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PRELIMINARY VALIDATION OF A STRESSOR-SPECIFIC RATIONAL AND IRRATIONAL BELIEF SCALES: THE SURGERY BELIEFS SCALE (SBS)

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Abstract
Stressor specific irrational beliefs may improve our understanding of distress beyond general irrational belief measures, as they are more specifically related to the stressor. The intent of this paper was twofold: to provide preliminary psychometric information on a stressor-specific measure of rational and irrational beliefs – the Surgery Beliefs Scale (SBS) (Study 1), and to explore the ability of this measure to predict general and surgery-specific pre-surgical distress in women scheduled to undergo breast cancer surgery at a large urban medical center (Study 2). Participants completed well-established measures of general rational and irrational beliefs (SGABS), distress (POMS-SV, IES), as well as the SBS. Results indicated that: (1) the SBS had two interpretable factors – rationality and irrationality; (2) the subscales of the SBS were moderately related to the corresponding subscales of the SGABS; and, (3) the SBS predicted pre-surgical distress. These findings provide preliminary support for the validity of the SBS, argue for the development of stressor-specific measures of rational and irrational beliefs, and suggest that this brief scale be used to better understand pre-surgical distress in patients scheduled for breast surgery.

***Keywords*:** irrational beliefs, cancer surgery, beliefs measurement

Introduction

Rational-Emotive and Cognitive-Behavior Therapy (REBT/CBT) (Ellis, 1962; 1994) has highlighted the importance of irrational (IBs) and rational (RBs) beliefs as proximal causes of psychological responses (e.g., feelings/cognitions/

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behaviors). Indeed, when primed by activating events (i.e., motivationally relevant events), IBs generate dysfunctional feelings (e.g., depressed mood/anxiety/anger/ hypomania), while RBs generate corresponding functional negative feelings. For example, when faced with a stressful event, patients with IBs may experience dysfunctional feelings like depression or anxiety, while patients who hold RBs would experience more functional feelings like sadness or concern (see David et al., 2010). Broadly speaking, in the context of negative events (defined as discrepant with our goals/desires, or motivationally incongruent), IBs/RBs will lead to negative feelings (dysfunctional or functional accordingly), and in the context of positive events (defined as consistent with our goals/desires – motivationally congruent), IBs/RBs will similarly lead to positive feelings (dysfunctional or functional accordingly) (see David et al., 2010). While the intensity of beliefs is associated to the intensity of feelings, duration/frequency of activating events are related to duration/frequency of feelings, thus, in the context of negative events, generating four outcomes: (1) clinical disorders (i.e., dysfunctional negative feelings of high intensity/frequency/duration); (2) subclinical conditions (dysfunctional negative feelings of lower intensity/frequency/duration); (3) life problems (i.e., functional negative feelings of high intensity/frequency/duration); and (4) healthy feelings (i.e., functional negative feelings of lower intensity/frequency/ duration).

Initially, Ellis (1962) delineated eleven irrational beliefs. With time however, his theory has evolved (e.g., DiGiuseppe, Leaf, Exner, & Robin, 1988; Wallen, DiGiuseppe, & Dryden, 1992; Ellis, 1994), and REBT is now focused on four categories of irrational cognitive processes: (1) demandingness/rigid and inflexible thinking (DEM – psychological inflexibility/rigidity); (2) awfulizing/ catastrophizing (AWF); (3) low frustration tolerance/frustration intolerance (LFT); and, (4) global evaluation (of self/others/life) (GE). Each category can be applied to various content areas (e.g., achievement, affiliation, comfort) to generate situation-specific irrational beliefs. For example, one could demand love, find discomfort intolerable, or think being passed up for a promotion is awful.

