IRRATIONAL BELIEFS AND UNCONDITIONAL SELF-ACCEPTANCE. II. EXPERIMENTAL EVIDENCE FOR A CAUSAL LINK BETWEEN TWO KEY FEATURES OF REBT

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ABSTRACT: In a test of two key features of REBT, causal relationships between irrational beliefs and unconditional self-acceptance were experimentally investigated in a sample of 106 non-clinical participants using a priming technique. Priming participants with statements of irrational belief resulted in a decrease in unconditional self-acceptance whereas priming participants with statements of rational belief resulted in an increase in unconditional self-acceptance. In contrast, priming participants with statements about unconditional self-acceptance did not result in an increase in rational thinking and priming participants with statements about conditional self-acceptance did not result in an increase in irrational thinking. The present study is the first to provide evidence of a causal link between rational/irrational thinking and unconditional/conditional self-acceptance. The findings have important implications for the core hypothesis of REBT and underscore the advantages of experimental over correlational studies in theory-testing.

KEY WORDS: priming; irrational beliefs; REBT; self-acceptance; self-esteem.

INTRODUCTION

According to REBT, irrational beliefs are illogical, rigid and inconsistent with reality whereas rational beliefs are logical, flexible and consistent with reality. As a result of holding irrational beliefs, people acquire unhealthy emotions, dysfunctional behaviors and psychological disturbance. Through disputation of their irrational

beliefs, people can develop more rational and realistic ways of thinking that will produce greater acceptance of the self and others. In REBT, self-acceptance means accepting oneself unconditionally regardless of whether one behaves competently or correctly and whether others are likely to express approval or respect (for reviews, see Dryden & Neenan, 2004; Ellis, 1994).

A great deal of research has been carried out on irrational beliefs, but very little work has been done on unconditional self-acceptance, even though unconditional self-acceptance has long been a key feature of REBT. One reason for this state of affairs may be the lack of a reliable and valid measure of unconditional self-acceptance. Recently, however, Chamberlain and Haaga (2001a) devised a measure consisting of 20 statements reflecting the various philosophical and practical aspects of unconditional self-acceptance distilled from the REBT literature. Chamberlain and Haaga (2001a, b) found that this measure of unconditional self-acceptance was positively associated with life satisfaction and happiness, and negatively associated with anxiety, depression and depression-proneness. Unfortunately, their measure of unconditional self-acceptance was also found to be correlated with self-esteem. To overcome this problem, they partialled out self-esteem from the other correlations. When this was done, the correlations with anxiety and depression-proneness remained significant, but the correlations with depression and life satisfaction/happiness became non-significant.

Armed with this newly-available measure of unconditional self-acceptance, Davies (2006) investigated its relationship with irrational beliefs and found a highly significant negative correlation even after self-esteem had been partialled out. Thus, irrational thinking was associated with conditional self-acceptance, whereas rational thinking was associated with unconditional self-acceptance. This provided the first empirical evidence of a link between two key aspects of REBT. However, the findings were only correlational and therefore it could not be concluded that rational/irrational thinking is a *cause* of unconditional/conditional self-acceptance. Indeed, it could well be that the reverse causal direction is the case—accepting oneself unconditionally/conditionally leads to more rational/irrational beliefs. To investigate the causal relations between these constructs would require the use of true experimental designs.

In the present study, causal links between the two key features of REBT were experimentally investigated using a *priming* technique.

Although priming is commonly used in social cognition to examine the effects of presenting different types of information on ostensibly unrelated subsequent judgments or behavior (for a review, see Higgins, 1996), it is not typically used in REBT. The usual technique of manipulating beliefs in REBT is to instruct participants to assume or hold a particular belief while imagining a problem scenario and then to measure the variables of interest. For example, while imagining having a serious disagreement with one's partner, participants might be instructed to hold the belief "It may be inconvenient disagreeing with my partner but it is not awful" and then relationship satisfaction is measured (taken from Cramer, 2005). Although this may be a useful technique in therapy, the problem with this technique from an experimental point of view is demand characteristics (Orne, 1962). Being instructed to assume or hold a belief may constitute a powerful demand cue such that, when it comes time to take the measure of interest, participants will guess the purpose of the experiment and simply respond in such a way as to please the experimenter and/or confirm the experimenter's hypothesis rather than respond as they naturally would. In the example above, having been asked to hold the belief "It may be inconvenient disagreeing with my partner but it is not awful" and then responding to a relationship satisfaction measure, participants may correctly guess that the experimenter wants them to respond more positively than they otherwise would (or, in the Cramer example, as they previously did on a pretest). With the priming technique, there is no ostensible relationship between the priming manipulation and the measurement of the dependent variable, and therefore demand cues are minimised.

