses

The means and standard deviations for pre-test and post-test scores for the control and intervention groups are displayed in Table 7. These variables were normally distributed with the exception of reflection, brooding, and depressive symptoms, which were positively skewed at pre-test and post-test. These variables were transformed using square root[11], with the resulting values having a more normal distribution. There was one extreme outlier for reflection on post-test, which was assigned a value one unit higher than the next most extreme case to reduce its influence (Tabachnick & Fidell, 2007). Statistical tests used transformed values for these measures, but untransformed values are reported to facilitate interpretation of the data.

Missing data occurred due to a small number of skipped items, with no item skipped more than once. Missing data analyses, using IBM® SPSS® Statistics software Version 19, indicated that these data were missing at random. A maximum likelihood

[11] Because the scores included values at 0 and 1, prior to applying square root transformation, a constant was added, as recommended by Hartwig and Dearing (1979).

Table 7

Descriptive Statistics for Control and Intervention Groups at Pre-Test and Post-Test

Variable	Pre-Test		Post-Test	
	M	***(SD)***	***M***	***(SD)***
Global learning vs. performance goals (GOI)				
Intervention	15.17†	(34.42)	33.26†	(33.14)
Control	27.21	(39.11)	32.61	(40.04)
Reappraisal (ERQ)				
Intervention	26.23	(6.31)	28.39	(5.52)
Control	27.88	(5.48)	26.23	(6.31)
Acceptance[a] (from DERS)				
Intervention	13.22	(6.16)	12.92	(5.72)
Control	12.12	(4.37)	12.08	(4.62)
Reflection (RSS)				
Intervention	4.56	(3.28)	5.41	(3.16)
Control	4.27†	(3.44)	2.85†	(3.27)
Brooding (RSS)				
Intervention	6.46	(2.99)	5.96	(3.26)
Control	4.92	(3.16)	4.84	(3.54)
Suppression (WBSI)				
Intervention	48.06†	(12.20)	44.96†	(11.73)
Control	42.84	(12.47)	40.72	(10.83)
Emotion regulation self-efficacy (NMR)				
Intervention	102.84†	(14.18)	108.92†	(13.11)
Control	111.84	(13.15)	112.17	(13.68)
Difficulties in emotion regulation (DERS)				
Intervention	87.74	(16.12)	85.03	(18.15)
Control	78.56	(15.07)	77.73	(14.62)
Adaptive responses to negative emotions (from DERS)				
Intervention	31.48†	(8.03)	33.70†	(6.62)
Control	33.61	(8.82)	33.08	(7.89)

(*table continues*)

Table 7 (Continued)

Variable	Pre-Test		Post-Test	
	M	*(SD)*	*M*	*(SD)*
Depressive symptoms (BDI-II)				
Intervention	9.00	4.91	7.36	(4.70)
Control	8.68	7.04	7.72	(7.36)
GPA[b]				
Intervention	3.23†	(.29)	3.45†	(.28)
Control	3.45	(.43)	3.48	(.31)

†: Significant change from pre-test to post-test means *within* group, $p < .05$.

a: Lower score for acceptance is considered improvement, as the score is from the nonacceptance subscale of the DERS (Gratz & Roemer, 2004).

b: GPA data are for non-freshmen ($N = 25$) as freshmen did not have GPA at pre-test.

algorithm, expectation maximization, was applied to estimate missing values (Schlomer, Bauman, & Card, 2010).

Independent *t*-tests were conducted to examine whether the intervention versus control groups differed significantly on demographic factors or outcome measures at pre-test. These and other tests were conducted as two-tailed with interpretation of significance at $p < .05$. The two groups significantly differed at pre-test on two of the variables: negative mood regulation beliefs $t(48) = 2.33$, $p = .024$; and difficulties in emotion regulation $t(48) = -2.08$, $p = .043$; but did not significantly differ in the other outcome variables listed in Table 7 or on demographic variables, including age (intervention $M = 19.00$, $SD = 1.02$; control group $M = 19.12$, $SD = 1.13$), gender (intervention 72% female, control 68% female), or college year (intervention $M = 1.84$, $SD = 0.99$; control $M = 2.12$, $SD = 1.17$).

Intercorrelations for the primary variables at pre-test are listed in Table A1, Appendix A. The correlations for the change in the variables from pre-test to post-test for the overall sample are displayed in Table A2, Appendix A.

Description of Analyses to Assess Pre- to Post-Test Change

Paired *t*-tests were used to analyze differences in pre-test to post-test mean scores for each group, and are reported when significant for each outcome variable below. (Although separate group effects are not typically reported if the analysis comparing groups are not significant, they are included here because of the exploratory nature of the research.) The pre-test to post-test differences for the intervention group were in the predicted direction on every outcome measure, although not all reached significance. As expected, the control group did not show any significant change from pre-test to post-test on the outcome measures, with the exception of lowered reflection, as described below.

To test the main hypotheses, group comparisons were conducted for each continuous variable using analysis of covariance (ANCOVA), with post-test scores as the dependent variable, condition (control or intervention) as the fixed independent variable, and pre-test scores as the covariate. Using ANCOVA while controlling for pre-test scores has been recommended in randomized studies to help account for baseline group differences (A. G. Barnett, van der Pols, & Dobson, 2005; Taylor & Innocenti, 1993). These baseline differences can occur despite random sampling, particularly in small samples (Hsu, 1989). For each ANCOVA analysis, the assumption of homogeneity of regression slopes was tested, and these analyses confirmed that no significant interaction existed between the pre-test scores and condition (Tabachnick & Fidell, 2007). In

addition, Levene's test was used to confirm that the assumption of equality of variance was not violated.

Effect sizes for the ANCOVA analyses were calculated using Cohen's *d*, subtracting the adjusted post-test means (reported in Table 8) and dividing by the pooled standard deviation based on the unadjusted standardized deviations (Thalheimer & Cook, 2002). The effect sizes are interpreted based on guidelines from Cohen (1988), as elaborated by Becker (2000), with effect sizes of 0.2 as small, 0.5 as medium, and 0.8 as large. Below analyses are reported first for survey measures of learning goals, emotion regulation strategies, competence beliefs, and functioning. These are followed by analyses of the emotional induction behavioral task.

Effects of the Intervention on Goals

To test whether the intervention was successful in fostering learning goals, two sets of analyses were conducted. The first analyses examined whether participants reported trying more new strategies after the intervention. At post-test, 96% of the intervention participants listed new emotion regulation strategies they had tried recently versus 28% in the control condition. Given that the change in number of strategies was not normally distributed, a non-parametric test, Kruskal-Wallis analysis of variance for ranked data, was used to compare the change in number of new strategies between groups, with significantly higher ratings for intervention over control, χ^2 =11.90, df = 1, p = 0.001. The results of a Wilcoxon non-parametric test indicated that the intervention group displayed a significant increase in new strategies from pre- to post-test, Z = -2.11, p = .034, whereas the control group displayed a significant decrease in new strategies tried recently, Z = -2.70, p = .007.

Table 8

Comparison of Adjusted Post-Test Means for Control and Intervention Groups

Outcome Measure	Adjusted *M*	ANCOVA *F*(1, 49)	*p*	Cohen's *d*
Global learning vs. performance goals (GOI)		2.27	.139	.27
Intervention	37.94			
Control	27.92			
Reappraisal (ERQ)		1.70	.199	.37
Intervention	28.80			
Control	26.63			
Acceptance[a] (from DERS)		< 1	.966	
Intervention	12.48			
Control	12.52			
Reflection (RSS)		19.45	<.001	.73
Intervention	5.30			
Control	2.94			
Brooding (RSS)		< 1	.790	
Intervention	5.22			
Control	5.42			
Suppression (WBSI)		< 1	.874	
Intervention	42.99			
Control	42.69			
Emotion regulation self-efficacy (NMR)		1.05	.310	.24
Intervention	112.02			
Control	109.07			
Difficulties in emotion regulation (DERS)		< 1	.920	
Intervention	81.55			
Control	81.20			
Adaptive responses to negative emotions (from DERS)		3.12	.084	.31
Intervention	34.54			
Control	32.33			

(*table continues*)

Table 8 (Continued)

Outcome Measure	Adjusted *M*	ANCOVA *F*(1, 49)	*p*	Cohen's *d*
Depressive symptoms (BDI-II)		< 1	.547	
Intervention	7.23			
Control	7.85			
GPA[a]		< 1	.361	
Intervention	3.51			
Control	3.42			

Note. Cohen's *d* are listed for ANCOVA with *F* values greater than 1.

a: Lower score for acceptance is considered improvement, as the score is from the nonacceptance subscale of the DERS (Gratz & Roemer, 2004).

b: GPA data are for non-freshmen ($n = 25$) as freshmen did not have GPA at pre-test.

The second set of analyses examined whether the intervention fostered a significant change in global learning versus performance goals, as measured by the Goal Orientation Inventory (GOI). A preliminary paired *t*-test showed that the intervention group experienced a significant increase in global learning versus performance goals, paired $t(24) = 3.33$, $p = .003$, whereas the control group did not, paired $t(24) = 1.27$, $p = .214$. However, as shown in Table 8, the main analysis, ANCOVA using pre-test scores as a covariate, did not show a significant difference between intervention and control groups at post-test on global learning versus performance goals. Thus, based on the analyses for these two sets of measures, the evidence was mixed as to whether the intervention increased learning goals for the intervention group.

Intervention Effects for Emotion Regulation Strategies

Contrary to prediction, participants in the intervention group did not significantly differ from the control group at post-test on cognitive reappraisal, as indicated by the ANCOVA analysis displayed in Table 8. Similarly, the two groups did not show significant differences in brooding rumination (RRS) or thought suppression (WBSI). The participants in the two groups also did not significantly differ in their use of acceptance of emotion (as measured by the Non-Acceptance subscale on the DERS.

However, the ANCOVA indicated that participants in the two groups did differ significantly on reflection at post-test, $F(1, 49) = 19.45$, $p < .001$, $d = 0.73$, which can be interpreted as a medium to large effect (Cohen, 1988). As shown in Table 8, the intervention group had higher adjusted mean scores at post-test as compared with the control group. Figure 10 shows the pre-test to post-test reflection scores for each group.[12]

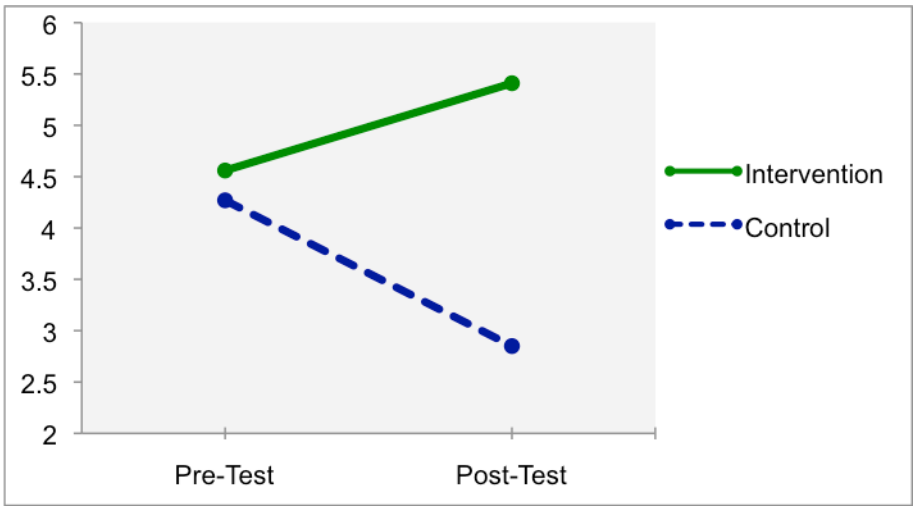


Figure 10. Mean reflection scores at pre-test and post-test for intervention and control participants.

[12] Untransformed values are displayed in the table and figures. The ANCOVA reported uses transformed values (and is significant when using untransformed values as well).

Intervention Effects for Emotion Regulation Competence Beliefs

Emotion regulation self-efficacy. There was a significant increase in emotion regulation self-efficacy beliefs for the intervention group, paired $t(24) = -2.37$, $p = .026$, and not for the control group, $t(24) = -.23$, $p = .820$, but the ANCOVA indicated that the difference in adjusted means at post-test was not significant, $F(1, 49) = 1.05$, $p = .310$, $d = 0.25$, although the effect size suggests a small effect.

Difficulties in emotion regulation. There were no significant changes in difficulties in emotion regulation (i.e., DERS total score) from pre- to post-test scores for either group, paired $t(24) = 1.0$, $p = .327$ for the intervention condition and paired $t(24) = 0.4$, $p = .693$ for the control condition, and the ANCOVA did not show any differences between adjusted post-test means for intervention and control conditions.

Adaptive responses to negative emotions. The intervention group increased significantly in adaptive responses to negative emotions, paired $t(24) = -2.15$, $p = .042$, whereas the control group experienced an insignificant decrease, paired $t(24) = -.59$, $p = .563$. Note that this variable is based on a subset of the DERS measure that includes the positively worded (i.e., reverse-coded) items on the DERS subscales assessing: clarity of emotions, pursuing goals despite negative emotions, access to emotion regulation strategies, and emotional awareness. As indicated in Table 8, the ANCOVA comparing intervention and control group at post-test for this variable approached significance, $F(1, 49) = 3.12$, $p = .084$, $d = 0.31$, and suggested a small effect.

Intervention Effects on Functioning

Depressive symptoms. There was a decrease bordering on significance in depressive symptoms for the intervention group from pre-test to post-test, paired

$t(24) = 2.02$, $p = .055$, and not for the control group, paired $t(24) = 1.50$, $p = .147$. As indicated in Table 8, the ANCOVA analysis did not show a significant difference in adjusted post-test means for depressive symptoms for intervention versus control groups.

Grade Point Average. Grades from the previous semester and the semester in which the intervention took place were compared. As noted earlier, because the intervention took place in the fall, students in their freshmen year did not have prior grade point average for comparison, and thus were not included in these analyses. In addition, three participants did not give permission to access their transcript, leaving $n = 25$ in the calculations of GPA ($n = 13$ in the intervention group, $n = 12$ in the control group). GPA for the intervention group increased significantly, paired $t(12) = -3.34$, $p = .006$, whereas for the control group it did not, paired $t(11) = -.365$, $p = .722$. However, the ANCOVA comparing adjusted post-test scores did not show a significant difference between groups.