The counterparts to irrational cognitive processes are rational cognitive processes (RBs). The four categories of RBs are: (1) preferences, in the form of intense motivation+acceptance, (PRE – psychological flexibility) rather than DEM; (2) the moderate evaluation of badness (BAD) rather than awfulizing/catastrophizing (AWF); (3) statements of frustration tolerance (FT) rather than low frustration tolerance (LFT); and (4) evaluation of specific actions and unconditional acceptance (non-GE) rather than global evaluation of human worth and life (GE). As above, each category of RB can be applied to various content areas (e.g., achievement, affiliation, comfort) to generate situation-specific irrational beliefs.

Irrational beliefs are important psychological constructs in that they can serve as cognitive vulnerability factors which predict individuals' emotional (e.g., psychological distress), cognitive (e.g., automatic dysfunctional descriptions/ inferences), and behavioral (e.g., passivity) reactions to stressful events. Indeed, a

large body of empirical evidence has demonstrated that irrational beliefs are predictive of emotional and behavioral problems including anxiety (Goldfried & Sobocinski, 1975; Jones, 1968), depression (Nelson, 1977), and general psychiatric symptoms (Jones, 1968). The statistically significant correlations between irrational beliefs and measures of such emotional and behavioral disturbance in these studies ranged from r = 0.25 to r = 0.70 (Smith, 1982).

Although these studies provided important clues about the effects of irrational beliefs, unfortunately, the construct validity of the studies was called into question by concerns about the irrational belief measures employed. More specifically, these measures were criticized for three reasons. First, many of the belief items on these measures were contaminated by affective wording, which may have falsely inflated the relationships found between emotional distress and irrational beliefs. Second, these measures were more reflective of Ellis's earlier theories of irrational thinking, with its focus on eleven irrational beliefs, rather than of his revised thinking and emphasis on four categories of cognitive processes. Third, these measures were criticized for assessing generic beliefs which may or may not be related to specific negative events (for a detailed review, see Smith, 1982; 1989).

In an effort to address these criticisms, a new generation of rational and irrational belief measures was created. This second generation of rational and irrational belief measures is defined by three major characteristics (for a brief review see Bernard, 1988; DiGiuseppe et al., 1988; Linder Kirkby, Wertheim, & Birch, 1999): (1) the scales contain cognitive items that are uncontaminated by affective wording; (2) the measures differentiate cognitive processes (e.g., AWF) from cognitive content (e.g., achievement); and, (3) the scales have different subscales assessing rational and irrational thinking. This last point is important, as it has recently been suggested that rationality and irrationality may be separate constructs, not opposite poles of the same bipolar construct (Bernard, 1998).

Once these second generation measures were developed, attempts were made to replicate the earlier empirical studies on irrational beliefs. Using these new measures, the majority of the previous findings were replicated in terms of both directionality and significance (for a review, see meta analyses by David et al., 2018; Oltean & David, 2018; Visla et al., 2016). It should be noted that the magnitude of the effect sizes and/or the associations between irrational beliefs and measures of emotional distress was lower in the more recent studies than in the original ones. However, this finding is not unexpected, because as noted earlier, the second generation measures used in these newer studies have irrational belief items uncontaminated by affective wording.

A more fine-grained analysis of the second generation measures of rational and irrational beliefs reveals that they can be classified according to three criteria (see Table 1): (1) general versus situation-specific rational and irrational beliefs; (2) direct (e.g., self-report questionnaire) versus indirect methods of assessing rational and irrational beliefs, and, (3) individualized versus standardized assessment of rational and irrational beliefs (see Solomon et al., 2003).

Table 1. Classification scheme for second-generation measures of rational and irrational beliefs.

	General		Specific	
	Individualized	Standardized	Individualized	Standardized
Direct	-----	DiGiuseppe et al. (1988) ABS-II	Solomon et al. (2003) personal weaknesses	Boelen et al. (2004) bereavement
Indirect	Solomon et al. (1998) ATSS	-----	Eckhardt & Jaminsson, (2002) ATSS-anger	-----

Most of the previous research in the field was based on general, self-report, standardized measures. However, some authors (e.g., Solomon, Haaga, Brody, Friedman, & Kirk, 1998; Solomon, Arnow, Gotlib, & Wind, 2003; Boelen, Kip, Voorsluijts, van den Bout, 2004) have used other types of measures, leading to several interesting findings. For example, using a specific, self-report, individuallized measure of irrational beliefs (i.e., personal weaknesses), Solomon et al. (2003) found an elevated level of irrational beliefs in formerly depressed patients; however, using a general self-report standardized measure he did not find this relationship.

