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Enhancing positive emotions in anxiety disorders: a preliminary evaluation of a CBT module targeting disturbances in positive emotion regulation

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ENHANCING POSITIVE EMOTIONS IN ANXIETY DISORDERS:
A PRELIMINARY EVALUATION OF A CBT MODULE TARGETING
DISTURBANCES IN POSITIVE EMOTION REGULATION

by

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To Mom, Dad, Caroline, and Angie, for your love, support, and regular infusions of positive emotion
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Enhancing Positive Emotions in Anxiety Disorders:

A Preliminary Evaluation of a CBT Module Targeting Disturbances in Positive Emotion Regulation

(Order No.               )

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ABSTRACT

Research has shown that positive emotions are important to optimal health, functioning, and well-being, and contribute to resilience against psychological dysfunction. However, many clinical disorders, particularly anxiety and mood disorders, are associated with deficits in positive emotion that may contribute to symptoms and inhibit full recovery. Despite accumulating data identifying disturbances in positive emotion and positive emotion regulation in anxiety and depressive disorders, these deficits have received insufficient attention in treatment.

The present study represents a preliminary evaluation of the feasibility and utility of a novel augmentation intervention for enhancing positive emotion in anxiety and depressive disorders. Nine patients with a range of principal anxiety disorders who had
previously completed an initial course of cognitive-behavioral treatment at the Center for Anxiety and Related Disorders at Boston University (CARD) completed the study. The study utilized a single case experimental design, specifically a multiple baseline across participants design, with participants randomized to 2-, 4-, or 6-week baseline periods to control for the effect of time on outcome variables. Primary outcome variables were assessed weekly during the baseline and intervention phases to permit analysis of functional relationships between individual factors, specific treatment components, and therapeutic outcomes. Major assessments were conducted at baseline, pre-, post-treatment, and a 3-month follow-up. These included both self-report and independent evaluator-rated components.

Results indicated that the intervention was effective in improving positive emotion regulation skills for 5 of the 9 of participants. The intervention was associated with significant improvements in anxiety and depressive symptoms, and preliminary effects sizes for pre- to follow-up changes in positive emotion regulation, symptoms, positive and negative emotion, functioning, quality of life, and well-being were moderate to large. Participants reported high acceptability and satisfaction with the study intervention. Qualitative feedback from participants highlighted several areas for improvement in the format and delivery of the intervention, such as increasing the number of sessions and providing a patient workbook, and these changes may increase the effectiveness of the intervention. Future research is needed to confirm the validity of these findings and evaluate the generalizability of these effects across patients and settings.
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<td>BAS</td>
<td>Behavioral Activation Scale</td>
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<tr>
<td>BLA</td>
<td>Baseline</td>
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<td>CBT</td>
<td>Cognitive-behavioral therapy</td>
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<td>$d$</td>
<td>Cohen’s $d$</td>
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<td>DASS-A</td>
<td>Depression Anxiety and Stress Scales-Anxiety</td>
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<td>RPA-D</td>
<td>Responses to Positive Affect-Dampening Scale</td>
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<tr>
<td>SBI</td>
<td>Savoring Beliefs Inventory</td>
</tr>
<tr>
<td>SIGH-A</td>
<td>Structured Interview for the Hamilton Anxiety Rating Scale</td>
</tr>
<tr>
<td>SIGH-D</td>
<td>Structured Interview for the Hamilton Depression Rating Scale</td>
</tr>
<tr>
<td>UP</td>
<td>Unified Protocol for Transdiagnostic Treatment of Emotional Disorders</td>
</tr>
<tr>
<td>WSAS</td>
<td>Work &amp; Social Adjustment Scale-Clinician Rated</td>
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INTRODUCTION

Many clinical disorders, particularly anxiety and mood disorders, are associated with deficits in positive emotion (Diener & Seligman, 2002; Kotov, Gamez, Schmidt, & Watson, 2013). These deficits may be an important factor in the development and maintenance of anxiety and mood disorders as well as hinder achievement of full recovery (Garland et al., 2010). Nevertheless, treatments for anxiety and depression have primarily focused on mitigating symptoms and associated distress without attending to the role of positive emotions (Wood & Tarrier, 2010). Clinical interventions that have addressed positive emotion processes have generally done so indirectly, as these processes are not usually considered primary treatment targets. A small number of interventions have focused more directly on positive outcomes (Quoidbach, Mikolajczak, & Gross, 2015), however these have had certain limitations in their applicability to populations with anxiety and depressive disorders (Carl, Soskin, Kerns, & Barlow, 2013). As recent research identifies the presence of specific transdiagnostic disturbances regulating positive emotions across anxiety and mood disorders, these disturbances represent a promising opportunity for direct intervention (Carl et al., 2013; Eisner, Johnson, & Carver, 2009). Thus, there is a need for more targeted, systematic interventions addressing the specific positive emotion deficits in these disorders. This is an important area of future research given that optimizing positive emotional functioning in anxiety and mood disorders has the potential to reduce the frequency and chronicity of these debilitating disorders and improve long-term quality of life (Ehrenreich, Fairholme,
Positive Emotion

Positive emotions represent unique biobehavioral phenomena that support a range of important behavioral and physiological functions associated with pursuit and attainment of goals or rewards. Theorists have conceptualized positive emotions as representing an affective dimension of a behavioral approach system (BAS) that regulates goal-oriented approach behaviors (e.g., Depue & Iacono, 1989; Gray, 1981, 1987). Relatedly, positive emotion also plays a key role in reward learning (e.g., Berridge & Robinson, 1998). Fredrickson’s (1998, 2001) broaden-and-build theory suggests that the cognitive, physiological, and behavioral changes that occur with positive emotion, such as broadened attention and cognitive flexibility, foster the development of individual resources, such as personal skills and social relationships, that enhance long-term functioning and well-being. Thus, positive emotions are believed to impact functioning through appetitive (anticipatory pleasure), consummatory (experiential pleasure), and post-consummatory (residual pleasure) functions.

Experientially, positive emotions span a wide-range of discrete pleasant-valenced states, such as joy, pride, contentment, or love. They also may be experienced as a more undifferentiated state of high energy or motivation. Correspondingly, they are often associated with medium to high levels of physiological arousal (Lang, 1995), although this is less true of certain positive emotional states, such as serenity or contentment. The experience of positive emotion is associated with specific neurobiological changes.
conducive to goal approach and reward learning, such as increased activity in the left prefrontal cortex (e.g., Davidson, Ekman, Saron, Senulis, & Friesen, 1990) and mesolimbic dopaminergic pathways (e.g., Ashby, Isen, & Turken, 1999). Physiological changes in connection with positive emotion have also been observed, including reduced startle responses (e.g., Bradley, Codispoti, Cuthbert, & Lang, 2001), increased cardiac vagal tone (e.g., Kok & Fredrickson, 2010; Oveis et al., 2009), and accelerated autonomic recovery following stressful events (Fredrickson & Levenson, 1998).

There is an extensive body of research on the benefits associated with increased positive emotion. These include a wide range of improvements in physical health, such as reduced risk of metabolic disease, improved immunological functioning, reduced pain, and longer life spans (Pressman & Cohen, 2005; Richman et al., 2005; Rosenkranz et al., 2003; Rozanski, Blumenthal, Davidson, Saab, & Kubzansky, 2005). They also include improvements in functioning, such as increased creativity and problem-solving abilities (Isen, 1999), increased social affiliation (Cunningham, 1988; Diener & Seligman, 2002), and increased goal attainment (Lyubomirsky, King, & Diener, 2005). Lastly, increased positive emotion is associated with enhanced resiliency to stress, and overall improvements in mental health and well-being (Garland et al., 2010; Tugade & Fredrickson, 2004).

**Positive Emotion in Anxiety and Depressive Disorders**

Anxiety and depressive disorders appear to be broadly associated with deficits in positive emotion (Carl et al., 2013; Kotov et al., 2013; Watson, 2000). However, there are nuances to the relationships between specific disorder symptomatologies and positive
emotion. Research studies employing structural models have revealed specific core deficits in positive emotion in association with unipolar mood disorders, social anxiety (Brown, 2007; Brown, Chorpita, & Barlow 1998; Watson & Naragon-Gainey, 2010), and agoraphobia (Rosellini, Lawrence, Meyer, & Brown, 2010). The remaining anxiety disorders have significant inverse zero-order correlations with positive emotion; however, these associations can be statistically accounted for by elevations in negative emotion (Watson, 2000). In other words, it appears that in some anxiety disorders, deficits in positive emotion may be due to an inhibitory effect of high levels of negative emotion rather than an independent process (Williams, Peeters, & Zautra, 2004). The strength of the relationship between positive emotion and specific emotional disorders also varies, and low positive emotion shows a particularly strong association with unipolar depression (Watson & Naragon-Gainey, 2010).

**Positive Emotion Regulation in Anxiety and Depressive Disorders**

Nevertheless, disturbances in positive emotion regulation appear to be present across anxiety and depressive disorders (Carl et al., 2013; Congard, Dauvier, Antoine, & Gilles, 2011; Eisner et al., 2009; Feldman, Joormann, & Johnson, 2008; Gilbert, 2012). Theories of emotion regulation suggest that through regulation people can maintain, increase, or decrease emotions, or attempt to cultivate specific emotions (Parrott, 1993; Gross, 2015; Gross & Thompson, 2007). Emotion regulatory attempts can occur before, during, or after an emotional event, they can be behavioral or cognitive in nature, and vary on the spectrum from conscious to automatic processes (Gross, 2015). Adaptive emotion regulation demands the ability to create the experiences that will elicit desired
emotions as well as the ability to flexibly upregulate or downregulate emerging emotions based on the context and individual goals (Gross, 2015).

As a result of the unique nature and function of positive emotions, positive emotion regulation includes distinct regulatory goals (Tugade & Fredrickson, 2007). For most individuals, having more positive emotions appears to be beneficial, thus greater maintenance/upregulation and less downregulation of positive emotions is generally optimal for health and well-being (Tugade & Frederickson, 2007). This contrasts with healthy regulation of negative emotions, which includes more emphasis on the ability to effectively downregulate negative emotions (Quoidbach et al., 2015). Nevertheless, the ability to downregulate positive emotions is also important, and for some individuals, such as those at risk for bipolar spectrum disorders or excessive reward-seeking (e.g., drug-seeking), too much upregulation versus downregulation can have harmful consequences (Gruber, Johnson, Oveis, & Keltner, 2008).

Despite the benefits of higher levels of positive emotions, anxiety and unipolar depressive symptoms are associated with excessive downregulation of positive emotion (Carl, Fairholme, Gallagher, Thompson-Hollands, & Barlow, 2014). Individuals with elevated symptoms of panic disorder, agoraphobia, obsessive-compulsive disorder, social phobia, generalized anxiety disorder, and unipolar depressive disorders all show increased tendencies to downregulate rather than upregulate positive emotion (Carl et al., 2013; Eisner et al., 2009; Feldman et al., 2008). A range of processes and strategies may be involved in this excessive downregulation, including reduced positive emotional reactivity, avoidance or lack of approach of positive emotion eliciting situations, lack of
attendance to positive emotional cues, negative or neutral interpretations of positive stimuli, and avoidance or suppression of positive feelings (Carl et al., 2013). These downregulatory attempts can be more automatic or more intentional, and a recent study suggests it may be more of an automatic process in association with depression versus a more conscious, intentional process in anxiety (Carl et al., 2014).

Individuals with heightened anxiety and depressive symptoms report decreased scores on the Savoring Beliefs Inventory (SBI; Bryant, 2003), a measure that assesses a trait-like sense of perceived control maintaining or enhancing positive emotion (i.e., “I can prolong enjoyment by my own effort”). Given the general wording of the items, this measure likely captures a range of positive emotion regulatory strategies. It is also hypothesized that higher savoring beliefs are associated with increased use of a variety of positive emotion upregulation strategies, such as sharing positive experiences, expressing positive emotions, rewarding oneself for positive achievements, attending to and remembering positive events, and focusing on pleasant sensory experiences (Bryant & Verhoff, 2007; Jose, Lim, & Bryant, 2012).

Higher anxiety and depressive symptoms are also associated with increased downregulation of positive emotions through cognitive dampening, or focusing on negative reappraisals during positive occurrences. Dampening appraisals can vary widely, and be self-focused (e.g., “I don’t deserve this”) or externalized (e.g., “think about what could go wrong”; Feldman et al., 2008), and there is likely substantial individual variability in specific types of negative appraisals. Nevertheless, cognitive dampening is associated with a range of anxiety symptomatologies, including panic,
agoraphobia, generalized anxiety, obsessions/compulsions, and specific phobias, as well as unipolar depressive symptoms (Eisner et al., 2009). Dampening thoughts are particularly disruptive to positive emotional experiences because they both interfere with attention to the positive experience in the moment as well prevent ways of appraising the situation that would result in an extension of positive emotion (e.g., “If I can accomplish this, I can probably accomplish other challenges”).

Although individuals may have different baseline emotional “set points,” research has shown that through processes of emotion regulation people can make meaningful changes in their emotions (Diener, Lucas, & Scollon, 2006; Ng & Diener, 2009; Quoidbach, Berry, Hansenne, & Miklojczak, 2010). For individuals with anxiety and depressive symptoms, these difficulties maintaining positive emotions may be addressable through changes in their emotion regulatory behaviors. Thus far, however, such regulatory disturbances have received limited attention as treatment targets.

**Existing Interventions Targeting Positive Emotion**

As mentioned, evidence-based treatments for anxiety and depressive disorders have primarily targeted symptoms and processes associated with negative emotionality, such as general distress, avoidance, worry, and rumination (Fava & Ruini, 2003; Garland et al., 2010). However, there are a number of interventions that address positive emotion processes in some fashion, and these provide an important foundation of information (Carl et al., 2013). There are a small number of interventions that target positive processes more specifically, and these include Well-Being Therapy (WBT; Fava & Ruini, 2003), Quality of Life Therapy (QOLT; Frisch, 2006) and positive psychology
interventions (Seligman, Rashid, & Parks, 2006; Sin & Lyubomirsky, 2009). WBT and QOLT both focus on helping clinical populations achieve improvements in variety of domains associated with positive mental health, such as autonomy and self-acceptance in WBT and health and community in QOLT (Ryff and Keyes, 1995; Frisch, 2006). Research has shown that these interventions are associated with increases in positive emotion over time (Frisch, 2013; Ruini, 2014). However, these interventions target a broad array of outcomes, and are not focused specifically on improving positive emotional functioning. Thus, it is possible that targeting positive emotion regulation difficulties directly would have different results, including possibly accelerating or increasing the improvements in positive emotion. Positive psychology interventions also focus on increasing positive emotion through a variety of behavior changes, such as pursuing one’s personal strengths, facilitating social connection, and increasing specific positive emotions such as gratitude (Lyubomirsky, Sheldon, & Schkade, 2005; Seligman et al., 2006). Although positive psychology interventions are more directly focused on positive emotion, they do not systematically address processes of positive emotion regulation. They also can produce adverse reactions when applied in clinical populations (Parks & Biswas-Diener, 2013). Certain other clinical interventions address discrete positive emotion difficulties, but do not cover the full range of disturbances. For example, in Behavior Activation (BA; Jacobson, Martell, & Dimidjian, 2001) or CBT for depression (Beck, 2011), the pleasant events scheduling and mastery exercises increase individuals’ contact with situations that may elicit positive emotions, which is a component of behavioral regulation of positive emotions.
Thus, none of the existing interventions systematically target the disturbances in positive emotion regulation associated with anxiety and depressive disorders. Concepts of emotion regulation have been integrated into many current treatments for anxiety and depressive disorders, and appear to be a helpful way to organize and approach the treatment framework for disorders that center around emotional distress and dysregulation (Kring & Sloan, 2009). Thus, developing an intervention that addresses positive emotion within an emotion regulation context is a logical next step (Carl et al., 2013; Quoidbach et al., 2015). As adaptive emotion regulation relies on emotional awareness and flexibility (Gross & Thompson, 2007), there are not rigid guidelines to follow for improving emotion regulation. Rather, learning adaptive emotion regulation requires developing awareness of one’s emotional processes, goals, and a range of regulatory strategies that can be flexibly applied. The Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP; Barlow et al., 2011) has provided a model for how a CBT-based intervention can align with an emotion regulation framework, and facilitate the development of broad-based emotion regulation skills. The UP focuses on first enhancing awareness of the nature and function of emotions and then teaches skills for regulating one’s attention, interpretations, and behaviors in service of long-term goals. Such a model is readily adaptable to a focus on positive emotions, and the specific regulatory disturbances found in conjunction with anxiety and depression. Additionally, the other existing treatments offer many useful exercises that could be adapted and incorporated into a positive emotion regulation framework. In summary, there is a need for interventions focused more specifically on positive emotion regulation
disturbances in anxiety and depression, and existing treatments provide an important foundation of effective behavior change principles and treatment models to draw upon.

**Potential Benefit of an Augmentation Intervention**

Despite advances over the past several decades in pharmacological and psychological treatments for anxiety and mood disorders, these disorders continue to be the most prevalent psychiatric disorders, with lifetime prevalence rates in the United States of 28.8% and 20.8%, respectively, (Kessler et al., 2005), and treatment response rates remain suboptimal at below 50% (Barlow, 2008; Nathan & Gorman, 2007). Moreover, anxiety and depressive disorders exhibit substantial comorbidity, with rates as high as 46% (Fava et al., 2004), and the course of illness (Fava et al., 2000) and treatment response rates (Fava et al., 2004) are significantly worse for such comorbid populations. Thus, improvements in treatments for emotional disorders are needed.

Positive emotion regulation disturbances have been under-addressed in clinical treatments for anxiety and depressive disorders, and thus represent a promising intervention target that has the potential to incrementally improve treatment outcomes (Brown & Barlow, 2009; Garland et al., 2010). Therapeutically enhancing positive emotion has the potential to engender a number of important direct and indirect clinical benefits. In the short-term, increased positive emotion in individuals with anxiety and unipolar depressive disorders is associated with increased treatment response and decreased rates of relapse (Dockray & Steptoe, 2010; Fava & Ruini, 2003; Folkman & Greer, 2000). In the long-term, higher positive emotion is associated with greater resilience, well-being, and overall improved health outcomes (Dockray & Steptoe, 2010;
Garland et al., 2010; Lyubomirsky, King et al., 2005). Increased positive emotion is also linked to improved modulation and repair of negative emotions, thus it may reduce risk of developing anxiety or depressive disorders.

**Study Aims**

The present study had three primary aims: 1. To develop a CBT module targeting positive emotion regulation disturbances associated with anxiety and unipolar depressive disorders; 2. To assess the feasibility of the proposed intervention in a single-case experimental design pilot study of 9 anxiety treatment-completers with deficits in positive emotion regulation; and 3. To assess the proposed intervention’s effects on positive emotion regulation skills, positive and negative emotions, emotional disorder symptoms, functioning, quality of life and well-being over the course of treatment and at a 3-month follow-up (FU).

**HYPOTHESES**

The present study hypotheses were: 1. The intervention would generate improvements in participants’ positive emotion regulation skills (SBI; Table 3) that would be depicted by an increase in the level and/or slope of SBI corresponding with the change from baseline to intervention phases; 2. Other assessments of positive emotion regulation skills would also remain stable during the baseline phases and improve in the intervention and follow-up phases (RPA-D, BAS, weekly positive activities); 3. Positive affectivity (PA) would increase from the baseline to intervention and follow-up phases, and negative affectivity (NA) would decrease across phases; 4. Improvements in positive emotion regulation skills would be associated with beneficial changes in emotional
disorder symptoms (DASS-A, DASS-D, SIGH-A, SIGH-D), functional impairment (WSAS), quality of life (QLESQ-SF), and well-being (MHC-SF). These changes would similarly be depicted by relative stability in scores during the baseline phase with incremental improvements corresponding with the intervention phase; 5. All outcomes would show continued improvement between post-intervention and the FU; and 6. The proposed intervention would demonstrate feasibility and acceptability as assessed through recruitment and retention of patients and patient ratings of acceptability and satisfaction on the Feedback Form at post-intervention.

METHODS

Study Design

The pilot study employed a multiple baseline across participants design, a commonly used single-case experimental design for conducting a preliminary assessment of a novel intervention, and one which allows for evaluation of treatment-related changes within- and between-participants (Barlow, Nock, & Hersen, 2009). Participants were randomized to 2-, 4-, or 6-week baseline periods to control for the effect of time on outcome variables. Primary outcome variables were assessed weekly during the baseline and intervention phases to permit analysis of functional relationships between individual factors, specific treatment components, and therapeutic outcomes. Major assessments were conducted at baseline, pre-, post-intervention, and FU, and included both a self-report and an independent evaluator-rated component.

Participants

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Patients were recruited from Boston University’s Center for Anxiety and Related Disorders (CARD). The Boston University Institutional Review Board approved all study procedures. Participants were recruited from adult outpatients at CARD who had recently completed a course of cognitive-behavioral treatment for a principal anxiety disorder. Eligible individuals had received a formal diagnostic evaluation at CARD using the Anxiety Disorder Interview Schedule (ADIS; DiNardo, Brown, & Barlow, 1994), been diagnosed with a principal anxiety disorder, completed between 8-18 sessions of CBT at CARD focused on treatment of their anxiety within the previous 18 months, and exhibited difficulties maintaining positive emotions as assessed by the SBI. Exclusion criteria were the following: 1. Acute risk factors (suicidal or homicidal ideation or clinical condition requiring immediate treatment); 2. The individual was in treatment elsewhere for related issues (or was not on a stable dose of medication); 3. The individual was unable or unwilling to commit to the duration of the study and study procedures.