To test the idea that irrational/rational beliefs cause conditional/unconditional self-acceptance, some participants were primed with irrational beliefs and others were primed with rational beliefs. Unconditional self-acceptance was measured before and after the priming manipulation. It was therefore hypothesized that priming irrational beliefs would lead to a significant decrease in unconditional self-acceptance, whereas priming rational beliefs would lead to a significant increase. To test the reverse causal link, some participants were primed with unconditional self-acceptance statements and others were primed with conditional self-acceptance. Irrational beliefs were measured before and after the priming manipulation. It was therefore hypothesized that priming unconditional self-acceptance would lead to a significant decrease in irrational beliefs, whereas

priming conditional self-acceptance would lead to a significant increase.

Self-esteem was included as a control measure. It was not expected that priming rational/irrational beliefs would affect self-esteem but it was expected that priming conditional/unconditional self-acceptance would affect self-esteem given the close relationship between these measures (Chamberlain & Haaga, 2001a, b). Thus, priming conditional self-acceptance should lead to lower self-esteem whereas priming unconditional self-acceptance should lead to higher self-esteem.

METHOD

Participants

Undergraduate students aged 18–43 ($M = 22.86$) completed a number of questionnaires for course credits in mass-testing sessions. Four months later they returned for testing in small groups. Complete data were obtained for 82 women and 24 men.

Measures

The measure of irrational beliefs was the Irrational Beliefs Scale (IBS; Malouff & Schutte, 1986), a questionnaire consisting of 20 statements representing the 10 irrational beliefs described by Ellis and Harper (1961) to which participants respond on a scale from 1 ("strongly disagree") to 5 ("strongly agree"). Malouff and Schutte report a test–retest reliability of 0.89 and a Cronbach alpha of 0.80. From this questionnaire, a set of 20 *irrational beliefs* was prepared. A set of 20 *rational beliefs* was prepared by reversing the meaning of the items. For example, scale item 5 "Some of my ways of acting are so ingrained that I could never change them" was re-worded as "Some of my ways of acting are ingrained but I can still change them."

Unconditional self-acceptance was measured with the USAQ (Chamberlain & Haaga, 2001a), a questionnaire consisting of 20 statements to which participants respond on a scale from 1 ("almost always untrue") to 7 ("almost always true"). In this questionnaire, nine items are worded such that higher scores represent greater unconditional self-acceptance (e.g., "I avoid comparing myself to

others to decide if I am a worthwhile person"), while 11 items are re-verse-scored such that higher scores represent greater conditional self-acceptance (e.g., "I set goals for myself that I hope will prove my worth"). Chamberlain and Haaga report a Cronbach alpha of 0.72 which is an acceptable level of internal consistency. From this questionnaire, a set of 20 *unconditional self-acceptance* statements was prepared using the nine normally-scored items plus re-wording of the 11 reverse-scored items. A set of 20 *conditional self-acceptance* statements was prepared using the 11 reverse-scored items plus re-wording of the nine normally-scored items.

Self-esteem was measured with the Rosenberg Self-Esteem scale (RSE; Rosenberg, 1965), a questionnaire consisting of 10 statements to which participants respond on a scale from 1 ("strongly agree") to 4 ("strongly disagree"). To avoid confusion in the interpretation of results, items were scored so that high scores represented high self-esteem. The Rosenberg scale is the most widely-used measure of self-esteem and has been found to have high reliability and internal consistency. For example, Fleming and Courtney (1984) report a Cronbach alpha of 0.88.

Procedure

In initial mass-testing sessions, participants completed a number of questionnaires including the Unconditional Self-Acceptance Questionnaire (USAQ), the Irrational Beliefs Scale (IBS) and the Rosenberg Self-Esteem scale (RSE). Approximately 4 months later, participants returned for a second testing session when they were randomly assigned either to one of three rationality-priming conditions or to one of three self-acceptance priming conditions. (The relatively long delay between the initial pre-testing and the experimental session was caused by administrative and organizational constraints outside the control of the experimenter.)

