Emotional Schema Therapy for Generalized Anxiety Disorder: A Single-Subject Design

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Generalized anxiety disorder (GAD) is a widespread psychiatric disorder that has important effects on human health. This study evaluated a new form of therapy based on emotional schema therapy (EST) that focuses on the individual's interpretations, strategies, and responses to his or her emotions. Treatment efficacy was assessed using the single-subject methodology in two patients with GAD. Patients completed the Leahy Emotional Schema Scale at pre-/post-treatment and at 2-month follow-up; and the Penn State Worry Questionnaire, the Beck Anxiety Inventory, the Hamilton Anxiety Rating Scale, and the Metacognitions Questionnaire-30 at baseline, after every other therapy session, and 2 months after completion of therapy. The results showed clinically substantial changes on all outcome measures in post-treatment as well as at 2-month follow-up. The results offer tentative support to the view that EST could be an effective therapy for GAD.

Keywords: emotional schema therapy, generalized anxiety disorder, metacognitive beliefs, worry

Generalized anxiety disorder (GAD) is the most common anxiety disorder, and its core processes represent the primary ones in all anxiety disorders (Barlow, 2004). Among clinical patients the prevalence of GAD is considerably greater, with GAD

appearing as the most prevalent anxiety disorder and the second most common mental health problem within primary care facilities (Wittchen, Kessler, Beesdo, Krause, & Hoyer, 2002). According to the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*; American Psychiatric Association [APA], 2013), the 12-month prevalence of GAD is 0.9% among adolescents and 2.9% among adults in the general community of the United States. Also, the 12-month prevalence of the disorder in other countries ranges from 0.4% to 3.6% (APA, 2013, p. 223).

Standard cognitive behavioral interventions are less than ideal for the treatment of GAD. For example, in vivo exposure and cognitive challenging strategies are often only moderately helpful as the target of exposure or cognitive challenges may change according to worry themes, so that clinicians find themselves chasing a "moving target" (Robichaud, 2013). Preliminary findings indicate that new protocols and conceptualizations of GAD have yielded treatment outcomes superior to earlier cognitive behavior therapy (CBT) interventions (e.g., Roemer, Orsillo, & Salters-Pedneault, 2008; Wells et al., 2010). On the other hand, attention to the role of emotion and emotional processing has expanded in recent years (e.g., Gross, 1998; Mennin, Heimberg, Turk, & Fresco, 2005). Of particular relevance to the function of worry, Borkovec, Alcaine, and Behar (2004) has proposed an emotional avoidance model that suggests that the abstract linguistic nature of worry temporarily inhibits emotional arousal. The implication of the emotional avoidance model is that individuals who fear emotion or have difficulty processing their emotions would be more likely to utilize worry as a strategy to avoid unwanted feelings.

Leahy's emotional schema model proposes that individuals differ in their awareness, interpretations, evaluations, and acceptance of "negative" feelings (Leahy, 2002, 2015a; Leahy, Tirch, & Napolitano, 2011). It is argued in this new model that the emotions themselves may constitute *objects* of cognition—that is, they may also be viewed as *content* to be evaluated, controlled, or utilized by an individual. Earlier CBT models have also suggested that individuals appraise their emotional experience, whether it is the sensations and thoughts accompanying the experience or the emotion itself (Barlow, 1991; Ellis & Dryden, 1997). The emotional schema model is a social cognitive model that proposes that individuals elaborate a theoretical model of their emotions and the emotions experienced by others, reflecting normalizing and pathological styles of coping with emotions. For example, the normalizing process entails viewing painful and conflicting emotions as having shorter duration, being controllable, not dangerous, comprehensible, similar to the emotions of others, and related to values and believing that they can be expressed, are validated, and are acceptable. In contrast, negative evaluations of these emotions may result in problematic coping, such as reliance on avoidance, drinking, binge eating, substance abuse, blaming, rumination, and worry.