Yet despite the fact that this second generation of rational and irrational belief measures addressed some of the concerns raised about the first generation of belief measures, there was still a dearth of stressor-specific measures of irrational beliefs. Consequently, these second-generation measures could provide neither definitive information about the relationships between stressor-specific and generalized beliefs, nor information about the relative strength of general versus stressor-specific beliefs in the prediction of emotional distress. This is an important limitation, as Smith (1989) and Ellis (1994) have suggested that stressor-specific rationality and irrationality may be better predictors of emotional, cognitive, and behavioral responses to a stressor than would general rationality and irrationality. Moreover, the REBT/CBT model argues that IBs/RBs, as a cognitive vulnerability factor, should be primed by activating events, otherwise they do not necessarily impact human responses. Indeed, even if IBs/RBS are available (i.e., we have them in our cognitive system, as cognitive vulnerabilities), if they are not accessible (i.e., primed by activating events), they do not generate human responses (David et al., 2010). Unfortunately, many previous studies of the relationship between IBs/RBs and various human responses were done without controlling for this activating factor; consequently, it is difficult to interpret a lack of an association, as it could be real and/or it could have come from the confusion of the availability and accessibility. Moreover, both IBs/RBs and various human responses were measured at the same time, rather than in a prospective fashion (i.e., IBs/RBs occur first and then lead to emotional distress). In this article we tried to rectify some of these limitations of the field.

Objectives

The overall goals of the present paper were as follows: (1) to evaluate the psychometric properties of the Surgery Beliefs Scale (SBS) in a sample of breast cancer surgical patients (Study 1). The SBS is designed to be a stressor-specific measure of rational and irrational beliefs to be used in the context of a specific activating event (i.e., breast cancer surgery); and, (2) to assess whether stressor-specific rational and irrational beliefs contribute to the prediction of patients' pre-surgical general emotional distress and surgery-specific distress (Study 2).

STUDY 1

The primary aim of Study 1 was to construct a surgery-specific measure of rational and irrational beliefs – the Surgery Beliefs Scale (SBS) – and to conduct a preliminary investigation of its psychometric properties.

Based on previous data and reviews (e.g., Smith, 1989) we hypothesized that: a) specific rational beliefs will be positively associated with general rational beliefs; b) specific rational beliefs will be negatively associated with general irrational beliefs; c) specific irrational beliefs will be positively associated with general irrational beliefs; d) specific irrational beliefs will be negatively associated with general rational beliefs (Ellis, 1994; Bernard, 1998).

Method

Participants

The study was conducted at a large medical center in New York City. A total of 97 women participated in the research. Participants were eligible for this study if they were scheduled to undergo curative or diagnostic breast cancer surgery. Preliminary analyses indicated that surgery type was unrelated to any of the study variables (all p's >.05). Based on those who responded to demographic questions, it was found that participants ranged in age from 21.1- 78.3 years (M = 47.8, SD = 13.2 years). In terms of ethnicity, 78.4% of the participants were white (not Hispanic), 10.3% were black (not Hispanic), 4.1% were Asian or Pacific Islander, 3.1% were Hispanic, 1.0% were Asian/Indian, and 1.0% described themselves as "other." This sample was fairly evenly balanced between individuals who were currently married (47.4%) and those who were not (50.6%). The majority of the sample had completed at least a college education (79.4%).

Measures

Demographics Questionnaire. A background questionnaire was used to gather basic demographic information including age, ethnicity, marital status, and education.

