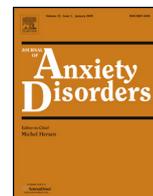




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Do negative beliefs about exposure therapy cause its suboptimal delivery? An experimental investigation

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ABSTRACT

Despite its effectiveness, exposure therapy is underutilized and frequently implemented in suboptimal fashion. Research has shown negative beliefs about exposure are related to its underutilization, and these beliefs are held by exposure therapists and may play a causal role in its suboptimal delivery. This study examined the effect of negative beliefs about exposure on treatment delivery. Participants ($n = 53$) received training in basic exposure implementation and were given additional information intended to elicit either positive or negative beliefs about the treatment's safety, tolerability, and ethicality prior to conducting an exposure session with a confederate client. Results indicated that participants with experimentally induced negative beliefs about exposure delivered the treatment more cautiously (e.g. creation of a less ambitious exposure hierarchy, selection of a less anxiety-provoking exposure task, attempts to minimize client anxiety during exposure) compared to participants with positive beliefs who pursued more ambitious delivery of exposure (e.g. encouraging clients' use of oppositional actions). The present findings suggest that therapist reservations about exposure cause suboptimal delivery and may adversely affect client outcomes.

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1. Introduction

Various forms of exposure therapy (ET) have consistently generated empirical support in the treatment of anxiety disorders (Deacon & Abramowitz, 2004; Olatunji, Cisler, & Deacon, 2010), including posttraumatic-stress disorder (e.g. Foa, Rothbaum, Riggs, & Murdock, 1991; Taylor et al., 2003), obsessive-compulsive disorder (e.g. Abramowitz, Franklin, Schwartz, & Furr, 2003; Franklin, Abramowitz, Kozak, Levitt, & Foa, 2000), panic disorder (e.g. Barlow, Gorman, Shear, & Woods, 2000; Gould, Otto, & Pollack, 1995) and social and specific phobias (Öst, 1996; Rapee, Gaston, & Abbott, 2009). Findings supporting the efficacy of ETs in clinical trials extrapolate to “real world” practice (Stewart & Chambless, 2009). Clinical practice guidelines published by the American Psychiatric Association (2011) and the National Institute for Clinical Excellence (2011) recommend ET approaches as first-line anxiety treatments. Clearly, ETs are a well-established treatment for anxiety disorders, and the need to disseminate them is a high priority (Gunter & Whittal, 2010).

However, despite the well-documented effectiveness of ET, its implementation is hindered by two dissemination problems: (a) it is an underutilized approach, and (b) when used, it is frequently

delivered in an unnecessarily cautious manner (e.g., refraining from use of highly anxiety-provoking exposure tasks, prematurely terminating exposure tasks, frequent use of anxiety reduction strategies; Deacon & Farrell, 2013). Becker, Zayfert, and Anderson (2004) found that a large majority (83%) of doctoral-level psychologists treating PTSD reported not using ET. Similarly, van Minnen, Hendriks, and Olff (2010) reported that most trauma experts did not utilize ET in treatment of PTSD, and found that both client factors (e.g. comorbidity) and therapist factors (e.g. fear of client dropout) predicted decisions to not use exposure. This is despite published findings that ET for PTSD is more effective and as safe and tolerable as other non-exposure methods (Foa, Zoellner, Feeny, Hembree, & Alvarez-Conrad, 2002; Hembree et al., 2003). The underutilization of ET is not specific to PTSD. A study on the implementation of exposure in Germany found that although almost all therapists in the study requested coverage for ET from obsessive-compulsive clients' health insurers, over 80% of the clients reported that no exposure component was used in their treatment (Böhm, Förstner, Kulz, & Voderholzer, 2008). In addition, Becker et al. (2004) noted that less than 15% of clinicians who received specialized training in ET to treat PTSD reported using the therapy when treating other anxiety disorders.

When ET is used, research shows that therapists frequently deliver it in a manner that appears to be cautious. Freiheit, Vye, Swan, and Cady (2004) surveyed a large group of CBT-oriented psychologists and found that many reported delivering ET in combination with other techniques, including relaxation training,

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meditation, and breathing retraining. Research has demonstrated that arousal-reduction strategies are not evidence-based adjuncts for ET (Deacon et al., 2012) and may even interfere with long-term improvement (Schmidt et al., 2000). In addition, many therapists favor client-guided ET over therapist-assisted exposure. For example, client self-directed ET was used approximately three times more often than therapist-assisted exposure among a sample of practitioners in Wyoming (Hipol & Deacon, 2013). These results are troubling, as ET is more effective when implemented in a therapist-assisted manner (Abramowitz, 1996; Gloster et al., 2011).

What might account for these two dissemination-related problems concerning ET? This question has been more thoroughly addressed in regards to the problem of underutilization. Specifically, research has revealed that many therapists hold a wide array of negative beliefs about ET (Deacon et al., in press, this issue) that contribute to its underutilization (e.g. van Minnen et al., 2010). Several authors have described therapists avoiding use of exposure due to concerns that it will lead to symptom exacerbation (Olatunji, Deacon, & Abramowitz, 2009), client decompensation (Rosqvist, 2005), direct client harm (Richard & Gloster, 2007), and eventual treatment dropout (van Minnen et al., 2010). Other literature has speculated that therapists believe ET to be aversive and intolerable to clients (Feeny, Hembree, & Zoellner, 2003; Rothbaum & Schwartz, 2002), only applicable to research settings and ineffective in “real world” practice (Becker et al., 2004), associated with a greater risk of malpractice lawsuits (Kovacs, 1996), and intolerable for therapists due to the provocation of negative affect in the client (Litz, 2002). For a more thorough critical review of negative beliefs about ET, see Deacon and Farrell (2013), Feeny et al. (2003), and Olatunji et al. (2009).