The emotional schema model draws on the metacognitive model, stressing the negative interpretation of internal experience (e.g., emotions), but differs from the metacognitive model of Wells (2009) in several ways. First, emotions are different from thoughts and involve physical sensations, action tendencies, and in-
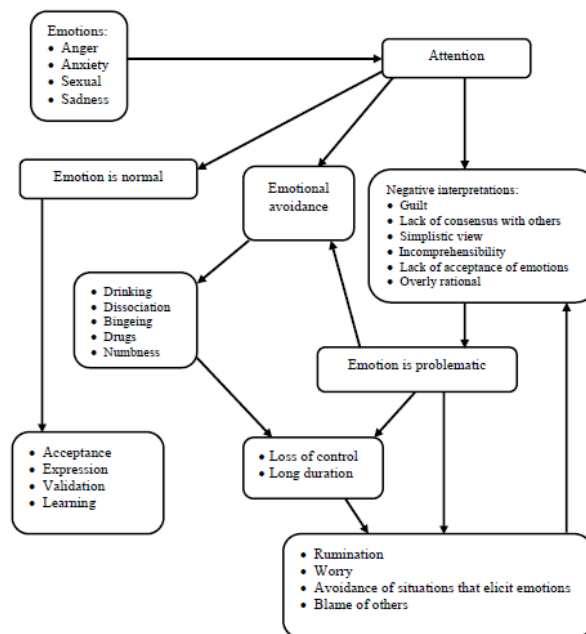
FIGURE 1. A model of emotional schema. Reproduced from Leahy (2015a, p. 44).

terpersonal functioning. Second, the emotional schema model (and the associated treatment, emotional schema therapy [EST]) focuses on the relationship between emotions and core values, such that painful emotions may often be the direct result of important values that the patient maintains. Third, EST places considerable emphasis on the role of validation and the therapeutic relationship as important factors in the attachment issues that arise in the sharing of emotion. Fourth, EST draws directly on evolutionary psychology and the adaptive function of emotion to help patients normalize their experience. Finally, EST relates current maladaptive interpretations of emotion to the patient's socialization experiences and to current interpersonal relations (Leahy, 2015b). A diagram of the Emotional Schema Model is given in Figure 1.

There is empirical support for the role of emotional schemas in psychopathology. In a study of 53 adult psychotherapy patients, participants were assessed, and their responses on the Leahy Emotional Schema Scale (LESS) were correlated with the Beck Depression Inventory and the Beck Anxiety Inventory (Leahy, 2002). In a study of 425 adult psychotherapy patients Risk Aversion, Negative Beliefs About Emotion (a composite score on the LESS), and Psychological Flexibility were significantly related to depression and to each other (Leahy, Tirch, & Melwani, 2012). Silberstein, Tirch, Leahy, and McGinn (2012) tested 107 adult cognitive-behavioral outpatient participants on Dispositional Mindfulness, Psychological Flexibility, and Emotional Schemas. Individuals with higher levels of dispositional mindfulness also had higher levels of psychological flexibility and were more likely to endorse more adaptive dimensions of emotional schemas.

In a study of 295 adult patients, Tirch, Leahy, Silberstein, and Melwani (2012) examined the relationship among psychological flexibility (Acceptance and Action Questionnaire II [AAQ-II]; Bond et al., 2011), mindfulness (Mindful Attention and Awareness Scale [MAAS]; Brown & Ryan, 2003), and emotional schemas (LESS; Leahy, 2002). All measures were significantly related to each other. Regression analysis indicated that emotional schemas regarding control of affect were the primary predictors of elevated Beck Anixety Inventory (BAI) scores, while psychological flexibility was the primary predictor of elevated anxiety scores on the Millon Clinical Multiaxial Inventory-III (Tirch et al., 2012).