Shortened General Attitude and Beliefs Scale (SGABS). The SGABS is a 26-item short-form self-report measure of irrational thinking based on the original, long-form General Attitude and Beliefs Scale (Bernard, 1998; Lindner et al., 1999). Although the SGABS can yield subscale scores, only the total rationality and total irrationality subscale scores were used in the present analyses. In previous research, this shortened measure was found to correlate highly and significantly with the original version of the GABS (correlations for subscales ranged from .84 to .98) (Linder et al., 1999). In addition, the SGABS has been found to be correlated with measures of trait anxiety and depression (Linder et al., 1999). The subscales of this measure were found to have moderate to high test-retest reliability, and to have moderate levels of internal consistency (Cronbach alpha values of .79 or greater) (Linder et al., 1999).

Surgery Beliefs Scale (SBS). The SBS is a 10-item self-report questionnaire (see Appendix) that asks about individuals' surgery-specific beliefs. The questionnaire has two subscales – a rational beliefs subscale (SBSr, 4 items) and an irrational beliefs subscale (SBSir, 4 items). There are two filler items. The development of this questionnaire will be discussed below.

Procedures

All participants provided written informed consent prior to surgery. Several days prior to surgery, participants were mailed a packet of questionnaires, containing the SGABS and the SBS, which they completed at home. They brought these completed questionnaire packets to the hospital with them on the morning of surgery, and handed them to the research coordinator.

Results

Preliminary analyses revealed that none of the background demographic or medical variables were significantly related to any of the study outcome variables (all p's > .05).

Validity

Content validity. A group of three experts in the fields of rational-emotive behavioral therapy, health psychology, and behavioral cancer research, all with over 10 years of experience, developed the items for the SBS. They created these items based on the state of REBT (see Wallen et al., 1992), as well as on their

experience with surgical populations. More specifically, these authors adapted items from a validated measure of general rational and irrational beliefs (ABS-II; DiGiuseppe et al., 1988) and tailored them to be specific to surgery as a stressor. The four items that make up the irrational beliefs subscale of the SBS were designed to assess irrational cognitive processes related to surgery (i.e., DEM, AWF, LFT, and self-downing-GE/SD); one item per irrational cognitive process. The four items that comprise the rational beliefs subscale of the SBS were designed to assess rational cognitive processes related to surgery (i.e., PRE, BAD, FT, and non-GE/SD); one item per rational cognitive process.

Construct validity:

Principal Component Analysis (N=97). A Principal Components Analysis (PCA) with a Promax rotation showed the presence of two interpretable components (see Table 2) in the SBS. A Promax rotation, which allows factors to correlate, was chosen rather than a Varimax rotation (which forces an orthogonal relationship between factors), in order to account for the fact that people most often hold a mixture of rational and irrational beliefs (Ellis, 1994).

In the SBS, one component was labeled irrationality and the other component was labeled rationality. The finding of two such distinct components is consistent with previous suggestions that rational and irrational beliefs are two different constructs rather than opposite poles of a bipolar construct (e.g., Bernard, 1998). Based on theory, as well as our empirical findings, we computed two separate subscale scores (rational and irrational beliefs), rather than a total score.

Table 2. Principal Components Analysis Results: First two components and the correlations between variables and components (N=97).

Surgery Beliefs Scale (SBS)		
	Factor 1 (27%)	Factor 2 (14%)
Item 1 (DEM)	.80	-.17
Item 2 (Filler)	-.24	.46
Item 3 (AWF)	.75	-.18
Item 4 (Non GE/SD)	-.42	.22
Item 5 (Filler)	-.03	.01
Item 6 (LFT)	.80	-.30
Item 7 (BAD)	-.18	.50
Item 8 (FT)	-.19	.80
Item 9 (PRE)	.04	.02
Item 10 (GE/SD)	.22	-.76
	Irrationality	Rationality

Note: DEM = demandingness, AWF = awfulizing, GE/SD = Global evaluation/self-downing, LFT = low frustration tolerance, BAD = moderate evaluation of badness, FT = frustration tolerance, PRE = preference+acceptance

Convergent and discriminant validity (N=97). As shown in Table 3, the rational subscale of the SBS were positively and moderately associated with the rational subscale of the SGABS.