Potential participants completed a phone screen to determine eligibility and interest in participation. Positive emotion regulation skills were assessed utilizing the Savoring Beliefs Inventory (SBI; Bryant, 2003), a 24-item self-report measure that assesses individuals’ tendencies to maintain versus dampen their positive emotions. Individuals with a total score of 34 or less on the SBI, who did not meet exclusion criteria, were eligible for the study. The SBI cutoff reflected the mean score observed across several prior studies of nonclinical individuals (Bryant, 2003).

19 individuals were screened for the study, and 11 (58%) were eligible (Figure 1). Notably, all of those who were eligible elected to participate in the study and were
consented and randomized to one of the three baseline conditions. The recruitment goal was to have 9 study completers, thus 2 additional participants were recruited to ensure the final recruitment target would be met. Of those randomized, 1 was withdrawn from the study after 2 sessions of the intervention due to the emergence of acute personal issues (urgent financial and legal difficulties) that were producing significant distress and needed to take priority. A second participant dropped from the study during the baseline phase citing a desire to focus on other commitments in his life. Since in single-case experimental designs each participant serves as their own control, non-completers cannot be included in the results because their data are insufficient for examining the study hypotheses. Thus, only the data from the 9 study completers are included in the analyses.

The final participants included in the study ranged in age from 20-55 (mean=37, SD=11.59), were 55% female, 89% White/Caucasian, and 100% non-Hispanic. They were well-educated on average, with all having completed some college or higher. Their principal diagnoses assessed prior to their initial course of CBT were primarily social anxiety disorder and generalized anxiety disorder. One participant had a principal diagnosis of OCD. Their additional diagnoses showed greater diversity, including other anxiety disorders, depressive disorders, eating disorders, and attention-deficit and hyperactivity disorder. 66.7% of the participants were treated with the UP while the remainder were treated with single disorder protocols for their principal anxiety disorder. The majority of participants received 16 sessions of CBT during their initial course of treatment. Participant characteristics are presented in Table 1.

Initial Course Of Treatment

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Participants were required to have completed 8-18 sessions of CBT for their principal anxiety disorder to be eligible for the present study. For this initial course of CBT, 6 participants received the UP, a CBT protocol targeting transdiagnostic emotional disorders, and 3 received single-disorder protocols targeting their principal anxiety disorder (Table 1). The treatment protocols utilized were all evidence-based and manualized (Barlow et al., 2011; Craske & Barlow, 2006; Foa, Yadin, & Lichner, 2012; Hope, Heimberg, & Turk, 2010; Zinbarg, Craske, & Barlow, 2006), and administered by CBT-trained clinicians at CARD who ranged from advanced graduate students to licensed psychologists. Graduate student clinicians were supervised by licensed supervisors. Most participants received 16 sessions of initial CBT; one participant received 12 sessions (Table 1). As the UP focuses on core processes of emotion and emotion regulation while the SDPs focus more on symptoms, it may generally be easier for individuals receiving the UP to grasp the skills targeted in the study intervention. However, feedback obtained during the study gave no indication of difficulty on the part of those who had received SDPs to understand the content.

**Study Intervention**

The proposed CBT module was developed based on theory and research related to adaptive positive emotion regulation, and specific regulatory disturbances found in association with anxiety and depression. The conceptual framework, treatment targets, and treatment strategies of the proposed intervention were based on results from a recent review (Carl et al., 2013). The proposed intervention aimed to specifically target the disturbances in positive emotion regulation common to anxiety and depressive disorders.
utilizing relevant treatment strategies identified in the review (Carl et al., 2013). The intervention adapted cognitive and behavioral intervention strategies that could be applied to making improvements in positive emotion regulation. For the present study, the intervention was designed as an augmentation intervention to be delivered in four sessions following a standard course of CBT for anxiety or unipolar depressive disorders. However, if integrated with a primary treatment that is CBT-based, the proposed intervention might require fewer sessions due to synergies that could be exploited across programs. The primary target of the intervention was improved behavioral and cognitive regulation of positive emotions with the goal of facilitating optimization of levels of positive emotionality, and reducing residual emotional disorder symptoms. Additional treatment targets included improved functioning, well-being, and quality of life.

The first session (90 minutes) includes an introduction to the intervention rationale and procedures, psychoeducation, functional assessment, and initial modification of behavioral strategies of positive emotion regulation (Table 2). The psychoeducation component includes discussion of the nature and adaptive function of positive emotions (adapted from the UP; Barlow et al., 2011), a description of the unique attributes and processes of positive emotions, and the role of positive emotions in anxiety and unipolar mood disorders and overall health and functioning. In addition, the concept of emotion regulation is introduced, including a discussion of emotion regulatory goals, different ways of regulating positive emotions, and how emotion regulation influences emotional outcomes. Patients refer to a list of the 10 most common positive emotions (Appendix A – Positive Emotion Identification Exercise) and note the 3 positive
emotions they would most like to focus on cultivating during the intervention. They are asked to describe situations in which they felt those positive emotions previously. Following this discussion, a functional assessment is conducted to identify behavioral strategies that interfere with the individual’s positive emotional experiences. Patients are instructed in countering their emotion-driven behaviors and implementing more effective behavioral regulatory strategies in positive emotional contexts. The therapist and patient identify several positive emotion-generating activities for the patient to engage in while implementing new, more adaptive regulatory behaviors. A homework form is provided for recording practice of novel behavior regulation strategies.

Session 2 (60 minutes) focuses on attentional and cognitive deficits related to regulation of positive emotions. The session begins with a review of the previous week’s homework and any modifications to be made for future assignments. Next, attentional and interpretive processes related to positive emotion regulation are discussed and maladaptive cognitive tendencies are identified. A savoring exercise is completed as an in-session exposure in which the patient has a chance to practice maintaining a positive emotional state while observing any tendencies to dampen their positive emotional experience. Patients’ are guided in savoring a cup of hot tea, using all of their senses, and attending to the positive aspects of the experience. Debriefing from the exercise allows patient’s to notice any beliefs or thoughts that interrupted their ability to savor their tea drinking experience. Then the therapist guides the patient in eliciting other thoughts/beliefs that tend to interfere with maintenance of positive emotions. The therapist facilitates reframing of such beliefs. For homework, the patient is assigned a
savoring exercise adapted from Bryant & Verhoff (2007) entitled “daily vacation” in which patients plan a 20-minute (or longer) positive activity for each subsequent day. They are instructed to think of these activities as “vacations” from the day, and to practice their savoring skills during the activities. They record their observations and reactions to these exercises and practice reframing negative beliefs.

Session 3 (60 minutes) focuses on refining and integrating the behavioral and cognitive strategies introduced in the previous sessions. Following a review of the homework, an in-session positive emotion exposure exercise is completed. The therapist and patient select an imaginal or in vivo exposure exercise that will allow the patient to experience personally relevant positive emotions that the patient tends to avoid or dampen. For homework, patients are assigned to continue with practicing their new behavioral and cognitive positive emotion regulation strategies and to complete several positive emotion exposure exercises.

Session 4 (60 minutes) focuses on helping patients consolidate their new positive emotion regulation skills and make a plan for implementing them more broadly in their daily lives. Patient’s long-term positive emotional goals will be discussed along with strategies for working towards these goals. Remaining questions or difficulties are addressed, patient’s progress is summarized, and treatment is terminated.

Intervention adherence guidelines (Appendix A) were created prior to the study for the purpose of assisting the therapist while delivering the treatment and facilitating quality control. The therapist referred to the guidelines during sessions to ensure coverage of content, and rated the sessions according to the guidelines during and
immediately following the session. All sessions were audio recorded for supervision and adherence purposes, and session recordings were reviewed when there was a question regarding whether an adherence guideline was met. All session adherence ratings were over 80%, with the modal rating 100%. The intervention was pre-piloted with 2 volunteers who provided qualitative feedback to the therapy developer related to their reactions and suggestions on the protocol and how it could be improved. Modifications in the organization of the content and the homework assignments were made based on this feedback and prior to beginning full recruitment.

Measures

Primary outcomes of positive and negative emotions, positive emotion regulation tendencies, and anxiety and depressive symptom severity and interference were assessed weekly during the baseline and intervention phases with a brief battery (15 minutes) of psychometrically validated self-report measures (Table 3). Participants completed all self-report assessments online via Qualtrics, a confidential Internet-based survey program commonly used for clinical data collection; however, pen and paper self-report assessments were also available for participants. Participants were sent a link to complete the self-report battery weekly, and follow-up contact was made by email and/or phone if participants failed to complete the battery each week. During the intervention, participants did not advance to the next session until the weekly battery was completed. They were able to complete it immediately prior to their session, if they had not before.

Major assessments occurred at baseline, pre-intervention (pre), post-intervention (post), and a 3-month follow-up (FU). For these assessments, participants completed a
longer version of the self-report battery (25 minutes) that included an assessment of primary outcomes as well as broader indicators of mental health and quality of life (Table 3). In addition, a trained independent evaluator conducted an interview (in person or by phone) to assess anxiety and depressive symptoms and functional impairment (30 minutes). Specifically, the independent evaluators administered the Structured Interview Guide for the Hamilton Depression/Anxiety Rating Scales (SIGH-D; Williams, 1988; SIGH-A; Shear, Vander Bilt, & Rucci, 2001) and the Work and Social Adjustment Scale-Clinician Rated (WSAS; Marks, Connolly, & Hallam, 1973; Mundt, Marks, Shear, & Greist, 2002). The independent evaluators were two advanced graduate students who had been previously trained to a gold standard on administration of these measures for a large R01 trial at CARD. This training included reviews of the recordings of their interviews by a clinical supervisor trained on these measures, achievement of interrater reliability with other trained evaluators, and ongoing interrater reliability checks on their ratings over a period of several years.

Description of Assessment Measures

Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994). The PANAS-X is a 60-item self-report measure assessing affect. Each item consists of an affective descriptor (e.g., cheerful, sad, timid) and participants are instructed to rate the extent to which they have “felt this way” in the specified time period. A range of temporal instructions can be used reliably with this measure, and the present study used the instructions of rating affect for “the past week.” This measure includes subscales assessing general dimensions of positive and negative affect as well as
subscales assessing specific positive (i.e., joviality, self-assurance, and attentiveness),
negative (i.e., fear, hostility, guilt, and sadness), and other (i.e., shyness, fatigue, serenity,
and surprise) affects. This measure has shown good convergent and discriminant validity
and reliability (Watson & Clark, 1999), and is a commonly used measure of affect.

_Dispositional Positive Emotion Scales (DPES; Shiota, Keltner, & John, 2006)._ The DPES is a 38-item self-report measure that assesses 7 distinct positive emotional
traits: joy, contentment, pride, love, compassion, amusement, and awe. Each subscale
consists of 5-6 items that assess trait characteristics linked with each emotion (e.g.,
contentment items: “I am generally a contented person”; “My life is very fulfilling”). The
subscales have demonstrated acceptable convergent and discriminant validity and
reliability (Shiota et al., 2006).

_The Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995)._ The
DASS is a 42-item self-report measure that assesses levels of depression, anxiety, and
stress. This is a commonly used clinical measure with good reliability and validity
(Lovibond & Lovibond, 1995).

_Savoring Beliefs Inventory (SBI; Bryant, 2003)._ The SBI is a 24-item self-report
questionnaire that assesses individuals’ beliefs regarding their tendencies to savor (hold
onto or enhance) versus dampen (minimize) positive emotional outcomes from past,
present, and future experiences. Example savoring items include: “I know how to make
the most of good time” (present) or " I feel a joy of anticipation when I think about
upcoming good things” (future). Example dampening items include: “It’s hard for me to
hang onto a good feeling for very long” (present) or “When I reminisce about pleasant
memories I often start to feel sad or disappointed” (past). The total score is calculated by subtracting the sum score of the dampening items from the sum score of the savoring items. The SBI has demonstrated high reliability as well as convergent and discriminant validity (Eisner et al., 2009; Bryant, 2003).

*Responses to Positive Affect Scale (RPA; Feldman, Joormann, & Johnson, 2008).* The RPA is a 17-item self-report measure that assesses cognitive response tendencies to positive emotions. It includes 3 subscales, evaluating constructs of dampening and emotion- and self-focused positive rumination. In the present study, only the dampening scale is used, as positive rumination appears more relevant to bipolar spectrum symptoms than to unipolar mood or anxiety symptoms (Carl et al., 2013; Feldman et al., 2008). Dampening reflects thought processes that minimize positive emotions (e.g., “think I don’t deserve this” or “remind yourself these feelings won’t last”). The RPA has shown good internal consistency, reliability, and convergent and discriminant validity (Eisner et al., 2009; Feldman et al., 2008; Raes, Daems, Feldman, Johnson, & van Gucht, 2009).

*The Behavioral Inhibition and Behavioral Activation Scales (BIS/BAS; Carver & White, 1994).* The BAS is a 13-item subscale assessing behavioral activation across three domains: drive, reward-responsiveness, and fun-seeking. (The BIS items were not administered in this study.) This scale has demonstrated excellent reliability and convergent/discriminant validity.

*Mental Health Continuum – Short Form (MHC-SF; Keyes, 2009).* The MHC-SF is a 14-item self-report measure that assesses social, emotional and psychological well-being. The measure has shown excellent internal consistency and discriminant validity in
adult and adolescent samples in the United States and several countries internationally (Keyes, 2005, 2006; Keyes et al., 2008; Lamers et al., 2011; Westerhof & Keyes, 2009).

Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott, Nee, Harrison, & Blumenthal, 1993). The QLESQ-SF is a 14-item self-report questionnaire that assesses a range of domains shown to be important to quality of life. The measure assesses satisfaction over the past week across the following: physical health; mood; work; household activities; social relationships; family relationships; leisure activities; daily functioning; sexual drive and interest; economic status; living situation; physical stability; vision; and overall sense of well-being. Each item is rated on a 5-point scale (very poor to very good), and a higher total score indicates a better perceived quality of life. The Q-LES-Q has demonstrated high internal consistency and good construct validity (Ritsner, Kurs, Kostizky, Ponizovsky, & Modai, 2002)

Hamilton Depression Rating Scale (HAM-D; Hamilton, 1960). The HAM-D was used to evaluate depressive symptoms and administered in accordance with the Structured Interview Guide for the Hamilton Depression Rating Scale (SIGH-D; Williams, 1988). This commonly used measure has demonstrated good levels of interrater and test-retest reliability (Williams, 1988), as well as concurrent validity with similar clinician rated and self-report measures of depression symptoms (Bech et al., 1992). Scores of 0-7 indicate normal mood, 8-13 indicates mild depressive symptoms, 14-18 reflects moderate depressive symptoms, 19-22 indicates severe depression, and greater than 23 reflects very severe depression according to clinical interpretation guidelines.
Hamilton Anxiety Rating Scale (HAM-A; Hamilton, 1959). The HAM-A was used to assess anxiety symptoms and was administered in accordance with the Structured Interview Guide for the Hamilton Anxiety (SIGH-A; Shear, Vander Bilt, & Rucci, 2001). This commonly used measure has demonstrated good levels of interrater and test-retest reliability, as well as convergent validity with similar clinician rated and self-report measures of depression symptoms (Shear et al., 2001). According to clinical interpretation guidelines, a total score of 10 or below represents normal mood, 11-17 indicates mild anxiety severity, 18 to 24 reflects mild to moderate anxiety severity, and 25 to 30 indicates moderate to severe anxiety severity.

Work and Social Adjustment Scale-Clinician Rated (WSAS; Marks, Connolly, & Hallam, 1973; Mundt, Marks, Shear, & Greist, 2002). The WSAS is a five-item patient self-report scale used to assess functional impairment and interference in five domains: work, home management, private leisure, social leisure, and family relationships. The WSAS has demonstrated good internal consistency, test-retest reliability, and convergent validity, as well as sensitivity to change and usefulness as an outcome measure (Mundt et al., 2002).

Positive Activity Record. This form was created for the study to assess the type and frequency of positive activities. Participants briefly describe positive activities they engage in each day and the number of total positive activities each day, and then sum this number up for a weekly total. Positive activities could be any activity that they reported brought them positive emotion (e.g., taking a walk, giving children a bath).
Feedback Form. This form (see Appendix A) was created for the study to collect feedback from patients on their experiences with the intervention. Patients rated acceptability and satisfaction with the intervention, and provided qualitative feedback regarding what they found most and least helpful, and any particular modifications they would recommend.

Data Analytic Plan

Data were analyzed utilizing visual inspection techniques, in accordance with analytic guidelines for single case experimental designs (Barlow, Nock, & Hersen, 2009; Kazdin, 2003). Data from primary outcome measures were plotted graphically and assessed for changes in the level and slope across study phases. Reliable changes within- and between-participants in the level and slope of the outcome variables between baseline, intervention, and follow-up phases in predicted directions were considered significant and supportive of hypotheses regarding the effect of the intervention on primary and secondary outcome variables. Acceptability and feasibility of the intervention were examined based on recruitment and retention rates, participants’ ratings of acceptability and feasibility and qualitative feedback provided. Relative changes in the level or slope of outcome variables during the course of treatment were examined for associations with individual factors and specific treatment components. In addition, reliable change index scores (RC) were calculated to assess for the statistical reliability of the changes on primary outcome variables for each participant. RC scores were calculated by subtracting an earlier timepoint score from a later timepoint score (e.g., subtracting pre from post) and dividing the result by the standard error of the differences.
(Sdiff; Ferguson, Robinson, & Splaine, 2002). RC scores greater than the z-score level of 1.96 are statistically significant at \( p > .05 \). Effect sizes and 95% confidence intervals were computed to obtain a preliminary estimate of the potential magnitude of the changes in outcome variables in the intervention and follow-up phases across participants.

**RESULTS**

Upon consent, participants were randomized to a 2-, 4-, or 6-week baseline length condition. They were then organized into two panels of three participants, with one from each baseline length condition (Figures 2 and 3), and one panel of three participants with two from the 2-week and one from the 4-week conditions (Figure 3). They were organized into these panels in the order of recruitment into the study (e.g., the first panel includes the first participants with 2-, 4- and 6-week baselines who completed the study, and so forth). Due to the attrition of two participants in the 6-week baseline condition, the third panel does not include a 6-week baseline condition, but rather two 2-week baselines and one 4-week. The first panel (Figure 2) shows the first experiment assessing the study hypotheses, with the second (Figure 3) and third (Figure 4) panels serving as replications, albeit the third panel is a partial replication given the lack of a 6-week baseline.

**Functional Analyses of the Effects of Baseline Condition**

Analyses of the changes in SBI across the 2-, 4-, and 6-week baseline conditions supports the hypothesis that there was not a consistent effect of time alone on SBI (Figures 2, 3, 4). That is, the increasing passage of time was not associated with changes in SBI. Rather, baseline phases showed relative stability across individuals regardless of
the length of the baseline. This is shown across the first panel (Figure 2) and the two replications (Figures 3 and 4). Additionally, for those participants who experienced significant changes in the level and slope of SBI (P1, P4, P6, P7, P8, P9), these changes occurred specifically during the intervention and follow-up phases and not during the baseline phase. Observations between participants and across panels further confirmed that changes did not occur until intervention was introduced (i.e., P1 in the 2-week, P8 in the 4-week, and P6 in the 6-week condition). Taken together, these data suggests a specific effect of the intervention rather than merely an effect of time or another external factor.

**Functional Analyses of Individual Data**

*Panel 1 - Participant 1.* During her initial course of treatment, P1 showed a small decrease in her principal diagnosis of GAD (Clinical Severity Rating [CSR] 6-5 from pre-post treatment). However, her additional diagnosis of social anxiety (SOC) increased (CSR 5-6) and her Specific Phobia (SP) remained stable (CSR 5) over this time frame. In the present study, P1’s scores on the SBI show an increase in level and slope corresponding with the phase change from baseline to intervention consistent with a positive effect of the intervention (Figure 2). During the baseline phase, SBI scores were relatively stable with a net nonsignificant increase (RC=.53; Table 5). In contrast, during the intervention, SBI scores increased significantly (RC=3.15), with sharp increases occurring between sessions 1 to 2 and 3 to 4. These changes may reflect a response to the behavioral positive emotion regulation strategies that are introduced in the first session and then reintegrated in the third session. SBI scores continued to increase significantly
from post-FU (RC=5.52). The resulting total change from pre-FU was also significant (RC=8.67). It is notable that P1’s baseline SBI scores were low compared with most participants, and yet she made substantial improvements over the course of the intervention and follow-up. P1’s scores on the RPA-D paralleled those on the SBI, showing specific intervention-related improvements that continued to the follow-up. These resulted in significant net decreases from pre-post (RC=-2.31) and post-FU (RC=-2.97). Alternatively, PA scores did not exhibit a response to the intervention. They declined slightly during the intervention only to rise to baseline levels at the FU. Nevertheless, P1 reported her weekly positive activities increased by approximately 86% from the baseline phase to the follow-up phase (Figure 5). P1’s anxiety and depressive symptom fluctuated over the course of the study making it difficult to draw conclusions related to the effect of the intervention. First SIGH-A and SIGH-D scores increased during the baseline phase (RC=.40 and RC=1.98, respectively), and then from pre-post, they decreased in similar magnitudes (RC=-.40 and RC=-1.49, respectively). There were no additional changes from post-FU. Self-report ratings on the DASS-A and DASS-D showed parallel changes. P1 rated the intervention acceptability and her satisfaction with it as “extremely acceptable/satisfying” (5/5).