In the *irrational-priming* condition, participants were presented with a list of 10 irrational beliefs. In the *rational-priming* condition, participants were presented with a list of 10 rational beliefs. In a *neutral-priming* (control) condition, participants were presented with a randomly-mixed list of five irrational and five rational beliefs. In the *unconditional-priming* condition, participants were presented with a list of 10 unconditional self-acceptance statements. In the *conditional-priming* condition, participants were presented with a list

of 10 conditional self-acceptance statements. In a *neutral-priming* (control) condition, participants were presented with a randomly-mixed list of five unconditional and five conditional self-acceptance statements.

Participants were asked to study the statements for 2 minutes. In order to justify the task and to concentrate participants' attention on the statements, the experimenter told them that they would be asked questions about the statements later on as part of a memory test. This memory test also served as a check on the equivalence of the priming tasks across conditions. After 2 minutes, the list of statements was removed and participants in the irrational/rational/neutral priming conditions were given the USAQ and RSE questionnaires to fill in, whereas those in the conditional/unconditional/neutral priming conditions were given the IBS and RSE questionnaires. The participants were then presented with 20 statements, 10 of which had been previously presented in the priming phase and 10 of the same type which had not been previously presented. They were required to tick the 10 statements they had been shown previously. After completion of the testing, participants were thoroughly debriefed.

RESULTS

The recognition-memory scores are shown in Table 1. There were no significant differences between the irrational/rational/neutral priming conditions nor between the unconditional/conditional/neutral self-acceptance priming conditions, Fs < 1. This suggests that the statements were equally memorable across conditions and therefore that the priming effects were equivalent across conditions.

Priming of Irrational/Rational beliefs

Scores on the USAQ and RSE were analysed using a 3 (Irrational, Rational, Neutral priming)×2 (Pretest/Posttest measurement) ANOVA. Table 2 shows summary statistics for Unconditional Self-Acceptance and Self-Esteem scores as a function of Priming and Pretest/Posttest conditions.

For Unconditional Self-Acceptance scores, there was a significant interaction of Priming and Pretest/Posttest conditions, $F(2,50) = 6.89$, $p < .002$. As can be seen from Figure 1, unconditional self-acceptance increased significantly as a result of priming Rational beliefs,

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Table 1

Number of Statements Correctly Recognised

	Priming condition			*Priming condition*		
	Irrational	*Rational*	*Neutral*	*Conditional*	*Unconditional*	*Neutral*
Mean	7.84	7.58	7.50	7.42	7.76	7.64
SD	1.25	1.27	1.32	1.40	1.29	1.17
N	18	19	16	19	17	17

Table 2

Summary Statistics for Unconditional Self-Acceptance and Self-Esteem Scores as a Function of Priming and Pretest/ Posttest Conditions

Priming condition		*Unconditional self-acceptance*		*Self-esteem*	
		Pretest	*Posttest*	*Pretest*	*Posttest*
Neutral	*Mean*	87.56	86.75	30.88	31.94
	SD	11.72	13.49	5.20	4.92
	N	16	16	16	16
Rational	*Mean*	85.95	92.63	31.21	32.74
	SD	9.80	12.87	4.16	5.16
	N	19	19	19	19
Irrational	*Mean*	85.56	77.50	32.17	32.00
	SD	11.74	11.00	4.02	5.55
	N	18	18	18	18

$t(18) = 2.38$, $p < .05$ (a medium effect; $d = 0.55$), decreased significantly as a result of priming Irrational beliefs, $t(17) = 3.44$, $p < .01$ (a large effect; $d = 0.81$), and stayed the same in the neutral-priming condition, $t < 1$.

For Self-Esteem scores, there were no significant effects, Fs < 1.