In a study of 425 psychotherapy patients, Leahy, Wupperman, and Shivaji (2016) explored the relationship among emotional schemas, metacognitive factors in worry (Metacognitions Questionnaire [MCQ]; Wells & Cartwright-Hatton, 2004), depression (Beck Depression Inventory-II; BDI-II), and anxiety (BAI). Negative Beliefs About Emotions were significantly correlated with each of the five metacognitive factors and with both depression (BDI-II) and anxiety (BAI). When controlling for anxiety, each of the MCQ factors was significantly related to Negative Beliefs About Emotion, except for Cognitive Competence, which was marginally significant ($p < .02$). Stepwise multiple regression indicated that Uncontrollability/Danger of Worry and Negative Beliefs About Emotion were the best predictors of anxiety, and Uncontrollability/Danger of Worry, Negative Beliefs About Emotion, and Cognitive Competence were the best predictors of depression.

In a study by Edwards, Micek, Mottarella, and Wupperman (in press), 668 college students completed the Toronto Alexithymia Scale-20, the LESS-II, the Socialization of Emotion Scale, the Child Abuse and Trauma Scale (Sanders & Becker-Lausen, 1995), and the Trauma History Questionnaire (THQ; Green, 1996). Mediation analysis of the predictor variables on alexithymia indicated emotion ideology (emotional schemas) completely mediated the effects of emotion socialization and child abuse. In a study of 325 adult psychotherapy outpatients by Westphal, Leahy, Pala, and Wupperman (2016), participants completed several self-report forms: the Millon Clinical Multiaxial Inventory-III (MCMI-III; Millon, Millon, & Davis, 1994), the Leahy Emotional Schema Scale (Leahy, 2002), the Self-Compassion Scale-Short Form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011), and the Measure of Parenting Style (MOPS; Parker et al., 1997). The subscale for Invalidation on the LESS and the subscales on the MCMI for major depressive disorder (MDD), posttraumatic stress disorder (PTSD), and borderline personality disorder (BPD) were of specific interest in this study. Invalidation on the LESS was strongly related to PTSD, MDD, and BPD, and self-compassion was strongly inversely associated with emotional invalidation. Both self-compassion and emotional invalidation mediated the relationship between parental indifference and mental health outcomes. Specifically, patients exposed to indifferent parenting displayed lower self-compassion and higher emotional invalidation, which mediated the risk for BPD, MDD, and PTSD. Together, these foregoing findings illustrate a central role of beliefs about emotions and strategies

about emotion regulation that mediate a wide range of indices of psychopathology.

The aim of the present study was to conduct a preliminary investigation of the efficacy of emotional schema therapy for GAD. As outlined earlier, a number of studies support the validity for the EST model of anxiety. This single-subject study whereby subjects were compared with themselves with repeated measures over time is a preliminary study in determining whether EST could be an efficacious treatment for GAD.

METHOD

DESIGN

The present study was conducted as an A B single-subject design to evaluate the efficacy of emotional schema therapy in patients with GAD. The study population comprised all patients with GAD who were admitted to hospital and private centers in Tehran, Iran in the time span of November to December 2014. Based on a psychiatrist's diagnosis as well as a structured diagnostic interview with a clinical psychologist, two patients with GAD were selected by convenience sampling.

PARTICIPANTS

Two patients admitted to psychology and counseling centers for treatment of GAD were included in the study. Patients were included if they met the following criteria: (1) diagnosis of GAD, (2) aged 20–45, (3) lack of a psychotic disorder, (4) no psychological intervention in the past 2 years, (5) no medication, and (6) lack of substance use. Prior to the study, informed consent was obtained from the patients.

Patient 1. Patient 1 was a 25-year-old single woman with a 6-year history of GAD. She was medication-free, reporting prior use of medication for 1 month about 5 years previous, with no positive outcome. In addition, she had never received psychotherapy. Her main worries were related to family, health, and education. She said that she had tried not to think about such worries with little success. She stated that her main problems included extreme worry about various issues, insomnia, lack of concentration at work, and fatigue.