Cognitive Reappraisal Ability Task

The following analyses investigate the results of the emotion regulation task conducted at post-test, a measure of cognitive reappraisal ability (CRA) validated by Troy and colleagues (2010). As in Troy et al., participants who rated their sadness after the baseline sadness film at 0 were *a priori* excluded from the analyses ($n = 3$).[13]

Self-reported sadness for the sadness baseline film was $M = 5.33$, SD = 2.39 for the control group and $M = 5.04$, $SD = 2.12$ for the intervention group; and for the sadness reappraisal film (in which participants were instructed to use reappraisal) was $M = 4.96$,

[13] Some analyses below differ from those in the Troy et al. (2010) study due to differences in overall experimental design. Troy et al. did not counterbalance the order of films and compared participants based on reappraisal versus non-reappraisal instructions within the same film (to establish validity of the measure), whereas in the current study all participants applied reappraisal during the second film clip, and the type of film clips were counterbalanced across workshop intervention and waitlist control groups.

SD = 2.22 for the control group and *M* = 4.57, *SD* = 2.02 for the intervention group. The difference in mean sadness baseline ratings between the two film clips, "The Champ" and "The Lion King," was not significant, $t(45) = 0.44$, $p = .663$.

Manipulation check for sadness induction and for reappraisal instructions. To check for whether the sadness manipulation and reappraisal instructions had the intended effect, the results were first analyzed for the combined sample ($N = 50$). The mean sadness ratings for the Lion King and the Champ clip compared to the neutral film clip ($M = 0.40$, $SD = 2.42$) confirmed that both films induced significantly greater self-reported sadness than the neutral film, paired $t(22) = -9.20$, $p < .001$ for Lion King; paired $t(23) = -9.04$, $p < .001$ for The Champ. However, the results did not indicate a significant effect of applying reappraisal instructions on self-reported sadness. The mean scores decreased for each film upon reappraisal, but were not significantly lower (Lion King from $M = 5.04$, $SD = 2.38$ to $M = 4.46$, $SD = 1.96$; $t(45) = -.92$, $p = .703$; for The Champ from $M = 5.33$, $SD = 2.14$ to $M = 5.09$, $SD = 2.25$; $t(45) = -.38$, $p = .361$). A comparison for all participants from sad baseline film to sad reappraisal film showed a mean decline in sadness from $M = 5.19$, $SD = 2.24$ to $M = 4.77$ $SD = 2.11$ but also did not reach significance, $t(46) = 1.34$, $p = .186$.

Several differences in implementation may account for the lack of significant effects for the reappraisal instructions in the current study as compared with the Troy et al. (2010) study, including: (a) use of different films to induce sadness (the films in Troy et al. were not specified); (b) the comparison in Troy et al. of a no reappraisal group to a reappraisal group on the same film at the same time; (c) younger participants in the current study, with a mean age of 19.0 years as compared with 34.9 years in the Troy et

al. study; (d) other differences between the college and community sample. (The size of the samples were similar in both studies and the reappraisal instructions used were identical.)

Comparison of intervention and control group on CRA-SAD. Although the reappraisal instructions did not appear to have a significant effect on subjective ratings of sadness, additional analyses were conducted to examine whether there were significant differences between the intervention and control groups in self-reported sadness. Paired *t*-tests did not show a significant change in sadness from baseline to reappraisal film for either group, paired $t(22) = 1.29$, $p = .211$ for the intervention group, paired $t(22) = 0.73$, $p = .476$ for the control group. An ANCOVA also did not show significant differences for control versus intervention after watching the film with reappraisal instructions when controlling for baseline sadness levels, $F(1, 46) = 0.25$, $p = .622$.

Skin conductance level (SCL). The mean values of skin conductance level were calculated for each participant on the sad baseline film and sad reappraisal film.[14] The mean SCL for the baseline film was positively correlated with the self-report rating of sadness, bordering on significance, $r = 0.29$, $p = .053$. There was a significant change in mean SCL from baseline to reappraisal, paired $t(45) = -3.64$, $p = .001$, with mean SCL higher in the reappraisal condition. As in Troy et al., CRA-SCL scores were calculated by first converting mean SCL to *z*-scores, and then subtracting SCL during the baseline sad film clip from SCL during the reappraisal film clip. Higher scores (lesser decrease in SCL) denote greater CRA. Mean CRA-SCL scores for the intervention group were 0.03

[14] The skin conductance ratings were not recorded properly for 1 participant and thus were not included. In addition the 3 participants with baseline sadness ratings of 0 were omitted from the analysis, as explained above.

(*SD* = 0.18) and for the control group were -0.03 (*SD* = 0.23). There was not a significant difference between CRA-SCL scores for intervention and control groups, $t(44) = -0.88$, $p = .381$.

Evaluation Survey Results

All 25 participants who completed the workshops filled out the evaluation survey at the end of the third session. As described in the Method section, the evaluation surveys were administered anonymously (i.e., without participant names or numbers) in order to encourage candid responses from participants about their opinions about the workshop. Thus, the workshop evaluation data are not analyzed in relation to the individual difference variables discussed above.

Satisfaction with the workshop. On the survey, 24 out of 25 reported that the workshop overall was helpful, with 40% of the total (10) indicating "*yes, it helped a great deal*"; 56% (14) "*yes, it helped*"; 4% (1) "*no, it really didn't help*; 0% (0) "*no, it made things worse*". All indicated an inclination towards recommending the intervention to a friend: 68% (17) "*yes, definitely*"; 32% (8) "*yes, I think so*"; 0% (0) "*no, I don't think so*"; 0% (0) "*no, definitely not*".

Descriptions of the workshop. The first question on the survey asked participants how they would describe the workshop in a couple words or phrases. Each participant typed two words or phrases, for a total of 50 responses. The most commonly occurring words were: helpful (9); relaxing (7); and fun (5). The themes included: relaxing (18); helpful/worthwhile (12); fun (6); interesting/informative (4); conversation (3); self-reflection (3); innovative (3); and developing mindfulness (1). (See

Appendix C for a complete list of phrases.) When asked whether they had participated in a workshop similar to this one, all who responded indicated they had not.[15]

Participants' interest in the workshop and activities. All participants reported some degree of interest in the workshop overall, with 52% (13) rating it *very interesting*; 36% (9) *interesting*, 12% (3) *a little interesting*; and 0% (0) *not at all interesting*. When rating how interested they were in the individual activities 96% rated at least one activity with *very interested.* The highest average ratings were for *biofeedback*, *identifying values*, and *group discussion*, and the lowest average ratings were for *making scripts*, *things to try or notice during the week*, and *self-talk*.

What participants reported learning. When asked in an open-ended question what, if anything, they had learned in the workshop, participants had a range of responses, from specific strategies to more general insights about managing emotions or stress. Some mentioned learning which strategies they personally found most helpful (e.g., "I learned that I like to actively do something to relieve my stress--whether it is cleaning my room or going to the gym."). The most commonly mentioned strategy was breathing (e.g., "I learned how effective controlled breathing can be in centering yourself and calming down"). A couple participants mentioned learning meditation, self-talk, or biofeedback. Some participants mentioned that they had learned a variety of strategies. Several mentioned becoming clearer about their values, or how their values related to their emotions (e.g., "the fact that often we are stressed or upset because something is going against our values"). One participant described having learned scientific aspects of

[15] Only a subset of participants (n = 12) responded to this question, as it was added to the survey partway through the study. Of these, 11 gave a simple negative response, the other wrote, "nothing except a couple mindfulness exercises."

managing stress ("I learned about just exactly how scientific it is in handling stress, like the scientific mechanism behind controlling breathing."). When asked if they had tried out any of these new strategies, 80% (20) indicated *yes;* 20% (5) indicated *no, not yet*.

Other evaluation survey questions. The results to the other items on the evaluation survey are reported in the Appendix C. These include more detailed ratings and descriptions of the workshop activities, as well as participants' suggestions for improving the workshop.

Discussion

Previous studies have fostered learning goals in academic, athletic, and work domains. The main goal of this study was to develop and test an intervention to promote learning goals in the domain of emotion regulation. The intervention applied principles for fostering a learning goal environment to engage participants in exploring concepts from the science of emotion regulation. The study used a randomized control design with a waitlist control group, often an initial step in testing a new psychosocial mental health intervention (e.g., Weisz, Thurber, Sweeney, Proffitt, & LeGagnoux, 1997).

As discussed below, the results provide evidence that the intervention increased participants' awareness and use of new emotion regulation strategies. An unanticipated finding was that participants in the intervention group showed significantly greater reflection on emotions at post-test than those in the control group. There was not clear support for the main hypotheses of post-test differences in emotion regulation strategies, competence beliefs, or functioning for intervention versus control condition participants. However there was partial and tentative evidence in line with these hypotheses, discussed below.

The discussion centers on the main findings, which compared post-test scores for participants in the intervention and control conditions while controlling for pre-intervention scores for each variable measured. Given the small sample size and exploratory nature of the study, the discussion also makes note of other findings beyond these main findings. Specifically, the discussion mentions when a variable of interest showed significant change from pre-test to post-test for each group, even when the analysis for post-test differences between intervention and control groups was not

significant. Significant pre-post change in the hypothesized direction was found on several key outcomes for the intervention group only, including a decrease in thought suppression and an increase in emotion regulation self-efficacy, adaptive responses to negative emotions, and grade point average. The pre- to post-test decrease in depressive symptoms for the intervention group approached significance.

In addition to discussing the results for outcomes of standardized measures, the discussion also considers two other sources of information. The evaluation survey responses, completed by all students who participated in the workshop intervention, are mentioned when relevant to assess acceptability of the intervention and to gain a better understanding of participants' experience and perceptions of the workshop. In addition, informal observations from the workshop are used to provide illustration and context for interpreting the main findings.

The findings for the key outcomes are discussed in light of related research. The limitations of the current study are then discussed, followed by implications and directions for future research.

Evidence for Increased Learning Goals

The intervention was designed to promote learning goals within the domain of emotion regulation. Given that there are currently no measures of learning and performance goals in the domain of emotion regulation, two other measures were used to examine whether participants had increased learning goals for managing their emotions.

First, a measure of global learning versus performance goals was used as an indicator of change in goals. This measure is designed to assess individuals' goals across situations, particularly stressful situations, and is regarded as a measure of dispositional

and relatively stable differences (Dykman, 1998). It appears that only one previous study has reported attempting to manipulate and measure change in these goals: a study by El-Alayli and Gabriel (2007, Study 3), which used a brief priming manipulation, and did not result in significant change in the goals. In the current study, the intervention group showed a significant increase in global learning versus performance goals, however, the adjusted mean post-test scores for the intervention and control groups were not significantly different.

Global learning and performance goals have been found to prospectively predict anxiety and depressive symptoms in stressful situations (Dykman, 1998; Lindsay & Scott, 2005). The more that individuals seek to learn and grow and the less they seek to prove their worth, the more likely they are to respond adaptively to failure and other stressful conditions (Dykman, 1998; Lindsay & Scott, 2005; also see review by Rusk & Rothbaum, 2010). Given the malleability of learning goals demonstrated in interventions within academics, youth sports, and work domains, the possibility of designing interventions to promote learning versus performance goals for managing emotions and stressful situations seems worthy of further investigation.

The other indicator used to determine whether participants had increased learning goals for emotion regulation was their open-ended descriptions of new emotion regulation strategies that they had tried recently. The participants in the intervention group at post-test described having tried significantly more new emotion regulation strategies than the control group participants. Whereas the control group went down in number of new strategies tried from pre- to post-test, the intervention participants significantly increased in number of new strategies tried. The greater number of

participants describing new strategies at post-test in the intervention group versus the control group (96% versus 28%) suggested that the intervention increased participants' awareness and exploration of new strategies. The new strategies described by intervention participants spanned the range from situation selection (e.g., "going to the gym") to cognitive change ("changing the way I think about a situation").

Exploring Constructive Emotion Regulation Strategies

Cognitive reappraisal. One hypothesis was that the intervention group would increase in their use of constructive emotion regulation strategies relative to the control group. As reviewed in the introduction, cognitive reappraisal is one of the most frequently researched emotion regulation strategies and is considered adaptive across a variety of situations (Aldao et al., 2010; Gross & John, 2003). The analyses for the standardized measures did not show a significant difference between the intervention and control group at post-test in reappraisal, nor a significant pre- to post-test change for either group.

Despite this absence of differences, when participants in the workshop evaluation survey were asked about new strategies they had learned during the workshop, 40% of them described a reappraisal strategy. For example, one wrote: "looking at the situation from another perspective"; another wrote, "shifting my perspective so I'm not hopeless about a situation." Some of these reappraisals described looking for the positive: "finding the best in a bad situation" and "looking for the good in things."

The main way that reappraisal was introduced in the workshop was through the Scripts Station, as one of the three ways to manage one's emotions (i.e., change the meaning). During one of the workshop sessions, a student standing near the station

spontaneously pointed to the set of reappraisal statements, and remarked, “I can’t do that,” explaining that she finds it hard to see situations differently. In contrast, later that session, another student also pointed to reappraisal statements, but said that she *mostly* does that, an assertion supported by the number of reappraisal statements in the script she made. These differences across individuals in adoption of reappraisal are reflected in the sample scripts created by the participants (see Appendix G).

It is possible that incorporating an experiential activity that focused on applying reappraisal to a stressful situation could help more workshop participants become aware of and interested in practicing reappraisal. One possibility would be to include a station where participants practice using reappraisal instructions during distressing film clips, similar to the behavioral measure of cognitive reappraisal ability (Troy et al., 2010). Another possibility would be to have a station showing interview clips of people discussing key experiences in their lives that they reappraised later (e.g., what they learned from failure or other setbacks). In addition, participants could be encouraged to try applying a reappraisal strategy between sessions, in response to a real life stressor.

An issue to consider when promoting reappraisal is whether to give people a choice of various types of reappraisals or to encourage a specific type. In a review of emotion regulation in older adults, Urry and Gross (2010) mention that type of reappraisal may matter. They cite a study by Shiota and Levenson (2009), which found that older as compared with younger adults were less successful at using *detached* reappraisal (i.e., viewing the situation from an objective and unemotional perspective) but were more successful at using *positive* reappraisal (i.e., seeing the positive aspects of a situation). Urry and Gross suggest that detached reappraisal may require more cognitive

control (which often lessens with age) whereas positive reappraisal may be supported by friends and other external forms of support (which often becomes stronger with age).