Further analysis was carried out on the USAQ scores. Previous research (Davies, 2006) had shown that the items of the USAQ did not load on a single factor but rather on two factors, self-esteem and self-acceptance. Therefore, two scores were calculated from the USAQ
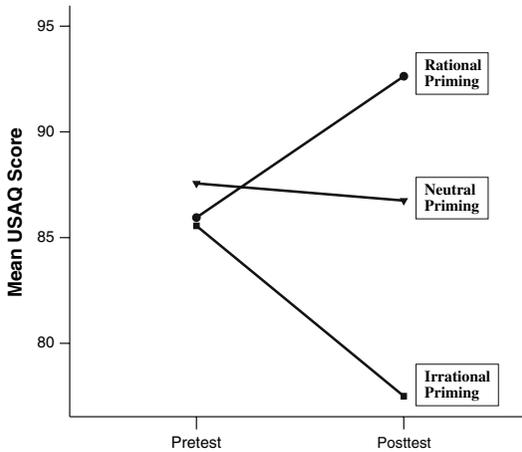
Figure 1. Self-acceptance as a function of priming irrational/rational beliefs.

items based on their loadings on these factors, Factor 1 representing self-esteem and Factor 2 representing self-acceptance. Analysis of variance showed a highly significant interaction of Irrational/Rational priming and Pretest/Posttest for Factor 2 (self-acceptance), $F(2,50) = 10.92$, $p < .001$, but no significant interaction for Factor 1 (self-esteem), $F < 1$. As can be seen from Figure 2, Factor 2 scores increased significantly as a result of priming Rational beliefs, $t(18) = 3.36$, $p < .005$, decreased significantly as a result of priming Irrational beliefs, $t(17) = 3.40$, $p < .005$, and stayed the same in the neutral-priming condition, $t < 1$.

Priming of Unconditional/Conditional Self-Acceptance

Scores on the IBS and RSE were analysed using a 3 (Unconditional, Conditional, Neutral Priming)×2 (Pretest/Posttest measurement) ANOVA. Table 3 shows summary statistics for the Irrational Beliefs and Self-Esteem measures as a function of Priming and Pretest/Posttest conditions.

For Irrational-Beliefs scores, there was no significant interaction of Priming and Pretest/Posttest conditions, $F < 1$. However, for Self-Esteem scores, there was a significant interaction of Priming and Pretest/Posttest conditions, $F(2,50) = 3.42$, $p < .05$. As can be seen from Figure 3, self-esteem increased as a result of priming unconditional self-acceptance, $t(16) = 2.36$, $p < .05$, decreased as a result of
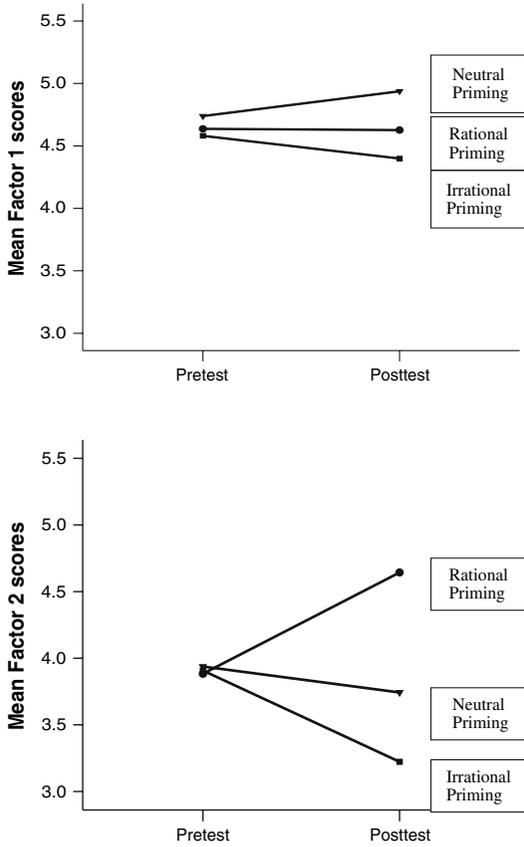
Figure 2. USAQ factor 1 and 2 scores as a function of irrational/rational priming.

priming conditional self-acceptance, $t(18) = 1.82$, $p < .10$, and stayed the same in the neutral-priming condition, $t < 1$.