Table 3. Concurrent Validity of the Surgery Beliefs Scale (SBS) and the SGABS (N=96).

	SGABSr	SGABSir	SBSr	SBSir
SGABSr		-.42*	.57*	-.13
SGABSir			-.39*	.08
SBSr				-.37*
SBSir				
CBSr				

Note: SGABSr = rational belief subscale of the Shortened General Attitudes and Beliefs Scale; SGABSir = irrational belief subscale of the Shortened General Attitudes and Beliefs Scale; SBSr = rational belief subscale of the Surgery Beliefs Scale; SBSir = irrational belief subscale of the Surgery Beliefs Scale.
* $p < .05$

Internal consistency (*N*=97). The Cronbach alphas for the Surgery Beliefs Scale (SBS) were as follows: $SBS_r = .49$; $SBS_{ir} = .62$.

Discussion

The internal consistency of the subscales of the SBS was relatively modest. These relatively modest values may be attributed to: (1) the low number of items in each subscale (i.e., four items); and/or (2) to the stressor-specific nature of the questionnaire. To elaborate on this last point, it should be noted that more general belief measures have found interrelationships among the four irrational cognitive processes (i.e., DEM, AWF, LFT, and GE/SD), as well as among the four rational cognitive processes (PRE, BAD, FT, and non-GE/SD) (e.g., DiGiuseppe et al., 1988). The discrepancy between these more general and more specific measures may be explained as follows: General belief measures tend to assess beliefs across a wide variety of contexts (e.g., work, school, home life), and as a result, increase the likelihood that a variety of beliefs are activated. For example, questions related to work may activate self-downing (I'm a terrible salesman), questions related to relationships may activate low frustration tolerance (I can't stand it that she left me), questions related to family may activate awfulizing (My children won't listen to me and that's awful), and questions related to health may activate demandingness (I must not have to take medication every day to take care of my health). By addressing only one context (e.g., surgery), stressor-specific measures like the SBS may only activate one cognitive process. For example, in the hypothetical case described above, they might only activate demandingness and/or one of the derivatives. Consequently, the cognitive processes would not appear highly correlated. Based on this explanation, we would expect a general measure of

rational and irrational beliefs to have a higher level of internal consistency than a more specific measure, and this is what was found. However, it is important to note that a lack of internal consistency is not a major shortcoming of a measure, as long as the measure demonstrates other psychometric properties (e.g., convergent and predictive validity) (Anastasi, 1988). For example, the full scale IQ score on the Wechsler scales demonstrates good convergent and predictive validity, and is widely used, despite the fact that the items which comprise it are not highly intercorrelated (Anastasi, 1988).

Factor analyses (i.e., Principal Component Analyses) showed the overall structure of our measures to be consistent with the underlying theory of rational and irrational beliefs which suggests that rational and irrational beliefs represent two distinct factors (e.g., Bernard, 1998). However, it should be noted that one item (PRE on the SBS) did not load on the components (in PCA) as would have been predicted by REBT theory. We chose to include this item in our subscales despite the factor analytic results for two reasons: 1) only 1 of the 8 items had low factor loadings, and 2) the same cognitive process was not problematic across scales.

As we hypothesized, surgery-specific rational and irrational beliefs were moderately related to the corresponding subscales of the general measure of rational and irrational beliefs. In other words, surgery-specific rational beliefs were moderately and positively associated with general rational beliefs and were negatively related to general irrational beliefs.

In terms of the relationship between rational and irrational beliefs, it was found that general and specific rational beliefs were inversely and moderately related to general and specific irrational beliefs. Finally, surgery-related rational and irrational beliefs were in general significantly related to each other.

STUDY 2

Our aim in the second study was to use the SBS to predict pre-surgical levels of general and surgery-specific distress. We hypothesized that stressor-specific rational and irrational beliefs would be better predictors of both general and surgery specific pre-surgical distress than general rational and irrational beliefs.