Negative beliefs about ET are present even among clinicians who utilize the treatment. Richard and Gloster (2007) surveyed therapists from the Anxiety Disorders Association of America who endorsed numerous reservations about using ET, including that it is too aversive and potentially damaging to the client. It is conceivable that therapists' negative beliefs about ET are responsible for why the treatment is frequently delivered in cautious fashion. Three studies have provided correlational evidence for this hypothetical causal relationship. Deacon and colleagues (in press, this issue) showed that scores on a measure of negative beliefs about ET were normally distributed among a sample of ET therapists, and negative beliefs about ET were associated with more cautious ET delivery in the context of a hypothetical case vignette. Therapists in this study who had more negative beliefs about ET were more likely to emphasize distress reduction in the delivery of ET as well as acquiesce to client requests to engage in safety behaviors. Furthermore, Harned, Dimeff, Woodcock, and Contreras (in press, this issue) recently demonstrated that negative attitudes toward exposure were predictive of a number of aspects of cautious ET delivery, including ineffective handling of client avoidance, reassuring clients of safety, and premature termination of exposure tasks. Finally, a recent therapist survey on interoceptive exposure (IE) revealed associations between therapist concerns about harmful effects of IE and cautious IE delivery (Deacon, Lickel, Farrell, Kemp, & Hipol, 2013). Specifically, therapists who reported greater concern about potential IE-induced harm (e.g., decompensation, symptom exacerbation) were more likely to emphasize controlled breathing in their delivery of IE to clients with panic disorder.

Although previous research has established a link between therapists' reservations about ET and a cautious delivery style, this research is correlational in nature and has not evidenced a causal relationship between these variables. Experimental research is necessary to demonstrate the hypothesized causal relationship between negative beliefs about ET and its cautious delivery because it appears that therapist delivery of exposure therapy plays a critical role in treatment outcome. Specifically, the effectiveness of

exposure has shown to be attenuated by a less intense delivery, such as using a limited number of brief exposure tasks, encouraging clients to use arousal reduction strategies (e.g. controlled breathing), and allowing clients to engage in safety behaviors (Deacon et al., submitted for publication, 2012; Powers, Smits, & Telch, 2004).

The objective of the present study was to determine the effect of therapists' beliefs about ET on the delivery of the treatment. To examine this effect, two experimental conditions were utilized in which participants received training in the delivery of ET to treat fear of contamination. Within the “Negative Beliefs” (NB) condition, participants' beliefs about ET were manipulated to have a high degree of concern about ET use. A second “Positive Beliefs” (PB) condition received information designed to reduce concerns about consequences of ET use. All participants completed an ET session with a confederate trained to act as a contamination phobic client. Participants created a hierarchy of exposure tasks before choosing a task from the hierarchy and guiding the client in its completion. We hypothesized that the ET delivery style of NB participants would be characterized by more cautious decision-making, including a less ambitious hierarchy of exposure tasks, choosing a less difficult exposure task to conduct, and terminating the task earlier as compared to PB participants. Additionally, we predicted that NB participants would exhibit more frequent allowance of client safety behaviors, greater attempts to alleviate distress (e.g. providing reassurance, encouraging use of controlled breathing), and less use of “fear-oppositional actions¹” (Wolitzky & Telch, 2009). Lastly, we hypothesized that NB participants would report greater levels of anxiety before and during the ET session as well as more negative attitudes toward future use of ET.

2. Methods

2.1. Participants

Participants included students recruited from undergraduate psychology classes at the University of Wyoming who reported that they were considering pursuing a career as a mental health professional. Participants were recruited via an email advertisement offering brief training in the delivery of ET for anxiety disorders. Exclusion criteria for the study included having previously taken a class from the second author, as this would have likely compromised the effectiveness of the study manipulation. The sample consisted of 53 participants (*M* age = 19.9 years, 56.6% female, 86.8% Caucasian), with 26 randomly assigned to the NB condition and 27 randomly assigned to the PB condition. A computer-based randomization procedure was used to assign participants to conditions. Previous research has indicated that inexperienced students can be taught to administer exposure competently in a relatively brief period of time (Solem, Hansen, Vogel, & Kennair, 2009).

2.2. Materials

Contamination Obsessions and Washing Compulsions (COWC) Subscale of the Padua Inventory–Washington State University Revision (PI-WSUR). The COWC Subscale of the PI-WSUR (Burns, Koertge, Formea, & Sternberger, 1996) is a 10-item measure that assesses a range of different concerns related to fear of becoming contaminated (e.g. “I feel my hands are dirty when I touch money”). In previous research, it has demonstrated acceptable internal

¹ Fear-oppositional actions, or simply oppositional actions, are effective ET augmentation strategies and are defined as client behaviors that oppose safety behavior tendencies.

consistency ($\alpha = .81$) and test-retest reliability ($\rho = .76$) after an eight-week interval (van Oppen, 1992). The COWC Subscale was administered to compare baseline differences in contamination-related fear between participants in the two conditions. It was not possible to compute α for the COWC Subscale from the present study because participants' responses were aggregated into a total score by the online screener program.