Patient 2. Patient 2 was a 30-year-old, married woman with an 8-year history of GAD. She had received psychotropic medication 6 years prior to this study, but had discontinued medication after 3 months, and she had never received psychological treatment. Her main worries were about her children, health, family, and income. She said that the course of her worry and anxiety had fluctuated for years but had never completely abated.

MATERIALS AND PROCEDURE

Structured Clinical Interview for DSM Axis-I Disorders (SCID-I). The SCID-I is a clinical assessment for making *DSM* diagnosis. In the present study the Iranian version of this scale was used, which has been shown to be reliable and valid in diagnosing major psychiatric disorders in the clinical population in Iran (Sharifi et al., 2004, 2007).

Leahy Emotional Schema Scale (LESS). The LESS (Leahy, 2002) is a self-report questionnaire composed of 50 questions intended to tap into 14 dimensions of beliefs and responses to one's emotions. The LESS has shown acceptable validity and reliability (Leahy, 2002). Moreover, in one study, reliability of this scale using Cronbach's alpha methods was reported between 0.59 to 0.73, and retest reliability after 2 weeks was 0.56 to 0.71 in an Iranian sample (Khanzadeh, Edrisi, Mohammadkhani, & Saeedian, 2013).

Penn State Worry Questionnaire (PSWQ). The PSWQ (Meyer, Miller, Metzger, & Borkovec, 1990) is comprised of 16 items designed to evaluate the tendency to engage in excessive and uncontrollable worry. Items are rated on a 5-point Likert scale. It has been shown to have reasonable psychometric properties (Meyer et al., 1990). There is satisfactory reliability and validity of the Persian version of this scale (Dehshiri, Golzari, Borjali, & Sohrabi, 2010).

Beck Anxiety Inventory (BAI). The BAI (Beck, Epstein, Brown & Steer, 1988) is a 21-item self-report that measures severity of somatic and cognitive symptoms over the previous week. This scale showed high internal consistency (0.92) and test-retest reliability over 1 week, r (81) = .75. In addition, the BAI was moderately correlated with the revised Hamilton Anxiety Rating Scale, r (150) = .51, and was only mildly correlated with the revised Hamilton Depression Rating Scale, r (153) = .25. Moreover, the Persian version of the BAI showed good reliability (r = .72, p < .001), very good validity (r = .83, p < .001), and excellent internal consistency (alpha = 0.92) (Kaviani & Mousavi, 2008).

Hamilton Anxiety Rating Scale (HARS). The HARS (Hamilton, 1959) is a 14-item scale that measures anxiety symptoms as assessed by a clinician. Each item is rated from 0 to 4 and total scores can range from 0 to 56. The HARS has acceptable psychometric properties (Bech, Grosby, Husum, & Rafaelsen, 1984; Clark & Donovan, 1994).

Metacognitions Questionnaire-30 (MCQ-30). The MCQ-30 (Wells & Cartwright-Hatton, 2004) showed good internal consistency and convergent validity, and acceptable to good test-retest reliability. Positive relationships between metacognitions and measures of worry and obsessive-compulsive symptoms provided further support for the validity of the measure and the metacognitive theory of intrusive thoughts (Wells & Cartwright-Hatton, 2004). The psychometric characteristics of the MCQ-30 were examined in a group of 258 nonclinical participants as well as in a clinical sample including 25 patients with obsessive-compulsive disorder, 25 patients with GAD, and 25 normal participants, and the results re-

flected good psychometric properties in the Iranian sample (Shirinzadeh Dastgiri, Goudarzi, Rahimi, & Naziri, 2009).

PROCEDURE

Patients completed the LESS at pre-/post-treatment and at 2-month follow-up and the PSWQ, BAI, HARS, and MCQ-30 at baseline, after every other therapy session, and 2 months after completion of therapy. Each patient received 10 1-hour weekly sessions of EST. The evaluations were conducted by an independent assessor.