Method

Participants

A total of 76 women undergoing breast cancer surgery (as described above) who completed all of the predictor and outcome measures provided the data for the present study. Participants ranged in age from 22.1 to 78.3 (M = 46.2 years; SD = 12.0 years). In terms of ethnicity, 78.9% of the participants were white (not Hispanic), 10.5% were black (not Hispanic), 5.3% were Asian or Pacific Islander, 3.9% were Hispanic, and 1.3% described themselves as "other." This sample was

fairly evenly balanced between individuals who were currently married (44.7%) and those who were not. The majority of the sample (82.9%) had completed at least a college education. Preliminary analyses revealed that none of the demographic variables was significantly related to any of the study variables (all *p*'s > .05).

Measures

We used all the measures described in Study 1 [i.e., Demographics Questionnaire, Shortened General Attitude and Beliefs Scale (SGABS), and Surgery Beliefs Scale (SBS)] as well as the following two measures:

Profile of Mood States – Short Version (POMS-SV). This 47-item self-report measure was used to assess participants' level of pre-surgical general emotional distress over the 24 hours prior to surgery. Individuals are asked to evaluate the degree to which each adjective applies to them by rating that adjective on a scale from 0 (not at all) to 4 (extremely). The Total Mood Disturbance score (TMD), a measure of total distress, was used in the present study. Past research has found the TMD score to have good internal consistency (ranging from $\alpha = .93$ to $\alpha = .96$) (Shacham, 1983) and its use has been validated with cancer patients (please put in Dilorenzo et al). In the present study, Cronbach's alpha for the TMD score was .95.

Impact of Events Scale (IES). This measure has two subscales, Intrusion and Avoidance, and was used to assess pre-surgical surgery-specific distress. The eight-item avoidance subscale (Horowitz, Wilner, & Alvarez, 1979) measured how often participants attempted to avoid stimuli, thoughts, or feelings related to surgery "in the last month, including today." Participants responded to each question as follows: 0 = not at all; 1 = rarely; 3 = sometimes; or 5 = often. The test-retest reliability for this subscale (.79) and its internal consistency (Cronbach's Alpha = .82) have both been shown to be adequate (Horowitz et al., 1979). The seven-item intrusion subscale of the IES measured frequency of intrusive thoughts, worries, and emotions about surgery "in the last month, including today." Frequency for each item was rated: 0 = not at all; 1 = rarely; 3 = sometimes; or 5 = often. The test-retest reliability for this subscale has been shown to be high (.89), as has its internal consistency ($\alpha = .78$) (Horowitz et al., 1979). In the present study, Cronbach's alphas were for both subscales higher than .80.

Procedures

All participants signed informed consent documents prior to surgery. Several days prior to surgery, participants were mailed a packet of questionnaires, containing the SGABS and the SBS, which they completed at home. They brought these completed questionnaire packets to the hospital with them on the morning of surgery, and handed them to the research coordinator. Later that morning, but prior to surgery, participants completed the IES and the POMS-SV. These questionnaires were administered in the presence of study staff, who were available to clarify questions related to any items.

Results

Preliminary analyses indicated that surgery type was unrelated to any of the study variables (all *p*'s >.05).

Table 4 presents the association between beliefs (stressor-specific and general, rational and irrational) and pre-surgical distress (general emotional and surgery-specific).

Table 4. Correlations between belief measures (SBS, SGABS) and distress prior to surgery (general emotional and cancer-specific) (N=76).

	General Emotional Distress	Cancer-specific Distress	
	POMS-SV	IES-Avoidance	IES-Intrusion
SBSr	-.24*	-.20	-.05
SBSir	.28*	.24*	.21
SGABSr	-.09	-.15	.007
SGABSir	.02	.09	-.07

* $p < .05$

Discussion

The results of Study 2 show that as hypothesized, the stressor-specific belief measure was a better predictor of distress (both general emotional and surgery-specific) than the general beliefs measure. More specifically, higher levels of surgery-specific irrational beliefs were related to higher levels of pre-surgical distress (both general emotional and surgery-specific), and higher levels of surgery-specific rational beliefs were related to lower levels of general emotional distress.