Anxiety Sensitivity Index-3 (ASI-3). The ASI-3 (Taylor et al., 2007) is an 18-item measure that assesses concerns related to the physical, cognitive, and social consequences of anxiety (e.g. "When I feel pain in my chest, I worry that I am going to have a heart attack") using a 5-point scale indicating the degree of concern for each item (0 = "very little" to 4 = "very much"). It has demonstrated good internal consistency ($\alpha = .87$) and criterion validity (Taylor et al., 2007). The ASI-3 was administered to compare baseline differences in anxiety sensitivity between participants in the two conditions. In the present study, the ASI-3 demonstrated excellent internal consistency ($\alpha = .93$).

Empathic Concern (EC) and Personal Distress (PD) Subscales of the Interpersonal Reactivity Index (IRI). Anecdotal observations of the first 10 participants in the study indicated considerable variability in empathic responding and overall distress in reaction to the confederate client's outward display of anxiety. Based upon these observations, we chose to administer the EC and PD subscales from the IRI (Davis, 1983) and were able to obtain data from the remaining 43 participants in the study. These subscales are both 7-item measures that assess a component of dispositional empathy. The EC subscale assesses the tendency to experience feelings of sympathy and compassion for unfortunate others (e.g. "I often have tender, concerned feelings for people less fortunate than me"). The PD subscale assesses the tendency to experience discomfort in response to distress in others (e.g. "Being in a tense emotional situation scares me"). Participants indicate the extent to which each item describes them (0 = "does not describe me very well" to 4 = "describes me very well"). In the present study, both the EC subscale ($\alpha = .78$) and the PD subscale ($\alpha = .81$) showed acceptable internal consistency.

Exposure History Form. Participants' prior knowledge of and experience with ET was assessed with this brief four-item measure. Participants were asked to indicate either "yes" or "no" to the following items: (a) Have you had any personal experience with exposure therapy? (b) To your knowledge, has a family member of yours ever undergone exposure therapy? (c) Have you ever seen any television shows depicting the use of exposure therapy? (d) Have you learned about exposure therapy in any of your undergraduate classes? "Yes" responses were coded as 2, and "No" responses were coded as "1." Total scores for this measure were calculated by summing the four responses.

Therapist Beliefs about Exposure Scale (TBES). The TBES (Deacon et al., in press, this issue) assesses the extent to which therapists endorse 21 negative beliefs about ET. Participants use a 5-point scale to indicate the extent to which they agree with each item (0 = "disagree strongly" to 4 = "agree strongly"). For a more thorough description of the TBES structure and psychometric properties, please see the article by Deacon and colleagues in this issue. The TBES has demonstrated excellent internal consistency ($\alpha = .95$) and criterion validity (Deacon et al., in press, this issue). In the present study, the TBES ($\alpha = .93$) was used as a manipulation check by comparing mean scores between the conditions following the manipulation.

Exposure Use Questionnaire. This brief questionnaire contains four items assessing participants' comfort using ET, perceived comfort of the client, self-efficacy in administering exposure, and interest in using ET as a mental health professional following a session with a client. Participants use a 0–4 scale to respond to

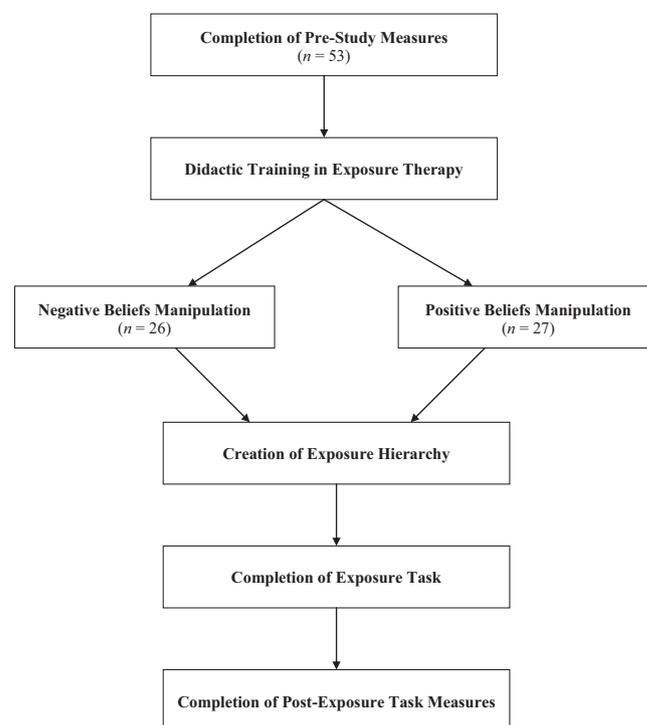


Fig. 1. Flow of study procedure.

each of the four items (e.g. "How confident do you feel in your ability to use exposure therapy in your professional career?") (0 = "not at all" to 4 = "extremely"). In the present study, the internal consistency of the Exposure Use Questionnaire was adequate ($\alpha = .77$).

Subjective Units of Distress Scale (SUDS). The SUDS was used in this study both as a means for participants to track the subjective distress of the confederate client as well as a measure of participants' distress prior to and during the ET session. At the outset of the session, the experimenter asked the participant to provide a SUDS rating in anticipation of delivering ET. Additionally, participants were asked immediately following the session to provide a SUDS rating corresponding to the peak degree of distress that they experienced during the session.

2.3. Procedure

2.3.1. Procedures common to both conditions

2.3.1.1. Pre-manipulation. Fig. 1 provides a visual overview of the study procedure. Participants completed the COWC Subscale of the PI-WSUR, ASI-3, and EC and PD Subscales of the IRI prior to their participation in the study.