Panel 1 - Participant 2. P2 showed worsening of her anxiety symptoms and improvement of her depressive symptoms during her initial course of treatment (DASS-A 12-18; DASS-D 26-11). P2 was not rated on the CSR of her principal diagnosis following this initial treatment. In the present study, P2’s scores on the SBI increased slightly from the baseline to the intervention phases, but there was not a visible change in
slope, thus it cannot be concluded that the intervention had a significant effect (Figure 2). Nevertheless, P2’s score on the SBI reached its highest level at the FU, and was moderately higher at that point than during most of the baseline phase. It is possible that delayed effects of the intervention were reflected in this increased score the FU timepoint. There were small nonsignificant changes in SBI during baseline (RC=.27; Table 5), pre-post (RC=-.13), and post-FU (RC=.40). For P2, RPA-D scores exhibited a more specific response to the intervention, with a notably decreased level from the baseline to intervention phases. However, the improvements showed limited stability as these scores increased during the latter part of the intervention phase and at the FU. These late-stage increases may have been in part due to an outside stressor the participant was experiencing at the time. PA remained relatively stable across phases, and did not show a response to the intervention. Parallel to the trajectory of the RPA-D, PA worsened (i.e., decreased) in the latter phase of the intervention (pre-post RC=-1.47). P2’s number of weekly positive activities was stable across phases (Figure 5). By contrast, SIGH-A and SIGH-D both decreased significantly during the intervention phase (RC=-3.58 and RC=-3.47, respectively). There was some loss of these gains from post to FU (SIGH-A: RC=1.19 and SIGH-D: RC=.99). Self-report ratings on the DASS-A/D showed more modest changes. P2 rated the acceptability of the intervention and her satisfaction with it as “very acceptable/satisfying” (4/5).

Panel 1 - Participant 3. P3 experienced a small decrease in OCD severity (CSR 6-5) from pre- to 12-month follow up in his initial treatment. He showed similar change in his SOC (CSR 5-4), but no change in EDNOS (CSR 4). In the present study, P3’s SBI
scores were relatively stable across phases, and thus are not indicative of significant intervention-related effects (Figure 2). Nevertheless, SBI scores were slightly higher on average during the intervention versus baseline phases (RC=.44), suggesting there may have been a small, gradual shift upward as a result of the intervention. Similarly, RPA-D and PA were relatively stable, but showed slight improvements corresponding with the initiation of the intervention (Table 5). These minimal improvements were not maintained at the FU. P3’s weekly positive activities also remained stable across study phases, yet occupied a notably high range compared with other participants (Figure 5). SIGH-A and SIGH-D scores improved significantly from baseline to pre-intervention (RC=3.58 and RC=2.48, respectively). There were minimal changes during the intervention (RC=0 and RC=-.99, respectively) and FU (RC=-.80 and RC=.50, respectively) phases. The DASS-A/D also showed minimal changes during the intervention and FU. P3 rated the intervention as “extremely acceptable/satisfying” (5/5).

Panel 2 - Participant 4. During her initial course of treatment, P4 experienced decreases in SOC severity (CSR 6-4) from pre- to 12-month follow up. An additional diagnosis of MDD also decreased (CSR 4 to 2) during that time. In the present study, P4’s scores on the SBI showed a marked change corresponding with the change from the baseline to intervention phases, suggestive of a positive effect of the intervention on SBI (Figure 3). During the baseline phase, P4’s scores were stable or decreasing (RC=-1.01; Table 5), they then increased significantly during the intervention phase (RC=2.61). They remained substantially elevated during the intervention phase compared with baseline despite a gradual downward slope during the intervention. Then from post-FU there was
an increase (RC=1.41) suggesting some stability to the gains achieved during the intervention phase. Total change from pre-FU was significant (RC=4.02). Like P1, P4 had notably low SBI scores initially, and was nevertheless able to experience significant improvements due to the intervention.

P4 exhibited similar improvements on the RPA-D and PA as with the SBI that corresponded with the introduction of the intervention. For the RPA-D these gains were extended through the FU, suggesting a lasting benefit of the intervention on her cognitive emotion regulation skills. P4’s weekly positive activities increased by approximately 50% from the baseline to intervention and follow-up phases (Figure 5). SIGH-A and SIGH-D scores both worsened significantly from baseline-pre (RC=1.99 and RC=3.96, respectively), then improved significantly from pre-post (R=-1.99 and RC=-2.48, respectively). At the FU, the SIGH-A had worsened slightly again (RC=1.59), while the SIGH-D continued to improve significantly (RC=-1.98). Self-report ratings on the DASS-A/D were similar to those on the SIGH-A/D, though the changes were more modest, and there was a small decrease in DASS-A from post-FU (RC=-.99). P4 rated the intervention as “extremely acceptable/satisfying” (5/5).

Panel 2 - Participant 5. P5 showed a decrease in GAD severity (CSR 5-3) from pre- to 6-month follow up in his initial treatment. An additional diagnosis of MDD also decreased substantially (CSR 4-1) during this time. In the present study, P5’s scores on the SBI increased at the baseline to intervention phase change (Figure 3), however, the average SBI during the intervention phase was only slightly higher than that during baseline (RC=.33; Table 5). The intervention did appear to have a stabilizing effect on
SBI scores, moderating both the highs and lows observed during baseline. This stability continued from post-FU. The high initial (B1-B3) level of SBI is also notable for P5. These scores were a marked elevation from his screening score (SBI=8), thus several of his baseline scores may be higher than average for him. If that is true, the intervention may have had more of an effect in raising his levels of SBI than is evident from the present chart.

As SBI increased from B5 to I1, RPA-D and PA scores showed a reverse pattern (Table 5). They both worsened for two weeks before returning to previous levels. The discrepancies in the results across these measures, suggests the presence of unique components of positive emotion regulation and positive emotion that they are assessing. In particular, these differences may indicate that SBI captures more of the behavioral changes that are made in the first session, whereas the RPA-D is most sensitive to cognitive changes that are focused on in sessions 2 and 3. P5’s weekly positive activities also decreased during the intervention phase, and then returned to baseline levels at the FU (Figure 5). P5’s SIGH-A scores showed minimal change over the course of the study. They increased from baseline-pre (RC=1.59) before sequentially dropping from pre-post (RC=-1.19) and post-FU (RC=-.40) down the level at baseline. Alternatively, SIGH-D scores decreased from baseline-pre (RC=-4.95), but then returned to the previous level by post (RC=4.46), and remained stable from post-FU (RC=0). Self-report scores on the DASS-A/D reflected smaller changes than on the SIGH-A/D, and showed improvement on the DASS-D from pre-post intervention (RC=-1.29). P5 rated the acceptability of the
Panel 2 - Participant 6. P6 experienced a decrease in SOC (CSR 5-3) from pre-12-month follow up in his initial course of treatment. In the present study, P6’s SBI scores displayed a marked change in their level and slope from the baseline to the intervention phases, suggesting a positive intervention effect (Figure 3). The SBI consistently increased during the intervention phase resulting in significant pre-post change (RC=2.01; Table 5). There was also a nonsignificant gain from post-FU (RC=.27), resulting in total pre-FU change of RC=2.28. However, there were no discernible effects of the intervention on RPA-D or PA. At the same time, P6 reported his weekly positive activities increased by approximately 13% from baseline to the follow-up phase (Figure 5). There was a minimal decrease in SIGH-A scores from baseline-pre (RC=-.40) and then a larger decrease from pre-post (RC=-1.19) that was maintained at the FU. SIGH-D scores increased minimally from baseline-pre (RC=.50) before decreasing from pre-post (RC=-1.49). This improvement was maintained at the FU. Self-reported changes on the DASS-A/D were minimal. P6 rated the intervention as “very acceptable/satisfying” (5/5).

Panel 3 - Participant 7. P7 showed a substantial decrease in SOC (CSR 5-1) from pre- to 12-month follow up in her initial course of treatment, but no changes on her additional diagnoses of SP (CSR 4) and ADHD (CSR 4). In the present study, P7’s SBI scores fluctuated significantly during the baseline and intervention phases, and there was not a consistent effect of the intervention (Figure 4). The magnitudes of these weekly
fluctuations are notable compared with other participants, and may reflect the participant’s reporting style as well as the presence of life stressors that introduced variability into her mood and distress levels. P7 reported ongoing difficulty making her ratings each week, and indicated that they were being strongly influenced by her mood each week. From pre-FU, SBI scores declined moderately (RC=-1.47; Table 5). Her scores on the RPA-D were more stable than the SBI, but similarly showed a worsening during the intervention phase. In contrast, her PA scores peaked during the intervention and FU compared with the baseline phase, but showed a lack of stability. There was no net increase from pre-post in PA (RC=0), but there was a significant increase from post-FU (RC=4.41) that appeared to be a continuation of the upward trajectory from the intervention phase. It is possible that the discrepancy between the SBI and RPA-D versus PA scores reflects heightened negative reactivity to assessing more internalized emotion regulation skills/abilities rather than emotions. Also notably, P7’s weekly positive activities increased approximately 91% from baseline to follow-up phases (Figure 5). P7’s anxiety and depressive symptoms fluctuated though her depressive symptoms decreased by the FU. SIGH-A progressively increased from baseline to pre to post (RC=1.19, 3.58, respectively), though then decreased by the FU (RC=-3.58). SIGH-D scores fluctuated, decreasing from baseline to pre (RC=-.99), increasing from pre-post (RC=.99), and then decreasing significantly from post-FU (RC=-1.98). Self-report ratings on the DASS-A/D were similar but more modest than those on the SIGH-A/D, and did not reflect significant worsening of anxiety indicated on the SIGH-A during the
pre-post intervention (RC=.16). P7 rated the acceptability of the intervention and her satisfaction with it as “very acceptable/satisfying” (4/5).

**Panel 3 - Participant 8.** P8 exhibited substantial decreases in SOC (CSR 5-1) from pre- to 12-month follow up during his initial course of treatment. His additional diagnoses also showed marked improvements GAD (CSR 4-1) and DDNOS (CSR 4-0), except his diagnosis of EDNOS remained stable (CSR 3). In the present study, P8’s scores on the SBI were relatively stable during the baseline phase, but corresponding with the intervention phase change, showed a notable shift upward in the score range (Figure 4). These scores increased and leveled off during the intervention phase (RC=.74; Table 5), and the changes were consistent with an intervention-related effect on the SBI outcomes. There was a slight decrease in gains from post-FU (RC=-.40), and though the SBI score at FU remained slightly higher than at baseline (pre-FU RC=.34). Neither RPA-D nor PA showed substantial improvements during the intervention, but PA was at its highest level at the FU, and showed significant change from pre (RC=2.57). It is possible that the intervention had a delayed effect on PA. Conversely, RPA-D increased at the FU and was on par with baseline levels. P8’s weekly positive activities only increased by approximately 3% from baseline to FU (Figure 5). SIGH-A scores fluctuated minimally from across baseline, pre, and post timepoints before decreasing slightly from post-FU (RC=-1.19). SIGH-D increased slightly from baseline-pre (RC=.50), then there was a significant decrease from pre-post (RC=-1.98). These gains eroded substantially from post-FU (RC=1.49). Self-reported changes on the DASS-A/D
were parallel to those on the SIGH-A/D, though reflected minimal change during the post-FU phase. P8 rated the intervention as “very acceptable/satisfying” (5/5).

**Panel 3 - Participant 9.** During her initial course of treatment, P9 showed substantial decreases on GAD (CSR 5-2) from pre- to 12-month follow up. Her additional diagnosis of SP remained stable (CSR 4). In the present study, P9’s SBI scores fluctuated relatively consistently during the baseline phase and in the first 3 weeks of the intervention (Figure 4). However, between I3 and I4 the scores increased markedly and continued an upward trend in the FU. The timing of these changes was consistent with the participant indicating a sense of consolidation of the positive emotion regulation skills taught during the intervention. The net changes on SBI from pre-post, post-FU, pre-FU were positive but nonsignificant (RC=.60, .87, 1.47, respectively; Table 5). Similarly, there was delayed improvement in PA, with the highest score occurring at the FU (post-FU RC=3.31), which may reflect a sleeper effect due to delayed consolidation of positive emotion regulation skills following the intervention. Weekly positive activities also increased across phases by approximately 26% (Figure 5). RPA-D was relatively stable across phases. SIGH-A and SIGH-D scores fluctuated minimally during baseline and intervention phases, and both increased from post-FU (RC=2.39 and RC=.99). However, the worsening of anxiety from post-FU was not reflected in self-report ratings on the DASS-A (RC=.66). P9 rated the intervention as “extremely acceptable/satisfying” (5/5).

**Results Across Individuals**

Effect sizes (Cohen’s *d*) and 95% confidence intervals were calculated to provide an initial estimate of the magnitude of the changes in the primary and secondary
outcomes across participants in association with completing the study intervention. These
effects and their respective confidence intervals may be useful for estimation of the range
of potential effect sizes in subsequent studies and comparison to effect sizes of other
interventions. Per convention, a Cohen's $d$ effect size of 0.2 to 0.3 is considered "small;”
0.5 is considered "medium;” and 0.8 and up is considered "large" (Cohen, 1988).

Effects on Positive Emotion Regulation Skills And Emotions

Descriptive data and effect sizes for positive emotion regulation skills and
positive and negative affect are presented in Table 6. There were minimal changes in
positive emotion regulation skills assessed by the SBI, RPA-D, and BAS during the
baseline phase (all effects were below the threshold denoting a “small” effect), and
moderate effects in the expected directions from pre-post (SBI $d=-.39$, RPA-D $d=.29$, and
BAS $d=-.42$). SBI and RPA-D scores continued to improve from post-FU, and the total
pre-FU effect sizes were large for SBI ($d=-.89$), and small-medium for RPA-D and BAS
($d=.47$ and $d=-.37$, respectively). PA decreased moderately ($d=.47$) from baseline-pre,
changed negligibly from pre-post ($d=.09$), and then increased back to baseline levels by
the FU ($d=-.57$). NA was stable during baseline ($d=-.03$), and then declined slightly by
post ($d=.27$) and FU ($d=.27$), resulting in a moderate total decrease from pre-FU ($d=.61$).

An examination of the effects of the intervention on specific positive emotions
revealed nuanced findings (see Table 9). During the baseline phase, all specific positive
emotions remained stable or decreased as might be expected during a waiting period prior
to intervention. From pre-post, and post-FU, all specific positive emotions either
increased or showed no changes. The magnitude of the effects of the intervention varied
slightly across specific positive emotions. Total change from pre-FU achieved large
effects for contentment, pride, serenity, self-assurance, and joviality ($d= -0.78$ to \( -1.02 \)),
medium effects for love, amusement, awe, attentiveness ($d= -0.43$ to \( -0.72 \)), and a small
effect for compassion ($d= -0.21$).

*Effects on Anxiety And Depressive Symptoms*

Descriptive data and effect sizes for changes in anxiety and depressive symptoms
are presented in Table 7. Participants exhibited small to moderate increases ($d= -0.17$ to \( -0.43 \)) in their anxiety and depressive symptoms during the baseline phase on self-report
(DASS-A and DASS-D) and clinician-rated (SIGH-A and SIGH-D) measures. From pre-
post, the SIGH-A, DASS-A, and DASS-D showed moderate reductions in symptoms
($d= 0.39$ to \( 0.55 \)), with the SIGH-D exhibiting a large reduction ($d= 0.79$). There continued to be
small improvements on the DASS-A and DASS-D from post-FU ($d= 0.20$ to \( 0.23 \)), though
there were no additional changes on the SIGH-A or SIGH-D. The total pre-FU changes
were close to large effects ($d= 0.77$ to \( 0.86 \)) on all measures, but the SIGH-A, which showed a
moderate overall improvement ($d= 0.41$).

*Effects on Functioning, Quality of Life, and Well-Being*

Descriptive data and effect sizes for changes in functioning, quality of life and
well-being are presented in Table 8. The measures of functional impairment (WSAS) and
quality of life (QLESQ) both showed moderate worsening from baseline-pre ($d= -0.46$ and
$d= 0.31$, respectively) which may have been associated with the concomitant increases in
anxiety and depressive symptoms during this time. From pre-post, these measures as well
as the measure of well-being (MHC) all indicated moderate size improvements ($d= 0.49$-
.74). There were minimal additional changes from post-FU. Total changes from pre-FU on the WSAS reached a large effect size ($d=1.01$), and effects on QLESQ and MHC remained moderate ($d=-.57$ to -.71).

**DISCUSSION**

Five of the nine participants (P1, P4, P6, P8, P9) showed changes in the level and slope of their SBI scores from the baseline to intervention phases consistent with a significant positive effect of the intervention on their positive emotion regulation skills (Table 4). Three of these participants (P1, P6, P9) made additional gains from the intervention to FU, and the remaining two (P4 and P8) maintained a substantial proportion of their gains at the FU. P2 showed relative stability SBI from baseline to intervention (slight increase in level, but no clear change in slope), though showed a significant increase in level and slope by the FU. Qualifying these results, some but not all of those who exhibited a beneficial positive response to the intervention, achieved a magnitude of change deemed significant according RC scores from pre-post intervention (P1, P4, P6) and post-FU (P2; Table 5). Participants 3 and 5 showed relative stability in their SBI scores across phases, suggesting minimal intervention effects. P7’s SBI scores generally decreased over the course of the intervention and follow-up phases. This appears as an adverse effect of the intervention on P7’s positive emotion regulation skills, however, this participant reported to the therapist and independent evaluators that the emergence of a stressful situation with her husband during the intervention phase was negatively impacting her ratings on the study assessments.
Preliminary effects across participants also showed beneficial changes in the primary and secondary outcome variables over the intervention and follow-up phases. Improvements from pre-FU in positive emotion regulation skills, positive and negative emotions, anxiety and depressive symptoms, functioning, quality of life, and well-being were all associated with medium to large effect sizes. One exception was increases in compassion from pre-FU, which were associated with a small effect.

The feasibility and acceptability of the intervention were supported by the high rate of recruitment (58%) and retention (82%), participants’ high ratings of acceptability (4.7/5) and satisfaction (4.6/5) with the intervention, and positive qualitative feedback.

**Impact of the Intervention on Positive Emotion Regulation Skills**

Five of the nine participants exhibited increases in SBI suggestive of a beneficial intervention effect on the ability to regulate positive emotions (Table 4). The large majority of participants increased their number of weekly positive activities during the intervention and follow-up phases (Figure 5), which also suggests an effect of the invention on behavioral positive regulation skills. Taken together, these data suggest that the intervention has the potential to produce desired changes in positive emotion regulation, and at the same time, may not be effective for everyone. One notable pattern is that the two participants who responded the most (P1 and P4) also had substantially lower baseline SBI scores than other participants. These two women reported extreme difficulty experiencing and maintaining positive emotions at the beginning of the study; P4 noted in her first session that she had not felt joy in over 20 years. For these participants, completing homework exercises in which they were attempting to cultivate
and maintain positive emotions was a marked change in their daily lives, and may be why they showed immediate and steep improvements during the intervention phase. P3 who had a principal diagnosis of OCD had difficulty engaging with the intervention because his obsessive thoughts related to feeling that something bad would happen if he were enjoying himself. Thus, his particular obsessive thoughts made it challenging for him to engage with the intervention. Based on his symptomatology, he may have needed more time to gradually approach positive experiences consistent with an exposure therapy model of treatment. As mentioned, P7’s SBI scores decreased over the course of the intervention, and it is likely that this was at least in part due to a concomitant increase in life stress. She reported significant stress emerging over the Thanksgiving holiday related to her husband and his alcohol use, and was distressed to the point of requesting a referral for couples therapy targeting alcohol use difficulties. Thus, changes in her reported ability to experience and maintain positive emotions during the intervention and follow-up phase may have been substantially influenced by her stress at home.

Individual differences in response to the intervention did not appear to be due to gender, principal or comorbid diagnostic status, type of initial treatment received, or response to the initial treatment. All of the participants experienced small to moderate responses to the initial course of treatment, and their degree of response was not related to their improvements in the present study. The present results are particularly remarkable for the lack of response pattern evidenced across individuals with varying diagnoses. These data suggest the intervention can have beneficial effects for individuals with a number of different principal and comorbid emotional disorders, which is
consistent with a transdiagnostic model of the emotional disturbances present across these disorders (Farchione et al., 2012).

It was also notable that all of the participants provided the qualitative feedback that they thought the intervention should be longer (one suggested 6-8 sessions). Several more sessions may have helped participants better learn, consolidate, and apply the new intervention skills, and this may have increased the rate and degree of response to the intervention. For most of the participants, they had completed the initial course of treatment approximately a year earlier, and therefore possibly experienced erosion of skill retention prior to the present study that may have made it harder for them to quickly make gains with a brief 4-session module. Thus, offering this augmentation intervention closer to the initial treatment may increase response rates.

**Impact of the Intervention on Positive and Negative Emotion**

The cumulative changes in positive and negative emotion during the intervention and follow-up phases showed improvements generally in the range of medium to large effects. This included both dimensions of overall positive affect (PA) and negative affect (NA) as well as specific positive emotions. These findings suggest a beneficial effect of the intervention on increasing a range of positive emotions and reducing negative emotion. However, there were some nuanced findings. Surprisingly, PA did not improve during the intervention phase, but only during the follow-up period. Thus, it did not parallel SBI scores; rather it lagged behind SBI changes. It may be the case that PA requires more time of applying new positive emotion regulation skills before it increases, and therefore improvements in PA might appear delayed. It was also notable that several
specific positive emotions changed more than others and overall PA. Contentment, pride, joviality, self-assurance, and serenity showed the largest increases of the positive emotion outcome variables. These results may be related to the exercise in the first session of the intervention, in which participants reviewed a list of positive emotions and identified the three positive emotions that they valued most and were interested in promoting. In their homework exercises participants often pursued those emotions they noted valuing. Thus, it may be that the positive emotions that changed the most reflect the participants’ emotional goals or values. It is also possible that a brief 4-session intervention is more conducive to promoting self-focused positive emotions (e.g., contentment, pride), and less to interpersonally based positive emotions, such as love and compassion, which may require longer periods of time to develop. There is no research to suggest that one positive emotion is better than another in terms of potential benefits to health and well-being, however, they may offer different benefits (Shiota et al., 2006) that may be more or less valuable to certain individuals.