In some studies in which participants are given instructions to reappraise, the instructions offer more than one possible way to think about the situation differently. For example, the reappraisal instructions from Troy and colleagues (2010) suggest looking for potential positive outcomes from the distressing situation (i.e., silver lining) or good things they may learn from the experience (i.e., growth). It may be that providing choices of reappraisal makes it more likely that people will be able to find a type that works for them in that situation. Providing choices is also more likely to encourage a learning goal (Kaplan & Maehr, 2007).

Research in a related area of research, benefit-finding, suggests that although looking for benefits in a negative situation has positive effects on individuals' psychological well-being (e.g., among cancer patients), instructing people who have experienced hardship to look for the positive aspects is typically problematic, as it may easily be seen as telling people what they should feel (Tennen & Affleck, 2005). Thus, choosing from a variety of possible reappraisals—and from a variety of different strategies besides reappraisal, as in the Scripts Station—may be most effective. Providing options may be more helpful than promoting adoption of a single strategy, even for a strategy shown to be highly effective.

Acceptance of negative emotion. Another emotion regulation strategy considered by many clinical psychologists to be constructive is non-judging acceptance of emotions. Given that performance goals involve judging one's ability, it was anticipated that creating an environment that promoted learning versus performance goals

would encourage participants to be more accepting of their emotions. In addition, participants were introduced to basic mindfulness techniques, including mindfulness of breath and walking meditation, which are exercises used as part of mental health interventions to increase non-judging acceptance of emotions (e.g., Segal, Williams, & Teasdale, 2002; Shapiro & Schwartz, 1999).

The results did not show significant changes in acceptance of emotion for either the intervention or control group. On the other hand, there was informal evidence that at least a couple of participants learned this strategy. When asked to list new strategies they had learned during the workshop, one participant wrote, "observing and not judging emotions." Similarly, in the post-test, when asked any new strategies they had tried lately, three participants in the intervention condition described strategies that closely match acceptance-based approaches to managing emotions (e.g., Roemer & Orsillo, 2007), such as the participant who wrote: "just letting them happen and knowing they'll change."

The most common new emotion regulation strategy mentioned by intervention participants at post-test involved a focus on breathing, which is considered a basic and introductory mindfulness technique. A more explicit focus on mindfulness—particularly the non-judging aspect of mindfulness—may help. Yet, Roemer and Orsillo (2003) mention that mindfulness takes time to learn and they question how much therapy should focus exclusively on mindfulness techniques, stating:

> Mindfulness is clearly a difficult approach to master; integrative treatments may face challenges due to the breadth of material being covered in addition to mindfulness. On the other hand, an exclusive focus on mindfulness may preclude other important elements of treatment. (p. 176)

In the current intervention, the fact that mindfulness was just one aspect of the intervention can be seen both as a limiting factor but also as a possible strength, as it allowed students to explore a range of strategies from situation selection to reappraisal. Mindfulness strategies have been found to involve attentional deployment (e.g., Goldin & Gross, 2010), although they can also be considered meta-level strategies (J. J. Gross, personal communication, April 20, 2009).

Greater Reflection

An unexpected finding was the significant post-test difference in reflection, with intervention participants having higher mean scores relative to control, and control participants experiencing a significant drop in reflection from pre-test to post-test. One interpretation for the higher reflection for the intervention group as compared to the control group may have been that participation in the workshop increased their attention and awareness of emotions, whereas participants in the control condition may have paid less attention to their emotional states over the course of the semester.

This finding of a greater reflection in the intervention than control group relates to an ongoing discussion in the emotion regulation research about constructive versus problematic types of self-reflection on emotions. Most emotion regulation researchers now agree that while repetitive brooding on one's negative emotions contributes to depression, certain types of reflection on emotions do not contribute to depression and can be beneficial (Kross, Ayduk, & Mischel, 2005; Rude, Maestas, & Neff, 2007; Watkins, 2008). McFarland and colleagues (2007) found that adopting a reflective orientation increased the likelihood that people would have positive (i.e., mood-incongruent) thoughts in response to negative emotions. Their operationalization of

reflective orientation included openness and striving to improve negative mood, which can be seen as overlapping with the concept of learning goals for emotion regulation.

While reflection on emotions can be beneficial, there is also evidence that reflection on emotions can be problematic for individuals with negative cognitive styles and susceptibility to depression (Miranda & Nolen-Hoeksema, 2007). Given that reflection on emotions has been found to be associated with depressive symptoms in some studies, particularly for individuals with elevated depressive symptoms (Miranda & Nolen-Hoeksema, 2007), interventions that focus on teaching emotion regulation strategies should be cautious that reflection on emotions does not induce brooding rumination. Rude et al. (2007) found that the judging aspect of reflection was the aspect associated with depression. This fits with McFarland and colleagues' (2007) findings on the benefits of a reflective orientation that involves openness to emotion as well as seeking not to dwell on negative mood. Their findings align with the idea that fostering learning goals (with their emphasis on openness and improvement) and lowering of performance goals (with their emphasis on judgment) in response to distress may help mitigate the potential negative effects of reflection.

Decreasing Defensive Emotion Regulation Strategies

There were not significant group differences between intervention and control participants for brooding rumination or thought suppression, the two defensive emotion regulation strategies measured. The only significant change in these variables for either group was a significant lowering in thought suppression for the intervention group from pre- to post-intervention.

The measure of thought suppression used in the current study (WBSI; Wegner & Zanakos, 1994) taps chronic use of thought suppression. Higher scores on this measure have been found to predict increases in depressive symptoms among college students (Beevers & Meyer, 2004; Wenzlaff & Luxton, 2003). Thus, the tentative evidence of lowered use of thought suppression in the intervention group is a promising finding. It can be seen as fitting with the finding of increased reflection for the intervention group relative to the control. Both may have been fostered by the learning goal approach in the workshop, which promoted openness towards negative emotions as fundamentally adaptive (Gross & Thompson, 2007) and as providing potentially useful information (Baumeister et al., 2007), while also encouraging trying new ways to improve managing them in order to pursue actions in line with one's values.

Emotion Regulation Competence Beliefs

There was some evidence that the intervention increased participants' competence beliefs for emotion regulation. The analyses examined three types of competence beliefs: (a) emotion regulation self-efficacy, (b) adaptive responses to negative emotion regulation, and (c) difficulties in emotion regulation, each discussed below.

Emotion regulation self-efficacy. The analyses did not indicate a significant difference in emotion regulation self-efficacy between the intervention and control groups. However, participants in the intervention group did show an increase in their emotion regulation self-efficacy. The measure of emotion regulation self-efficacy, the Negative Mood Regulation scale (Catanzaro & Mearns, 1990), has been shown to prospectively predict lower depressive symptoms and anxiety in college students and other populations, even when controlling for baseline negative affect, depressive

symptoms, and coping strategies (e.g., Kassel et al., 2007). An increase in these beliefs indicates increased expectation that when upset one can do something to feel better.

The Negative Mood Regulation (NMR) construct includes both the idea that one can find *something* to make oneself feel better (general expectancies), as well believing that *specific actions* (such as seeing a movie or talking to a friend) will help. The workshop may have promoted both of these aspects. When asked in the survey what they learned in the workshop, some participants mentioned specific strategies, whereas others mentioned learning a variety of strategies. For example, one participant wrote: "I learned about many different ways to deal with stress. Even the way I am breathing and the way I am thinking can help relieve stress."

Although the NMR measure is often used as a *trait* measure of individual differences in emotion regulation beliefs, there is precedence for using it to measure *changes* within other mental health intervention studies. Backenstrass et al. (2006) found that improvements in NMR beliefs correlated with lessening of depressive symptoms during cognitive-behavioral therapy for depressive clients, and predicted further improvement during follow-up. In addition, a study of therapy for women with abuse-related Post-Traumatic Stress Disorder (PTSD) showed that an increase in NMR beliefs predicted lessening of PTSD symptoms (Cloitre, Stovall-McClough, Miranda, & Chemtob, 2004). While these studies found a positive increase in negative mood regulation beliefs for participants, some other studies using similar methods have not found significant effects (e.g., Telch, Agras, & Linehan, 2001). Given that NMR is often regarded as a trait measure, the suggestive evidence of change in NMR in the

intervention group provides tentative support for the idea that promoting learning goals may help foster emotion regulation self-efficacy.

Difficulties with emotion regulation. There were no significant differences found between groups at post-test for the measure of difficulties with emotion regulation (DERS; Gratz & Roemer, 2004). There were also no changes from pre- to post-test on this variable for either group.

Adaptive responses to negative emotions. There was evidence of an increase in self-reported adaptive responses to negative emotions for the intervention group. In addition, the analysis of differences between intervention and control groups for this outcome variable at post-test approached significance. The indication of improvement for self-perceived adaptive responses to negative emotions but not in difficulties with emotion regulation may have been due to the focus of the intervention on promoting exploration of constructive approaches to managing emotions, rather than on reducing problematic emotion regulation.

An area for further investigation is how to encourage reduction of problematic emotion regulation in a way that is conducive to learning goals and does not inadvertently trigger performance goals and defensiveness. This is particularly important given findings in the clinical research literature about depression about one's depression (Teasdale, 1985), anxiety about anxiety (Ellis, 1980), and other "reactions to reactions" (Williams, 2010, p. 2), which have been found to exacerbate depressive symptoms and increase negative self-judgments. The challenge is how to raise awareness of problematic responses to negative emotions without increasing self-judging. One approach may be to provide experiential activities in which participants experiment with techniques from the

literature on reducing problematic responses, for example, trying out the idea of "stop rules" (Startup & Davey, 2001, p. 83) in response to rumination or worry and experimenting with practicing non-judging of emotions (e.g., Rude et al., 2007). Placing the emphasis on experimenting and choosing from a variety of research-based techniques may help foster learning goals not only for developing adaptive responses but also for reducing problematic strategies.

Relationship between goals and competence beliefs. The evidence of an increase in competence beliefs—including emotion regulation self-efficacy and adaptive responses to negative emotions—for the intervention group may be seen as paralleling findings on learning goals and competence beliefs within academic domains. In a classic study of goal orientation theory, Ames and Archer (1988) found that students who perceived their classroom environment as emphasizing learning goals had stronger expectations that success would follow from one's effort and were more likely to use effective learning strategies. In a recent study, Jagacinski and colleagues (Jagacinski, Kumar, Boe, Lam, & Miller, 2010) found that increases in college students' learning goals over the course of a semester were associated with increases in self-efficacy for learning, including beliefs that one could learn the material in the class. Thus, the present findings provide initial evidence that the established link between learning goals and competence beliefs in the academic domain may also extend to the domain of emotion regulation.

Alleviating Depressive Symptoms

The intervention group showed a reduction in depressive symptoms bordering on significance, although the difference in depressive symptoms at post-test for the

intervention in comparison to the control group was not significant. The lack of group differences in depressive symptoms may have been influenced by the generally low levels of depressive symptoms in this normative sample or by the brevity of the intervention.

As mentioned earlier, most evidence-based interventions designed to reduce depression in adolescents and adults involve at least 12 sessions. Thus three brief sessions may not have been enough to make significant reduction in depressive symptoms. However, Stice and colleagues (Stice, Rohde, Seeley, & Gau, 2008) found significant reductions in depressive symptoms for a four-session activities-based CBT intervention. There were several differences between the design of their study and the present study, including their focus on lowering depressive symptoms, their involvement of a larger sample of students (a combination of high school and college students, $N = 145$), and their inclusion of only participants with elevated depressive symptoms. Psychosocial interventions designed to improve emotional functioning have been found to make a difference particularly for clinical populations (see meta-analysis by Aldao et al., 2010).

Rather than specifically addressing depression, the current preventive intervention was focused on promoting learning goals for emotion regulation and encouraging exploration of a range of constructive strategies. This broader focus on emotion regulation may make sense as a preventive intervention, given that emotion regulation been found to influence a wide range of mental and physical health issues, including smoking, substance abuse, and health-related behaviors (e.g., Magid et al., 2009; Nolen-Hoeksema et al., 2007).

Schoolwork and Strategies for Managing Distress

The tentative evidence of change in grade point average for the intervention group is intriguing, given that the intervention focused on promoting managing distress, not directly on academic work. In fact, many of the new strategies that participants reported trying between sessions involved taking a break from schoolwork. On the other hand, difficulties with emotions, including feeling anxious, can interfere with concentration on schoolwork (e.g., Daniels et al., 2009).

It is possible that the intervention's emphasis on noticing and trying adaptive strategies as well as pursuing valued actions even when feeling negative emotions helped students maintain their focus on schoolwork. Consistent with this idea, some participants made comments during the workshop discussion about ways in which applying the concepts had helped them to deal with their distress and to concentrate on writing papers and taking exams. For example, one participant had explained that sometimes she becomes so anxious on tests that she cannot concentrate, and at the third workshop session reported that although she still felt anxious when taking an exam that week, she had been able to persist in working through and completing it. The idea that learning goals for stressful situations can help in academic situations fits with findings by Baer, Grant, and Dweck (2008) that college students with higher levels of global learning goals responded to negative emotion with greater use of problem-solving strategies.

Limitations of the Current Study

One limitation of the study is the use of a waitlist control group. An active control group would be needed to show that the effects are not solely due to attention or other

nonspecific factors of participation in the group. Using a no-treatment control condition is often a first step in testing new psychosocial interventions to evaluate the feasibility and acceptability of the intervention and to test measures and other aspects of a study before conducting a larger randomized trial using an active control group (e.g, Bearman & Weisz, 2009).

Another limitation of the study is the small sample size, which restricted the statistical power to detect effects. Replication of the study with a larger sample could also help eliminate potential alternative explanations of findings for the intervention group, such as that it resulted from sampling error or regression to the mean (e.g., Hsu, 1989; A. G. Barnett et al., 2004). Power analyses (Cohen, 1992) using the software program G*Power (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that with a sample size of 90 participants (45 in each group) there would be a 80% probability of detecting an effect of $d = .30$ at the .05 significance level. This effect size ($d = .30$) was the average found for targeted prevention programs designed to prevent depressive symptoms in children and adolescents in a metaanalysis by Horowitz and Garber (2006).

The current findings included only two time points, which limits the ability to examine change over time. Future studies should assess participants' goals and other variables at multiple time points in order to test the mechanisms of change (Nock, Janis, & Wedig, 2008). In addition, future studies should examine potential moderators of change.

The current sample came from a self-selected population of college students, which limits generalizability of the results. However, whereas many psychology studies

involve only students studying psychology, the present sample included students with more than 10 different majors across humanities, sciences, and engineering. The study would need to be replicated with other populations to increase the applicability of the findings with other groups. In addition, the intervention would need to be replicated to further assess feasibility of implementation with other facilitators and in other settings. Several participants as well as experts providing advice on the design of the study suggested that the intervention might also work with high school students, a possibility to be explored further.