2.3.1.2. Didactic training and manipulation check. At the outset of the study, participants were told that the study aim was to assess the ET delivery competency of undergraduates interested in a career in mental health. Participants began by viewing a 35-min video that provided didactic training from the second author in the effective delivery of ET for contamination fear. This video contained detailed descriptions and demonstrations illustrating the theory and contamination-specific application of ET. Participants then viewed a second "informational" video, which differed by condition (see next section) and comprised the manipulation in the study. Although the content of these two informational videos differed, the information was presented by the same speaker and was standardized for time. After viewing the informational video, participants completed a 10-question, true–false quiz that assessed

retention of the training material. Five of the quiz items pertained to information presented in the didactic training, and the other five items pertained to information presented in each condition's manipulation. For these latter five items, whether an answer was scored as "correct" depended upon the item's consistency with the manipulation information. For example, consider the following quiz item: "High levels of anxiety during exposure may present a danger to the client." In regards to this item, a response of "true" was scored as correct for participants in the NB condition, whereas a response of "false" was scored as correct for participants in the PB condition. Following completion of the quiz, the experimenter reviewed each incorrect answer with the participant and provided a corrective response that was standardized for each question. Participants then completed the TBES, which served as a manipulation check to ensure that participants' beliefs about ET were influenced in the intended direction based upon condition.

2.3.1.3. Exposure therapy session. All participants were asked to conduct an apparent therapy session with a client who was introduced as fearful of contacting germs due to beliefs that it would result in contracting a serious illness. Participants were falsely informed by the experimenter that the on-campus psychology clinic had a long wait-list for anxiety treatment, and the purpose of having participants conduct a therapy session with a client from the wait-list was to assist clients while they waited for availability of services. However, unbeknownst to participants, the "client" was actually a confederate trained to act as an anxious client. To enhance the believability of the study pretense, participants were contacted prior to the date of their participation and were asked to dress in business attire.

All participants received a checklist of tasks to be completed during the exposure session. They were first instructed to create an eight-item hierarchy with the client by selecting from a master list of 27 exposure stimuli. Each of the 27 tasks entailed the client contacting a perceived "contaminant" (e.g. toilet plunger), and each contaminant was present on a bookshelf in view of both the participant and the confederate. Prior to the outset of the study, "difficulty" scores between 0 and 10 were obtained for each of the contaminants by surveying a sample of 31 undergraduate psychology students who rated the objects based upon the degree of contamination that would be experienced if they were to touch them and were unable to immediately wash their hands (see Table 1). Confederate clients were trained to offer no input during the hierarchy-building phase of the study so that participants had to make these judgments free of any external factors. After participants completed the hierarchy, they were instructed to choose an exposure task from the hierarchy and to guide the client in conducting the chosen task. Participants were told that they could attempt to solicit input from the client regarding which items to include on the hierarchy or the choice of exposure task, however, it was ultimately up to them to arrive at a final decision.

Table 2 summarizes confederate client actions during the exposure session. Participants were responsible for recording the client's SUDS rating at 2-min time intervals throughout the duration of the exposure task. A digital timer was placed in view of both the participant and the confederate client. As soon as the task began, the confederate asked if it was permissible to place only her fingertips on the feared object. Based on the participant's response, the confederate conducted the exposure task in that manner, unless later directed to do differently by the participant. At other specified time points during the exposure task, the confederate interjected with various requests or other verbalizations that attempted to elicit responses from participants. For example, 5 min into the task, the confederate began to breathe somewhat heavily and told the participant that her anxiety level was "pretty high." Later during the exposure task at a specified time point, the confederate asked to

Table 1
Exposure stimuli.

Exposure item	Difficulty rating
Hardened dog feces	8.5
Base of a toilet plunger	8.2
Clump of hair pulled from a shower drain	8.1
Used jockstrap	7.5
Container of water taken from a toilet	7.2
Bandage with dried blood on it	7.0
"Seat" of a hospital bedpan	6.7
Tissue someone used to blow their nose	6.2
Used underwear from a second-hand store	6.1
Cat litter scoop	5.8
Another person's sweaty socks	5.6
Inside of a pair of used gym shoes	5.5
Soiled diaper (urine only)	4.9
Washcloth from another person's shower	4.6
Old, worn bathmat	4.0
Strands of a dirty mop	3.9
Napkin used by someone to wipe their mouth	3.7
Used straw that has been chewed on	3.5
Inside someone else's dirty hat	2.8
Large piece of lint from a public laundromat	2.2
Unwashed pillow case from someone's bed	2.0
Food-stained apron	1.8
Toilet paper taken from a public restroom	1.7
Dirty dollar bill	1.5
Someone else's set of keys	0.9
Ball other people have played with	0.8
Someone else's pen	0.7

use hand sanitizer that was casually placed in the room in sight of both the participant and the confederate. Every delivery-related decision made by the participant was fully adhered to by the confederate, who was instructed not to argue or attempt to change the mind of the participant. Upon completion of the exposure task, participants completed the Exposure Use Questionnaire. Prior to debriefing, the experimenter questioned participants to determine if they had been able to decipher the true premise of the study. While debriefing participants, the experimenter explained that the chief reason for the study's deception was to assess the delivery of ET from a sample of therapists who had negative beliefs about the treatment, similar to many actual exposure therapists. All participants then were given a typed summary of accurate information regarding ET, including a number of empirical findings that debunk many of the negative beliefs about ET that we attempted to induce in NB participants.

2.3.2. Procedures unique to condition

Participants were randomly assigned to either the NB condition or the PB condition using a computer-generated randomization procedure. Following the standardized video-based instructional training in ET that was the same for both conditions, each condition was shown an informational video that comprised the experimental manipulation.