**Impact of the Intervention on Anxiety and Depressive Symptoms**

Overall, participants’ anxiety and depressive symptoms decreased from pre-FU as assessed by the independent evaluator-rated (SIGH-A/SIGH-D) and self-report (DASS-A/DASS-D) measures in the magnitude of medium to large effects. This contrasted with the baseline period in which anxiety and depressive symptoms worsened. It was notable that most of the positive change occurred during the intervention phase, with minimal additional gains from post-FU. This pattern is suggestive of beneficial impact of the intervention on symptoms, however, it is unclear why there were minimal additional
gains in the follow-up phase. This may be further indication of the need for a greater number of sessions to facilitate individuals’ abilities to continue applying the skills and making progress following the intervention. Although the participants that increased their positive emotion regulation skills generally improved in anxiety and depressive symptoms as well, the independent evaluator-rated changes in symptoms (SIGH-A and SIGH-D) only met the threshold deemed significant for reliable change (RC) in 3 of the 5 intervention responders. Self-reported changes in symptoms (DASS-A and DASS-D) generally corroborated the evaluator ratings, however, overall they tended to be slightly more modest, particularly for anxiety symptoms. Moderate score differentiation across measures and independent evaluator versus self-report ratings is expected and may be due to several factors, such as different items, the assessment of unique symptom components, and various reporter biases (Uher et al., 2012). As the SIGH-A/D scales assess more physiological components of anxiety and depression, whereas the DASS-A/D assess more behavioral and cognitive components, it may require more time for the latter changes to be observed and reported by individuals. This might partly explain the slightly smaller apparent changes on the DASS-A/D versus the SIGH-A/D scales in the present study.

On average, changes in anxiety and depressive symptoms were associated with reductions across clinical severity levels associated with the scales (e.g., mild, moderate, severe). According to the DASS-A and SIGH-A interpretation guidelines, 4 and 5 participants (respectively) decreased at least one clinical severity level from pre-post intervention. On both the DASS-D and SIGH-D, 3 participants decreased one clinical
severity level from pre-post intervention. Nevertheless, the clinical severity levels for these scales categorized participants differently (e.g., several participants that were categorized in the “normal” range on the DASS-D were categorized in the “very severe” range on the SIGH-D), and the clinical severity levels have been subject to debate in the literature (Leichsenring, 2006; Möller, 2009). Thus, it may be more meaningful to evaluate continuous change on these measures rather than changes across fixed thresholds.

Based on the present findings, one possibility is that it would require additional time practicing the intervention skills to produce larger and more reliable changes in anxiety and depressive symptomatology. Nevertheless, given the brief length of the intervention and the fact that participants had previously received full courses of CBT, the individual changes observed on anxiety and depressive symptoms and the effect sizes across participants from pre- to FU are promising. These results are consistent with previous research that has shown increases in positive emotion facilitate buffering against and repair of negative emotions, and higher positive emotion is associated with reduced anxiety and depressive symptoms (Garland et al., 2010; Quoidbach et al., 2015).

**Impact of the Intervention on Functioning, Quality of Life, and Well-Being**

Changes in functioning, quality of life, and well-being paralleled those of anxiety and depressive symptoms. These outcomes all worsened slightly during the baseline period, then improved moderately during the intervention phase and minimally during the follow-up phase. Given the brief nature of the intervention, these medium to large positive effects on impairment, quality of life, and well-being beginning in the
intervention phase are particularly notable. In fact, they are comparable in magnitude to treatment-related effects on similar outcomes obtained from full courses of CBT for anxiety disorders (e.g., Gallagher et al., 2013). A key promise of improving positive emotion regulation and increasing positive emotion is that these changes are hypothesized to specifically support enhancements in durable indicators of positive mental health such as quality of life and well-being that are not merely achieved by the absence of symptoms (Garland et al., 2010; Tugade & Fredrickson, 2007). The present results support the notion that focusing on positive emotion processes may have the potential to foster beneficial changes in functioning, quality of life and well-being more efficiently than through solely focusing on reducing symptomatology.

**Intervention Strengths and Limitations**

The intervention has a number of strengths as well as limitations that may be addressed in future iterations. As discussed, the overall acceptability and satisfaction levels for the intervention were high. In the initial screen, participants indicated the rationale for the intervention resonated with them, and there was a high rate of recruitment and retention during the study. Additionally, the data from this preliminary pilot study suggest that the intervention is effective for a substantial percentage of individuals in enhancing their regulation of positive emotions. Participants in this study also showed improvements in their positive and negative emotion, anxiety and depressive symptoms, functioning, quality of life, and well-being. Taken together, these data support the potential utility of this intervention for addressing residual anxiety and depressive symptoms and increasing overall mental health. The moderate to large size of the effects
on the outcome variables was also particularly notable considering that participants recently received a full course of CBT. Given the lack of augmentation interventions targeting disturbances in positive emotion regulation associated with anxiety and depressive disorders, this intervention contributes to addressing a gap in existing intervention options, and has the potential to improve treatment outcomes. The brief nature of the intervention, and the ability to integrate it with a range of CBT protocols are also strengths that increase its potential for dissemination and implementation.

There are also several limitations of the intervention that remain to be addressed, and have the potential to improve the intervention’s outcomes. The majority of the participants thought that the intervention was too few sessions to fully acquire the skills taught. It is possible that completing this intervention more closely following the initial course of treatment would eliminate the need for lengthening the intervention due to synergies that could be exploited in the treatment skills. However, if the intervention is pursued several months after the initial treatment, it may need to be extended by 2-4 sessions for individuals to optimize their response rate and retention of skills. These preliminary data also suggest that not everyone responds to the intervention. More research will be needed to understand what factors are responsible for individual differences in response. However, in the present study, one preliminary pattern suggested that individuals with lower baseline positive emotion regulation skills (i.e., SBI scores) experienced the most substantial gains. Thus, selectively offering this intervention as an augmentation treatment for anxious and depressed patients with the lowest SBI scores may be especially promising. Of the participants who did not respond to the intervention,
there appeared to be a variety of reasons, including one having a co-occurring stressful life event (P7), one having OCD symptoms that made it more challenging to engage with the intervention content (P4), and one having relatively high positive emotion regulation skills at baseline (P5). Thus, close examination of both predictors of response as well as these potential predictors of non-response may be useful in identifying individuals likely to benefit from the intervention.

**Directions for Future Research**

The present study employed a single-case experimental design, which allowed for a high level of internal validity in assessing the effects of the study intervention within participants. Between-participant analyses also provided a preliminary indication of the generality of the intervention’s effects across individuals. However, it will be important to further evaluate the generalizability of these results by conducting evaluation of the intervention’s effects across a larger sample of individuals. Additionally, to ensure that the present results are due to the specific intervention techniques and not solely due to nonspecific therapeutic factors (e.g., empathy, support), it will be necessary to compare the intervention with an active control condition (e.g., attentional control). Mediational analyses may also be conducted to assess the degree to which the intervention outcomes are directly a result of the enhanced positive emotion regulation skills targeted.

It will also be beneficial to continue to explore predictors of response and non-response to the study intervention in future research. Participants in this study were fairly heterogeneous in terms of diagnoses and baseline positive emotional functioning. Given the discrepancies in individual responses to the intervention in the present study, there
may be a number of individual differences that are relevant to predicting whether someone is likely to benefit from the intervention. It also may be that individual factors predict the rate and degree of change in response to the intervention beyond merely a binary response versus nonresponse outcome. Future studies should seek to include a more racially and ethnically diverse sample, as participants in the present study were predominantly White/Caucasian and non-Hispanic.

Future studies should assess whether intervention outcomes may be improved by reducing the length of time between participants’ initial course of treatment and the study intervention, increasing the number of intervention sessions, and/or providing a client workbook. These are all possible changes indicated through participant feedback and therapist observations during the study that have the potential to enhance participants’ responses to the intervention.

**Conclusion**

The present study represents a preliminary evaluation of the feasibility and utility of an augmentation intervention for enhancing positive emotion in anxiety and depressive disorders. Results indicated that the intervention was effective for approximately 55% of participants. Qualitative feedback from participants highlighted several areas for improvement in the format and delivery of the intervention, and such changes may increase the effectiveness of the intervention. Future research is needed to examine the intervention in a larger sample utilizing a randomized-controlled trial to assess for the generalizability of the intervention effects, and to further examine mediational relationships among the hypothesized mechanisms of change and outcome variables.
<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Sex</th>
<th>Marital</th>
<th>Race</th>
<th>Ethnicity</th>
<th>Education</th>
<th>Income</th>
<th>Principal Diagnosis</th>
<th>Additional Diagnoses</th>
<th>Type of initial treatment</th>
<th>Number of initial sessions completed</th>
</tr>
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<tbody>
<tr>
<td>P1</td>
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<td>F</td>
<td>M</td>
<td>Black/African</td>
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<td>Master’s</td>
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<td>M</td>
<td>NM</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Master’s</td>
<td>$25,000 - $34,999</td>
<td>OCD</td>
<td>SOC, EDNOS</td>
<td>UP</td>
<td>16</td>
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<td>P4</td>
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<td>$25,000 - $34,999</td>
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<td>MDD</td>
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<td>NH</td>
<td>Bachelor’s</td>
<td>$55,000 - $74,999</td>
<td>GAD</td>
<td>MDD</td>
<td>SDP</td>
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<td>ADHD, SP</td>
<td>UP</td>
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<td>SOC</td>
<td>GAD, DDNOS, EDNOS SP</td>
<td>SDP</td>
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<td>M</td>
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<td>NH</td>
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<td>$100,000+</td>
<td>GAD &amp; SOC</td>
<td>SOC</td>
<td>SDP</td>
<td>16</td>
</tr>
</tbody>
</table>
Note. P=Participant; M=Male; F=Female; M=Married; NM=Never Married; NH=Non-Hispanic; GAD=Generalized Anxiety Disorder; SOC=Social Anxiety Disorder; SP=Specific Phobia; ADHD=Attention-Deficit and Hyperactivity Disorder; Major Depressive Disorder; EDNOS=Eating Disorder Not Otherwise Specified; DDNOS=Depressive Disorder Not Otherwise Specified; UP=Unified Protocol; SDP=Single Disorder Protocol.
Table 2

*Intervention content*

<table>
<thead>
<tr>
<th>Session</th>
<th>Skill Targets</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Psychoeducation Positive Emotion Awareness Behavioral Positive Emotion Regulation Strategies</td>
<td>Introduction to positive emotions and their role in anxiety and depression, identification of positive emotions to target, introduction to behavioral strategies for regulating positive emotions, assignment of behavioral strategies homework</td>
</tr>
<tr>
<td>2</td>
<td>Cognitive Positive Emotion Regulation Strategies</td>
<td>Review of behavioral strategies homework, introduction to cognitive strategies of regulating positive emotion, including attention and beliefs, savoring exercise conducted, negative beliefs about positive emotions are identified and reframed, assignment of cognitive strategies homework</td>
</tr>
<tr>
<td>3</td>
<td>Integrated Positive Emotion Regulation Strategies</td>
<td>Review of cognitive strategies homework, conduct positive emotion exposure, assignment of homework to continue to practice and integrate behavioral and cognitive strategies for regulating positive emotions</td>
</tr>
<tr>
<td>4</td>
<td>Skill Review</td>
<td>Review of homework, identify what was helpful/not helpful, troubleshoot, plan for future</td>
</tr>
</tbody>
</table>
Table 3

*Schedule of assessment measures*

<table>
<thead>
<tr>
<th>Measures</th>
<th>Domain Assessed</th>
<th>Weekly Assessments</th>
<th>Major Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive and Negative Affective Schedule – Expanded (PANAS-X) Watson &amp; Clark, 1994</td>
<td>Positive &amp; negative affect; specific positive emotions</td>
<td>SR</td>
<td>SR</td>
</tr>
<tr>
<td>Dispositional Positive Emotion Scales (Shiota, Keltner, John, 2006)</td>
<td>Discrete positive emotions: joy, contentment, pride, love, compassion, amusement, and awe</td>
<td>SR</td>
<td></td>
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<tr>
<td>Depression Anxiety and Stress Scales (DASS; Lovibond &amp; Lovibond, 1995)</td>
<td>Anxiety, depression, and stress severity</td>
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<td>SR</td>
</tr>
<tr>
<td>Positive Activity Record</td>
<td>Frequency of positive activities</td>
<td>SR</td>
<td>SR</td>
</tr>
<tr>
<td>Savoring Beliefs Inventory (SBI; Bryant, 2003)</td>
<td>Positive emotion regulation</td>
<td>SR</td>
<td>SR</td>
</tr>
<tr>
<td>Responses to Positive Affect – Dampening scale (RPA-D; Feldman, Joormann, &amp; Johnson, 2008)</td>
<td>Positive emotion regulation</td>
<td>SR</td>
<td>SR</td>
</tr>
<tr>
<td>Behavioral Activation Scale (BAS; Carver &amp; White, 1994)</td>
<td>Behavioral approach and motivation</td>
<td>SR</td>
<td></td>
</tr>
<tr>
<td>Mental Health Continuum – Short Form (MHC-SF; Keyes, 2009)</td>
<td>Well-being</td>
<td>SR</td>
<td></td>
</tr>
<tr>
<td>Quality of Life Enjoyment and Satisfaction Questionnaire – Short Form (QLESQ-SF; Endicott, J., Nee, J., Harrison, W., &amp; Blumenthal, R., 1993).</td>
<td>Quality of life</td>
<td>SR</td>
<td></td>
</tr>
<tr>
<td>Structured Interview Guide for the Hamilton Anxiety and Depression Rating Scales (SIGH-A and SIGH-D; Shear et al., 2001; Williams, 1988)</td>
<td>Anxiety &amp; depression symptom severity and interference</td>
<td>IE</td>
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</tr>
<tr>
<td>Work &amp; Social Adjustment Scale-Clinician Rated (WSAS; Marks, Connolly, &amp; Hallam, 1973)</td>
<td>Functional impairment</td>
<td>IE</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Weekly assessments occurred during baseline and intervention phases only; major assessments occurred at baseline, pre-treatment, post-treatment, and a 3-month follow-up. SR=self-report; IE=independent evaluator-rated.
Table 4

*Summary of changes in SBI scores during intervention and follow-up*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Intervention Phase</th>
<th>Follow-Up Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>P2</td>
<td>Relative stability*</td>
<td>Increased</td>
</tr>
<tr>
<td>P3</td>
<td>Relative stability</td>
<td>Relative stability</td>
</tr>
<tr>
<td>P4</td>
<td>Increased</td>
<td>Moderate maintenance of gains</td>
</tr>
<tr>
<td>P5</td>
<td>Relative stability</td>
<td>Relative stability</td>
</tr>
<tr>
<td>P6</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>P7</td>
<td>Decreased</td>
<td>Decreased</td>
</tr>
<tr>
<td>P8</td>
<td>Increased</td>
<td>Moderate maintenance of gains</td>
</tr>
<tr>
<td>P9</td>
<td>Increased</td>
<td>Increased</td>
</tr>
</tbody>
</table>

*Note.* *P2 showed a slight increase in average level of SBI from baseline to intervention phases, but no visible change in slope. P=Participant; SBI=Savoring Beliefs Inventory.*
Table 5

Reliable Change Index (RC) scores for primary and secondary outcome measures

<table>
<thead>
<tr>
<th></th>
<th>SBI</th>
<th>RPA-D</th>
<th>PA</th>
<th>SIGH-A</th>
<th>SIGH-D</th>
<th>DASS-A</th>
<th>DASS-D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Sdiff= 7.61)</td>
<td>(Sdiff= 3.03)</td>
<td>(Sdiff= 2.72)</td>
<td>(Sdiff= 2.51)</td>
<td>(Sdiff= 2.02)</td>
<td>(Sdiff= 6.08)</td>
<td>(Sdiff= 3.11)</td>
</tr>
<tr>
<td><strong>P1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>0.53</td>
<td>1.32</td>
<td>-0.74</td>
<td>0.40</td>
<td>1.98*</td>
<td>1.15</td>
<td>2.25*</td>
</tr>
<tr>
<td>Pre-post</td>
<td>3.15*</td>
<td>-2.31*</td>
<td>0.00</td>
<td>-0.40</td>
<td>-1.49</td>
<td>-1.32</td>
<td>-2.57*</td>
</tr>
<tr>
<td>Post-FU</td>
<td>5.52*</td>
<td>-2.97*</td>
<td>1.10</td>
<td>0.00</td>
<td>0.00</td>
<td>0.49</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>P2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BLA-pre</td>
<td>0.27</td>
<td>0.99</td>
<td>0.00</td>
<td>0.40</td>
<td>-0.50</td>
<td>-0.33</td>
<td>0.64</td>
</tr>
<tr>
<td>Pre-post</td>
<td>-0.13</td>
<td>0.00</td>
<td>-1.47</td>
<td>-3.58*</td>
<td>-3.47*</td>
<td>-0.16</td>
<td>-1.61</td>
</tr>
<tr>
<td>Post-FU</td>
<td>0.40</td>
<td>0.33</td>
<td>1.10</td>
<td>1.19</td>
<td>0.99</td>
<td>-0.49</td>
<td>0.64</td>
</tr>
<tr>
<td><strong>P3</strong></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>BLA-pre</td>
<td>0.13</td>
<td>-0.99</td>
<td>0.37</td>
<td>-3.58*</td>
<td>2.48*</td>
<td>-0.33</td>
<td>-0.96</td>
</tr>
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<td>Pre-post</td>
<td>0.00</td>
<td>-0.66</td>
<td>-0.37</td>
<td>0.00</td>
<td>-0.99</td>
<td>0.00</td>
<td>0.32</td>
</tr>
<tr>
<td>Post-FU</td>
<td>0.27</td>
<td>0.66</td>
<td>0.00</td>
<td>-0.80</td>
<td>0.50</td>
<td>0.16</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>P4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>-1.01</td>
<td>2.31*</td>
<td>-0.74</td>
<td>1.99*</td>
<td>3.96*</td>
<td>0.16</td>
<td>1.29</td>
</tr>
<tr>
<td>Pre-post</td>
<td>2.61*</td>
<td>-2.97*</td>
<td>1.47</td>
<td>-1.99*</td>
<td>-2.48*</td>
<td>-0.66</td>
<td>-1.93</td>
</tr>
<tr>
<td>Post-FU</td>
<td>-1.41</td>
<td>0.00</td>
<td>-2.21*</td>
<td>1.59</td>
<td>-1.98*</td>
<td>-0.99</td>
<td>-1.29</td>
</tr>
<tr>
<td><strong>P5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>-1.34</td>
<td>0.33</td>
<td>0.00</td>
<td>1.59</td>
<td>-4.95*</td>
<td>0.33</td>
<td>0.64</td>
</tr>
<tr>
<td>Pre-post</td>
<td>0.67</td>
<td>0.33</td>
<td>-1.47</td>
<td>-1.19</td>
<td>4.46*</td>
<td>-0.49</td>
<td>-1.29</td>
</tr>
<tr>
<td>Post-FU</td>
<td>0.13</td>
<td>0.00</td>
<td>0.74</td>
<td>-0.40</td>
<td>0.00</td>
<td>0.33</td>
<td>1.29</td>
</tr>
<tr>
<td><strong>P6</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>0.40</td>
<td>-1.32</td>
<td>-1.47</td>
<td>-0.40</td>
<td>0.50</td>
<td>-0.16</td>
<td>-0.96</td>
</tr>
<tr>
<td>Pre-post</td>
<td>2.01*</td>
<td>0.00</td>
<td>0.00</td>
<td>-1.19</td>
<td>-1.49</td>
<td>-0.33</td>
<td>0.00</td>
</tr>
<tr>
<td>Post-FU</td>
<td>0.27</td>
<td>0.66</td>
<td>0.37</td>
<td>0.00</td>
<td>0.00</td>
<td>0.66</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>P7</strong></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.19</td>
<td>-0.99</td>
<td>-0.16</td>
<td>-0.64</td>
</tr>
<tr>
<td>Pre-post</td>
<td>-2.21*</td>
<td>1.32</td>
<td>0.00</td>
<td>3.58*</td>
<td>0.99</td>
<td>0.16</td>
<td>1.61</td>
</tr>
<tr>
<td>Post-FU</td>
<td>0.74</td>
<td>1.32</td>
<td>4.41*</td>
<td>-3.58*</td>
<td>-1.98*</td>
<td>-1.15</td>
<td>-3.22*</td>
</tr>
<tr>
<td><strong>P8</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>0.07</td>
<td>-0.33</td>
<td>-1.47</td>
<td>0.40</td>
<td>0.50</td>
<td>0.49</td>
<td>0.32</td>
</tr>
<tr>
<td>Pre-post</td>
<td>0.74</td>
<td>-0.33</td>
<td>-0.37</td>
<td>-0.40</td>
<td>-1.98*</td>
<td>-0.66</td>
<td>-0.96</td>
</tr>
<tr>
<td>Post-FU</td>
<td>-0.40</td>
<td>0.66</td>
<td>2.21*</td>
<td>-1.19</td>
<td>1.49</td>
<td>0.16</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>P9</strong></td>
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<td></td>
</tr>
<tr>
<td>BLA-pre</td>
<td>0.94</td>
<td>-0.33</td>
<td>1.47</td>
<td>0.80</td>
<td>-0.50</td>
<td>0.82</td>
<td>0.00</td>
</tr>
<tr>
<td>Pre-post</td>
<td>0.60</td>
<td>-0.33</td>
<td>0.00</td>
<td>-0.40</td>
<td>0.50</td>
<td>-0.49</td>
<td>-0.64</td>
</tr>
<tr>
<td>Post-FU</td>
<td>0.87</td>
<td>-0.66</td>
<td>3.31*</td>
<td>-2.39*</td>
<td>0.99</td>
<td>-0.66</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Note. P=Participant; BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; SBI=Savoring Beliefs Inventory; RPA-D=Responses to Positive Affect-Dampening Scale; PA=Positive Affect; SIGH-A=Structured Interview for the Hamilton Anxiety Rating Scale; SIGH-D=Structured Interview for the Hamilton Depression Rating Scale; DASS-A=Depression Anxiety and Stress Scales-Anxiety; DASS-D=Depression Anxiety and Stress Scales-Depression. Negative values denote decreases on the outcome measures, and positive values denote increases. * p<.05
Table 6