ADAPTING EST FOR PATIENTS WITH GAD

EST is a principle-based intervention not defined by a specific format, but includes a range of emotion regulation techniques that address the patient's beliefs about emotion (e.g., durability, control, comprehensibility, distinctiveness) as well as identifying and modifying maladaptive coping (Leahy, 2015a; Leahy et al., 2011). The emotional schema therapist follows a structured approach to assessing current beliefs about emotions, developing a case conceptualization of how these beliefs maintain negative mood, how these emotional schemas are related to maladaptive styles of coping, and how emotional schemas can be modified (Leahy, 2015a). In the first session, a case conceptualization based on the emotional schema model was developed with each patient, followed by validating difficult emotions and by psychoeducation about generalized anxiety disorder and worry. As a homework, patients were asked complete an activity schedule, identify emotions and thoughts, and review a form that summarizes the functions of emotions. In the second session, the case conceptualization was completed. During this stage, the therapist and patient collected information about the patient's beliefs about emotion, typical maladaptive coping strategies, the origin of some of these beliefs about emotion, and the impact of these beliefs and strategies on depression, anxiety, anger, interpersonal relationships, motivation, and work. Then the patient's problematic coping strategies as well as emotional schemas were identified. Subsequent treatment sessions involved validating the patient's emotions, identifying and labeling emotions, normalizing emotions, stress reduction, challenging emotion myths, practicing acceptance of emotions, and identifying useful coping strategies such as acceptance, expression, behavioral activation, and the development of more meaningful supportive relationships to cope with emotions instead of problematic strategies such as worry, rumination, substance abuse, avoidance, and suppression. In addition, the clinician introduced mindfulness, examining the costs and benefits of certain emotional schemas and coping strategies as well as self-monitoring of emotions. Specific beliefs about emotions (emotional schemas) were identified and addressed, for example, predictions about the durability of
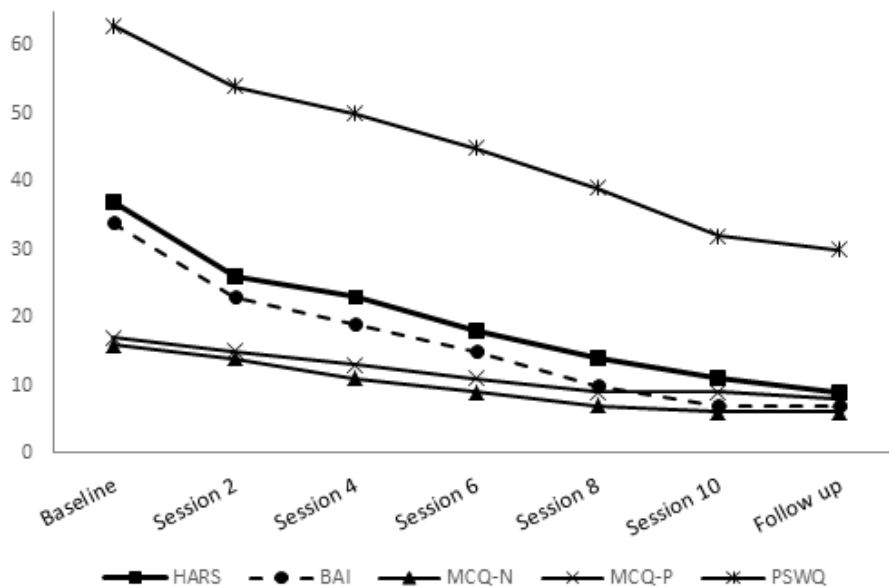
FIGURE 2. Patient 1's scores on the PSWQ, BAI, HARS, MCQ-N, and MCQ-P during pre-/post-treatment and at 2-month follow-up.

anxiety, distinguishing emotions from actions, and making sense of emotions by linking emotions to current thoughts, situational triggers, and prior history (see also Leahy, 2015a, 2015b; Leahy et al., 2011). The last session focused on linking emotions to higher values, making room for emotions, and reviewing a written version of techniques that were used.