The study findings are based primarily on self-report measures. As noted in the Results section, the emotional induction test of cognitive reappraisal ability had a problem with validity, as the manipulation check for reappraisal was not significant. However, the behavioral measure of academic functioning, grade point average, provided some indication of improvement for the intervention group.

Keyes (2005) reviewed evidence supporting the idea that mental health (including emotional well-being) and mental illness (e.g., major depressive disorder) are distinct, correlated constructs, and argued that absence of mental illness is not identical to mental health. Similarly, a National Academies report on preventing mental, emotional, and behavioral (MEB) disorders in youth emphasized that "mental health is more than the absence of a disorder" (O'Connell, Boat, & Warner, 2009, p. 2) and recommended that "the mental health research spectrum should include not just the prevention of MEB disorders, but also a focus on wellness—the promotion of mental health" (p. 2). Adding a measure of psychological well-being would be useful to further compare outcomes in the two groups, and is planned for the follow-up testing.

An important dimension that was not explicitly addressed in the current study was the role of culture in emotion regulation. Cultural context can influence how people view emotions, which emotional states they see as desirable, how they respond to particular emotions, as well as the consequences of particular responses (e.g., Butler, Lee, & Gross, 2007; Kitayama, Mesquita, & Karasawa, 2006; Mesquita & Leu, 2007; Tsai, 2007). Although the current study included students from a variety of cultural backgrounds, including several international students, the sample size did not lend itself to investigating the potential moderating effects of cultural factors. In the current intervention, students were able to choose emotion regulation strategies that fit with their values and beliefs. However, availability of choice is more valued in some cultures than others (Markus & Kitayama, 1991). Future studies should investigate cultural factors in the promotion of adaptive emotion regulation.

Implications and Future Directions

The study took a first step in exploring the intersection of four areas of research that have not previously been investigated in combination (represented in Figure 11). The hypotheses, the design of the intervention, and interpretations of findings are informed by the convergence of these four domains.

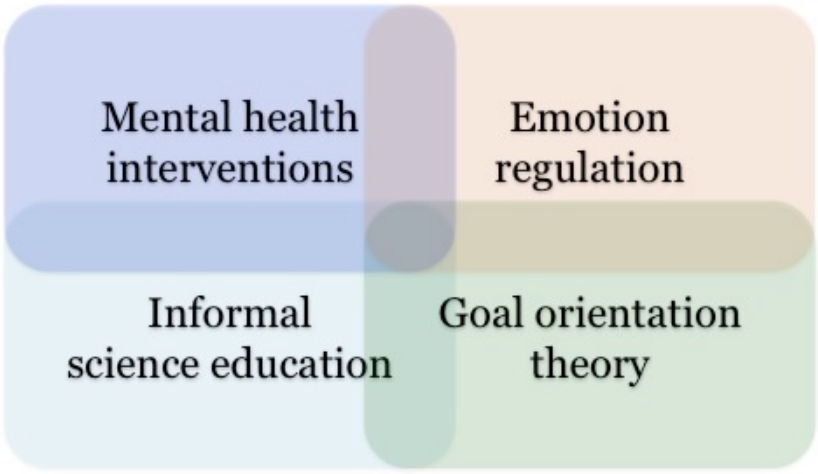


Figure 11. Intersection of four research areas investigated in the study with potential for further investigation.

Interventions to promote learning goals for emotion regulation. There are at least two potential paths for further developing the learning goals for emotion regulation intervention. One would be to further develop and refine this workshop as a stand-alone intervention, addressing some of the concepts and processes suggested above, such as experiential activities focused on fostering reappraisal and lessening brooding rumination. A different direction for further research would be to integrate the approach developed in this current brief intervention with other programs. Introducing engaging ways of exploring strategies for managing emotions and stressful situations, as this intervention is designed to do, could be useful for youth development programs, including youth sports and after-school programs in arts, science, and technology (cf., Duda, 2005; Larson & Brown, 2007). There is precedence for finding that interventions designed to address participants' motivation can work well both as stand-alone as well as

integrated into other existing programs (e.g., motivational interviewing; Miller & Rose, 2009).

Applying goal orientation theory to emotion regulation. A novel aspect of the intervention was to apply findings from goal orientation research to establish a learning goal environment to engage students in exploring new emotion regulation strategies. Emotions are seen as providing feedback about one's rate of progress towards goals (e.g., Carver & Scheier, 2000). Research has found that students' adoption of learning goals influence which emotions they experience. There is research on the value of learning goals for constructively handling distress (Baer et al., 2008; Dykman, 1998). There is also research on the value of helping clients identify their specific goals or problems they want to address for engaging in therapy (e.g., Weisz et al., in press). However, there are few, if any, interventions that have explicitly applied goal orientation research findings to help individuals improve their ability to manage emotions.

The workshop was designed to foster learning goals based on aspects of environments previously found to promote learning versus performance goals, as summarized in the TARGET principles (Kaplan & Maehr, 2007). In order to foster a learning goal environment, all six aspects of the TARGET framework were addressed in the design of the current intervention (listed in Table 5, in the Current Study section). The application of these aspects *in combination* may have been important. As Kaplan and Maehr summarize, the various aspects of TARGET may "serve together as cues to trigger a comprehensive mastery or performance goal orientation" (p. 158). Because they were used in combination, this design did not allow identification of the relative contribution of different aspects of the intervention. However, the participants' responses to the

evaluation survey provide some feedback on several salient aspects of the intervention and environment.

Identifying and pursuing values. The main task of the intervention, as described to participants, was to identify strategies for managing emotional distress that allow them to pursue what they find meaningful. Participants consistently rated the activity of identifying and discussing their values as among the most interesting activities. The values activity fit with the TARGET principle of promoting learning goals through promotion of personally meaningful tasks with a useful (rather than primarily evaluative) outcome. This approach also fits with research on mental health interventions that promote valued-based action (Hayes et al., 1999; Roemer & Orsillo, 2007). The focus on pursuing values also fits with research on the positive psychological and motivational benefits of identifying and pursuing purpose in life for youth and adults (e.g., McKnight & Kashdan, 2009; Damon, 2008).

Choice of strategies. As anticipated, individual participants in the workshop showed preferences for different activities. Each of the activities rated *least* interesting by some participants were rated *most* interesting by others. Similarly, activities that some found most helpful, others found least helpful. The range of preferences suggests that the availability of choice was important for meeting the needs and interests of different students. Providing students with a choice of strategies is one of the TARGET principles for promoting learning goals. Choice has been found to support intrinsic motivation for learning (see meta-analysis by Patall, Cooper, & Robinson, 2008).

Self-determination theorists emphasize that choice supports intrinsic motivation, whereas self-regulatory theorists emphasize the cost in cognitive and self-regulatory

resources when too many choices are available (Patall et al., 2008). Based on their meta-analysis, Patall and colleagues suggest an ideal number of three to five choices (and allowing for more than one round of choice) as most supportive of intrinsic motivation. The number of stations in the intervention matched this number of five choices, and inclusion of three sessions allowed for multiple rounds of choice. Several participants reported what they found most interesting about the workshop was exploring the various stations.

Despite the variety, when asked for suggestions on the evaluation survey, several of the participants proposed adding a greater variety of stations and other types of activities to try. Although it may be worthwhile to add other types of activities, the workshop already contained many different ideas and approaches within a relatively brief period. One of the participants who suggested more variety also reported liking the biofeedback, which takes time and practice to learn. Some experts have noted that the current generation of students, who have grown up with personal digital technologies, tend to rely on distraction as a primary emotion regulation technique (Ross, March 12, 2010, personal communication; Turkle, 2011). Thus, it may be useful for participants to settle down after exploring the possibilities in order to engage more deeply. The balance between providing enough variety to engage interest but not so many that it distracts attention seems important to investigate further.[16]

Recognition for trying new strategies. In the current intervention, recognition was given for trying new strategies and sharing observations, rather than for how

[16] Comparisons with related research from science museums may also be instructive, for example, posing questions at activity stations that foster more in-depth investigation and inquiry (S. Allen & Gutwill, 2009).

successful students were in achieving positive emotional states. This approach was reinforced by take-home exercises, which focused on noticing, trying, and practicing strategies rather than on achieving a relaxed state or positive mood.[17] An emphasis on providing recognition for noticing, trying, and practicing strategies fits with a learning goal orientation. It also is aligned with acceptance-based therapeutic approaches, which encourage engaging in valued-based actions, while accepting that negative emotions may arise in the process (Roemer & Orsillo, 2007).

Learning from sharing strategies. Another aspect of TARGET applied in the intervention was grouping students with a range of emotion regulation skills. Some of the students on the pre-test indicated they felt satisfied and confident in their ability to manage stress and negative emotions (e.g., "Mostly, I get stressed out socially, but I'm able to talk myself out of the stress"), while others indicated low satisfaction with their ability (e.g., "I wish my mechanisms for dealing with stress had long-term outcomes that were not so negative").

The first activity in the first session of the workshop involved students in sharing strategies that they already use for managing negative emotions and stress. This approach of starting with their previous knowledge fits with recommendations in informal (as well as formal) science education research to bring to light students' prior knowledge and

[17] In some mental health interventions for adolescents at risk for depression, an emphasis is placed on rating one's mood, from 0 *negative* to 10 *positive*, with the goal of promoting strategies to achieve and maintain positive mood (e.g., Stark, Arora, & Funk, 2011). This activity is aligned with research showing that a prominent characteristic of depression in adolescents is decreased seeking of positive emotions (Forbes & Dahl, 2005). On the other hand, emphasizing seeking to achieve positive emotional states for those who have low perceived ability may risk triggering avoidant forms of performance goals, as suggested by goal orientation research in other domains and by related research on the problems with seeking happiness (e.g., Mauss, Tamir, Anderson, & Savino, in press; Rothbaum, Morling, & Rusk, 2009).

experience in order to foster motivation as well as to build connections to new concepts (Duschl, Schweingruber, & Shouse, 2007; Bell et al., 2009). When asked on the evaluation survey which aspect of the workshop they found most interesting, several participants wrote that it was hearing about other students' strategies for managing stress.

Preventive interventions for the "millennial" generation. The educational approach of the workshop may be particularly suited to preventive interventions for the current generation of students, sometimes referred to as the "millennial" generation (Howe & Strauss, 2000). These students have typically grown up accustomed to using digital technologies and making choices about what and when they will learn (Oblinger, 2003). At the same time, they often enjoy communicating and collaborating with peers, both online and in person. Thus, providing self-directed time to explore activities that integrate digital technologies within a group context may be particularly suitable as an entry point for learning new emotion regulation strategies for teens and young adults in today's society.

When asked how they would describe the workshop to a friend, many participants emphasized the informal aspects of the workshop, as well as the opportunity to try a variety of different strategies for handling stress. For example, one wrote, "Relaxing and informative; not your typical workshop." Another described: "It included lots of helpful strategies for coping with stress while teaching in an informal way."

A few workshop participants suggested providing more in-depth information. Informal science education is often conceptualized as an entry point for motivating further learning (Bell et al., 2009). One area for future development would be to provide

a website with resources on emotion regulation strategies for students to access, including information on related research.

Informal educational approaches have become recognized as playing an important role in broadening participation in science (Bell et al., 2009; Meltzoff, Kuhl, Movellan, & Sejnowski, 2009). The current study provides a proof-of-concept of the potential applicability of these approaches for preventive mental health interventions. As in informal science learning environments, the intervention engaged participants with diverse interests in experiencing strategies they had not previously encountered. For example, many may not have chosen to attend a class focused on meditation, but were exposed and became interested in the idea through exploration of the stations. Several students in the pilot studies voiced that they would not have signed up for a workshop in the counseling center, and liked the idea of holding the workshop in the student center or other informal meeting place. Several students emphasized that the atmosphere of the room—which was more inviting than a standard classroom in its layout, furniture, and materials—was an important aspect of their experience.

As concluded in the National Academies' consensus report, informal learning environments can serve as an entry points to help the learner build familiarity and to "establish the experience base, motivation, and knowledge that fuel and inform later science learning experiences" (Bell et al., 2009, p. 295). Thus, the informal learning environment for exploring emotion regulation strategies tested in the current study may serve its most important role in generating students' awareness and interest in trying new strategies.

Conclusion

Kazdin and Blase (2011) call for alternatives to psychotherapy that reach more broadly to address high rates of mental health problems nationally. Other leading researchers have called for preventive interventions that foster research-based understanding of emotion regulation. Izard and colleagues (Izard, Stark, Trentacosta, & Schultz, 2008) highlight the need for preventive intervention research that goes beyond simply dampening anger or other negative affect, to foster "the use of techniques and strategies that harness the energy of emotion arousal in constructive thought and action" (p. 156).

This study is a first step in examining how goal orientation theory can be applied to promote healthy emotion regulation in students managing stressful situations. The intervention used a novel approach of introducing college students to ideas from the science of emotion regulation through hands-on activity stations, guided by research on aspects of environments that foster learning goals. The findings suggest that promoting learning goals for managing emotions increases students' reflection on emotions and trying a range of new strategies, and may contribute to students' adaptive emotion regulation, emotion regulation competence beliefs, and academic functioning.

Appendix A

Correlation Tables

Table A1

*Intercorrelations and Means of Primary Variables at Pre-Test for Full Sample (*N = *50)*

Variable	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
1. Global learning vs. performance goals	-										
2. Reappraisal	.17	-									
3. Acceptance[a]	-.23	.04	-								
4. Reflection	.01	-.07	.35*	-							
5. Brooding	-.38**	-.07	.33*	.39**	-						
6. Suppression	-.18	-.08	.33*	.44**	.49***	-					
7. Emotion regulation self-efficacy	.40**	.39**	-.22	-.11	-.39**	-.33*	-				
8. Difficulties in emotion regulation	-.36*	-.23	.69***	.35*	.46***	.52***	-.60***	-			
9. Adaptive responses to negative emotions	.42**	.52***	-.05	.19	-.10	-.20	.39**	-.35*	-		
10. Depressive symptoms	-.26	-.27	.21	.35*	.63***	.41**	-.39**	.47***	-.16	-	
11. GPA[b]	-.29*	.15	.15	-.11	.20	-.08	-.08	.11	-.20	.10	-
M	21.19	27.05	12.67	4.42	5.72	45.45	107.34	83.14	32.55	3.78	3.33
SD	36.97	5.91	5.31	3.33	3.13	12.49	14.28	16.12	8.42	0.74	0.38

a: Higher scores indicate lower acceptance. b: GPA for non-freshmen only, $n = 25$. *** $p < .001$; .** $p < .01$; * $p < .05$.