Effects on positive emotion regulation skills and positive and negative affect (Cohen’s d)

<table>
<thead>
<tr>
<th>Measure</th>
<th>BLA</th>
<th>Pre</th>
<th>Post</th>
<th>FU</th>
<th>BLA-Pre</th>
<th>Pre-Post</th>
<th>Post-FU</th>
<th>Pre-FU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean SD</td>
<td>d SE</td>
<td>CI</td>
<td>d SE</td>
<td>CI</td>
</tr>
<tr>
<td>SBI</td>
<td>-6.33 (24.08)</td>
<td>-5.89 (24.45)</td>
<td>3.89 (25.37)</td>
<td>14.67 (21.82)</td>
<td>-0.02 (0.47)</td>
<td>-0.94, 0.90</td>
<td>-0.39 (0.48)</td>
<td>-1.31, 0.56</td>
</tr>
<tr>
<td>RPA-D</td>
<td>18.22 (4.68)</td>
<td>18.44 (6.11)</td>
<td>16.89 (4.51)</td>
<td>16.00 (4.18)</td>
<td>-0.04 (0.47)</td>
<td>-0.96, 0.89</td>
<td>0.29 (0.47)</td>
<td>-0.65, 1.20</td>
</tr>
<tr>
<td>BAS</td>
<td>23.89 (7.90)</td>
<td>22.67 (8.35)</td>
<td>25.89 (7.10)</td>
<td>25.44 (6.77)</td>
<td>0.15 (0.47)</td>
<td>-0.78, 1.07</td>
<td>-0.42 (0.48)</td>
<td>-1.33, 0.54</td>
</tr>
<tr>
<td>PA</td>
<td>27.00 (5.55)</td>
<td>24.44 (5.34)</td>
<td>24.00 (4.69)</td>
<td>27.33 (6.84)</td>
<td>0.47 (0.48)</td>
<td>-0.49, 1.38</td>
<td>0.09 (0.47)</td>
<td>-0.84, 1.01</td>
</tr>
<tr>
<td>NA</td>
<td>22.33 (4.74)</td>
<td>22.44 (5.37)</td>
<td>21.22 (5.24)</td>
<td>19.89 (4.73)</td>
<td>-0.03 (0.47)</td>
<td>-0.95, 0.90</td>
<td>0.27 (0.47)</td>
<td>-0.67, 1.19</td>
</tr>
</tbody>
</table>

Note. BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; SBI=Savoring Beliefs Inventory; RPA-D=Responses to Positive Affect-Dampening Scale; BAS=Behavioral Activation Scale; PA=Positive Affect; NA=Negative Affect. Negative effect sizes (d) denote increases on the outcome measures, and positive effect sizes (d) denote decreases.
<table>
<thead>
<tr>
<th>Measure</th>
<th>BLA</th>
<th>Pre</th>
<th>Post</th>
<th>FU</th>
<th>BLA-Pre</th>
<th>Pre-Post</th>
<th>Post-FU</th>
<th>Pre-FU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>d (SE)</td>
<td>CI (SE)</td>
<td>d (SE)</td>
<td>CI (SE)</td>
</tr>
<tr>
<td>SIGH-A</td>
<td>12.11 (5.13)</td>
<td>13.11 (4.54)</td>
<td>11.22 (5.02)</td>
<td>11.11 (5.09)</td>
<td>-0.21 (.47)</td>
<td>-1.12, .73</td>
<td>.39 (.48)</td>
<td>-.56, 1.31</td>
</tr>
<tr>
<td>SIGH-D</td>
<td>25.67 (4.12)</td>
<td>26.33 (3.67)</td>
<td>23.56 (3.32)</td>
<td>23.56 (2.70)</td>
<td>-0.17 (.47)</td>
<td>-1.09, .76</td>
<td>.79 (.49)</td>
<td>-.20, 1.71</td>
</tr>
<tr>
<td>DASS-A</td>
<td>8.22 (6.08)</td>
<td>10.11 (4.83)</td>
<td>7.44 (5.27)</td>
<td>6.44 (4.69)</td>
<td>-0.34 (.47)</td>
<td>-1.26, .60</td>
<td>.53 (.48)</td>
<td>-.44, 1.44</td>
</tr>
<tr>
<td>DASS-D</td>
<td>7.22 (4.58)</td>
<td>9.11 (4.26)</td>
<td>6.67 (4.58)</td>
<td>5.67 (4.06)</td>
<td>-0.43 (.48)</td>
<td>-1.34, .53</td>
<td>.55 (.48)</td>
<td>-.41, 1.47</td>
</tr>
</tbody>
</table>

*Note. BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; SIGH-A=Structured Interview for the Hamilton Anxiety Rating Scale; SIGH-D=Structured Interview for the Hamilton Depression Rating Scale; DASS-A=Depression Anxiety and Stress Scales-Anxiety; DASS-D=Depression Anxiety and Stress Scales-Depression. Negative effect sizes (d) denote increases on the outcome measures, and positive effect sizes (d) denote decreases.*
Table 8

*Effects on functioning, quality of life, and well-being (Cohen’s d)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>BLA Mean (SD)</th>
<th>Pre Mean (SD)</th>
<th>Post Mean (SD)</th>
<th>FU Mean (SD)</th>
<th>BLA-Pre d (SE)</th>
<th>Pre-Post d (SE)</th>
<th>Post-FU d (SE)</th>
<th>Pre-FU d (SE)</th>
<th>CI</th>
<th>CI</th>
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</thead>
<tbody>
<tr>
<td>WSAS</td>
<td>11.22 (7.14)</td>
<td>14.44 (7.02)</td>
<td>9.44 (6.58)</td>
<td>8.67 (4.09)</td>
<td>-.46 (.48)</td>
<td>-.137 (.49)</td>
<td>.74 (.50)</td>
<td>.14 (.47)</td>
<td>-.79, 1.06</td>
<td>1.01, -.02, 1.93</td>
</tr>
<tr>
<td>QLESQ-SF</td>
<td>47.67 (5.59)</td>
<td>45.22 (9.85)</td>
<td>49.89 (9.32)</td>
<td>51.44 (7.43)</td>
<td>.31 (.47)</td>
<td>-.64 (.48)</td>
<td>-.49 (.47)</td>
<td>-.18 (.47)</td>
<td>-.110, .75</td>
<td>-.71, -1.63, .27</td>
</tr>
<tr>
<td>MHC-SF</td>
<td>35.33 (35.33)</td>
<td>34.56 (9.71)</td>
<td>41.11 (11.10)</td>
<td>40.67 (11.81)</td>
<td>.07 (.47)</td>
<td>-.86 (.48)</td>
<td>-.63 (.48)</td>
<td>.04 (.48)</td>
<td>-.89, .96</td>
<td>-.57, -1.48, .40</td>
</tr>
</tbody>
</table>

*Note.* BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; WSAS=Work & Social Adjustment Scale-Clinician Rated; QLESQ-SF=Quality of Life Enjoyment and Satisfaction Questionnaire-Short Form; MHC-SF=Mental Health Continuum – Short Form. Negative effect sizes (d) denote increases on the outcome measures, and positive effect sizes (d) denote decreases.
### Table 9

*Effects on specific positive emotions (Cohen’s d)*

<table>
<thead>
<tr>
<th>Measure</th>
<th>BLA</th>
<th>Pre</th>
<th>Post</th>
<th>FU</th>
<th>BLA-Pre</th>
<th>Pre-Post</th>
<th>Post-FU</th>
<th>Pre-FU</th>
</tr>
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<tbody>
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<td>Mean</td>
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<td>Mean</td>
<td>Mean</td>
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<td>Mean</td>
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<td></td>
<td>(SD)</td>
<td>(SD)</td>
<td>(SD)</td>
<td>(SD)</td>
<td>(SE)</td>
<td>(SE)</td>
<td>(SE)</td>
<td>(SE)</td>
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<tr>
<td>Contentment</td>
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<td>19.08</td>
<td>21.78</td>
<td>.08</td>
<td>-.85</td>
<td>1.00</td>
<td>-.55</td>
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<td></td>
<td>(3.71)</td>
<td>(4.94)</td>
<td>(5.88)</td>
<td>(6.10)</td>
<td>(.47)</td>
<td>(.48)</td>
<td>(.48)</td>
<td>(.48)</td>
</tr>
<tr>
<td>Pride</td>
<td>18.78</td>
<td>18.22</td>
<td>20.67</td>
<td>22.56</td>
<td>.11</td>
<td>-.82</td>
<td>1.03</td>
<td>-.51</td>
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<td>(5.38)</td>
<td>(4.76)</td>
<td>(4.77)</td>
<td>(3.64)</td>
<td>(.47)</td>
<td>(.49)</td>
<td>(.49)</td>
<td>(.50)</td>
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<td>Love</td>
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<td>24.67</td>
<td>27.33</td>
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<td>-1.04</td>
<td>.81</td>
<td>-.02</td>
</tr>
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<td></td>
<td>(7.36)</td>
<td>(7.31)</td>
<td>(6.78)</td>
<td>(4.33)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.48)</td>
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<td>Compassion</td>
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<td>-.19</td>
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<td></td>
<td>(4.00)</td>
<td>(4.24)</td>
<td>(3.94)</td>
<td>(4.09)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
</tr>
<tr>
<td>Amusement</td>
<td>20.56</td>
<td>21.44</td>
<td>22.44</td>
<td>24.22</td>
<td>-.14</td>
<td>-1.05</td>
<td>.79</td>
<td>-.15</td>
</tr>
<tr>
<td></td>
<td>(6.56)</td>
<td>(6.46)</td>
<td>(6.89)</td>
<td>(5.17)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
</tr>
<tr>
<td>Awe</td>
<td>24.31</td>
<td>22.00</td>
<td>25.44</td>
<td>26.67</td>
<td>.38</td>
<td>-.57</td>
<td>1.30</td>
<td>-.61</td>
</tr>
<tr>
<td></td>
<td>(5.18)</td>
<td>(6.78)</td>
<td>(4.10)</td>
<td>(6.16)</td>
<td>(.48)</td>
<td>(.48)</td>
<td>(.48)</td>
<td>(.47)</td>
</tr>
<tr>
<td>Serenity</td>
<td>8.67</td>
<td>5.89</td>
<td>7.33</td>
<td>7.33</td>
<td>1.45</td>
<td>.35</td>
<td>2.41</td>
<td>-.66</td>
</tr>
<tr>
<td></td>
<td>(1.94)</td>
<td>(1.90)</td>
<td>(2.45)</td>
<td>(1.73)</td>
<td>(.52)</td>
<td>(.48)</td>
<td>(.48)</td>
<td>(.47)</td>
</tr>
<tr>
<td>Attentiveness</td>
<td>11.67</td>
<td>10.33</td>
<td>10.44</td>
<td>11.33</td>
<td>.54</td>
<td>-.42</td>
<td>1.46</td>
<td>-.05</td>
</tr>
<tr>
<td></td>
<td>(2.60)</td>
<td>(2.29)</td>
<td>(2.60)</td>
<td>(2.29)</td>
<td>(.48)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
</tr>
<tr>
<td>Self-Assurance</td>
<td>12.58</td>
<td>10.89</td>
<td>11.78</td>
<td>13.51</td>
<td>.58</td>
<td>-.39</td>
<td>1.49</td>
<td>-.30</td>
</tr>
<tr>
<td></td>
<td>(3.99)</td>
<td>(2.37)</td>
<td>(3.38)</td>
<td>(3.54)</td>
<td>(.48)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.47)</td>
</tr>
<tr>
<td>Joviality</td>
<td>20.44</td>
<td>18.67</td>
<td>18.67</td>
<td>22.89</td>
<td>.33</td>
<td>-.62</td>
<td>1.24</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>(5.79)</td>
<td>(5.02)</td>
<td>(4.58)</td>
<td>(5.80)</td>
<td>(.47)</td>
<td>(.47)</td>
<td>(.49)</td>
<td>(.49)</td>
</tr>
</tbody>
</table>
Note. BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; "Denotes measures from the Dispositional Positive Emotion Scales (DPES). "Denotes measures from the Positive and Negative Affective Schedule-Expanded Form (PANAS-X). Negative effect sizes (d) denote increases on the outcome measures, and positive effect sizes (d) denote decreases.
Figure 1

Recruitment flow of participants into the study

25 Participant names received

19 phone screened

11 consented and randomized

4 randomized to 2-week baseline
3 randomized to 4-week baseline
4 randomized to 6-week baseline

6 Unable to contact for screen

1 Above SBI cutoff
4 Moved away
1 Receiving other treatment
1 Received over 18 previous treatment sessions
1 Lost contact after screening

1 withdrawn due to personal issues
1 dropped
Figure 2

*Weekly Savoring Belief Inventory (SBI) scores across baseline (2-, 4-, or 6-weeks), intervention, and follow-up phases for P1, P2, and P3*
Figure 3

Weekly Savoring Belief Inventory (SBI) scores across baseline (2-, 4-, or 6-weeks), intervention, and follow-up phases for P4, P5, and P6
Figure 4

Weekly Savoring Belief Inventory (SBI) scores across baseline (2-, 4-, or 6-weeks), intervention, and follow-up phases for P7, P8, and P9.
Figure 5

Number of weekly positive activities across study phases by participant
Appendix A

**Intervention Adherence Guidelines**

**Enhancing Positive Emotion Module**

**Adherence Rating Scale**

**Session 1 – 90 minutes**

I. **Introduction to Treatment**

Did the therapist do the following (indicate only presence or absence):

☐ Yes ☐ No   Explain the rationale for treatment

☐ Yes ☐ No   Describe the treatment procedures

II. **Psychoeducation:**

Did the therapist do the following (indicate only presence or absence)

☐ Yes ☐ No   Describe the nature and adaptive function of different positive emotions.

☐ Yes ☐ No   Explain the role of positive emotions in anxiety, depression, and overall mental health

☐ Yes ☐ No   Introduce the concept of emotion regulation and describe briefly describe ways of regulating positive emotions

☐ Yes ☐ No   Explain maladaptive ways individuals with anxiety and depression tend to regulate their positive emotions

III. **Functional Assessment:**

Did the therapist do the following (indicate only presence or absence)

☐ Yes ☐ No   Identify which positive emotions the patient experiences most often/least often

☐ Yes ☐ No   Identify key sources (idiographic) of positive emotion for patient at times when has felt best

☐ Yes ☐ No   Identify obstacles to patient pursuing positive emotional experiences
IV. Behavioral Modification:

Did the therapist do the following (indicate only presence or absence)

☐ Yes  ☐ No  Discuss behavioral strategies for increasing positive emotions (situation selection, situation modification, and response modulation)

☐ Yes  ☐ No  Identify new behaviors for patient to implement

V. Homework Assignment:

Did the therapist do the following (indicate only presence or absence)

☐ Yes  ☐ No  Assign 3 positive emotion-generating activities for patient

☐ Yes  ☐ No  Assign Behavioral Strategies Form for patient to track use of new behaviors

VI. Session Length:

☐ Yes  ☐ No  Was the session length approximately 90 minutes (within 75-105 minutes)?

Total “Yes”  ____  ÷  Total “Yes”  ____  +  Total “No”  ____  =  Total Adherence Score  ____
Enhancing Positive Emotion Module
Adherence Rating Scale

Session 2 – 60 minutes

I. Homework Review:

Did the therapist do the following (indicate only presence or absence):

☐ Yes  ☐ No  Review homework assigned and assess for any difficulty with completing the homework forms

II. Attentional and Cognitive Strategies:

Did the therapist do the following (indicate only presence or absence)

☐ Yes  ☐ No  Describe attentional and cognitive strategies of regulating positive emotions
☐ Yes  ☐ No  Identify beliefs related to dampening of positive emotions
☐ Yes  ☐ No  Help patient generate more adaptive appraisals
☐ Yes  ☐ No  Complete an in-session savoring exercise during which the patient is instructed to experience their positive emotions and observe any attempts distract or dampen

III. Homework Assignment:

Did the therapist do the following (indicate only presence or absence):

☐ Yes  ☐ No  Assign daily savoring exercises for patient to complete and record responses on the Cognitive Strategies Form
☐ Yes  ☐ No  Instruct the patient to continue implementing new behaviors and recording responses on the Behavioral Strategies Form

IV. Session Length:

☐ Yes  ☐ No  Was the session length approximately 60 minutes (within 45-75 minutes)?

Total “Yes” ____ ÷ Total “Yes” ____ + Total “No” ____ = Total Adherence Score ____
Enhancing Positive Emotion Module
Adherence Rating Scale

Session 3 – 60 minutes

I. Homework Review:

Did the therapist do the following (indicate only presence or absence):

□ Yes □ No   Review homework assigned and assess for any difficulty with completing the homework forms

II. Integrating Behavioral and Cognitive Strategies:

Did the therapist do the following (indicate only presence or absence)

□ Yes □ No   Help patient advance their understanding of behavioral and/or cognitive strategies of positive emotion regulation and how they can be adaptively applied in the patient’s life context

□ Yes □ No   Complete an in-session imaginal or in vivo exposure exercise that elicits personally relevant positive emotions

III. Homework Assignment:

Did the therapist do the following (indicate only presence or absence):

□ Yes □ No   Assign 3 homework exposure exercises and have patient record responses on Exposure Form

□ Yes □ No   Assign patient to complete the Integrated Positive Emotion Regulation Form for 3-5 positive emotional experiences during the week

□ Yes □ No □ N/A  Continue to assign previous exercises/forms, as appropriate

IV. Session Length:

□ Yes □ No   Was the session length approximately 60 minutes (within 45-75 minutes)?

Total “Yes” ____ ÷ Total “Yes” ____ + Total “No”____ = Total Adherence Score ____
Enhancing Positive Emotion Module
Adherence Rating Scale

Session 4 – 60 minutes

I. Homework Review:
Did the therapist do the following (indicate only presence or absence):

☐ Yes  ☐ No  Review homework assigned and assess for any difficulty with completing the homework forms

II. Integrating Behavioral and Cognitive Strategies:
Did the therapist do the following (indicate only presence or absence)

☐ Yes  ☐ No  Help patient advance their understanding of behavioral and/or cognitive strategies of positive emotion regulation and how they can be adaptively applied in the patient’s life context

☐ Yes  ☐ No  ☐ N/A Complete an in-session imaginal or in vivo exposure exercise that elicits personally relevant positive emotions, as needed

III. Discuss Progress, Goals, and Termination:
Did the therapist do the following (indicate only presence or absence)

☐ Yes  ☐ No  Review patient’s progress and any areas to continue working on

☐ Yes  ☐ No  Discuss patient’s long-term positive emotional goals, and how to apply strategies learned toward achievement of these goals

☐ Yes  ☐ No  Find out what patient found most/least helpful

☐ Yes  ☐ No  Discuss termination and follow-up process

IV. Session Length:

☐ Yes  ☐ No  Was the session length approximately 60 minutes (within 45-75 minutes)?

Total “Yes” _____ ÷ Total “Yes” _____ + Total “No”______ = Total Adherence Score

______
Appendix B

**Homework Forms**

Positive Emotions Identification Exercise

Below is a list of the top ten most frequently experienced positive emotions. Please read through the definitions and note an example from your own life when you experienced each of these positive emotions.

**Joy**

Joy happens in an instant -- a perfect moment captured when all is just exactly as it should be. Think of a wonderful holiday morning with the family, an unexpected present that delights you, or seeing the first smile on your infant's face.

My example: ____________________________________________

**Gratitude**

Gratitude is a moment of realizing someone has gone out of their way for you, or simply feeling overwhelmed with your heart opening, after being moved in some way. With gratitude comes a desire to give in return or 'pay it forward' in some way.

My example: ____________________________________________

**Serenity**

Serenity is like a mellow, relaxed, or sustained version of Joy. Serenity is a peacefulness that comes on a cloudless day, when you realize there's nothing you have to do. Serenity is indulging in a favorite luxury, and being mindful enough to take it in. Serenity is the moment on vacation when you finally let go.

My example: ____________________________________________

**Interest**

Interest is a heightened state that calls your attention to something new that inspires fascination, and curiosity. Like a shiny new toy to capture your imagination, interest is alive and invigorating. Interest wakes you up, and leaves you wanting more.

My example: ____________________________________________

**Hope**
Unlike other emotions that arise out of comfort and safety, hope springs out of dire circumstances, as a beacon of light. Deep within the core of hope is the belief that things can change, turn out better. Possibilities exist. Hope sustains you and motivates you to turn things around.