RESULTS

It should be noted that given the aim of the study, the two components of the MCQ-30, negative metacognitive beliefs about worry (MCQ-N) and positive metacognitive beliefs about worry (MCQ-P) are reported here. Also, in order to facilitate the interpretation of findings, the emotional schemas were divided into two parts: maladaptive emotional schemas (LESS-M: including rumination, guilt, uncontrollability, validation, blaming, over-rationalization, and simplistic view) and adaptive emotional schema (LESS-A: including emotional self-awareness, expression of feelings, comprehensibility, relating emotions to higher values, acceptance, and consensus). As indicated in Figures 2 and 3, each patient showed substantial decreases at the first sessions in scores on the BAI, HARS, and PSWQ, as well as in metacognitive beliefs about worry, with relatively stable decreases over the course of treatment. Also, these changes were maintained at follow-up. Although patient 2's scores on the HARS and MCQ-P showed a slight deterio-
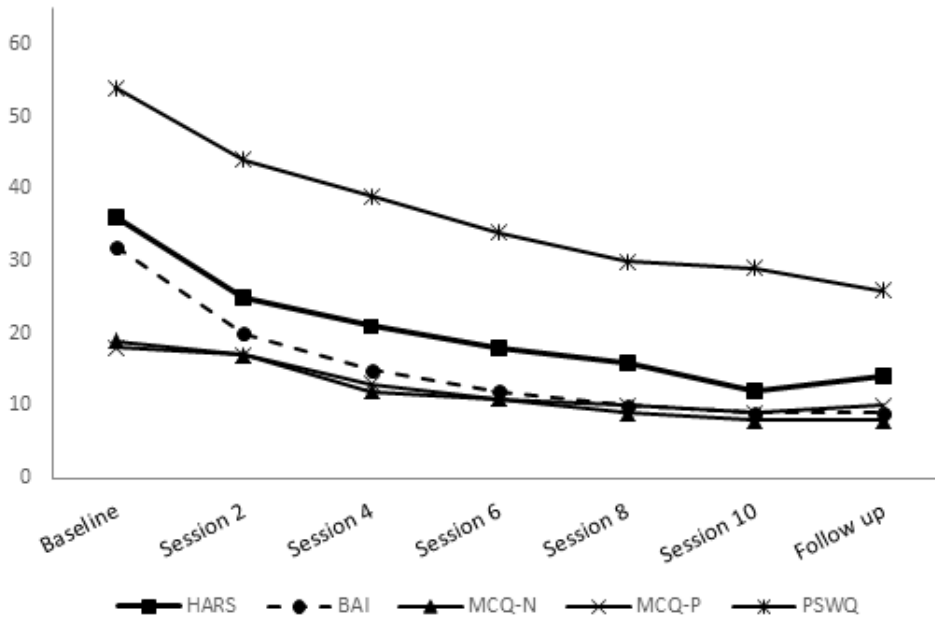
FIGURE 3. Patient 2's scores on the PSWQ, BAI, HARS, MCQ-N, and MCQ-P during pre-/post-treatment and at 2-month follow-up.
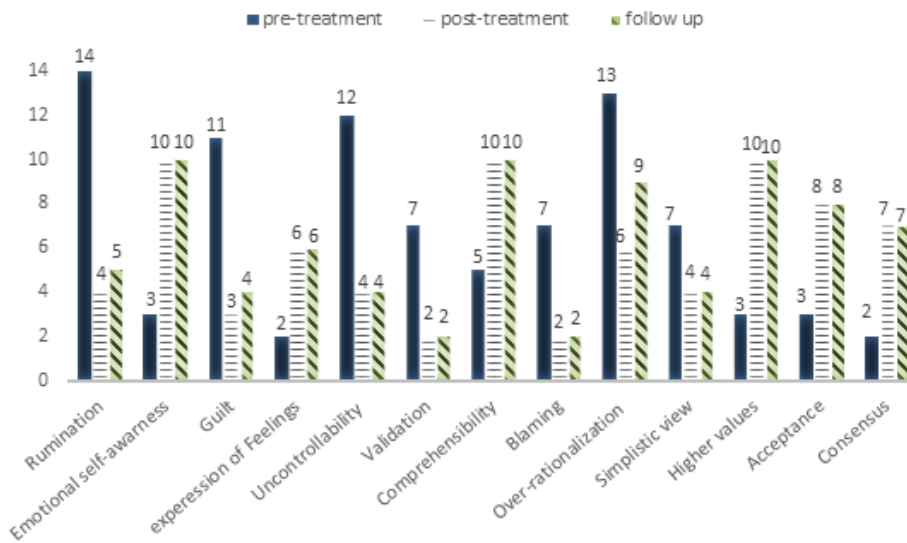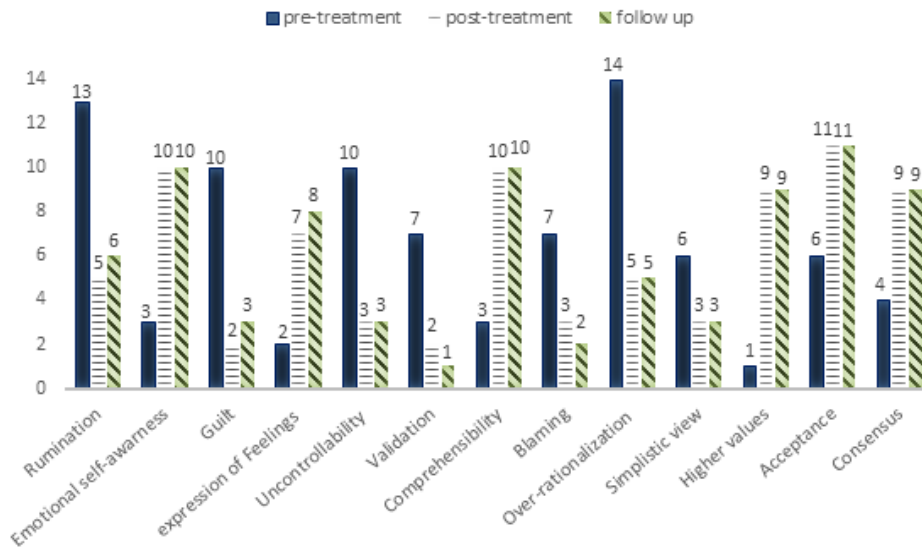