2.3.2.1. Negative beliefs condition. The informational video viewed by NB participants contained material that attempted to induce reservations about the use of ET similar to those endorsed by community therapists (Deacon et al., in press, this issue). Participants were presented with a wide scope of negative beliefs about ET and were told that many practicing ET therapists hold these beliefs. For example, it was explained that many therapists believe that ET will be difficult for clients to tolerate, lead to worsening of symptoms, and detract from the therapeutic relationship. Next, participants were shown several excerpts from a New York Times article (Slater, 2003) that emphasized concerns about use of ET and included quotes from former clients that corroborated ET-related reservations. Finally, participants viewed a portion of a video clip on ET

Table 2
Summary of standardized confederate client actions during exposure session.

Time during task	Verbalization	Overt behavior	Reported SUDS
Beginning	"Would it be alright if I only touch the [exposure item] with my fingertips?"	None	50
3:00	"I can't believe you're really having me do this."	Anxious facial expression	55
5:00	"My anxiety is getting pretty high."	Breathing heavily	65
7:00	"This is getting really hard. Can I please use some hand sanitizer?"	Continue breathing heavily	70
9:00	"This is so scary. I'm feeling kind of light-headed right now."	Breathing more rapidly	80
11:00	"I'm really freaked out about getting sick. Can I take a break from this?"	Continue breathing rapidly, hands trembling	85
13:00	"I am really scared. Are you sure that I won't get sick from this?"	Continue breathing rapidly, hands trembling more noticeably	85
15:00	None	Breathing slower, hands trembling less	75
17:00	"My heart is still beating really fast."	Continue breathing slower, hands trembling less	65
19:00	"It's getting better, but I swear I feel germs on my hands. Can I quickly wipe them off?"	Normal rate of breathing, continued anxious facial expression	55
21:00	"I'm still a little freaked out, but it's going down."	None	50
End	"Is it fine to go wash my hands?"	None	25

that included a demonstration of ET delivery to a client with a snake phobia by international expert Dr. Lars-Göran Öst. The portion of the video shown to NB participants was edited to remove any segments that may have eased NB participants' concerns about ET. Instead, this edited video only contained anxiety-laden verbalizations and facial expressions by the client and ended with the client seemingly experiencing a panic attack.

2.3.2.2. Positive beliefs condition. The informational video viewed by PB participants contained information designed to alleviate therapist concerns about use of ET. Although each of the negative beliefs about ET that were presented to NB participants were also introduced to PB participants, the inaccuracies of these beliefs were highlighted via presenting findings from relevant research. For example, it was explained that while many therapists believe that use of ET will detract from the therapeutic relationship, research has shown this to be unfounded. In addition, PB participants watched the full and unedited video in which Dr. Lars-Göran Öst delivered ET to an anxious client. In its unedited form, this video portrayed the use of ET in a favorable light and provided a visual example that disconfirms many of the common therapist reservations about ET. To illustrate, it showed a client who experienced observably high anxiety during exposure followed by complete fear reduction and the absence of negative consequences.

2.3.3. Procedures involving confederate clients

Five undergraduate students who worked in our anxiety disorders laboratory were trained to act as contamination-phobic clients in the present study. They were all blind to the existence of the two conditions as well as the study hypotheses. All were female and between the ages of 19 and 24. Confederate clients' behavior and planned interaction with the participant throughout the duration of the session was scripted and identical across both conditions to ensure standardization. Each of the confederates was given extensive training in acting in a similar manner to an anxious client during a challenging exposure task. This training lasted 3 h and was comprised of watching videos of anxious clients during ET sessions, using subtle interoceptive exercises (e.g. holding breath) to appear observably anxious, and role-playing with the experimenter. In addition, each of the confederates memorized the interjections that occurred at standardized times during the exposure session (see Table 2). They also provided standardized SUDS ratings at pre-specified times throughout the session.

2.3.4. Procedures involving video coding

Eight undergraduate students served as video coders in the study. Each video coder attended a 2-h training where they

were given instruction in the coding procedure. We utilized a pre-determined system to code aspects of participants' verbal and nonverbal behavior during the ET sessions. Depending upon the behavior that was being assessed, coders recorded either the amount of time that participants instructed the confederate clients to engage in the behavior or counted number of instances in which the participants engaged in the behavior. Each video was viewed simultaneously by two coders who were instructed to make joint decisions regarding coding variables. Any disparities between coders' judgments were dealt with in real time by pausing the video and discussing the disagreement before coming to a joint consensus. Due to problems related to the technology used to video-record the ET sessions (e.g. microphone picking up extraneous noise) and human error (e.g. forgetting to replace camera batteries), we were only able to retrieve and code 39 videos (NB=19, PB=20) with complete audio and video data. Missing video data did not differ by condition, $p = .87$.

3. Results

3.1. Preliminary analyses

The two study conditions did not differ based on age, $t(51) = 1.04$, or prior knowledge of exposure therapy, $t(51) = -1.76$ (both p 's > .10). The conditions also did not differ based on sex, $\chi^2(1) = .03$. Of the pertinent psychological variables assessed prior to the study, the two conditions did not significantly differ based on contamination fear, $t(50) = -1.30$, anxiety sensitivity, $t(50) = 0.57$, or empathic concern, $t(41) = 0.66$ (all p 's > .20). However, there was a difference on personal distress; participants in the PB condition had significantly higher scores on the IRI-PD subscale ($M = 10.3$, $SD = 4.7$) than participants in the NB condition ($M = 6.9$, $SD = 3.9$), $t(41) = -2.64$, $p = .01$, $d = .79$. To assess potential differences in participants' behavior as a function of the confederate client with whom they interacted, a series of one-way analyses of variance (ANOVA) tests were conducted. These revealed that confederate clients did not have any effects upon each of the dependent variables that were assessed both during and after the ET session (all p 's > .60).