My example:______________________________________________________________________________

Pride

Ever done something really well that took a little time and effort? Maybe you reached a goal you never thought was attainable? Then pat yourself on the back with unadulterated pride. Stand back, take that deep breath and let it in -- you earned it.

My example:______________________________________________________________________________

Amusement

Think of amusement as those delightful surprises that make you laugh. It's those unexpected moments that interrupt your focus and crack you up. It's a great feeling to have amusement sparkle out of the doldrums and instantly change your perspective.

My example:______________________________________________________________________________

Inspiration

Inspiration is a moment that touches your heart and nearly takes your breath away - or takes in your breath, as the word literally translates. Inspiration whispers between the strands of your hair, as you watch a perfect sunset, witness academic or athletic excellence, or observe unexpected triumphs over adversity.

My example:______________________________________________________________________________

Awe

Awe happens when you come across goodness on a grand scale, and you feel overwhelmed by greatness. Awe is triggered when we are faced with the vastness of nature, or the cosmos. Gazing at the Milky Way and counting the stars, or standing at the top of the Grand Canyon triggers awe.

My example:______________________________________________________________________________

Love
Love encompasses all of the above: joy, gratitude, serenity, interest, hope, pride, amusement, inspiration and even awe. Love is all that and more. When we experience love, our bodies are flooded with the "feel good" hormones that reduce stress and even lengthen our lives.

My example:______________________________________________________________________________

Source: Adapted from Kari Henley and Barbara Fredrickson (2009).
## Behavioral Strategies Form

<table>
<thead>
<tr>
<th>Date</th>
<th>Positive Activity</th>
<th>Behavioral Strategies</th>
<th>Consequences (How did you feel? How did it work?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/3/13</td>
<td>Go to dinner with a friend.</td>
<td>- Emailed my friend to invite her to dinner Thursday night.</td>
<td>- Had a better time than usual. Felt like I had accomplished my goals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Initiated conversation on a topic of mutual interest.</td>
<td>- Walked home because it was a nice evening.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Did not check my email or watch during dinner.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Made a reservation at a new restaurant I have wanted to try.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>“Daily Vacation” Savoring Activity (20 minutes)</td>
<td>Observations of Your Experience</td>
<td>Dampening Thoughts</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4/11/13</td>
<td>Having a cappuccino at favorite coffee shop</td>
<td>Felt satisfied and treated.</td>
<td>Thought I should do this more often, but I don’t have the time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noticed the aromas, flavors, and textures of the drink.</td>
<td>Wanted to relax more, but was thinking of how many other tasks I need to get done today.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noticed I liked the music playing.</td>
<td></td>
</tr>
</tbody>
</table>
### Integrated Positive Emotion Regulation Strategies Form

<table>
<thead>
<tr>
<th>Date</th>
<th>Positive Activity</th>
<th>Cognitive Strategies</th>
<th>Behavioral Strategies</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/18/13</td>
<td>Musical concert</td>
<td>Present-focused attention and savoring of the sounds and sensations.</td>
<td>Went to the concert even though I was anxious.</td>
<td>Enjoyed myself overall.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reappraisal of thought that I don’t have time to spend going to concerts.</td>
<td><strong>Bought a CD at the show and listened to it on the way home.</strong></td>
<td>Felt more relaxed the next day.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Called my friend and told them about the concert afterwards.</strong></td>
<td>Was able to remind myself I can have a good time even when I am stressed.</td>
</tr>
</tbody>
</table>
Exposure Form

*Before Exposure:*

Positive Exposure Goal:

Dampening thoughts or beliefs:

Avoidance behaviors:

Feelings/emotions:

Adaptive cognitive and behavioral regulatory strategies to implement:

*After Exposure:*

Goal completed? Yes No Partially (Circle one)

What were your thoughts, feelings/emotions, and behaviors during the exposure?:

What worked? What didn't work?

What did you learn?
Appendix C

Feedback Form

(Completed following final intervention session)

*Please provide feedback for us by answering the questions below as honestly as possible.*

1. Overall, how acceptable was the intervention to you? In other words, did you think that the treatment approach and activities made sense and were reasonable. (Circle answer)

<table>
<thead>
<tr>
<th>Not at all acceptable</th>
<th>Slightly acceptable</th>
<th>Moderately acceptable</th>
<th>Very acceptable</th>
<th>Extremely acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. Overall, how satisfied were you with the intervention? (Circle answer)

<table>
<thead>
<tr>
<th>Not at all satisfied</th>
<th>Slightly satisfied</th>
<th>Moderately satisfied</th>
<th>Very satisfied</th>
<th>Extremely satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

3. In your own words, please tell us what you thought of the intervention overall.

4. What elements of the intervention did you find most helpful?

5. What elements of the intervention did you find least helpful?

6. Are there any changes you would recommend?

7. What are the most important things you learned from this intervention?
Appendix D

Manuscript for Publication

Running Head: EVALUATION OF A POSITIVE EMOTION INTERVENTION

A Preliminary Evaluation of a Positive Emotion Intervention for Anxiety and Depression

Jenna R. Carl, M.A.

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Abstract

Research has shown that positive emotions are important to optimal health, functioning, and well-being, and contribute to resilience against psychological dysfunction. However, many clinical disorders, particularly anxiety and mood disorders, are associated with deficits in positive emotion that may contribute to symptoms and inhibit full recovery, and these deficits have received insufficient attention in treatment.

The present study represents a preliminary evaluation of the feasibility and utility of a novel augmentation intervention for enhancing positive emotion in anxiety and depressive disorders. Nine patients with a range of principal anxiety disorders who had previously completed an initial course of cognitive-behavioral treatment at the Center for Anxiety and Related Disorders at Boston University (CARD) completed the study. The study utilized a single case experimental design, specifically a multiple baseline across participants design, with participants randomized to 2-, 4-, or 6-week baseline periods to control for the effect of time on outcome variables.

Results indicated that the intervention was effective in improving positive emotion regulation skills for 55% of participants. The intervention was also associated with improvements in anxiety and depressive symptoms, positive and negative emotion, functioning, quality of life, and well-being. Participants reported high acceptability and satisfaction with the study intervention. Future research is needed to confirm the validity of these findings and evaluate the generalizability of these effects across patients and settings.

Keywords: Positive emotion, anxiety, depression, cognitive-behavioral treatment
A Preliminary Evaluation of a Positive Emotion Intervention for Anxiety and Depression

Positive emotions are important to optimal health, functioning, and well-being (Dockray & Steptoe, 2010; Garland et al., 2010; Lyubomirsky, King, & Diener, 2005). Fredrickson’s (1998, 2001) broaden-and-build theory posits that positive emotions are associated with a range of beneficial cognitive, physiological, and behavioral changes, such as broadened attention and cognitive flexibility, that synergistically enhance functioning. Maintained over time, moderate levels of positive emotion are hypothesized to contribute to resilience to stress and psychological dysfunction (Fredrickson & Levenson, 1998; Garland et al., 2010).

Unfortunately, many clinical disorders, particularly anxiety and mood disorders, are associated with deficits in positive emotions that may exacerbate symptoms and inhibit full recovery. Structural models have indicated deficits in positive affectivity are particularly associated with unipolar depression, social anxiety (Brown, Chorpita, & Barlow, 1998; Brown, 2007), and agoraphobia (Rosellini, Lawrence, Meyer, & Brown, 2010); however, increasing evidence suggests disturbances in positive emotion regulation (defined as how people influence the onset, nature and course of their positive emotions) are more widely present across anxiety and depressive disorders (Carl, Fairholme, Gallagher, Thompson-Hollands, & Barlow, 2014; Carl, Soskin, Kerns, & Barlow, 2013; Congard, Dauvier, Antoine, & Gilles, 2011; Eisner, Johnson, & Carver, 2009; Feldman, Joormann, & Johnson, 2008; Gilbert, 2012).

Unlike healthy individuals, people with anxiety and depressive symptoms tend to regulate their positive emotions in ways that minimize rather than enhance positive
emotions (Carl et al., 2013; Eisner et al., 2009; Feldman et al., 2008; Tugade & Fredrickson, 2007). Anxiety symptoms associated with generalized anxiety disorder (GAD), social anxiety disorder (SOC), panic disorder (PD), obsessive compulsive disorder (OCD), and agoraphobia (AG) have been associated with decreased “savoring” or maintenance of positive emotions as well as increased “dampening” or downregulation of positive emotions (Eisner et al., 2009). Individuals endorsing high anxious arousal (associated with PD, AG, SOC, and specific phobia), anxious apprehension (associated with GAD), or anhedonic depression all showed a reduced tendency to maintain positive affect as assessed by startle responses following a pleasant mood induction (Larson et al., 2007).

Despite accumulating data identifying disturbances in positive emotionality and positive emotion regulation in emotional disorders, these deficits have received insufficient attention as treatment targets (Quoidbach, Mikolajczak, & Gross, 2015). Evidence-based psychological and pharmacological treatments for emotional disorders have primarily focused on targeting symptoms and processes associated with negative emotionality, such as general distress, avoidance, worry, and rumination (Fava & Ruini, 2003; Garland et al., 2010). There are a small number of psychological interventions that address processes related to positive emotions, such as Well-Being Therapy (Fava & Ruini, 2003) and positive psychology interventions (Seligman, Rashid, & Parks, 2006; Sin & Lyubomirsky, 2009), however, these interventions do not specifically target disturbances in positive emotion regulation.
The present study seeks to address this gap in existing treatment options through developing and evaluating a positive emotion regulation focused augmentation intervention for anxiety and depressive disorders. The study had three primary aims: 1. To develop a CBT module targeting positive emotion regulation disturbances associated with anxiety and unipolar depressive disorders; 2. To assess the feasibility and utility of the proposed intervention in a single-case design pilot study of 9 anxiety treatment-completers with deficits in positive emotion regulation through evaluation of patient recruitment and retention, treatment acceptability, and treatment satisfaction; and 3. To assess the proposed intervention’s effects on patients’ positive and negative emotions, emotional disorder symptoms, functioning, mental health, and quality of life over the course of treatment and at a 3-month follow-up.

**Methods**

**Study Design**

The pilot study employed a multiple baseline across participants design, a commonly used single-case experimental design for conducting a preliminary assessment of a novel intervention, and one which allows for evaluation of treatment-related changes within- and between-participants (Barlow, Nock, & Hersen, 2009). Participants were randomized to 2-, 4-, or 6-week baseline periods to control for the effect of time on outcome variables. Primary outcome variables were assessed weekly during the baseline and intervention phases to permit analysis of functional relationships between individual factors, specific treatment components, and therapeutic outcomes. Major assessments
were conducted at baseline, pre-, post-intervention, and FU, and included both a self-report and an independent evaluator-rated component.

**Participants**

Patients were recruited from adult outpatients at Boston University’s Center for Anxiety and Related Disorders (CARD), and all study procedures were approved by Institutional Review Board. Eligible individuals had received a formal diagnostic evaluation at CARD using the Anxiety Disorder Interview Schedule (ADIS; DiNardo, Brown, & Barlow, 1994), been diagnosed with a principal anxiety disorder, completed between 8-18 sessions of CBT at CARD focused on treatment of their anxiety within the previous 18 months, and exhibited difficulties maintaining positive emotions as assessed by the SBI. Exclusion criteria were the following: 1. Acute risk factors (suicidal or homicidal ideation or clinical condition requiring immediate treatment); 2. The individual was in treatment elsewhere for related issues (or was not on a stable dose of medication); 3. The individual was unable or unwilling to commit to the duration of the study and study procedures.

Potential participants completed a phone screen to determine eligibility and interest in participation. Positive emotion regulation skills were assessed utilizing the Savoring Beliefs Inventory (SBI; Bryant, 2003), a 24-item self-report measure that assesses individuals’ tendencies to maintain versus dampen their positive emotions. Individuals with a total score of 34 or less on the SBI, who did not meet exclusion criteria, were eligible for the study. The SBI cutoff was determined based on the mean score observed across several prior studies of nonclinical individuals (Bryant, 2003).
19 individuals were screened for the study, and 11 (58%) were eligible (Figure 1). Notably, all of those who were eligible elected to participate in the study and were consented and randomized to one of the three baseline conditions. Of those randomized, 1 was withdrawn from the study after 2 sessions of the intervention due to the emergence of acute personal issues and a second dropped from the study during the baseline phase. Data from the 9 study completers are included in the analyses. The final participants included in the study ranged in age from 20-55 (mean=37, $SD=11.59$), were 55% female, 89% White/Caucasian, and 100% non-Hispanic. Participant characteristics are presented in Table 1.

**Initial Course Of Treatment**

Participants were required to have completed 8-18 sessions of CBT for their principal anxiety disorder to be eligible for the present study. For this initial course of CBT, 6 participants received the UP, a CBT protocol targeting transdiagnostic emotional disorders, and 3 received single-disorder protocols targeting their principal anxiety disorder (Table 1). The treatment protocols utilized were all evidence-based and manualized (Barlow et al., 2011; Craske & Barlow, 2006; Foa, Yadin, & Lichner, 2012; Hope, Heimberg, & Turk, 2010; Zinbarg, Craske, & Barlow, 2006), and administered by CBT-trained clinicians at CARD who ranged from advanced graduate students to licensed psychologists.

**Study Intervention**

The proposed CBT module was developed based on theory and research related to adaptive positive emotion regulation, and specific regulatory disturbances found in
association with anxiety and depression. The conceptual framework, treatment targets, and treatment strategies of the proposed intervention were based on results from a recent review (Carl et al., 2013). The proposed intervention aimed to specifically target the disturbances in positive emotion regulation common to anxiety and depressive disorders utilizing relevant treatment strategies identified in the review (Carl et al., 2013). The intervention adapted cognitive and behavioral intervention strategies that could be applied to making improvements in positive emotion regulation. For the present study, the intervention was designed as an augmentation intervention to be delivered in four sessions following a standard course of CBT for anxiety or unipolar depressive disorders. The primary target of the intervention was improved behavioral and cognitive regulation of positive emotions with the goal of facilitating optimization of levels of positive emotionality, and reducing residual emotional disorder symptoms. Table 2 provides a description of the session by session intervention content.

Interception adherence guidelines were created prior to the study for the purpose of assisting the therapist while delivering the treatment and facilitating quality control. The therapist referred to the guidelines during sessions to ensure coverage of content, and rated the sessions according to the guidelines during and immediately following the session. All sessions were audio recorded for supervision and adherence purposes, and session recordings were reviewed when there was a question regarding whether an adherence guideline was met. All session adherence ratings were over 80%, with the mode rating 100%.

**Measures**
Primary outcomes of positive and negative emotions, positive emotion regulation tendencies, and anxiety and depressive symptom severity and interference were assessed weekly during the baseline and intervention phases with a brief battery (15 minutes) of psychometrically validated self-report measures. Participants completed all self-report assessments online via Qualtrics, a confidential Internet-based survey program commonly used for clinical data collection. Participants were sent a link to complete the self-report battery weekly, and follow-up contact was made by email and/or phone if participants failed to complete the battery each week. During the intervention phase, participants were not able to advance to subsequent sessions until the weekly battery was completed.

Major assessments occurred at baseline, pre-intervention (pre), post-intervention (post), and a 3-month follow-up (FU). For these assessments, participants completed a longer version of the self-report battery (25 minutes) that included an assessment of primary outcomes as well as broader indicators of mental health and quality of life. In addition, a trained independent evaluator conducted an interview (in person or by phone) to assess anxiety and depressive symptoms and functional impairment (30 minutes). Specifically, the independent evaluators administered the Structured Interview Guide for the Hamilton Depression/Anxiety Rating Scales (SIGH-D; Williams, 1988; SIGH-A; Shear, Vander Bilt, & Rucci, 2001) and the Work and Social Adjustment Scale-Clinician Rated (WSAS; Marks, Connolly, & Hallam, 1973; Mundt, Marks, Shear, & Greist, 2002). The independent evaluators were two advanced graduate students who had been previously trained to a gold standard on administration of these measures for a large R01 trial at CARD.
Description of Assessment Measures

Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson & Clark, 1994). The PANAS-X is a 60-item self-report measure assessing affect. Each item consists of an affective descriptor (e.g., cheerful, sad, timid) and participants are instructed to rate the extent to which they have “felt this way” in the specified time period. A range of temporal instructions can be used reliably with this measure, and the present study will use the instructions of rating affect for “the past week.” This measure includes subscales assessing general dimensions of positive and negative affect. This measure has shown good convergent and discriminant validity and reliability (Watson & Clark, 1999), and is a commonly used measure of affect.

Savoring Beliefs Inventory (SBI; Bryant, 2003). The SBI is a 24-item self-report questionnaire that assesses individuals’ beliefs regarding their tendencies to savor (hold onto or enhance) versus dampen (minimize) positive emotional outcomes from past, present, and future experiences. Example savoring items include: “I know how to make the most of good time” (present) or " I feel a joy of anticipation when I think about upcoming good things” (future). Example dampening items include: “It’s hard for me to hang onto a good feeling for very long” (present) or “When I reminisce about pleasant memories I often start to feel sad or disappointed” (past). The total score is calculated by subtracting the sum score of the dampening items from the sum score of the savoring items. The SBI has demonstrated high reliability as well as convergent and discriminant validity (Eisner et al., 2009; Bryant, 2003).
Responses to Positive Affect Scale (RPA; Feldman, Joormann, & Johnson, 2008). The RPA is a 17-item self-report measure that assesses cognitive response tendencies to positive emotions. It includes 3 subscales, evaluating constructs of dampening and emotion- and self-focused positive rumination. In the present study, only the dampening scale is used, as positive rumination appears more relevant to bipolar spectrum symptoms than to unipolar mood or anxiety symptoms (Carl et al., 2013; Feldman et al., 2008). Dampening reflects thought processes that minimize positive emotions (e.g., “think I don’t deserve this” or “remind yourself these feelings won’t last”). The RPA has shown good internal consistency, reliability, and convergent and discriminant validity (Eisner et al., 2009; Feldman et al., 2008; Raes, Daems, Feldman, Johnson, & van Gucht, 2009).

Mental Health Continuum – Short Form (MHC-SF; Keyes, 2009). The MHC-SF is a 14-item self-report measure that assesses social, emotional and psychological well-being. The measure has shown excellent internal consistency and discriminant validity in adult and adolescent samples in the United States and several countries internationally (Keyes, 2005, 2006; Keyes et al., 2008; Lamers et al., 2011; Westerhof & Keyes, 2009).

Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q; Endicott, Nee, Harrison, & Blumenthal, 1993). The QLESQ-SF is a 14-item self-report questionnaire that assesses a range of domains shown to be important to quality of life. The measure assesses satisfaction over the past week across the following: physical health; mood; work; household activities; social relationships; family relationships; leisure activities; daily functioning; sexual drive and interest; economic status; living situation; physical stability; vision; and overall sense of well-being. Each item is rated on
a 5-point scale (very poor to very good), and a higher total score indicates a better perceived quality of life. The Q-LES-Q has demonstrated high internal consistency and good construct validity (Ritsner, Kurs, Kostizky, Ponizovsky, & Modai, 2002).

**Hamilton Depression Rating Scale (HAM-D; Hamilton, 1960).** The HAM-D was used to evaluate depressive symptoms and administered in accordance with the Structured Interview Guide for the Hamilton Depression Rating Scale (SIGH-D; Williams, 1988). This commonly used measure has demonstrated good levels of interrater and test-retest reliability (Williams, 1988), as well as concurrent validity with similar clinician rated and self-report measures of depression symptoms (Bech et al., 1992). Scores of 0-7 indicate normal mood, 8-13 indicates mild depressive symptoms, 14-18 reflects moderate depressive symptoms, 19-22 indicates severe depression, and greater than 23 reflects very severe depression according to clinical interpretation guidelines.

**Hamilton Anxiety Rating Scale (HAM-A; Hamilton, 1959).** The HAM-A was used to assess anxiety symptoms and was administered in accordance with the Structured Interview Guide for the Hamilton Anxiety (SIGH-A; Shear, Vander Bilt, & Rucci, 2001). This commonly used measure has demonstrated good levels of interrater and test-retest reliability, as well as convergent validity with similar clinician rated and self-report measures of depression symptoms (Shear et al., 2001). According to clinical interpretation guidelines, a total score of 17 or below indicates mild anxiety severity, 18 to 24 reflects mild to moderate anxiety severity, and 25 to 30 indicates moderate to severe anxiety severity.
Work and Social Adjustment Scale-Clinician Rated (WSAS; Marks, Connolly, & Hallam, 1973; Mundt, Marks, Shear, & Greist, 2002). The WSAS is a five-item patient self-report scale used to assess functional impairment and interference in five domains: work, home management, private leisure, social leisure, and family relationships. The WSAS has demonstrated good internal consistency, test-retest reliability, and convergent validity, as well as sensitivity to change and usefulness as an outcome measure (Mundt et al., 2002).

Data Analytic Plan

Data were analyzed utilizing visual inspection techniques, in accordance with analytic guidelines for single case experimental designs (Barlow, Nock, & Hersen, 2009; Kazdin, 2003). Data from primary outcome measures were plotted graphically and assessed for changes in the level and slope across study phases. Reliable changes within-and between-participants in the level and slope of the outcome variables between baseline, intervention, and follow-up phases in predicted directions were considered significant and supportive of hypotheses regarding the effect of the intervention on primary and secondary outcome variables. Acceptability and feasibility of the intervention were examined based on recruitment and retention rates, participants’ ratings of acceptability and feasibility and qualitative feedback provided. Relative changes in the level or slope of outcome variables during the course of treatment were examined for associations with individual factors and specific treatment components. In addition, reliable change index scores (RC) were calculated to assess for the statistical reliability of the changes on primary outcome variables for each participant. RC scores were
calculated by subtracting an earlier timepoint score from a later timepoint score (e.g., subtracting pre from post) and dividing the result by the standard error of the differences (Sdiff; Ferguson, Robinson, & Splaine, 2002). RC scores greater than the z-score level of 1.96 are statistically significant at p > .05. Effect sizes and 95% confidence intervals were computed to obtain a preliminary estimate of the potential magnitude of the changes in outcome variables in the intervention and follow-up phases across participants.