Table A2

Intercorrelations and Means of Change from Pre- to Post-Test

Variable	1	2	3	4	5	6	7	8	9	10	11
1. **Global learning vs. performance goals**											
Full sample	-										
Intervention	-										
Control	-										
2. **Reappraisal**											
Full sample	.14	-									
Intervention	.05	-									
Control	.14	-									
3. Acceptance[a]											
Full sample	-.02	-.05	-								
Intervention	.01	-.22	-								
Control	-.04	.13	-								
4. Reflection											
Full sample	.12	.21	-.27	-							
Intervention	.22	.25	-.02	-							
Control	-.33	-.05	-.57**	-							

(*table continues*)

Table A2 (Continued)

Variable	1	2	3	4	5	6	7	8	9	10	11
5. Brooding											
Full sample	-.19	.10	.08	.17	-						
Intervention	-.18	.13	.20	.27	-						
Control	-.15	.12	-.06	.27	-						
6. Suppression											
Full sample	.06	.08	.08	-.06	.06	-					
Intervention	.23	.36	.10	-.33	.05	-					
Control	-.12	-.18	.06	.23	.07	-					
7. Emotion regulation self-efficacy											
Full sample	.23	.32*	-.17	.04	-.41**	-.03	-				
Intervention	.06	.37	-.16	.01	-.36	.16	-				
Control	.42*	.12	-.18	-.37	-.50*	-.32	-				
8. Difficulties in emotion regulation											
Full sample	.00	-.07	.61***	.01	.07	.24	-.41**	-			
Intervention	.16	-.17	.69***	.07	.03	.12	-.40*	-			
Control	-.22	.10	.53**	.02	.11	.38	-.43*	-			
9. Adaptive responses to negative emotions											
Full sample	.43**	.19	-.27	.19	-.12	-.13	.21	-.30*	-		
Intervention	.48*	.24	-.15	.13	-.17	.01	.06	-.05	-		
Control	.26	.02	-.41*	0.02	.02	-.28	.32	-.65**	-		

(*table continues*)

Variable	1	2	3	4	5	6	7	8	9	10	11
10. Depressive symptoms											
Full sample	.07	-.18	.37**	-.07	.18	.07	-.34*	.39**	.07	-	
Intervention only	.21	-.23	.25	.09	.09	.08	-.46*	.33	.47*	-	
Control only	-.05	-.10	.50*	-.18	.27	.06	-.12	.48*	-.35	-	
11. GPA[b]											
Full sample	-.08	.11	.23	.06	.06	.24	-.12	.14	-.01	.31	-
Intervention	-.32	.06	.29	.04	.47	-.13	-.60*	.01	.15	.54	-
Control	.05	.03	.07	-.32	-.24	.49	.19	.24	-.27	.13	-
***M* change**											
Full sample	11.75	0.66	-0.17	-0.28	-0.40	-2.25	3.21	-1.77	0.84	-1.30	0.13
Intervention	18.09	2.17	-0.30	0.85	-0.71	-2.39	6.08	-2.71	2.22	-1.64	0.22
Control	5.40	-0.84	-0.04	-1.41	-0.08	-2.12	0.33	-0.83	-0.53	-0.96	-0.03
SD											
Full sample	24.96	6.61	3.14	2.32	2.71	6.86	10.72	12.00	5.01	3.73	0.28
Intervention	27.20	6.60	3.08	2.19	2.87	6.87	12.84	13.55	5.16	3.88	0.24
Control	21.16	6.39	3.26	1.87	2.56	6.99	7.28	10.42	4.53	3.61	0.31

Note. Pearson correlations are listed for overall sample ($N = 50$); intervention ($n = 25$); and control ($n = 25$).

a: Higher scores indicate lower acceptance.

b: GPA for non-freshmen only ($n = 25$).

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

Appendix B

Workshop Evaluation Survey

This survey was administered on a computer using Surveymonkey. There were several additional questions not reported here, as they were not central to the questions of the current study (e.g., suggestions for a related website).

The following survey asks for your feedback on the workshop. Your responses will help us to understand how we might improve the workshop. Thank you very much!

Thoughts about the Workshop

We are interested in your thoughts about the workshop.

1) What are a couple words or phrases you think of to describe the workshop?
   1. _____
   2. _____

2) How might you describe the workshop to a friend who wanted to know what it was like?

3) How interesting did you find the workshop overall?

- ☐ 1. Not at all interesting
- ☐ 2. A little interesting
- ☐ 3. Moderately interesting
- ☐ 4. Very interesting

4) Which aspect was most interesting to you?

5) Which aspect was least interesting to you?

6) How interested were you in each of the following aspects of the workshop?

Aspects of Workshop:	**Very interested**	**Moderately interested**	**Slightly interested**	**Not interested**	**Didn't try**
Making scripts	☐	☐	☐	☐	☐
Biofeedback	☐	☐	☐	☐	☐
Mindhabits games	☐	☐	☐	☐	☐
Self-talk station	☐	☐	☐	☐	☐
Identifying values	☐	☐	☐	☐	☐
Mindfulness exercises	☐	☐	☐	☐	☐
Group discussion	☐	☐	☐	☐	☐
Things to try or notice during the week	☐	☐	☐	☐	☐

7) Was the workshop helpful to you?

- ☐ 1. Yes, it helped a great deal
- ☐ 2. Yes, it helped
- ☐ 3. No, it really didn't help
- ☐ 4. No, it seemed to make things worse

8) If a friend were considering participating, would you recommend the workshop?

- ☐ 1. No, definitely not
- ☐ 2. No, I don't think so
- ☐ 3. Yes, I think so
- ☐ 4. Yes, definitely

Learning

The following questions focus on things you learned or may be interested in learning more about after the workshop.

9) What is something you learned about, if anything, in the workshop?

10) Which of the following might you want to learn more about or explore further?
(Please check all that apply)

- ☐ Mindhabits games
- ☐ Mindfulness practices
- ☐ Biofeedback
- ☐ Online resources for dealing with stress
- ☐ Other approaches for handling emotions
- ☐ Helping children learn to deal with emotions
- ☐ How to help other people deal with stress

11) How interested are you in learning new ways to handle emotions?

- ☐ 1. Not at all interested
- ☐ 2. Slightly interested
- ☐ 3. Moderately interested
- ☐ 4. Very interested

12) Please list any new ways of handling emotions you have learned about in the workshop:

* _____
* _____
* _____

13) Have you tried out any of these new strategies?

- ☐ Yes
- ☐ No, not yet

Suggestions

We are interested in your suggestions to help us improve the workshop.

14) What do you think would be the ideal number of sessions for a workshop like this?

- ☐ 1 session
- ☐ 2 sessions
- ☐ 3 sessions
- ☐ 4 sessions
- ☐ Once a week for a semester
- ☐ Other: _____

15) What suggestions, if any, do you have for improving the workshop (e.g., activities, topics, group size, timing, food, location, or anything else)?

16) Have you ever participated in something similar to this workshop? If so, what was it?

17) Please share any other comments or suggestions:

Thank you very much!

Appendix C

Workshop Evaluation Survey Results

A summary of responses to several key questions from the evaluation survey is included in the Results section. Below are descriptions of participants' responses to other questions from the survey, with figures and tables summarizing the results.

Overall Ratings of the Workshop

An overview of participants' responses to the questions on how interesting and how helpful they found the workshop are summarized in the Results section. Figure C1 shows ratings of participants' interest in the workshop overall. Figure C2 indicates participants' ratings of how helpful the workshop was. Figure C3 indicates how many participants would recommend the workshop to a friend.

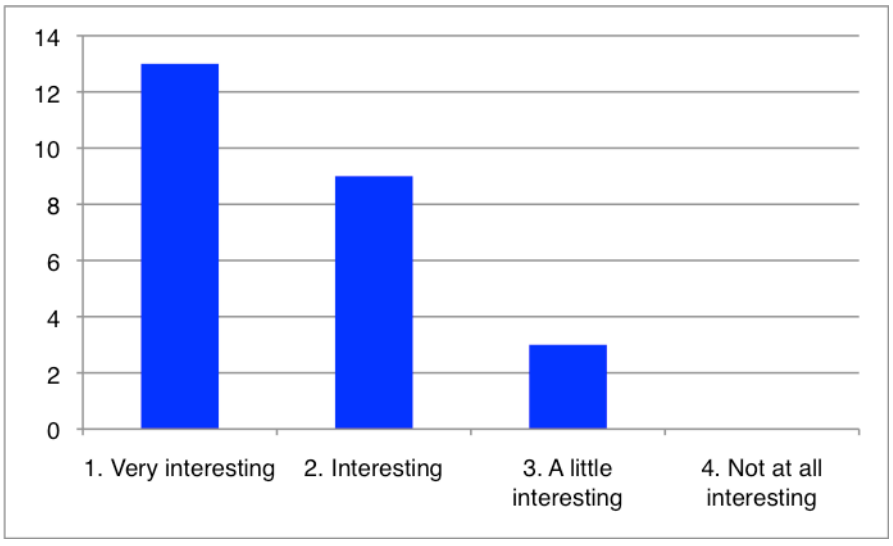


Figure C1. Ratings of interest in the workshop.

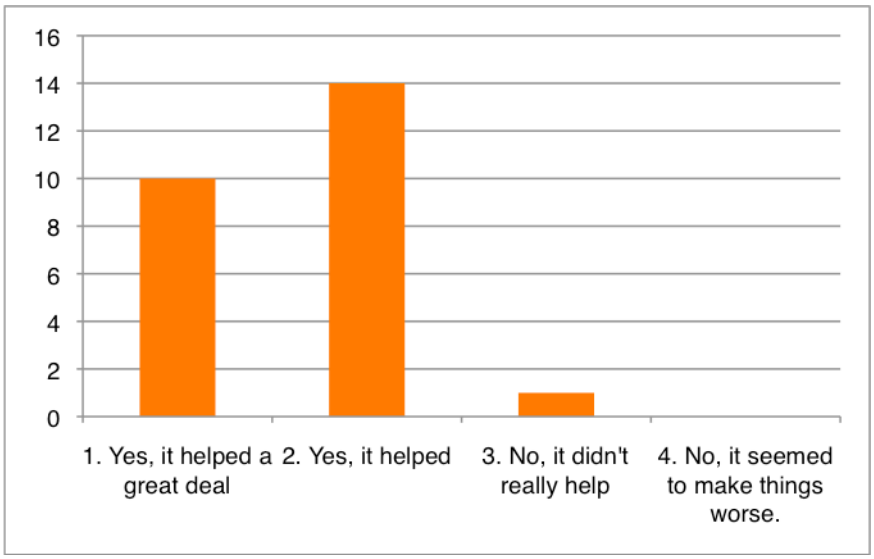


Figure C2. Ratings of helpfulness of the workshop.

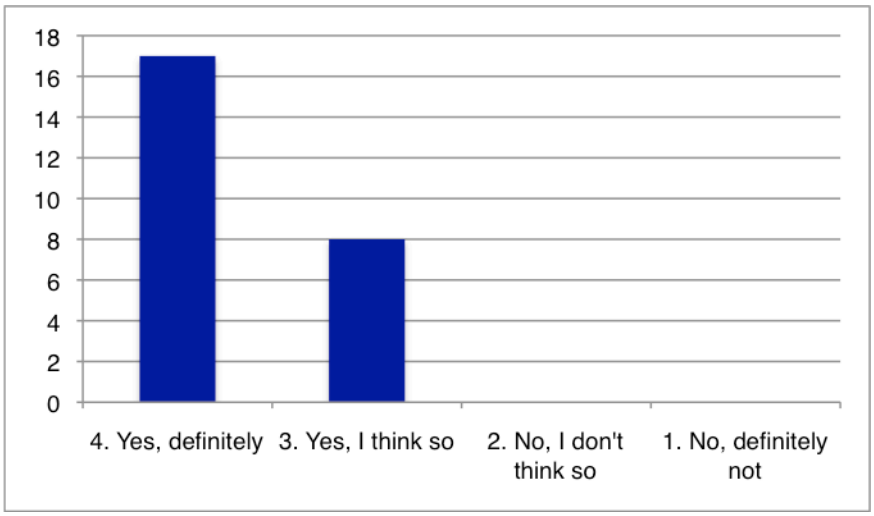


Figure C3. Responses to whether participants would recommend the workshop to a friend.

In response to how interested they were in learning new ways to handle emotions (following the workshop), 40% indicated *very interested*, 40% indicated *moderately interested,* 20% indicated *slightly interested*, and 0% indicated *not at all interested*.

Interest in Workshop Activities

Figure C4 provides a graphical representation of the varying levels of interest in each activity. The vertical axis indicates the number of participants for each rating.

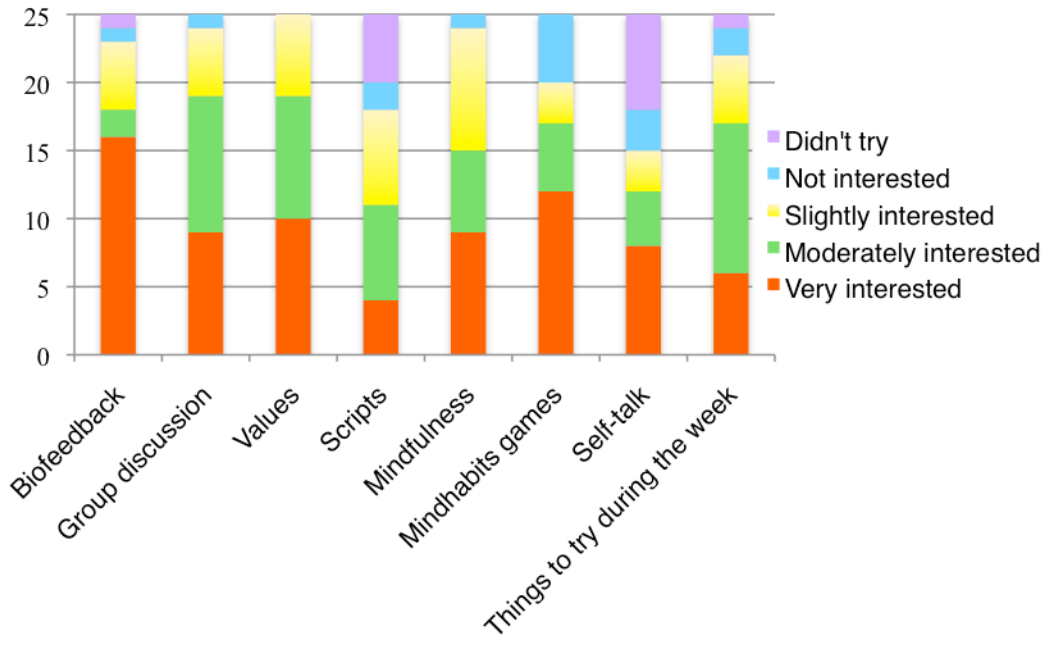


Figure C4. Interest ratings for each aspect of the workshop. The *y*-axis indicates numbers of participants for each rating.