3.2. Manipulation check

Immediately following the study manipulation, all participants completed a brief 10-item quiz assessing their retention of the didactic material presented on ET. The sample performed well on the quiz ($M = 9.5$, $SD = .67$), as all participants answered at least eight questions correctly. Although the conditions differed

Table 3
Descriptive statistics, significance tests, and effect sizes for all comparisons.

Continuous variables	Condition				t	d
	Negative beliefs (n = 26)		Positive beliefs (n = 27)			
	M	SD	M	SD		
Pre-exposure task						
Therapist SUDS	36.27	20.40	25.17	17.19	2.15 [*]	.59
Hierarchy average	3.76	0.86	4.22	0.89	−1.81	.53
Low hierarchy item	1.28	0.81	1.89	1.58	−1.75	.49
High hierarchy item	6.49	1.49	7.04	1.63	−1.26	.35
Exposure task chosen	2.44	2.02	3.99	2.49	−2.48 [*]	.68
Mid-exposure task						
Oppositional actions time (min)	0.73	2.00	3.75	4.88	−2.50 [*]	.81
Controlled breathing time (min)	5.06	5.67	0.91	1.25	3.19 ^{**}	1.01
Apologetic language	0.26	0.65	0.05	0.22	1.38	.44
Focusing client attention	0.68	1.29	2.75	4.32	−2.00 [*]	.65
Deliberate distraction	1.26	2.13	0.45	0.83	1.59	.50
Reassuring client	5.74	4.61	2.20	2.61	2.97 ^{**}	.95
Duration of exposure task (min)	26.85	3.87	27.37	4.49	−0.45	.12
Post-exposure task						
Therapist peak SUDS	48.94	24.94	36.67	17.04	2.10 [*]	.57
Comfort using ET	2.74	0.86	2.92	0.89	−0.76	.21
Perceived client comfort	1.65	1.09	1.81	0.96	−0.57	.16
Efficacy in using ET	2.46	0.99	2.48	0.98	−0.07	.02
Interest in using ET	2.85	1.15	3.41	0.74	−2.11 [*]	.58

Categorical variables	Condition				χ ²	φ
	Negative beliefs (n = 26)		Positive beliefs (n = 27)			
	n	%	n	%		
Acquiescing to client requests						
Fingertips-only contact	25	96.2	25	92.5	<.001	.01
Hand sanitizer use	4	15.4	4	14.8	<.001	.01
Break from task	8	30.8	6	22.2	0.50	.10
Wiping hands	7	26.9	8	29.6	0.16	.06
Washing hands	10	38.5	13	48.1	0.52	.10

^{*} $p \leq .05$.

^{**} $p \leq .01$.

marginally on quiz scores, $t(51) = -1.78$, $p = .08$, with participants in the PB condition ($M = 9.7$, $SD = .56$) slightly outperforming the NB condition ($M = 9.4$, $SD = .75$), this minor difference appeared to be driven by extremely small variances and thus was assumed to be negligible. Following the quiz, all participants completed the TBES. Consistent with prediction, participants in the NB condition scored significantly higher on the TBES ($M = 42.1$, $SD = 6.2$) than participants in the PB condition ($M = 18.2$, $SD = 8.9$), $t(51) = 11.28$, $p < .0005$, $d = 3.12$. Thus, although participants' knowledge of the theory and practice of ET did not differ by condition, concerns about using ET were significantly greater in the NB condition. It is worth noting that the average TBES score for NB participants closely approximated the mean TBES score for masters level clinicians in the study by Deacon and colleagues that appears in this issue. Finally, only four out of 53 (7.5%) participants were able to accurately decipher the nature of the study's deception prior to debriefing. The pattern of results reported below remained unchanged when these four cases were removed from data analyses.

3.3. Dependent variables assessed pre-exposure task

Descriptive statistics, significance tests, and effect sizes for all comparisons by condition are provided in Table 3. As hypothesized, NB participants reported significantly higher anxiety at the outset of the ET session than PB participants. To assess for differences in the overall difficulty of the items included on the hierarchy and the particular item chosen for the exposure task, a series of independent samples t -tests were conducted. Consistent with hypothesis, participants in the NB condition chose a significantly less difficult item for the ET task than participants in the PB condition ($p = .02$).

The item chosen for the exposure task by participants in the NB condition was also in a significantly lower position on the hierarchy than the position of the item chosen by the PB condition ($p = .002$).

The average difficulty rating of the hierarchy items was marginally greater for participants in the PB condition than the NB condition ($p = .07$), and the lowest item included on the hierarchy was also marginally more difficult among PB participants as compared to NB participants ($p = .08$), indicating that NB participants chose to include relatively easier ET tasks on the hierarchy with greater frequency than PB participants. Contrary to prediction, there was no statistically significant difference between conditions on the difficulty rating of the highest item on the hierarchy. However, PB participants' choice of a greater mean difficulty rating for the highest hierarchy item did produce a moderate effect size ($d = .53$).