**Results**

Upon consent, participants were randomized to a 2-, 4-, or 6-week baseline length condition. They were then organized into two panels of three participants, with one from each baseline length condition (Figures 1 and 2), and one panel of three participants with two from the 2-week and one from the 4-week conditions in the order of recruitment into the study (e.g., the first panel includes the first participants with 2-, 4- and 6-week baselines who completed the study, and so forth). Due to the attrition of two participants in the 6-week baseline condition, the third panel does not include a 6-week baseline condition, but rather two 2-week baselines and one 4-week. The first panel (Figure 1) shows the first experiment assessing the study hypotheses, with the second (Figure 2) and third (Figure 3) panels serving as replications, albeit the third panel is a partial replication given the lack of a 6-week baseline.

**Functional Analyses of the Effects of Baseline Condition**

Analyses of the changes in SBI across the 2-, 4-, and 6-week baseline conditions supports the hypothesis that there was not a consistent effect of time alone on SBI (Figures 1, 2, 3). That is, the increasing passage of time was not associated with changes
in SBI. Rather, baseline phases showed relative stability across individuals regardless of the length of the baseline. This is shown across the first panel (Figure 1) and the two replications (Figures 2 and 3). Additionally, for those participants who experienced significant changes in the level and slope of SBI (P1, P4, P6, P7, P8, P9), these changes occurred specifically during the intervention and follow-up phases and not during the baseline phase. Observations between participants and across panels further confirmed that changes did not occur until intervention was introduced (i.e., P1 in the 2-week, P8 in the 4-week, and P6 in the 6-week condition). Taken together, these data suggests a specific effect of the intervention rather than merely an effect of time or another external factor.

**Functional Analyses of Individual Data**

*Panel 1 - Participant 1.* P1’s scores on the SBI show an increase in level and slope corresponding with the phase change from baseline to intervention consistent with a positive effect of the intervention (Figure 1). During the baseline phase, SBI scores were relatively stable with a net nonsignificant increase (RC=.53; Table 4). In contrast, during the intervention, SBI scores increased significantly (RC=3.15), with sharp increases occurring between sessions 1 to 2 and 3 to 4. These changes may reflect a response to the behavioral positive emotion regulation strategies that are introduced in the first session and then reintegrated in the third session. SBI scores continued to increase significantly from post-FU (RC=5.52). The resulting total change from pre-FU was also significant (RC=8.67). It is notable that P1’s baseline SBI scores were low compared with most participants, and yet she made substantial improvements over the course of the
intervention and follow-up. P1’s scores on the RPA-D paralleled those on the SBI, showing specific intervention-related improvements that continued to the follow-up. These resulted in significant net decreases from pre-post (RC=-2.31) and post-FU (RC=-2.97). Alternatively, PA scores did not exhibit a response to the intervention. They declined slightly during the intervention only to rise to baseline levels at the FU. Nevertheless, P1 reported her weekly positive activities increased by approximately 86% from the baseline phase to the follow-up phase. P1’s anxiety and depressive symptom fluctuated over the course of the study making it difficult to draw conclusions related to the effect of the intervention. First SIGH-A and SIGH-D scores increased during the baseline phase (RC=.40 and RC=1.98, respectively), and then from pre-post, they decreased in similar magnitudes (RC=-.40 and RC=-1.49, respectively). There were no additional changes from post-FU. P1 rated the intervention acceptability and her satisfaction with it as “extremely acceptable/satisfying” (5/5).

Panel 1 - Participant 2. P2’s scores on the SBI increased slightly from the baseline to the intervention phases, but there was not a visible change in slope, thus it cannot be concluded that the intervention had a significant effect (Figure 1). Nevertheless, P2’s score on the SBI reached its highest level at the FU, and was moderately higher at that point than during most of the baseline phase. It is possible that delayed effects of the intervention were reflected in this increased score the FU timepoint. There were small nonsignificant changes in SBI during baseline (RC=.27; Table 4), pre-post (RC=-.13), and post-FU (RC=.40). For P2, RPA-D scores exhibited a more specific response to the intervention, with a notably decreased level from the
baseline to intervention phases. However, the improvements showed limited stability as these scores increased during the latter part of the intervention phase and at the FU. These late-stage increases may have been in part due to an outside stressor the participant was experiencing at the time. PA remained relatively stable across phases, and did not show a response to the intervention. Parallel to the trajectory of the RPA-D, PA worsened (i.e., increased) in the latter phase of the intervention (pre-post RC=1.47). P2’s number of weekly positive activities was stable across phases. By contrast, SIGH-A and SIGH-D both decreased significantly during the intervention phase (RC=-3.58 and RC=-3.47, respectively). There was some loss of these gains from post to FU (SIGH-A: RC=1.19 and SIGH-D: RC=.99). P2 rated the acceptability of the intervention and her satisfaction with it as “very acceptable/satisfying” (4/5).

**Panel 1 - Participant 3.** P3’s SBI scores were relatively stable across phases, and thus are not indicative of significant intervention-related effects (Figure 1). Nevertheless, SBI scores were slightly higher on average during the intervention versus baseline phases (RC=.44), suggesting there may have been a small, gradual shift upward as a result of the intervention. Similarly, RPA-D and PA were relatively stable, but showed slight improvements corresponding with the initiation of the intervention (Table 4). These minimal improvements were not maintained at the FU. P3’s weekly positive activities also remained stable across study phases, yet occupied a notably high range compared with other participants. SIGH-A and SIGH-D scores improved significantly from baseline to pre-intervention (RC=3.58 and RC=2.48, respectively). There were minimal changes during the intervention (RC=0 and RC=-.99, respectively) and FU (RC=-.80 and
RC=.50, respectively) phases. P3 rated the intervention as “extremely acceptable/satisfying” (5/5).

Panel 2 - Participant 4. P4’s scores on the SBI showed a marked change corresponding with the change from the baseline to intervention phases, suggestive of a positive effect of the intervention on SBI (Figure 2). During the baseline phase, P4’s scores were stable or decreasing (RC=-1.01; Table 4), they then increased significantly during the intervention phase (RC=2.61). They remained substantially elevated during the intervention phase compared with baseline despite a gradual downward slope during the intervention. Then from post-FU there was an increase (RC=1.41) suggesting some stability to the gains achieved during the intervention phase. Total change from pre-FU was significant (RC=4.02). Like P1, P4 had notably low SBI scores initially, and was nevertheless able to experience significant improvements due to the intervention.

P4 exhibited similar improvements on the RPA-D and PA as with the SBI that corresponded with the introduction of the intervention. For the RPA-D these gains were extended through the FU, suggesting a lasting benefit of the intervention on her cognitive emotion regulation skills. P4’s weekly positive activities increased by approximately 50% from the baseline to intervention and follow-up phases. SIGH-A and SIGH-D scores both worsened significantly from baseline-pre (RC=1.99 and RC=3.96, respectively), then improved significantly from pre-post (R=-1.99 and RC=-2.48, respectively). At the FU, the SIGH-A had worsened slightly again (RC=1.59), while the SIGH-D continued to improve significantly (RC=-1.98). P4 rated the intervention as “extremely acceptable/satisfying” (5/5).
Panel 2 - Participant 5. P5’s scores on the SBI increased at the baseline to intervention phase change (Figure 2), however, the average SBI during the intervention phase was only slightly higher than that during baseline (RC=.33; Table 4). The intervention did appear to have a stabilizing effect on SBI scores, moderating both the highs and lows observed during baseline. This stability continued from post-FU. The high initial (B1-B3) level of SBI is also notable for P5. These scores were a marked elevation from his screening score (SBI=8), thus several of his baseline scores may be higher than average for him. If that is true, the intervention may have had more of an effect in raising his levels of SBI than is evident from the present chart.

As SBI increased from B5 to I1, RPA-D and PA scores showed a reverse pattern (Table 4). They both worsened for two weeks before returning to previous levels. The discrepancies in the results across these measures, suggests the presence of unique components of positive emotion regulation and positive emotion that they are assessing. In particular, these differences may indicate that SBI captures more of the behavioral changes that are made in the first session, whereas the RPA-D is most sensitive to cognitive changes that are focused on in sessions 2 and 3. P5’s weekly positive activities also decreased during the intervention phase, and then returned to baseline levels at the FU. P5’s SIGH-A scores showed minimal change over the course of the study. They increased from baseline-pre (RC=1.59) before sequentially dropping from pre-post (RC=-1.19) and post-FU (RC=-.40) down the level at baseline. Alternatively, SIGH-D scores decreased from baseline-pre (RC=-4.95), but then returned to the previous level by post (RC=4.46), and remained stable from post-FU (RC=0). P5 rated the acceptability of the
intervention as “extremely acceptable” (5/5) and his level of satisfaction with it as “very satisfied” (4/5).

Panel 2 - Participant 6. P6’s SBI scores displayed a marked change in their level and slope from the baseline to the intervention phases, suggesting a positive intervention effect (Figure 2). The SBI consistently increased during the intervention phase resulting in significant pre-post change (RC=2.01; Table 4). There was also a nonsignificant gain from post-FU (RC=.27), resulting in total pre-FU change of RC=2.28. However, there were no discernible effects of the intervention on RPA-D or PA. At the same time, P6 reported his weekly positive activities increased by approximately 13% from baseline to the follow-up phase. There was a minimal decrease in SIGH-A scores from baseline-pre (RC=-.40) and then a larger decrease from pre-post (RC=-1.19) that was maintained at the FU. SIGH-D scores increased minimally from baseline-pre (RC=.50) before decreasing from pre-post (RC=-1.49). This improvement was maintained at the FU. P6 rated the intervention as “very acceptable/satisfying” (5/5).

Panel 3 - Participant 7. P7’s SBI scores fluctuated significantly during the baseline and intervention phases, and there was not a consistent effect of the intervention (Figure 3). The magnitudes of these weekly fluctuations are notable compared with other participants, and may reflect the participant’s reporting style as well as the presence of life stressors that introduced variability into her mood and distress levels. P7 reported ongoing difficulty making her ratings each week, and indicated that they were being strongly influenced by her mood each week. From pre-FU, SBI scores declined moderately (RC=-1.47; Table 4). Her scores on the RPA-D were more stable than the
SBI, but similarly showed a worsening during the intervention phase. In contrast, her PA scores peaked during the intervention and FU compared with the baseline phase, but showed a lack of stability. There was no net increase from pre-post in PA (RC=0), but there was a significant increase from post-FU (RC=4.41) that appeared to be a continuation of the upward trajectory from the intervention phase. It is possible that the discrepancy between the SBI and RPA-D versus PA scores reflects heightened negative reactivity to assessing more internalized emotion regulation skills/abilities rather than emotions. Also notably, P7’s weekly positive activities increased approximately 91% from baseline to follow-up phases. P7’s anxiety and depressive symptoms fluctuated though her depressive symptoms decreased by the FU. SIGH-A progressively increased from baseline to pre to post (RC=1.19, 3.58, respectively), though then decreased by the FU (RC=-3.58). SIGH-D scores fluctuated, decreasing from baseline to pre (RC=-.99), increasing from pre-post (RC=.99), and then decreasing significantly from post-FU (RC=-1.98). P7 rated the acceptability of the intervention and her satisfaction with it as “very acceptable/satisfying” (4/5).

Panel 3 - Participant 8. P8’s scores on the SBI were relatively stable during the baseline phase, but corresponding with the intervention phase change, showed a notable shift upward in the score range (Figure 3). These scores increased and leveled off during the intervention phase (RC=.74; Table 4), and the changes were consistent with an intervention-related effect on the SBI outcomes. There was a slight decrease in gains from post-FU (RC=-.40), and though the SBI score at FU remained slightly higher than at baseline (pre-FU RC=.34). Neither RPA-D nor PA showed substantial improvements
during the intervention, but PA was at its highest level at the FU, and showed significant change from pre (RC=2.57). It is possible that the intervention had a delayed effect on PA. Conversely, RPA-D increased at the FU and was on par with baseline levels. P8’s weekly positive activities only increased by approximately 3% from baseline to FU. SIGH-A scores fluctuated minimally from across baseline, pre, and post timepoints before decreasing slightly from post-FU (RC=-1.19). SIGH-D increased slightly from baseline-pre (RC=.50), then there was a significant decrease from pre-post (RC=-1.98). These gains eroded substantially from post-FU (RC=1.49). P8 rated the intervention as “very acceptable/satisfying” (5/5).

Panel 3 - Participant 9. P9’s SBI scores fluctuated relatively consistently during the baseline phase and in the first 3 weeks of the intervention (Figure 3). However, between I3 and I4 the scores increased markedly and continued an upward trend in the FU. The timing of these changes were consistent with the participant indicating a sense of consolidation of the positive emotion regulation skills taught during the intervention. The net changes on SBI from pre-post, post-FU, pre-FU were positive but nonsignificant (RC=.60, .87, 1.47, respectively; Table 4). Similarly, there was delayed improvement in PA, with highest score occurring at the FU (post-FU RC=3.31), which may reflect a sleeper effect due to delayed consolidation of positive emotion regulation skills following the intervention. Weekly positive activities also increased across phases by approximately 26%. RPA-D was relatively stable across phases. SIGH-A and SIGH-D scores fluctuated minimally during baseline and intervention phases, and both increased
from post-FU (RC=2.39 and RC=.99). P9 rated the intervention as “extremely acceptable/satisfying” (5/5).

**Results Across Individuals**

Effect sizes (Cohen’s $d$) and confidence intervals were calculated to provide an initial estimate of the magnitude of the changes in the primary and secondary outcomes across participants in association with completing the study intervention (Table 5). These effects may be useful for estimation of the range of potential effect sizes in subsequent studies and comparison to effect sizes of other interventions. Per convention, a Cohen's $d$ effect size of 0.2 to 0.3 is considered "small,” 0.5 is considered "medium,” and 0.8 and up is considered "large” (Cohen, 1988).

Preliminary effects across participants also showed beneficial changes in the primary and secondary outcome variables over the intervention and follow-up phases. Improvements from pre-FU in positive emotion regulation skills, positive and negative emotions, anxiety and depressive symptoms, functioning, quality of life, and well-being were all associated with medium to large effect sizes (Table 5).

**Discussion**

Five of the nine participants (P1, P4, P6, P8, P9) showed changes in the level and slope of their SBI scores from the baseline to intervention phases consistent with a significant positive effect of the intervention on their positive emotion regulation skills (Table 3). Three of these participants (P1, P6, P9) made additional gains from the intervention to FU, and the remaining two (P4 and P8) maintained a substantial proportion of their gains at the FU. P2 showed relative stability SBI from baseline to
intervention (slight increase in level, but no clear change in slope), though showed a significant increase in level and slope by the FU. Qualifying these results, some but not all of those who exhibited a beneficial positive response to the intervention, achieved a magnitude of change deemed significant according RC scores from pre-post intervention (P1, P4, P6) and post-FU (P2; Table 4). Participants 3 and 5 showed relative stability in their SBI scores across phases, suggesting minimal intervention effects. P7’s SBI scores generally decreased over the course of the intervention and follow-up phases. This appears as an adverse effect of the intervention on P7’s positive emotion regulation skills, however, this participant reported to the therapist and independent evaluators that the emergence of a stressful situation with her husband during the intervention phase was negatively impacting her ratings on the study assessments.

The feasibility and acceptability of the intervention were supported by the high rate of recruitment (58%) and retention (82%), participants’ high ratings of acceptability (4.7/5) and satisfaction (4.6/5) with the intervention, and positive qualitative feedback.

**Impact of the Intervention on Positive Emotion Regulation Skills**

Five of the nine participants (55%) exhibited increases in SBI suggestive of a beneficial intervention effect on the ability to regulate positive emotions (Table 3). The large majority of participants increased their number of weekly positive activities during the intervention and follow-up phases, which also suggests an effect of the invention on behavioral positive regulation skills. Taken together, these data suggest that the intervention has the potential to produce desired changes in positive emotion regulation, and at the same time, may not be effective for everyone. One notable pattern is that the
two participants who responded the most (P1 and P4) also had substantially lower baseline SBI scores than other participants. These two women reported extreme difficulty experiencing and maintaining positive emotions at the beginning of the study; P4 noted in her first session that she had not felt joy in over 20 years. For these participants, completing homework exercises in which they were attempting to cultivate and maintain positive emotions was a marked change in their daily lives, and may be why they showed immediate and steep improvements during the intervention phase. P3 who had a principal diagnosis of OCD had difficulty engaging with the intervention because his obsessive thoughts related to feeling that something bad would happen if he were enjoying himself. Thus, his particular obsessive thoughts made it challenging for him to engage with the intervention. Based on his symptomatology, he may have needed more time to gradually approach positive experiences consistent with an exposure therapy model of treatment.

As mentioned, P7’s SBI scores decreased over the course of the intervention, and it is likely that this was at least in part due to a concomitant increase life stress. She reported significant stress emerging over the Thanksgiving holiday related to her husband and his alcohol use, and was distressed to the point of requesting a referral for couples therapy targeting alcohol use difficulties. Thus, changes in her reported ability to experience and maintain positive emotions during the intervention and follow-up phase may have been substantially influenced by her stress at home.

Individual differences in response to the intervention did not appear to be due to gender, principal or comorbid diagnostic status, or type of initial treatment received. In fact, the present results are remarkable for the lack of response pattern evidenced across
individuals with varying diagnoses. These data suggest the intervention can have beneficial effects for individuals with a number of different principal and comorbid emotional disorders, which is consistent with a transdiagnostic model of the emotional disturbances present across these disorders (Farchione et al., 2012).

It was also notable that all of the participants provided the qualitative feedback that they thought the intervention should be longer (one suggested 6-8 sessions). Several more sessions may have helped participants better learn, consolidate, and apply the new intervention skills, and this may increased the rate and degree of response to the intervention. For most of the participants, they had completed the initial course of treatment approximately a year earlier, and thus they had possibly reduced skill retention going into the study that may have made it harder for them to quickly make gains with a brief 4-session module. Thus, offering this augmentation intervention closer to the initial treatment may increase response rates.

**Impact of the Intervention on Positive and Negative Emotion**

The cumulative changes in positive and negative emotion during the intervention and follow-up phases showed improvements generally in the range of medium to large effects. This included both dimensions of overall positive affect (PA) and negative affect (NA) as well as specific positive emotions. These findings suggest a beneficial effect of the intervention on increasing a range of positive emotions and reducing negative emotion. However, there were some nuanced findings. Surprisingly, PA did not improve during the intervention phase, but only during the follow-up period. Thus, it did not parallel SBI scores; rather it lagged behind SBI changes. It may be the case that PA
requires more time of applying new positive emotion regulation skills before it increases, and therefore improvements in PA might appear delayed.

**Impact of the Intervention on Anxiety and Depressive Symptoms**

Overall, participants’ anxiety and depressive symptoms decreased from pre-FU in the magnitude of medium to large effects. This contrasted with the baseline period in which anxiety and depressive symptoms worsened. It was notable that most of the positive change occurred during the intervention phase, with minimal additional gains from post-FU. This pattern is suggestive of beneficial impact of the intervention on symptoms, however, it is unclear why there were minimal additional gains in the follow-up phase. This may be further indication of the need for a greater number of sessions to facilitate individuals’ abilities to continue applying the skills and making progress following the intervention. Although the participants that increased their positive emotion regulation skills generally improved in anxiety and depressive symptoms as well, the changes in symptoms (SIGH-A and SIGH-D) only met the threshold deemed significant for reliable change (RC) in 3 of the 5 intervention responders. According to the SIGH-A and SIGH-D interpretation guidelines, 5 and 3 (respectively) participants decreased at least one clinical severity level from pre-post intervention. Nevertheless, the clinical severity levels for these scales have been subject to debate in the literature (Leichsenring, 2006; Möller, 2009), and it may be more meaningful to evaluate continuous change on these measures rather than changes across fixed thresholds.

Based on the present findings, one possibility is that it would require additional time practicing the intervention skills to produce larger and more reliable changes in
anxiety and depressive symptomatology. Nevertheless, given the brief length of the intervention and the fact that participants had previously received full courses of CBT, the individual changes observed on anxiety and depressive symptoms and the effect sizes across participants from pre- to FU are promising.

**Impact of the Intervention on Functioning, Quality of Life, and Well-Being**

Changes in functioning, quality of life, and well-being paralleled those of anxiety and depressive symptoms. These outcomes all worsened slightly during the baseline period, then improved moderately during the intervention phase and minimally during the follow-up phase. Given the brief nature of the intervention, these medium to large effects positive effects on impairment, quality of life, and well-being beginning in the intervention phase are particularly notable. In fact, they are comparable in magnitude to treatment-related effects on similar outcomes obtained from full courses of CBT for anxiety disorders (e.g., Gallagher et al., 2013). A key promise of improving positive emotion regulation and increasing positive emotion is that these changes are hypothesized to specifically support enhancements in durable indicators of positive mental health such as quality of life and well-being that are not merely achieved by the absence of symptoms (Garland et al., 2010; Tugade & Fredrickson, 2007). The present results support the notion that focusing on positive emotion processes may have the potential to foster beneficial changes in functioning, quality of life and well-being more efficiently than through solely focusing on reducing symptomatology.