FIGURE 4. Emotional schemas for patient 1 at pre-/post-treatment and 2-month follow-up.

FIGURE 5. Emotional schemas for patient 2 at pre-/post-treatment and 2-month follow up.

ration at 2-month follow-up, these post-treatment scores were still substantially lower than at pretreatment. The two patients' scores on 13 components of the LESS at pretreatment, post-treatment, and 2-month follow-up indicated that the scores were substantially lower at post-treatment than pretreatment for most of the maladaptive emotional schemas (rumination, guilt, uncontrollability, validation, blaming, over-rationalization, and simplistic view) and higher for the adaptive emotional schemas (emotional self-awareness, expression of feelings, comprehensibility, relating emotions to higher values, acceptance, and consensus; Figures 4 and 5). The exceptions were for rumination, guilt, and over-rationalization in patient 1 and rumination and guilt for patient 2, which showed slight increases at follow-up but were still lower than pretreatment scores. Percentage improvements for pre- to post-treatment and follow-up are presented in Table 1.

Furthermore, the results of regression analysis to estimate the degree of change across time for each patient and outcome measures (PSWQ, BAI, HARS, MCQ-N, and MCQ-P) across all sessions are as follows. For patient 1: PSWQ ($R^2adj = 0.983$, $p = .001$), BAI ($R^2adj = 0.900$, $p = .001$), HARS ($R^2adj = 0.927$, $p = .001$), MCQ-N ($R^2adj = 0.930$, $p = .001$), MCQ-P ($R^2adj = 0.941$, $p = .001$); and for patient 2: PSWQ ($R^2adj = 0.911$, $p = .001$), BAI ($R^2adj = 0.742$, $p = .01$), HARS ($R^2adj = 0.805$, $p = .01$), MCQ-N ($R^2adj = 0.877$, $p = .001$), and MCQ-P ($R^2adj = 0.820$; $p = .001$). Thus, there was substantial clinical improvement over the course of treatment for each of these outcome measures.

TABLE 1. Percentage Improvement of Two Patients

Group	Patient	Pretreatment	Post-treatment	Percentage improvement	2-month follow-up	Percentage improvement at 2-month follow-up
LESS-M	1	10.14	3.57	64	4.28	57
	2	9.57	3.28	65	3.28	65
LESS-A	1	3	8.5	64	8.66	65
	2	3.16	9.33	66	9.5	66
PSWQ	1	63	32	49	30	52
	2	54	29	46	26	51
BAI	1	34	7	79	7	79
	2	32	9	71	9	71
HARS	1	37	11	70	9	75
	2	36	12	66	14	61
MCQ-N	1	16	6	62	6	62
	2	19	8	57	8	57
MCQ-P	1	17	9	47	8	52
	2	18	9	50	10	44

Note. LESS-M = Leahy Emotional Schema Scale - Maladaptive emotional schemas; LESS-A = Leahy Emotional Schema Scale - Adaptive emotional schemas; PSWQ = Penn State Worry Questionnaire; BAI = Beck Anxiety Inventory; HARS = Hamilton Anxiety Rating Scale; MCQ-N = Metacognition Questionnaire - Negative beliefs about worry; MCQ-P = Metacognition Questionnaire - Positive beliefs about worry.

DISCUSSION

The aim of this study was to assess if EST can be an effective treatment for GAD. The results of this single-subject study provide preliminary evidence for effectiveness of EST on GAD in two patients who attained clinically significant gains and maintained these gains at 2-month follow-up. A substantial reduction on all maladaptive emotional schemas and a substantial increase on adaptive emotional schema dimensions were obtained. In addition, substantial changes were observed on the other measures, the BAI, MCQ-30, PSWQ, and HARS, at post-treatment as well as at 2-month follow-up. The emotional schema model proposes that when an emotion is activated, negative beliefs and interpretations about emotions can determine whether these emotions will continue, exacerbate, or decrease. In EST, the validation of the patient's emotions, psychoeducation about emotions, normalizing emotions, acceptance, emotional self-awareness, tolerating mixed feelings, linking emotions to higher values, mindfulness, and making room for emotions can lead to increasing acceptance of emotion and a decrease in the reliance on worry as a coping strategy (Leahy, 2015a). The data from this study offer tentative support for this model.

One interesting finding was that the patients' metacognitive beliefs about worry, especially negative beliefs, changed in treatment. Studies have shown that

metacognitive factors of worry may be activated partly because of negative beliefs about emotion (Leahy et al., 2011, 2016). By modifying beliefs about emotion (adaptive and maladaptive) during EST, the reliance on worry as a strategy to cope with emotions may be decreased, thereby modifying the underlying metacognitive factors of worry.

There are a number of limitations in this study. First, the study is limited to the two patients and, therefore, caution should be considered in generalizing from these preliminary results. Second, only one therapist was used in the present study, and it may be problematic to generalize from the results obtained here. Another limitation is the design of the study. The main problem of the A B design is the lack of a sufficient number of baseline measures and, therefore, future case studies could consider the multiple baseline designs. However, the two patients who were treated with EST both made substantial improvement during treatment and maintained this improvement at 2-month follow-up. The present research could be considered as a preliminary test of the effectiveness of emotional schema therapy for patients with GAD.

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