3.4. Dependent variables assessed mid-exposure task

Refer to Table 3 for all comparisons by condition. A number of differences emerged between the two conditions concerning ET delivery during the exposure task. As predicted, participants in the NB condition spent significantly more time engaging clients in controlled breathing and significantly less time having their clients perform fear-oppositional actions, as compared to participants in the PB condition; both of these differences produced large effect sizes. When the use of fear oppositional actions was examined categorically, a significantly smaller percentage of NB participants (50%) instructed their clients to do so, as compared to PB participants (78%), $\chi^2(1) = 4.44$, $p = .03$, $\phi = 0.29$. Additionally, consistent with prediction, participants in the NB condition made

fewer attempts to focus their clients' attention on the exposure item than participants in the PB condition. Finally, as hypothesized, NB participants reassured clients of their safety significantly more often than PB participants, and the effect size for this difference was large. Although there were not statistically significant differences between the conditions on the frequency of using apologetic language with the client or deliberately attempting to distract the client's attention from the exposure task, both of these behaviors occurred with marginally greater frequency among NB participants and produced moderate effect sizes.

Inconsistent with hypotheses, a series of chi-square analyses yielded no differences between conditions in the frequency with which safety behaviors were permitted when directly requested by the confederate client. Specifically, there were no differences based on the frequencies of allowing the client to: (a) contact the exposure item with only her fingertips, (b) use hand sanitizer, (c) wipe her hands on her pants, (d) take a break to disengage from contact with the exposure item, or (e) wash her hands following the exposure task (all p 's > .35). Also, the conditions did not differ in the length of time of the exposure task.

3.5. Dependent variables assessed post-exposure task

Table 3 contains information on all of the comparisons conducted by condition. Consistent with prediction, participants in the NB condition reported experiencing a significantly higher level of peak anxiety during the exposure task as compared to participants in the PB condition. To assess for potential differences in participants' attitudes toward ET following the exposure task, a series of independent samples t -tests were conducted. As hypothesized, participants in the NB condition reported significantly less interest in using ET in their future careers to treat anxious clients than participants in the PB condition. However, the conditions did not differ in participants' reported comfort with using ET in the future, perceptions of the client's comfort during the exposure task, or self-efficacy in using ET with a future client (all p 's > .40).

3.6. Exploratory post hoc analyses

To determine whether other participant characteristics were predictive of ET delivery while controlling for condition, two composite scores were created. The first of these was created by summing z -scores for each of the seven continuous variables assessed mid-exposure task (see Table 3); z -scores for oppositional actions time, focusing client attention, and duration of the exposure task were reverse coded. The second composite score was created by coding participants' categorical responses to each safety behavior request made by the confederate client (1 = discouraging safety behavior, 2 = permitting safety behavior) and then summing. For both composite scores, a higher score was indicative of more cautious ET delivery. NB participants scored significantly higher than PB participants on the continuous composite score, $t(37) = 4.35$, $p < .001$. Although there was no statistically significant difference between the two conditions on the categorical composite score, $t(47) = 1.58$, $p = .12$, there was a trend toward significance of NB participants scoring higher than PB participants.

Correlational analyses revealed a significant association between IRI-EC subscale scores and continuous composite scores ($r = .38$, $p = .03$). A hierarchical regression was conducted with condition entered in the first block, IRI-EC subscale score in the second block, and an interaction term between these two variables in the third block. In this manner, we tested whether empathic concern accounted for significant incremental variance while controlling for condition and whether this differed as a function of condition. Results revealed that the addition of empathic concern

in the second block explained a significant portion of variance ($R^2_{\Delta} = .12$) in continuous composite scores while controlling for condition, $F(1, 29) = 5.08$, $p = .03$. The interaction between condition and empathic concern did not account for significant variance in the third block, $p = .91$.

A significant correlation was also found between IRI-EC subscale scores and categorical composite scores ($r = .33$, $p = .03$). A similar hierarchical regression was conducted with the same variables entered in three blocks predicting categorical composite score. Again, the addition of empathic concern in the second block accounted for significant incremental variance ($R^2_{\Delta} = .09$) in categorical composite scores while controlling for condition, $F(1, 38) = 4.08$, $p = .05$. No additional variance in categorical composite scores was accounted for by the condition \times empathic concern interaction.

4. Discussion

The purpose of this study was to experimentally examine the effect of therapist beliefs about exposure therapy on how it is delivered. Participants received didactic training in the delivery of exposure and were randomly assigned to one of two informational manipulations which either reduced or increased negative beliefs about ET. As predicted, the delivery of ET by participants with experimentally induced negative beliefs about exposure was more cautious than the delivery of ET by participants with positive beliefs about exposure in three critical ways: (a) creation of a less ambitious exposure hierarchy, (b) choosing a less anxiety-provoking item for the exposure task, and (c) greater attempts to minimize clients' anxiety (e.g. use of controlled breathing, reassuring clients of safety). These findings provide the first causal evidence in support of the hypothesized relationship between negative therapist beliefs about ET and the cautious delivery of this therapy to anxious clients.

Additionally, participants who held negative beliefs about ET reported being more anxious about administering the treatment both at the outset of and during the session. Because negative beliefs about ET are present even among therapists who currently use the treatment, this finding implies that those with greater concern about consequences of exposure will enter sessions with more anxiety themselves. It is possible that therapist anxiety may play a causal role in the delivery of the treatment in an overly cautious manner. Furthermore, results demonstrated that after completing the exposure task, participants in the NB condition reported having significantly less interest in using ET to treat anxious clients in their future careers. This finding suggests that ET-using therapists who harbor concerns about the treatment may have a lower threshold for deciding to give up on the treatment altogether.