**Intervention Strengths and Limitations**
The intervention has a number of strengths as well as limitations that may be addressed in future iterations. As discussed, the overall acceptability and satisfaction levels for the intervention were high. In the initial screen, participants indicated the rationale for the intervention resonated with them, and there was a high rate of recruitment and retention during the study. Additionally, the data from this preliminary pilot study suggest that the intervention is effective for a substantial percentage of individuals in enhancing their regulation of positive emotions. Participants in this study also showed improvements in their positive and negative emotion, anxiety and depressive symptoms, functioning, quality of life, and well-being. Taken together, these data support the potential utility of this intervention for addressing residual anxiety and depressive symptoms and increasing overall mental health. The moderate to large size of the effects on the outcome variables was also particularly notable considering that participants recently received a full course of CBT. Given the lack of augmentation interventions targeting disturbances in positive emotion regulation associated with anxiety and depressive disorders, this intervention contributes to addressing a gap in existing intervention options, and has the potential to improve treatment outcomes. The brief nature of the intervention, and the ability to integrate it with a range of CBT protocols are also strengths that increase its potential for dissemination and implementation.

There are also several limitations of the intervention that remain to be addressed, and have the potential to improve the intervention’s outcomes. The majority of the participants thought that the intervention was too few sessions to fully acquire the skills taught. It is possible that completing this intervention more closely following the initial
course of treatment would eliminate the need for lengthening the intervention due to synergies that could be exploited in the treatment skills. However, if the intervention is pursued several months after the initial treatment, it may need to be extended by 2-4 sessions for individuals to optimize their response rate and retention of skills. These preliminary data also suggest that not everyone responds to the intervention. More research will be needed to understand what factors are responsible for individual differences in response. However, in the present study, one preliminary pattern suggested that individuals with lower baseline positive emotion regulation skills (i.e., SBI scores) experienced the most substantial gains. Thus, selectively offering this intervention as an augmentation treatment for anxious and depressed patients with the lowest SBI scores may be especially promising. Of the participants who did not respond to the intervention, there appeared to be a variety of reasons, including one having a co-occurring stressful life event (P7), one having OCD symptoms that made it more challenging to engage with the intervention content (P4), and one having relatively high positive emotion regulation skills at baseline (P5). Thus, close examination of both predictors of response as well as these potential predictors of non-response may be useful in identifying individuals likely to benefit from the intervention.

The present study employed a single case experimental design, which allowed for a high level of internal validity in assessing the effects of the study intervention within each participant. Assessing for replicability of the findings between-participants also provided a preliminary indication of the generality of the intervention’s effects across individuals. However, as a follow-up to this study it will be important to further evaluate
the generality of the present findings by evaluating the nomothetic effects of the intervention across a larger sample of individuals. Additionally, to ensure that the present results are due to the specific intervention techniques and not solely due to nonspecific therapy factors (e.g., empathy, support), it will be necessary to further evaluate the treatment compared with an active control condition (e.g., attentional control, supportive therapy).

It will also be beneficial to continue to explore predictors of response and non-response to the study intervention in future research. Participants in the present study were fairly heterogeneous in terms of diagnoses and baseline positive emotional functioning. Given the discrepancies in individual responses to the intervention in the present study, there may be a number of individual differences that are relevant to predicting whether someone is likely to benefit from the intervention. It also may be that individual factors predict the rate and degree of change in response to the intervention beyond merely a binary response versus nonresponse outcome. Future studies should seek to include a more racially and ethnically diverse sample, as participants in the present study were predominantly White/Caucasian and non-Hispanic.

An evaluation of the study intervention within a large sample will also allow for examination of changes in positive emotion regulation skills as a therapeutic mechanism of change in improving anxiety and depressive symptoms, functioning, quality of life, and well-being. Mediational analyses may be conducted that assess the degree to which the intervention outcomes are a result of the enhanced positive emotion regulation skills targeted.
Conclusion

The present study represents a preliminary evaluation of the feasibility and utility of an augmentation intervention for enhancing positive emotion in anxiety and depressive disorders. Results indicated that the intervention was effective for approximately 55% of participants. Qualitative feedback from participants highlighted several areas for improvement in the format and delivery of the intervention, and such changes may increase the effectiveness of the intervention. Future research is needed to assess whether intervention outcomes may be improve by reducing the length of time between participants’ initial course of treatment and the study intervention, increasing the number of intervention sessions, and/or providing a client workbook. It will also be important to further assess for the generalizability of the intervention effects within a larger sample, and to examine mediational relationships among the hypothesized mechanisms of change and outcome variables.
Table 1

Characteristics of participants

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Sex</th>
<th>Marital Status</th>
<th>Race</th>
<th>Ethnicity</th>
<th>Education</th>
<th>Income</th>
<th>Principal Diagnosis &amp; CSR (0-8)</th>
<th>Additional Diagnoses &amp; CSR (0-8)</th>
<th>Type of initial treatment</th>
<th>Number of initial sessions completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>43</td>
<td>F</td>
<td>M</td>
<td>Black/African White/Caucasian</td>
<td>NH</td>
<td>Master’s</td>
<td>$35,000 - $44,999</td>
<td>GAD 6</td>
<td>SOC 5, SP 5</td>
<td>None</td>
<td>UP</td>
</tr>
<tr>
<td>P2</td>
<td>24</td>
<td>F</td>
<td>NM</td>
<td>NH</td>
<td>Master’s</td>
<td>$35,000 - $44,999</td>
<td>GAD 6</td>
<td>None</td>
<td>None</td>
<td>UP</td>
<td>12</td>
</tr>
<tr>
<td>P3</td>
<td>36</td>
<td>M</td>
<td>NM</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Master’s</td>
<td>$25,000 - $34,999</td>
<td>OCD 6</td>
<td>SOC 5, EDNOS 4</td>
<td>MDD 4</td>
<td>UP</td>
</tr>
<tr>
<td>P4</td>
<td>52</td>
<td>F</td>
<td>NM</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Some College</td>
<td>$25,000 - $34,999</td>
<td>SOC 6</td>
<td>None</td>
<td>None</td>
<td>UP</td>
</tr>
<tr>
<td>P5</td>
<td>32</td>
<td>M</td>
<td>NM</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Bachelor’s College</td>
<td>$55,000 - $74,999</td>
<td>GAD 5</td>
<td>MDD 4</td>
<td>SDP</td>
<td>16</td>
</tr>
<tr>
<td>P6</td>
<td>20</td>
<td>M</td>
<td>NM</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Some College</td>
<td>$100,000+</td>
<td>SOC 5</td>
<td>None</td>
<td>UP</td>
<td>16</td>
</tr>
<tr>
<td>P7</td>
<td>55</td>
<td>F</td>
<td>M</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Bachelor’s College</td>
<td>$100,000+</td>
<td>SOC 5</td>
<td>ADHD 4, SP 4</td>
<td>None</td>
<td>UP</td>
</tr>
<tr>
<td>P8</td>
<td>36</td>
<td>M</td>
<td>M</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>Master’s College</td>
<td>$100,000+</td>
<td>SOC 5</td>
<td>GAD 4, DDNOS 4, EDNOS 3</td>
<td>SP 4</td>
<td>SDP</td>
</tr>
<tr>
<td>P9</td>
<td>35</td>
<td>F</td>
<td>M</td>
<td>White/Caucasian</td>
<td>NH</td>
<td>PhD</td>
<td>$100,000+</td>
<td>GAD &amp; SOC 5</td>
<td>None</td>
<td>None</td>
<td>16</td>
</tr>
</tbody>
</table>

Note. P=Participant; M=Male; F=Female; M=Married; NM=Never Married; NH=Non-Hispanic; CSR=Clinical Severity Rating; GAD=Generalized Anxiety Disorder; SOC=Social Anxiety Disorder; SP=Specific Phobia; ADHD=Attention-Deficit and Hyperactivity Disorder; Major Depressive
Disorder; EDNOS=Eating Disorder Not Otherwise Specified; DDNOS=Depressive Disorder Not Otherwise Specified; UP=Unified Protocol; SDP=Single Disorder Protocol.
<table>
<thead>
<tr>
<th>Session</th>
<th>Skill Targets</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Psychoeducation</td>
<td>Introduction to positive emotions and their role in anxiety and depression, identification of positive emotions to target, introduction to behavioral strategies for regulating positive emotions, assignment of behavioral strategies homework</td>
</tr>
<tr>
<td></td>
<td>Positive Emotion Awareness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Behavioral Positive Emotion Regulation Strategies</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cognitive Positive Emotion Regulation Strategies</td>
<td>Review of behavioral strategies homework, introduction to cognitive strategies of regulating positive emotion, including attention and beliefs, savoring exercise conducted, negative beliefs about positive emotions are identified and reframed, assignment of cognitive strategies homework</td>
</tr>
<tr>
<td>3</td>
<td>Integrated Positive Emotion Regulation Strategies</td>
<td>Review of cognitive strategies homework, conduct positive emotion exposure, assignment of homework to continue to practice and integrate behavioral and cognitive strategies for regulating positive emotions</td>
</tr>
<tr>
<td>4</td>
<td>Skill Review</td>
<td>Review of homework, identify what was helpful/not helpful, troubleshoot, plan for future</td>
</tr>
</tbody>
</table>
Table 3

*Summary of changes in SBI scores during intervention and follow-up*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Intervention Phase</th>
<th>Follow-Up Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>P2</td>
<td>Relative stability*</td>
<td>Increased</td>
</tr>
<tr>
<td>P3</td>
<td>Relative stability</td>
<td>Relative stability</td>
</tr>
<tr>
<td>P4</td>
<td>Increased</td>
<td>Moderate maintenance of gains</td>
</tr>
<tr>
<td>P5</td>
<td>Relative stability</td>
<td>Relative stability</td>
</tr>
<tr>
<td>P6</td>
<td>Increased</td>
<td>Increased</td>
</tr>
<tr>
<td>P7</td>
<td>Decreased</td>
<td>Decreased</td>
</tr>
<tr>
<td>P8</td>
<td>Increased</td>
<td>Moderate maintenance of gains</td>
</tr>
<tr>
<td>P9</td>
<td>Increased</td>
<td>Increased</td>
</tr>
</tbody>
</table>

*Note.* P2 showed a slight increase in average level of SBI from baseline to intervention phases, but no visible change in slope. P=Participant; SBI=Savoring Beliefs Inventory.
Table 4

**Reliable Change Index (RC) scores for primary and secondary outcome measures**

<table>
<thead>
<tr>
<th></th>
<th>SBI (Sdiff=7.61)</th>
<th>RPA-D (Sdiff=3.03)</th>
<th>PA (Sdiff=2.72)</th>
<th>SIGH-A (Sdiff=2.51)</th>
<th>SIGH-D (Sdiff=2.02)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>BLA-pre 0.53</td>
<td>1.32</td>
<td>-0.74</td>
<td>0.40</td>
<td>1.98*</td>
</tr>
<tr>
<td></td>
<td>Pre-post 3.15*</td>
<td>-2.31*</td>
<td>0.00</td>
<td>-0.40</td>
<td>-1.49</td>
</tr>
<tr>
<td></td>
<td>Post-FU 5.52*</td>
<td>-2.97*</td>
<td>1.10</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>P2</td>
<td>BLA-pre 0.27</td>
<td>0.99</td>
<td>0.00</td>
<td>0.40</td>
<td>-0.50</td>
</tr>
<tr>
<td></td>
<td>Pre-post -0.13</td>
<td>0.00</td>
<td>-1.47</td>
<td>-3.58*</td>
<td>-3.47*</td>
</tr>
<tr>
<td></td>
<td>Post-FU 0.40</td>
<td>0.33</td>
<td>1.10</td>
<td>1.19</td>
<td>0.99</td>
</tr>
<tr>
<td>P3</td>
<td>BLA-pre 0.13</td>
<td>-0.99</td>
<td>0.37</td>
<td>-3.58*</td>
<td>2.48*</td>
</tr>
<tr>
<td></td>
<td>Pre-post 0.00</td>
<td>-0.66</td>
<td>-0.37</td>
<td>0.00</td>
<td>-0.99</td>
</tr>
<tr>
<td></td>
<td>Post-FU 0.27</td>
<td>0.66</td>
<td>0.00</td>
<td>-0.80</td>
<td>0.50</td>
</tr>
<tr>
<td>P4</td>
<td>BLA-pre -1.01</td>
<td>2.31*</td>
<td>-0.74</td>
<td>1.99</td>
<td>3.96*</td>
</tr>
<tr>
<td></td>
<td>Pre-post 2.61*</td>
<td>-2.97*</td>
<td>1.47</td>
<td>-1.99</td>
<td>-2.48*</td>
</tr>
<tr>
<td></td>
<td>Post-FU -1.41</td>
<td>0.00</td>
<td>-2.21*</td>
<td>1.59</td>
<td>-1.98*</td>
</tr>
<tr>
<td>P5</td>
<td>BLA-pre -1.34</td>
<td>0.33</td>
<td>0.00</td>
<td>1.59</td>
<td>-4.95*</td>
</tr>
<tr>
<td></td>
<td>Pre-post 0.67</td>
<td>0.33</td>
<td>-1.47</td>
<td>-1.19</td>
<td>4.46*</td>
</tr>
<tr>
<td></td>
<td>Post-FU 0.13</td>
<td>0.00</td>
<td>0.74</td>
<td>-0.40</td>
<td>0.00</td>
</tr>
<tr>
<td>P6</td>
<td>BLA-pre 0.40</td>
<td>-1.32</td>
<td>-1.47</td>
<td>-0.40</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Pre-post 2.01*</td>
<td>0.00</td>
<td>0.00</td>
<td>-1.19</td>
<td>-1.49</td>
</tr>
<tr>
<td></td>
<td>Post-FU 0.27</td>
<td>0.66</td>
<td>0.37</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>P7</td>
<td>BLA-pre 0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>1.19</td>
<td>-0.99</td>
</tr>
<tr>
<td></td>
<td>Pre-post -2.21*</td>
<td>1.32</td>
<td>0.00</td>
<td>3.58*</td>
<td>0.99</td>
</tr>
<tr>
<td></td>
<td>Post-FU 0.74</td>
<td>1.32</td>
<td>4.41*</td>
<td>-3.58*</td>
<td>-1.98*</td>
</tr>
<tr>
<td>P8</td>
<td>BLA-pre 0.07</td>
<td>-0.33</td>
<td>-1.47</td>
<td>0.40</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Pre-post 0.74</td>
<td>-0.33</td>
<td>-0.37</td>
<td>-0.40</td>
<td>-1.98*</td>
</tr>
<tr>
<td></td>
<td>Post-FU -0.40</td>
<td>0.66</td>
<td>2.21*</td>
<td>-1.19</td>
<td>1.49</td>
</tr>
<tr>
<td>P9</td>
<td>BLA-pre 0.94</td>
<td>-0.33</td>
<td>1.47</td>
<td>0.80</td>
<td>-0.50</td>
</tr>
<tr>
<td></td>
<td>Pre-post 0.60</td>
<td>-0.33</td>
<td>0.00</td>
<td>-0.40</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Post-FU 0.87</td>
<td>-0.66</td>
<td>3.31*</td>
<td>2.39*</td>
<td>0.99</td>
</tr>
</tbody>
</table>

*Note. P=Participant; BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; SBI=Savoring Beliefs Inventory; RPA-D=Responses to Positive Affect-Dampening Scale; PA=Positive Affect; SIGH-A=Structured Interview for the Hamilton Anxiety Rating Scale; SIGH-D=Structured Interview for the Hamilton Depression Rating Scale. Negative values denote decreases on the outcome measures, and positive values denote increases. * p<.05*
## Table 5

Effects on primary and secondary outcome measures (Cohen’s $d$)

<table>
<thead>
<tr>
<th>Measure</th>
<th>BLA</th>
<th>Pre</th>
<th>Post</th>
<th>FU</th>
<th>BLA-Pre</th>
<th>Pre-Post</th>
<th>Post-FU</th>
<th>Pre-FU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean ($SD$)</td>
<td>Mean ($SD$)</td>
<td>Mean ($SD$)</td>
<td>Mean ($SD$)</td>
<td>$d$</td>
<td>$CI$</td>
<td>$d$</td>
<td>$CI$</td>
</tr>
<tr>
<td>SBI</td>
<td>-6.33 (24.08)</td>
<td>-5.89 (24.45)</td>
<td>3.89 (25.37)</td>
<td>14.67 (21.82)</td>
<td>-0.02 (.47)</td>
<td>-0.94, .90</td>
<td>-0.39 (.48)</td>
<td>-1.31, .56</td>
</tr>
<tr>
<td>RPA-D</td>
<td>18.22 (4.68)</td>
<td>18.44 (6.11)</td>
<td>16.89 (4.51)</td>
<td>16.00 (4.18)</td>
<td>-.04 (.47)</td>
<td>-0.96, .89</td>
<td>.29 (.47)</td>
<td>-0.65, 1.20</td>
</tr>
<tr>
<td>PA</td>
<td>27.00 (5.55)</td>
<td>24.44 (5.34)</td>
<td>24.00 (4.69)</td>
<td>27.33 (6.84)</td>
<td>.47 (.48)</td>
<td>-0.49, 1.38</td>
<td>.09 (.47)</td>
<td>-0.84, 1.01</td>
</tr>
<tr>
<td>NA</td>
<td>22.33 (4.74)</td>
<td>22.44 (3.57)</td>
<td>21.22 (5.24)</td>
<td>19.89 (4.73)</td>
<td>-.03 (.47)</td>
<td>-0.95, .90</td>
<td>.27 (.47)</td>
<td>-.67, 1.19</td>
</tr>
<tr>
<td>SIGH-A</td>
<td>12.11 (5.13)</td>
<td>13.11 (4.54)</td>
<td>11.22 (5.02)</td>
<td>11.11 (5.09)</td>
<td>-.21 (.47)</td>
<td>-1.12, .73</td>
<td>.39 (.47)</td>
<td>-.56, 1.31</td>
</tr>
<tr>
<td>SIGH-D</td>
<td>25.67 (4.12)</td>
<td>26.33 (3.67)</td>
<td>23.56 (3.32)</td>
<td>23.56 (2.70)</td>
<td>-.17 (.47)</td>
<td>-1.09, .76</td>
<td>.79 (.49)</td>
<td>-.20, 1.71</td>
</tr>
<tr>
<td>WSAS</td>
<td>11.22 (7.14)</td>
<td>14.44 (7.02)</td>
<td>9.44 (6.58)</td>
<td>8.67 (4.09)</td>
<td>-.46 (.48)</td>
<td>-1.37, .50</td>
<td>.74 (.49)</td>
<td>-.25, 1.65</td>
</tr>
<tr>
<td>QLESQ-SF</td>
<td>47.67 (5.59)</td>
<td>45.22 (9.85)</td>
<td>49.89 (9.32)</td>
<td>51.44 (7.43)</td>
<td>.31 (.47)</td>
<td>-0.64, 1.22</td>
<td>-0.49 (.47)</td>
<td>-1.40, .47</td>
</tr>
<tr>
<td>MHC-SF</td>
<td>35.33 (35.33)</td>
<td>34.56 (9.71)</td>
<td>41.11 (11.10)</td>
<td>40.67 (11.81)</td>
<td>.07 (.47)</td>
<td>-.86, .99</td>
<td>-.63 (.47)</td>
<td>-1.54, .35</td>
</tr>
</tbody>
</table>

**Note.** BLA=Baseline; Pre=Pre-intervention; Post=Post-intervention; FU=Follow Up; SBI=Savoring Beliefs Inventory; RPA-D=Responses to Positive Affect-Dampening Scale; PA=Positive Affect; NA=Negative Affect. SIGH-A=Structured Interview for the Hamilton Anxiety Rating Scale; SIGH-D=Structured Interview for the Hamilton Depression Rating Scale WSAS= Work & Social Adjustment Scale- Clinician Rated; QLESQ-SF= Quality of
Life Enjoyment and Satisfaction Questionnaire-Short Form; MHC-SF=Mental Health Continuum – Short Form. Negative effect sizes ($d$) denote increases on the outcome measures, and positive effect sizes ($d$) denote decreases.
Figure 1

*Weekly Savoring Belief Inventory (SBI) scores across baseline (2-, 4-, or 6-weeks), intervention, and follow-up phases for P1, P2, and P3*
Figure 2

Weekly Savoring Belief Inventory (SBI) scores across baseline (2-, 4-, or 6-weeks), intervention, and follow-up phases for P4, P5, and P6.
Figure 3

Weekly Savoring Belief Inventory (SBI) scores across baseline (2-, 4-, or 6-weeks), intervention, and follow-up phases for P7, P8, and P9
References


REFERENCES


Frisch, M. B. (2013). Evidence-based well-being/positive psychology assessment and intervention with Quality of Life Therapy and coaching and the Quality of Life Inventory (QOLI). *Social Indicators Research, 114*, 193-227.


Vita

Jenna Carl earned her B.A. in history from Cornell University and her M.A. in clinical psychology from Boston University. She is currently a doctoral candidate in clinical psychology at Boston University and is expected to receive her doctoral degree in 2015. During her matriculation at Boston University, Ms. Carl has received training at the Center for Anxiety and Related Disorders at Boston University and at the Freedom Trail Clinic at Massachusetts General Hospital. She has been extensively involved in research during her time at Boston University, authoring several peer-reviewed research papers and presenting at national psychology conferences. Her research focuses on the role of positive emotion in anxiety and mood disorders, cognitive-behavioral therapy process and outcomes, and development of novel interventions for preventing or treating emotional disorders.