Table C1 lists the average rating for each activity. The first column of numbers shows the average interest rating for those participants who tried the activity, and the second column includes those who did not try the activity (and thus rating it at 0).

Table C1

Average Interest Rating for Workshop Activities

Activity	Average Interest Rating	Number of Participants Who Tried the Activity
Biofeedback	3.38	24
Identifying values	3.16	25
Group discussion	3.08	25
Mindhabits games	2.96	25
Self-talk station	2.94	20
Mindfulness exercises	2.92	25
Things to try or notice during week	2.88	24
Making scripts	2.65	21

Note. Ratings based on 4 = *very interested* ; 3 = *moderately interested*; 2 = *slightly interested*; 1 = *not interested.* Participants who indicated they didn't try the activity were not included in the average.

What Participants Reported Learning

In response to the open-ended question, "What is something you learned about, if anything, in the workshop?" all 25 participants gave responses. These responses were grouped into categories shown in Table C2.

Table C2

What Workshop Participants Reported Learning

Category	Frequency	Example Responses
Breathing as a way to handle stress	8	"I also learned the power of something as simple as breathing — previously I always felt stupid trying to do something like that, but now I know it is actually very beneficial to focus on something small like that."
Different ways to handle stress	6	"More concrete scripts that I can use"; "I learned about many different ways to deal with stress. Even the way I am breathing and the way I am thinking can help relieve stress"
Meditation or mindfulness	4	"Breathing exercises and meditation — to pay more attention to just my surroundings."
Values	3	"the fact that often we are stressed or upset because something is going against our values"
Identified preferred strategies	3	"I learned about myself and the way I deal with emotions and stress. It was nice in group discussions to identify personal characteristics and strategies in other people as well — it provides a feeling of togetherness/not being alone." "That I like to actively do something to relieve my stress— whether it is cleaning my room or going to the gym."
Self-talk can be helpful	2	"Self-talk was helpful."
Biofeedback	2	"The biofeedback exercises taught me about regulating breathing and calming my mind, and I noticed that making my body act calm made my mind feel calmer as well. That was interesting."
Helpful to take or schedule a break	2	"That it is more helpful to take a break than to keep trudging through"
Scientific basis of strategies	1	"I learned about just exactly how scientific it is in handling stress, like the scientific mechanism behind controlling breathing."
Value of practicing strategies	1	"I learned that practicing these techniques that allow me to de-stress is a valuable skill."

The following are participants' responses to the question: "Which of the following might you want to learn more about or explore further?", in order of frequency of responses.

Other approaches for handling emotions: 17 (68%)

Biofeedback: 15 (60%)

How to help other people deal with stress: 15 (60%)

Mindhabits games: 14 (56%)

Online resources for dealing with stress: 14 (56%)

Helping children learn to deal with emotions: 10 (40%)

Mindfulness practices: 10 (40%)

Other: 1 (Specified: "How music/dance/self-talk can affect your productivity")

Participants' Descriptions of the Workshop

The first question on the evaluation survey asked, "What are a couple of words or phrases you think of to describe the workshop?" This question was asked first to try to assess participants' impressions before prompting with other concepts and questions. Their responses are summarized in the Results section. In addition, Figure C5 provides a list of all the words and phrases generated by participants, roughly grouped and color coded by theme.

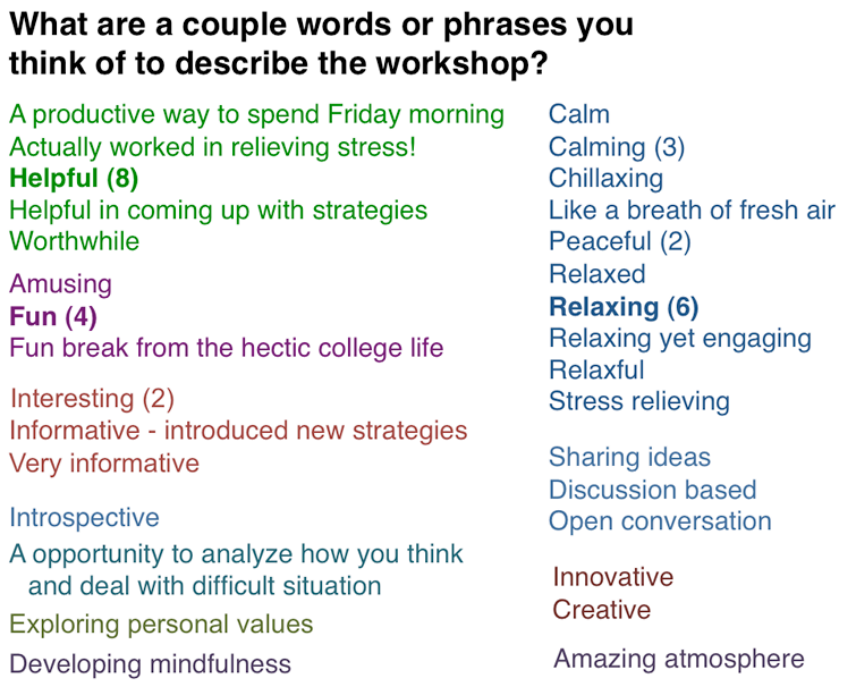


Figure C5. List of words and phrases used to describe the workshop. They are grouped and color-coded by roughly similar themes. The number in parentheses indicates the number of participants who listed the same word.

Participants were also asked for a fuller description of the workshop with the prompt: "How might you describe the workshop to a friend who wanted to know what it was like?" All 25 responses are included here to provide an overall picture of participants' perspectives on the workshop.

> I hesitate to say playtime, only because the childlike connotation seems condescending, but on that same note it does help you find time to tap into the carefree, youthful playfulness that exists in all of us.
>
> Very helpful, it wasn't just another study that was i[n] search of an answer to their questions of research but a study that actually helps the participants.
>
> This workshop is an opportunity to learn different ways to de-stress in everyday life.

I would say that it is a good experience for learning about handling stress. While not every strategy will be helpful or applicable to your life, some will, and they might be things you never thought of before. I always leave feeling less stressed then when I came. I also liked the discussion sessions before and after the station work.

The workshop consisted of several stations where I was able to try various stress-relief strategies. Some focused on scientific calmness, while others dealt with examining situations and how to approach them.

It was a series of a few very chill meetings with a small group of people, where you get free snacks and practice de-stressing strategies like breathing and reading inspirational quotes, and you do the strategies on your own and they play Bob Marley in the background, so it was pretty nice.

It is a very cozy and fun atmosphere where you can really relax and think about yourself.

You get to try a few different devices which are supposed to help alleviate stress. You also talk about your experience and tell the instructor what you do for stress relief.

It's a practice in being mindful and aware of the things that stress us.

A small group talking about strategies that people are trying to relieve stress from our everyday lives. There were stations with a specific way to relieve stress- playing a video game, meditating, controlling one's heart rate.

It actually helped with stress. Now if I ever get stressed out, I have a few different strategies to chose from.

We tried out different stress management strategies, some were more thought-process oriented and some were using different technologies.

Relaxing and informative; not your typical workshop.

It was a great opportunity to learn a lot about myself and you should definitely try it. It is a lot of fun and a good investment of my time toward my future stressed-out self.

We sit around a table, think about our weeks and talk about ideas of how we can control our stress. Then we do small workshops that allow us to explore different aspects of controlling stress: breathing, positive thinking, mindfulness exercises.

It's a place that helps you figure out what makes you stressed and propose some strategies in trying to lessen the stress in your life.

informal conversations w/ interactive activities

[*University name*] Stress Management Program is a workshop that allows [*University name*] students to eat, chat, and try different strategies to relieve stress.

It was a good experience for me to explore new strategies for dealing with stress. I found out what I was doing was great and that other options were available too. It's totally worth the walk because the room is sooo much fun!

We did activities that help you learn how to manage stress in a healthy way.

It's relaxing way to think about a healthy way to live your life

It sounds like it might be a little hectic and formal, but it'll relax you for the rest of the night and it's so nice having a break that still contributes to your daily life with really nice people.

I would tell them that it was definitely worth it. It definitely relieves stress and is very nice after a stressful day of classes

it was relaxed and chill

It included lots of helpful strategies for coping with stress while teaching in an informal way.

Suggestions

In response to the question, "What suggestions, if any, do you have for improving the workshop (e.g., activities, topics, group size, timing, food, location, or anything else)?", 23 of the participants provided responses. They are categorized and summarized in Table C3.

Table C3

Participants' Suggestions for Improving the Workshop

Category	Frequency	Example Responses
Liked it as is	6	"Worked just great the way it is!"
Location	Closer to campus: 4; Liked room: 2	"Location could be more closer to the campus, then I think we could meet more than three times."
More types of stations or other activities	More variety: 3; More group activities: 1 More active activities: 1	"There should be a larger variety of stations and activities for participants to try"; "More interactive activities that promote working together in groups"; "More active activities";
Small group size	Wanted: 2 Liked: 2	"The smaller the group the better."
More in-depth content or discussion	More about the science: 1 More about how strategies can help you: 1 Reading to discuss: 1	"I'd also have been interested in learning more about the scientific/psychological aspects of stress, emotions, and stress management, so maybe we could have talked a little about brain chemistry or what other studies have shown."
More specific instruction on strategies	1	"I think it should be more structured in terms of walking students though concrete examples that will help them with their stress and emotions."
Scheduled time at stations	2	"I would allot time for each station in the first two workshops, and then allow people to in the third session to go to whatever station they please for however long."
Email discussion topic beforehand	1	"A little more time to prep might be good: sending out an e-mail giving a heads up to think of strategies/values might make it easier to come up with them at the workshop"
Walking meditation garden idea	1	"Also, a complete re-modeling of the little garden outside to a rock garden or walking meditation garden in partnership with the architecture program wouldn't be a bad idea."

Appendix D

Stress and Emotions Survey

I am conducting this survey to better understand how students experience stress.

Your participation in this survey is completely optional. All responses will be anonymous. Your name will not be collected. You are free to skip any or all questions.

Responses will be examined for patterns of stress and related emotions.

Thank you very much for your help!

1. Please think about the most stressful event you have experienced in the past month. How stressful was this event? Circle a number from 1 (not at all) to 7 (extremely).

not at all stressful			moderately stressful			extremely stressful
1	**2**	**3**	**4**	**5**	**6**	**7**

2. Which type of stressful event did you experience? Please choose the one that is the closest.

___ Interpersonal/Relationships

___ School

___ Work/Finances

___ Health

___ Other (please specify): _____

3. Which of the following, if any, have you experienced in the last month as a result of stress? Check all that apply.

___ Irritability or anger

___ Fatigue or exhaustion

___ Lack of interest, motivation, or energy

___ Feeling nervous or anxious

___ Headache

___ Tightness in my chest

___ Crying or feeling like crying

___ Upset stomach or indigestion

___ Feeling depressed

___ Teeth grinding

___ Feeling faint or dizzy

___ Muscular tension

___ Difficulty concentrating

4. How interested are you in learning new ways to deal with stress? Circle a number from 1 to 7.

Not at all			moderately			extremely
1	**2**	**3**	**4**	**5**	**6**	**7**

5. Are you:

___ Female ___ Male

Thank you!

Appendix E

Stress and Emotions Survey Results

Demographics

There were 65 respondents (57 female; 7 male; 1 recommended having other option on survey besides male and female). The survey was conducted in one session of an undergraduate course on child development. The survey was conducted in the last class of the semester, prior to final exams, which is generally a time of higher stress for students.

1. Stressful Event Rating

The mean level of stressful event in last month was 5.58 (*SD* = 1.00), with responses ranging from 2 to 7 (on the scale from 1 *not at all stressful* to 7 *extremely stressful*). 92% rated the event above *moderately stressful*.

2. Type of Stressful Event

The following are the ratings for type of stressful event. Some respondents indicated more than one type.

55% School related

43% Interpersonal/relationships

6% Health

6% Work or financial

9% Other. Reasons specified: “Deciding what I want to do with my future”; “Family”; “Mental health”; “Pregnancy scare”; “ROTC Related”; “Sport”.

3. Experienced as a result of stress

92% indicated they had experienced one of the following in the last month as a

result of stress, which can be seen as emotion related (experience or expression of emotions): *nervous/anxious; irritability or anger; feeling depressed;* and/or *crying or feeling like crying.* Regarding the experience of emotions, 88% indicated: *nervous/anxious; irritability or anger;* and/or *feeling depressed.*

Percentages of respondents who experienced each item as a result of stress are as follows, listed in order of frequency:

85% Fatigue or exhaustion
74% Feeling nervous or anxious
72% Difficulty concentrating
62% Crying or feeling like crying
57% Lack of interest, motivation, or energy
46% Irritability or anger
45% Headache
32% Feeling depressed
29% Muscular tension
26% Upset stomach or indigestion
22% Feeling faint or dizzy
14% Tightness in my chest
9% Teeth grinding

4. Interest in Learning New Ways of Dealing with Stress

The mean rating of interest in learning new ways of dealing with stress was fairly high, 5.11 (*SD* = 1.24), with the full range from 1 *not at all interested* to 7 *extremely interested*. 70% rated interest above *moderately interested*. (One respondent added a note: "I'd be more interested if I didn't think this would take time and lead to more stress!")

Appendix F

Statements Provided at the Scripts Station

This section shows the various statements that participants could choose from to create scripts for managing emotions at the Scripts Station. The three types of statements (situation, attention, and meaning) were grouped and color-coded by category, as shown in Figure F1. They were printed on label stickers so that they could be easily placed and arranged on a piece of paper. The dark blue statements are situation strategies; the light blue are *attention* strategies, and the dark green are *meaning* strategies. For each category, there were also blank statements available for participants to write in their own strategies.