Although several of the study hypotheses were confirmed, a number of the categorical dependent variables assessing participants' delivery of ET did not differ by condition. Specifically, upon confederate clients' requesting to engage in safety behaviors, participants in the NB condition did not acquiesce to these requests with greater frequency than participants in the PB condition. What might explain why these results were inconsistent with the hypotheses? Because participants in the NB condition on average chose an item for the exposure task that was significantly less challenging than the exposure item chosen by the PB condition, it may be that this decision acted as a buffer against later permitting of client safety behaviors. Participants in the NB condition may have been more comfortable with discouraging safety behaviors by virtue of their choosing less difficult exposure tasks for their clients. If the exposure task had been standardized, it is possible that greater differences would have emerged in the categorical

dependent variables that we assessed. However, standardizing the exposure task would have precluded assessment of outcomes associated with the exposure hierarchy.

It is also possible that the absence of differences between conditions in acquiescence to safety behaviors was due to many participants simply mimicking the behaviors of the exposure therapist they observed in the training video. Evidence for this notion can be gleaned from the frequency with which participants engaged in certain behaviors during the ET task. Whereas only 15% of participants permitted the client to use hand sanitizer, 96% of the sample allowed the client to only contact the object with her fingertips. Because not allowing the client to wash her hands was part of the explicit instruction that was given during the video training while use of only fingertips to touch the item was *not* mentioned during the video, it can be reasonably inferred that participants may have attempted to model their behavior as closely as possible after the demonstration they viewed. However, in cases where the behavior was not explicitly mentioned in the video training, participants had less guidance regarding how to deliver ET.

There were several findings in this study derived from post hoc exploratory analyses that were unexpected, but nonetheless warrant mentioning. In a hierarchical regression model, when controlling for condition, therapists' empathic concern showed to be a significant and unique predictor of two composite scores that measured cautious ET delivery. Furthermore, the interaction between condition and empathic concern was not significant, indicating that even participants whose beliefs about ET were manipulated to be positive showed an association between empathic concern and cautious ET delivery. These findings suggest that a therapist's empathic concern for clients, while not necessarily an undesirable trait, may warrant attention in the context of ET delivery. In particular, it may be important for novice ET therapists to develop an effective balance between empathy for client difficulties and the ability to tolerate clients' expressions of negative affect during exposure tasks. The present findings suggest that exposure therapists with high empathic concern are likely to adopt an unnecessarily cautious therapeutic style that may be counterproductive in the delivery of ET.

Strengths of this study include the standardization of ET training provided to participants, use of a novel paradigm that assessed therapist delivery of ET with a standardized set of client requests and actions, and the wide scope of primarily behavioral dependent variables gathered in the assessment of ET delivery. There were also several limitations to this study. Perhaps most importantly, the use of a naïve undergraduate sample raises question as to whether the findings from this study would generalize to actual practicing therapists. Due to the experimental nature of the study, it was critical to use a sample with limited prior ET-related experience so that their beliefs about the treatment were subject to manipulation. Previous research has shown that inexperienced undergraduate students can be instructed to deliver ET competently with minimal training (Solem et al., 2009). In addition, steps were taken to ensure that all participants were interested in both ET training as well as pursuing careers as a mental health professional. Future research in this area should include the use of actual therapists who are likely to already have formed beliefs about the use of exposure. Although this would likely preclude an experimental investigation of beliefs about ET and exposure delivery, a correlational study of these variables among practicing therapists could strengthen the generalizability of the present findings.

Additionally, in order to standardize the ET session and ensure that all data were gathered for each participant, several aspects of the session lacked ecological validity. For example, the confederate client was instructed to provide no input to participants regarding items that were included on the hierarchy, thereby forcing participants to create the exposure hierarchy themselves. The confederate

client was also instructed to not offer input in determining which exposure task to conduct. While these measures were necessary for standardization of the ET session, it may have detracted from the external validity of the study. Finally, due to technical problems we were only able to obtain video-coded data from 81% of the total sample, which reduced the power to detect between-groups differences.

Future studies should examine the relationship between therapist beliefs about ET and treatment delivery among more representative samples. For example, future research may utilize graduate students who are not yet trained in ET as well as other novice therapists being instructed in ET delivery for the first time. Furthermore, future studies might replicate this investigation's design using a sample of currently practicing therapists to determine if the current findings extrapolate to "real world" therapeutic practice. Such research may determine whether therapists' beliefs about exposure could be altered in a manner that would ultimately improve its delivery, and perhaps client outcomes. Finally, it was outside of the scope of the present study to examine the relationship between exposure therapists' delivery style and actual treatment outcomes. Little research has been conducted to examine this hypothetical relationship; thus a goal of future studies should be to better identify therapist behaviors and decisions that comprise the optimal delivery of exposure therapy.

In summary, this study provides evidence in support of the theory that therapist beliefs about exposure therapy affect how it is delivered. Specifically, the present findings show that therapists with pronounced negative beliefs about exposure deliver the treatment in a considerably more cautious manner than therapists with fewer concerns about ET. This study highlights an important characteristic of exposure therapists that has received little attention in previous research; negative beliefs about ET appear to cause its cautious delivery. One implication of these findings is that novice therapists being trained in ET might benefit from an intervention that targets their beliefs about exposure in addition to purely didactic training in the theory and practice of ET. Results from this study suggest that marked negative beliefs about ET, if not modified during training, are likely to result in the unnecessarily cautious delivery of this treatment. This could ultimately affect the outcomes of clients with anxiety disorders. For example, therapists who create a less ambitious exposure hierarchy and minimize the intensity of exposure tasks may inadvertently prevent their clients from learning that their fear is tolerable, and that predicted catastrophes are unlikely to occur even in the presence of the most feared exposure stimuli. If future research shows cautious ET delivery to be associated with attenuated treatment outcome, attention should be focused on the potential mediating role of negative beliefs about this treatment.

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