DISCUSSION

The findings of the present study show clearly that thinking about rational beliefs increases unconditional self-acceptance whereas thinking about irrational beliefs reduces unconditional self-acceptance. By contrast, thinking about unconditional or conditional self-acceptance does not affect irrational versus rational thinking (although it does influence self-esteem such that unconditional

Table 3

Summary Statistics for Irrational-Beliefs and Self-Esteem Scores as a Function of Priming and Pretest/Posttest Conditions

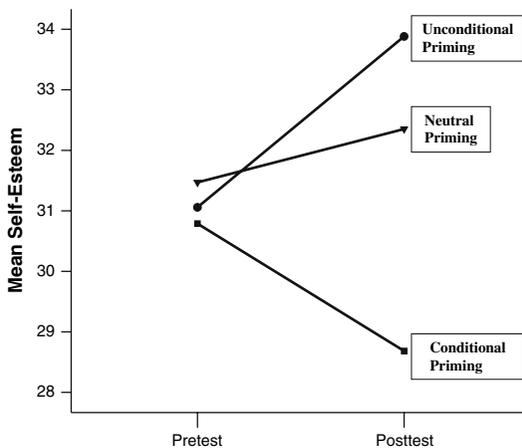| Priming condition		Irrational beliefs		Self-esteem	
		Pretest	*Posttest*	*Pretest*	*Posttest*
Neutral	*Mean*	58.65	58.59	31.47	32.35
	SD	10.01	8.13	5.25	5.41
	N	17	17	17	17
Unconditional	*Mean*	57.88	56.41	31.06	33.88
	SD	8.25	7.02	5.24	4.34
	N	17	17	17	17
Conditional	*Mean*	59.63	60.63	30.79	28.68
	SD	7.28	7.80	5.19	5.20
	N	19	19	19	19

Figure 3. Self-esteem as a function of priming unconditional/conditional self-acceptance.

self-acceptance increases self-esteem whereas conditional self-acceptance reduces self-esteem).

As well as supporting previous findings that irrational beliefs are associated with low unconditional self-acceptance (Davies, 2006), these findings extend this work by showing not simply a correlation

between the two but a causal link. In addition, the present findings establish that the previously-observed correlation was not simply due to content overlap between measures of irrational beliefs and unconditional self-acceptance, otherwise the priming effects of IBS and USA would have been similar when they were clearly not.

These findings are very relevant to the issue of whether the "core" hypothesis of REBT—that irrational beliefs cause psychological dysfunction and disturbance—is testable (e.g., Bond & Dryden, 1996a). Ellis (1958, 1994) proposed that cognitions, emotions and behaviors are not separate psychological entities but that they are intimately related to each other. This is what Bond and Dryden refer to as the "interdependence principle" of REBT. If this principle holds, then causal links between these entities, such as between irrational beliefs and unhealthy emotions, cannot be examined because interdependence logically implies that these entities are not separate and cannot be separated from one another. Thus, the "core" REBT hypothesis cannot be tested. According to Bond and Dryden "If a system is truly interdependent, then each element of that system cannot be isolated and its effects examined, because the effect of each element is contingent upon the other elements of the system; in other words, cognitions, emotions, and behavior cannot legitimately be separated from each other; therefore, if one attempts to measure the effects of cognition on psychological disturbance and health, one is also measuring the effects of emotions and behavior as well." (p. 31).

Although the present study found evidence that irrational beliefs are a causal agent in self-acceptance, there was no evidence that self-acceptance is a causal agent in irrational thinking. However, there was no check to see whether the experimental priming of self-acceptance actually changed people's self-acceptance. It is possible that the priming method is particularly suited to changing beliefs rather than to changing stable and central traits such as self-acceptance and this is why no significant effects of self-acceptance on irrational beliefs were found. Unfortunately, the priming method does not easily allow for manipulation checks. In addition, since there is only one recognized measure of unconditional self-acceptance, the findings need to be replicated with different measures and different methods, especially since there are some doubts about the psychometric properties of the USAQ (Davies, 2006).

It may very well be that other areas of Ellis's REBT model are interdependent or exhibit bi-directional causality. In an important

series of studies, Bond and Dryden (1996b, 1997, 2000) showed, using role-playing/imaginal inductions, that people who hold irrational beliefs endorse more dysfunctional inferences than those holding rational beliefs. However, they did not test whether inference statements may cause beliefs and therefore it remains a possibility (admittedly unlikely) that there is also a reverse causal link, i.e. holding functional versus dysfunctional inferences results in the differential endorsement of rational versus irrational beliefs.

Clearly, the present findings need replicating using other samples, methods and procedures, particularly different manipulations or inductions of irrational/rational thinking, as well as other measures relating to self-acceptance. Given the application in the present study of an experimental technique (priming) new to REBT, it would be of interest to examine the use of priming in other REBT areas to see whether similar effects occur and whether there are qualifications or limitations of the effects observed in the present study.

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