GENERAL DISCUSSION

The field of REBT/CBT has been limited by the lack of specific measures of rational and irrational beliefs, and the failure to control for activating events in studies about the relationship between IBs and RBs as well as their consequences for emotional responses. In this article we tried to address these limitations.

The revealed that the Surgery Beliefs Scale (SBS), which is based on the REBT/CBT theory of rational and irrational beliefs (Ellis, 1994), shows a factor structure consistent with the idea of rational and irrational beliefs as two discernable constructs, rather than as opposite ends of a spectrum (Bernard, 1998). Also, as predicted stressor-specific rational and irrational beliefs were moderately correlated with a general measure of rational and irrational beliefs.

In terms of the predictive validity of the newly created measure, the results revealed that whereas general measures of rational and irrational beliefs are poor predictors of pre-surgical distress (general and surgery-specific), surgery-specific

rational and irrational beliefs were better predictors of distress. This suggests that prior to surgery, surgery-related irrational beliefs may be the best predictor of distress.

Clinical Implications. The pre-surgical distress experienced by breast cancer patients is not only emotionally trying, but has also been linked to physical consequences such as post-surgical nausea, fatigue, and discomfort (Montgomery & Bovbjerg, 2004). Given that the present findings suggest that surgery-related irrational beliefs are predictive of this pre-surgical distress, it follows that interventions which decrease these beliefs (e.g., REBT) should in turn decrease pre-surgical distress, and consequently, could yield important physical and psychological benefits for women. If such interventions are found to be effective, then the generalizability of this phenomenon to other surgical populations (e.g., cardiac surgery) should be examined.

Overall, these findings provide preliminary support for the validity of the SBS, argue for the development of more stressor-specific measures of rational and irrational beliefs, and suggest the adoption of this brief scale into more studies on surgical patients. However, these studies should only be seen as a first step in the process of validating these two scales. Future studies should further explore their psychometric properties, for example, their test-retest reliability. In addition, it should be noted that the present studies are not without their limitations. Most importantly, although it is prospective with regard to the prediction of distress, Study 2 remains correlational. In order to provide a more rigorous test of directionality, future experimental studies should be conducted to determine whether experimentally-induced changes in rational and irrational beliefs can induce changes in distress.

In conclusion, our results are consistent with the position that context-specific rational and irrational beliefs can improve prediction of subsequent distress in those specific contexts. The continued development of reliable and valid measures of specific rational and irrational belief measures would be of great benefit not only in terms of advancing the scientific development and empirical support for REBT theory, but also in terms of providing intervention targets for clinicians working with surgery patients.

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APPENDIX

Surgery Beliefs Scale (SBS)

A. For each of these statements, please indicate the extent to which you agree or disagree by circling the appropriate number. Try to be as accurate and as honest as you can, and try not to let your answer to one question influence your answers to other questions. There are no right or wrong answers. We are only interested in your opinion.

	Strongly agree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1. I don't want to ever have surgery, and I absolutely must not have it.	1	2	3	4	5
2. I don't get upset too easily.	1	2	3	4	5
3. It is awful to have surgery.	1	2	3	4	5
4. If I have to undergo surgery it doesn't mean that I am worthless.	1	2	3	4	5
5. It is easy for me to relax.	1	2	3	4	5
6. It is unbearable to have surgery.	1	2	3	4	5
7. It is unpleasant and unfortunate to have surgery but not awful.	1	2	3	4	5
8. I can stand having surgery	1	2	3	4	5
9. I really don't want to ever undergo surgery, but I realize and accept that things do not have to always be the way I want them to be.	1	2	3	4	5
10. If I undergo surgery, it means that I am not worthwhile.	1	2	3	4	5

LEGEND:

Rational Items: 4, 7, 8, 9.

Irrational Items: 1, 3, 6, 10.

Filler Items: 2, 5.