Figure F1. Scripts Station with three categories of statements (situation, attention, and meaning). The statements were grouped by category on plates for participants to browse and select.

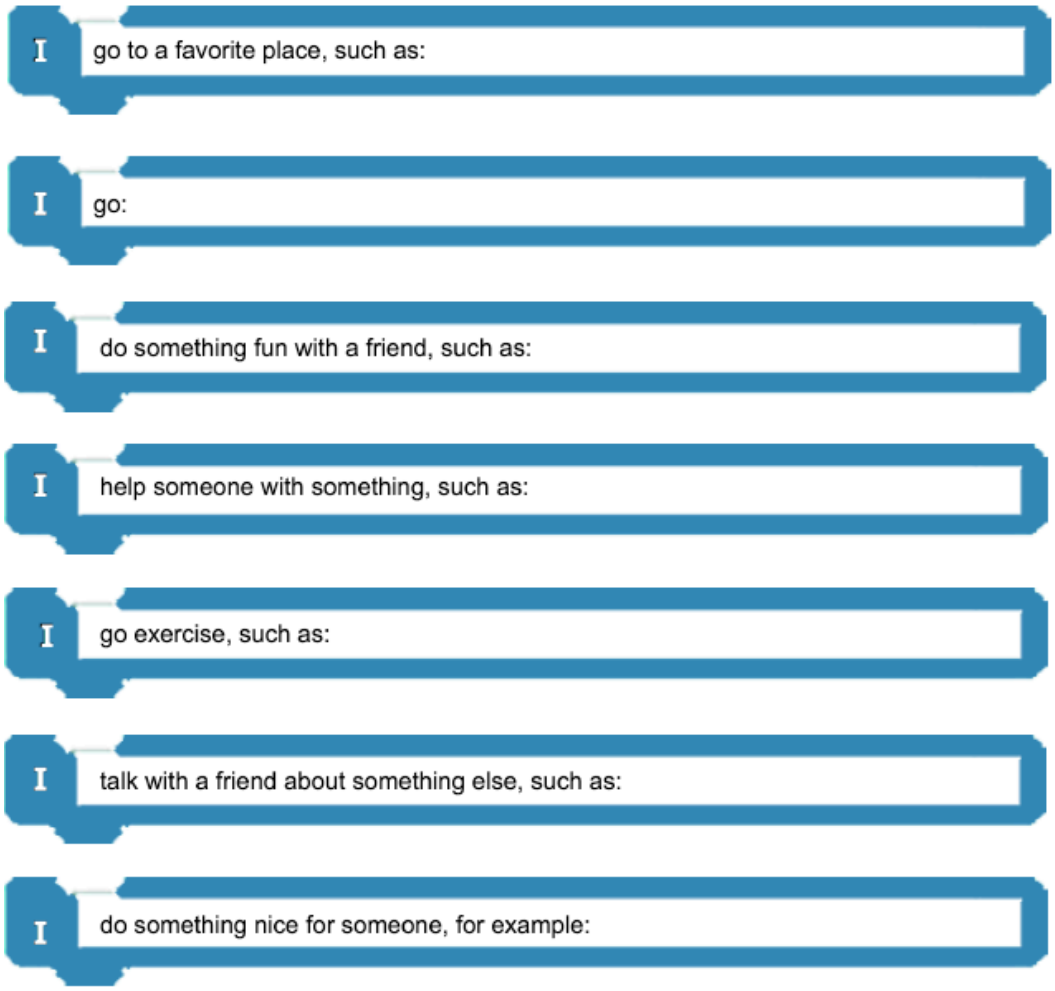
When I Feel

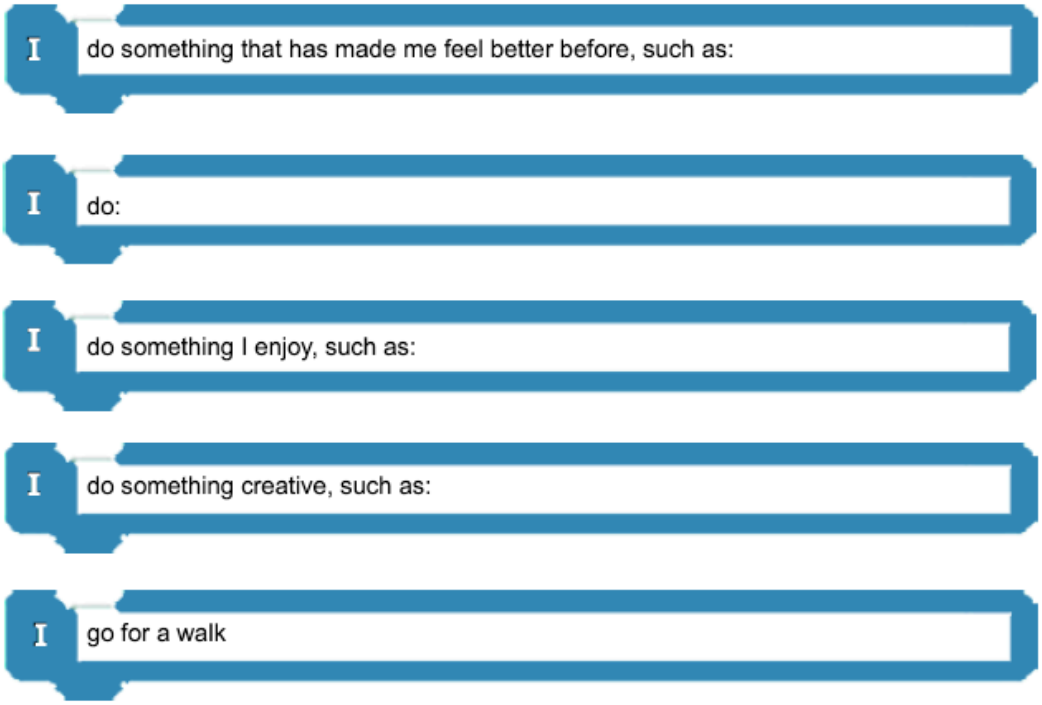
The first plate on the left contained orange labels that said, "when I feel ____." Each script started with one of these labels (see Appendix G for examples). Participants

were prompted to choose and write in any feeling they wanted to manage (e.g., stressed, sad, frustrated).

Situation Statements

The following set of statements was available on the plate labeled "Situation" with the explanation, "You can change the situation." Within the process model of emotion regulation (Gross, 1998, 2001; Gross & Thompson, 2007), they can be seen as including situation selection as well as situation modification strategies.





Attention Statements

These statements were available on the plate labeled “Attention” with the explanation, “You can shift your attention.” Within the process model of emotion regulation (Gross, 1998, 2001), they can be considered attentional deployment strategies.

The last seven statements in this set are mindfulness strategies. They were included in this category as mindfulness strategies have been found to involve attentional deployment (e.g., Goldin & Gross, 2010).


I shift my attention to something else, such as:
I distract myself by:
I focus on something else, such as:
I engage my mind by:
I concentrate on:
I think about the layout of a space, such as:
I imagine:

I work on a mental puzzle, such as:

I count:

I picture:

I look at:

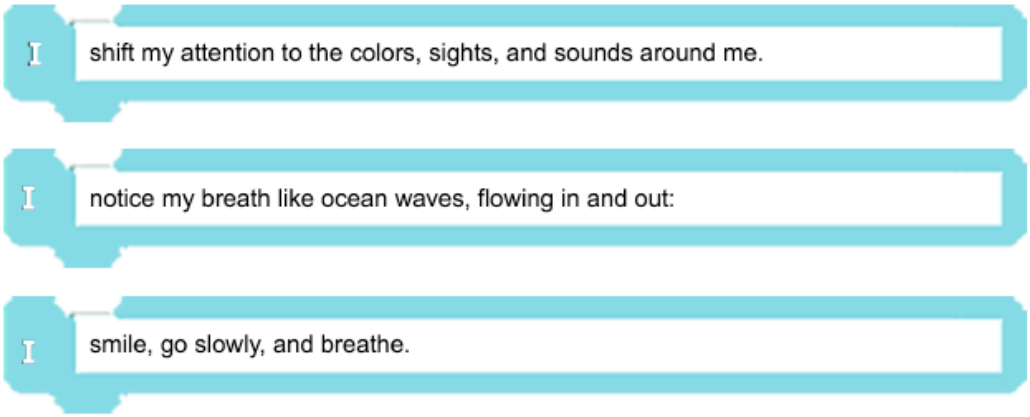
I notice:

I notice my thoughts and feelings without judging.

I count my breath

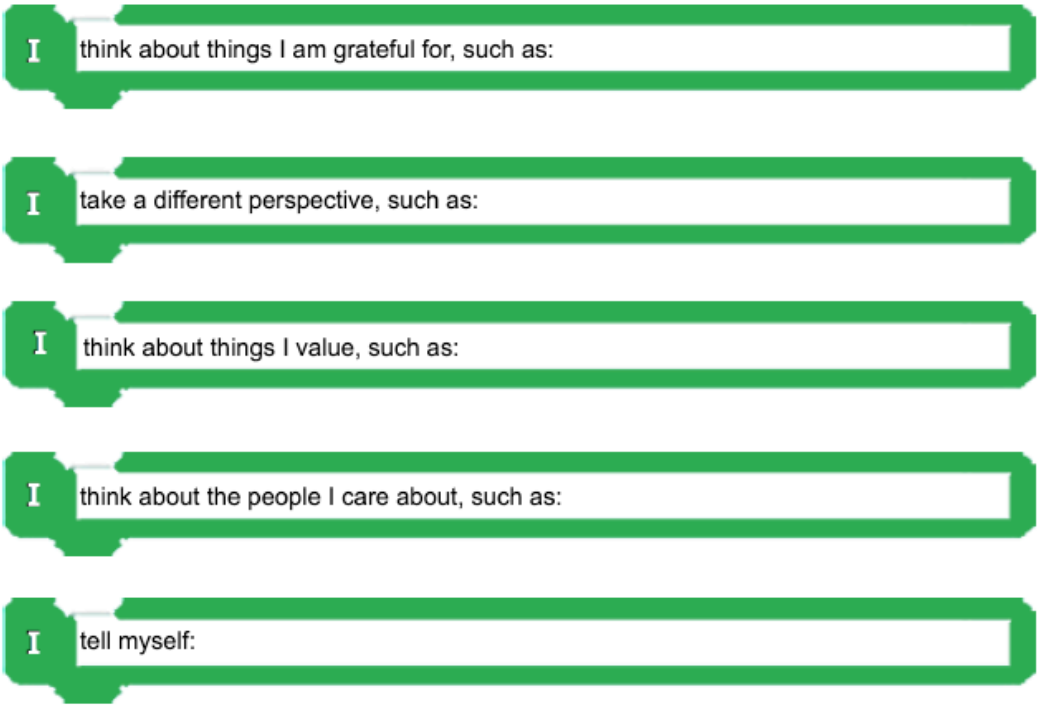
I bring my attention to the present moment.

I notice when my mind wanders and bring attention back to my breath



Meaning Statements

These statements were available on the plate labeled “Meaning” with the explanation, “You can change the meaning.” Within the process model of emotion regulation (Gross, 1998, 2001), they can be considered cognitive change or reappraisal strategies.




I look for the positive aspects in the situation
I think about the situation in a way that helps me stay calm
I think about the situation in a different way:
I think things aren't as bad as they seem
I think what can I learn from this situation
I look at the situation from an objective, neutral perspective
I think things will improve with time

Appendix G

Example Scripts Created by Participants

Participants were free to take home the scripts they created during the workshop or to leave them to be collected. Of the 13 scripts that were left for collection, the scripts averaged 5 statements each, with an average of 2 situation statements, 1 attention statement, and 2 meaning statements each. The feeling phrases in these scripts were: stressed (5), overwhelmed (4), "overwhelmed or stressed" (2); worried (1), and apathetic (1).

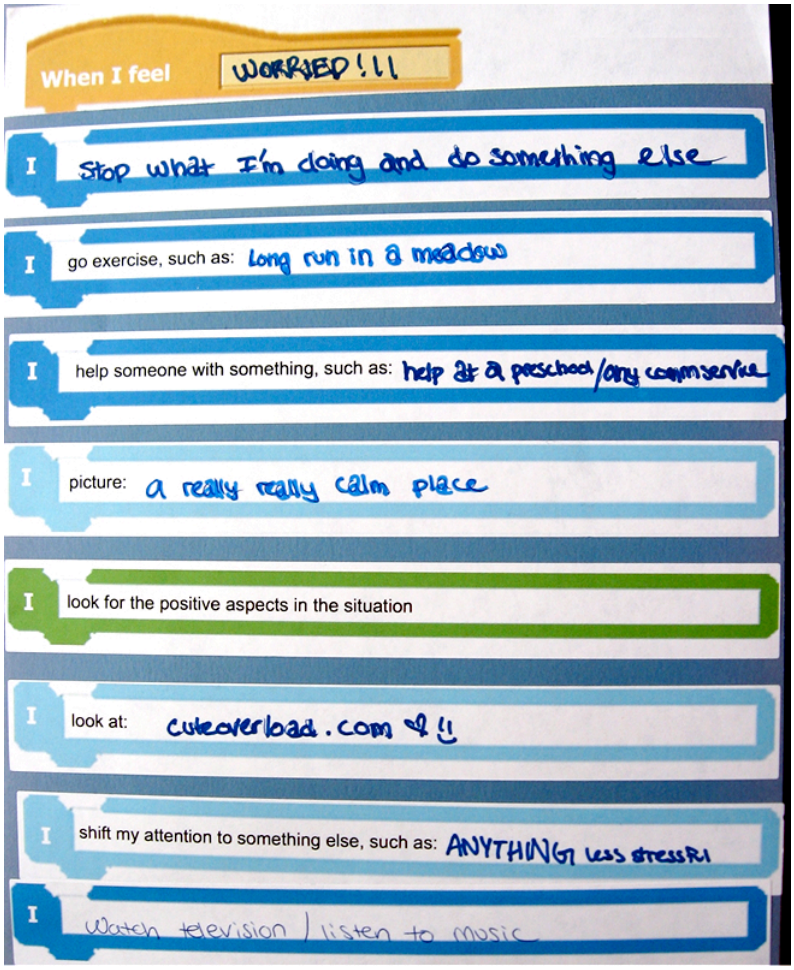


Figure G1. Example script by participant. This script included all three types of statements.

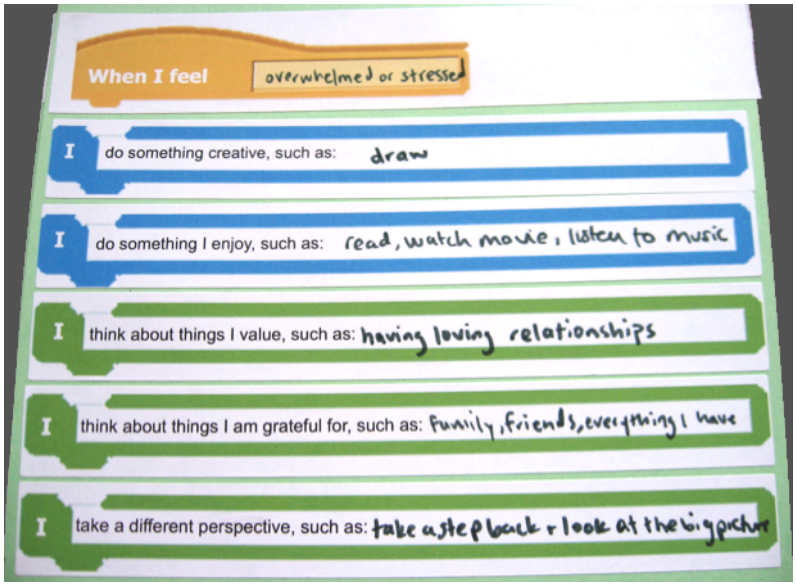


Figure G2. Example script with situation and meaning statements. This contains three meaning (i.e., reappraisal) statements.

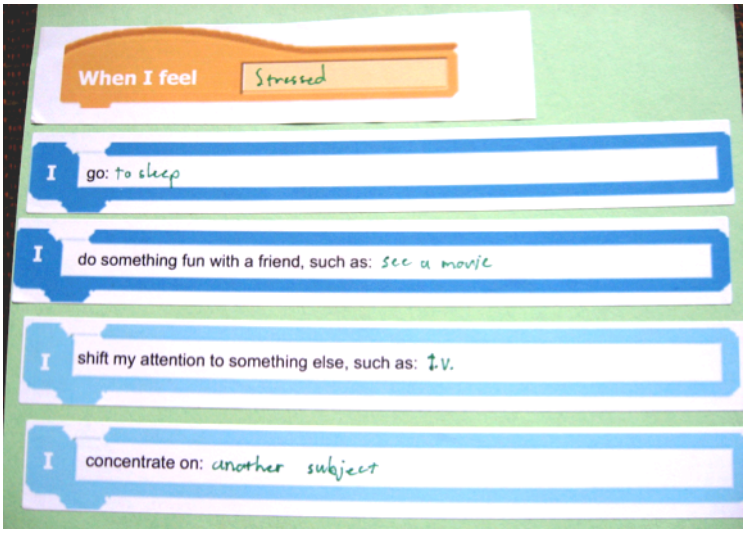


Figure G3. Example script with situation and attention statements. These strategies can be interpreted as primarily using distraction and did not contain any meaning (i.e., reappraisal) statements.

Appendix H

Examples of Values Written by Participants

Participants each created their own list of values during the beginning of Session 2. Figures H1 and H2 show two example lists of values generated by participants.

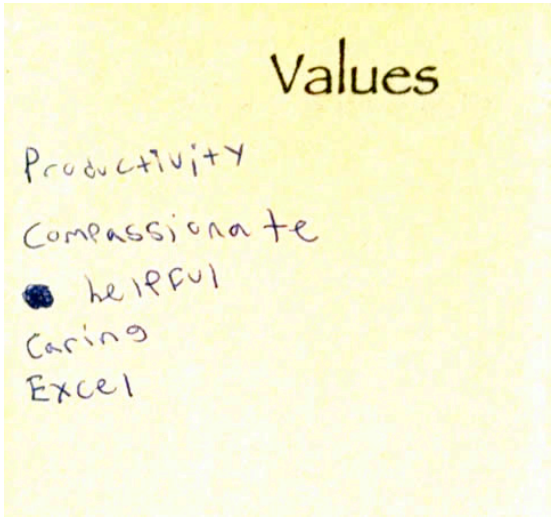


Figure H1. Example of a participant's list of values.

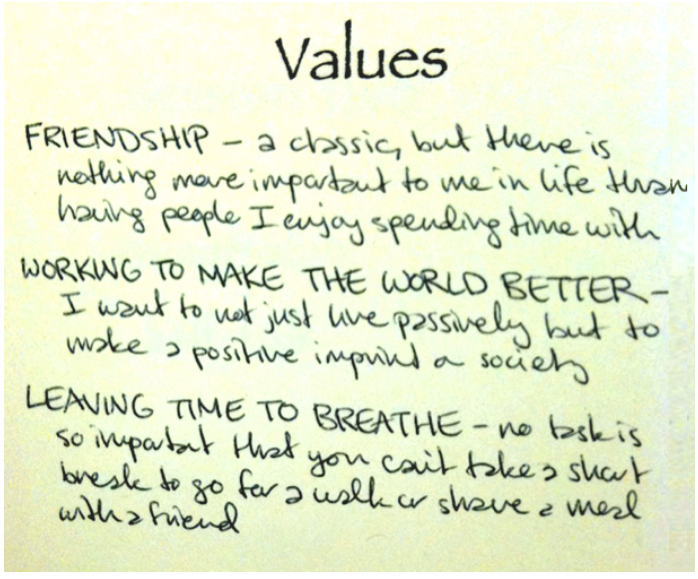


Figure H2. Example of a participant's list of values with descriptions.

Appendix I

Examples from the Self-Talk Station

There were 28 initial printed phrases for participants to choose from at the Self-Talk Station. The instructions were for participants to place a star on the two or three phrases they prefer, or write in their own phrase, thinking about what they would find helpful to tell themselves after a rejection, failure, or other upsetting event. On the blank balloons, participants wrote in a total of 13 phrases. Figure I1 shows the phrases that were selected most often by participants as phrases they would find prefer to tell themselves when upset. The handwritten phrase in Figure I1, "use the time & energy you're spending on being upset to move past it!", was one of the phrases contributed by a participant.

Figure I1. Self-talk phrases most often selected by participants.

Quotes from Self-Talk Station Selected by Participants

The quotes shown in Figure I2 were the three most frequently selected by participants from a set of 18 quotes made available at the Self-Talk Station during Sessions 2 and 3. The first quote on becoming oneself is by Jon Kabat-Zinn, Ph.D., from

the book *Full Catastrophe Living* on mindfulness-based stress reduction (Kabat-Zinn, 1990). The second quote on detachment is by Mitch Albom, from the popular book *Tuesdays with Morrie* (1997). The third quote on happiness in the moment is attributed to Omar Khayyam, an 11th century Persian mathematician and poet.

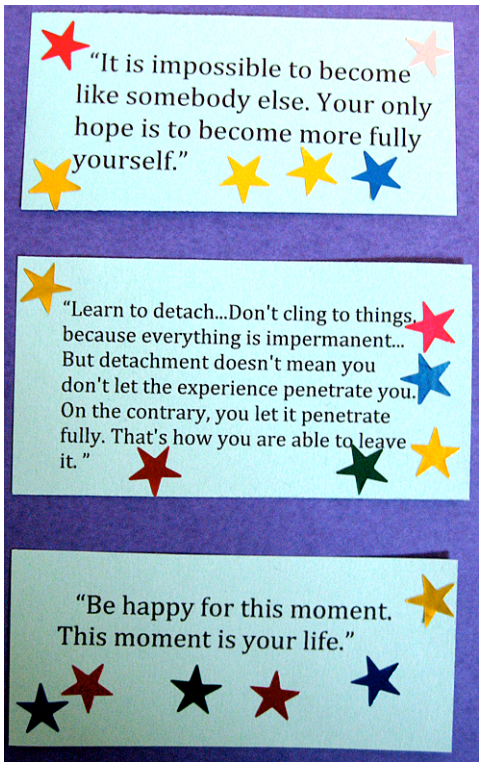


Figure I2. Quotes most often selected by participants.

Songs Suggested by Participants

During Session 3 of the workshops, participants had the option to suggest songs. Examples of songs and notes from participants are listed in Table I1.

Table I1

Examples of Songs Suggested by Participants for Helping Self or Others Through Difficult or Challenging Times.

Title	Artist	Line from Lyrics	Genre[a]
Classical Music	Mozart, Chopin, Beethoven	no lyrics. very calming, it helps me concentrate sometimes when I'm working on a paper	Classical
Forever	Chris Brown	"Feels like I've waited my whole life, for this one night, it's goin' be me you & the DANCE FLOOR" Happy beat, feel-good song	R&B/Soul
Home	Edward Sharpe & The Magnetic Zeros		Alternative
Om Mani Padme Hum	Buddhist chant	Om mani padme hum – the chant is a very powerful and calming mantra	World
Relax Take It Easy	Mike	"Relax…take it easy b/c there is nothing that we can't do"	Pop
Smile	Janelle Monáe	"Smile what's the use of crying? You'll find that life is still worthwhile when you smile."	R&B/Soul
So Small	Carrie Underwood	Can't remember but puts everything in perspective	Country
Sunday Morning	Maroon 5	"living life gets hard to do and I would gladly hit the road, get up and go if I knew that some day it will lead me back to you"	Rock
Three Little Birds	Bob Marley	"Every little thing will be alright."	Reggae

a. Genre was added here and is based on Apple ITunes genre classifications.

Appendix J

Posters of Recommended Strategies Created by Participants

Participants created posters (in subgroups of two or three participants) during the final session of each workshop. The instructions were to collaborate to create a poster about a strategy for managing stress or emotions that they would recommend to other students. The posters were to include: (a) the title of the strategy, (b) the steps to take, and (c) any suggestions for using the strategy. They were also asked to sign with either their names or a descriptive phrase about themselves (e.g., an engineering major). Figure J1 shows an example poster created by three participants.

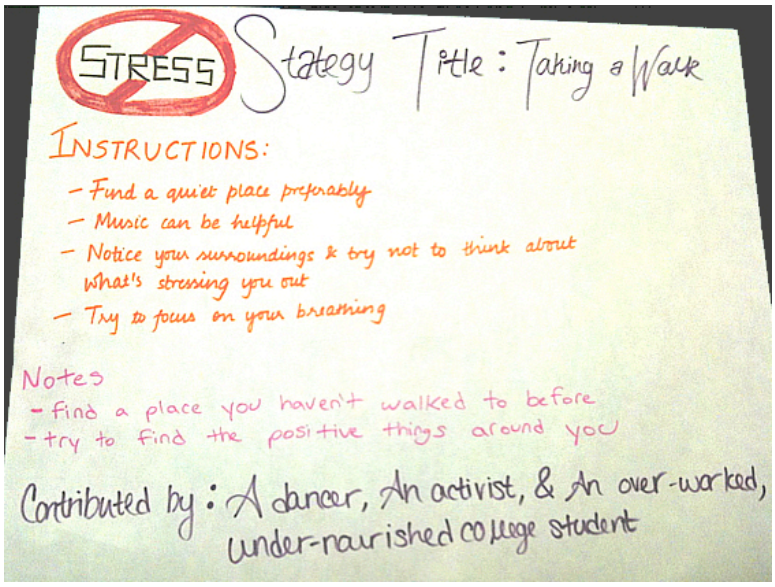


Figure J1. Example of a poster with a recommended strategy.

The titles of the strategies generated by the participants are listed in Table J1. These strategies can be roughly grouped into five themes (exercise, mindfulness, music, social support, taking a break) and can be categorized as changing one's situation or attention.

Table J1.

Posters of Recommended Strategies Created by Participants.

Poster Title	Theme (Category)	Summary of Suggested Strategy
"Exercise"	Exercise (Situation)	Recommended choosing an exercise that will last 20 minutes and during a time that would not interfere with one's regular schedule. Included "Take the scenic route, if possible" and "HAVE FUN!"
"Physical Activities"	Exercise (Situation)	Provided exercise options: Basketball, Running, Stretching, Workout, ending with "go back to work"
"Work It Out"	Exercise (Situation)	Provided a variety of exercise suggestions, such as yoga to help you relax/calm down and "Buddy Up!"
"Take a Walk"	Mindfulness (Attention)	Talking a walk while listening to music, noticing surroundings, and focusing on breath.
"Meditation"	Mindfulness (Attention)	Suggested "1) When feeling stressed find a quiet cozy place; 2) Play soft background music, 3) Focus on your breathing; 4) Clear your mind."
"Zazen (Sitting Meditation)"	Mindfulness (Attention)	Four steps for sitting meditation. (Created by two students; one experienced with meditation, having learned in a sports psychology class in high school.)
"Music"	Music (Attention)	Four steps for listening to music: "1. Clear mind. 2. Choose song(s); make a play list. 3. Go to a comfy place. 4. Press PLAY and RELAX!"
"Talk It Out"	Social Support (Situation)	Provided five steps, including: "Figure out what you need: finding someone to listen to or someone to comfort you."
"Sweet Escapes"	Taking a Break (Attention)	Suggested a break including going to favorite place, eating favorite food, listening to favorite music.
"Take a Break"	Taking a Break (Attention)	Suggested a variety of activities to relax. "Remember to return to your problem with a less stressful mindset."
"Shift Your Attention"	Taking a Break (Attention)	A variety of options for shifting attention (e.g., listening to music, call up an old friend). For 20-30 minutes only to prevent more stress from lack of time

Many of the posters included a step to return to the task at hand. A similar idea had been raised during the workshop by the facilitator when discussing positive distraction: research suggesting that distraction can be constructive as long as one returns to the issue, so that it does not turn into avoidance (Nolen-Hoeksema et al., 2008).

Interestingly, strategies for shifting attention were mentioned in several of the posters whereas reappraisal only appeared within one poster, even though reappraisal strategies were mentioned often in the post-test surveys. A possible explanation is that in discussing strategies as a group the reappraisal strategies may have seemed more abstract or personal, and therefore more difficult to discuss or to suggest to others.

Two of the posters included the step of clearing one's mind. Because a common misconception about mindfulness is that it requires clearing one's mind of thoughts (which can cause beginners to give up trying), the facilitator mentioned that mindfulness practitioners and researchers emphasize how active the mind is, and that the process of mindfulness often involves noticing one's thoughts with distance and perspective. As Jon Kabat-Zinn says, "You can't stop the waves, but you can learn to surf" (Kabat-Zinn, 1994, p. 30).

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