Can you believe it? Examining the influence of safety behavior beliefs on speech task outcomes

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Abstract
Beliefs and expectations about treatment have been shown to significantly impact treatment outcomes in medical settings. However, researchers have seldom examined the role of beliefs within the context of cognitive behavioral therapy. Beliefs may be particularly salient for safety behavior (SB) use in exposure therapy, as clinicians often hold opinions about whether judicious SB use facilitates or inhibits treatment. These beliefs may consequently be relayed during psychoeducation, influencing client expectations of SB helpfulness and exposure efficacy. We investigated experimentally the influence of SB beliefs on working memory, speech predictions, speech duration, anxiety, performance, and speech acceptability. Speech anxious undergraduate participants (N = 144) received psychoeducation on exposure and were told (using random assignment) either that SBs: increase anxiety (unhelpful), decrease anxiety (helpful), or were provided with no information on SBs (control). People in the helpful condition only believed the exposure would be more successful. Crucially, exposure expectancy mediated the relationship between the helpful (but not unhelpful) condition and willingness to engage in future exposures. There were no effects of condition on most cognitive, emotional, or behavioral outcomes, suggesting that SBs (and SB beliefs) may have less impact on exposure outcomes than is currently believed.

Keywords
Beliefs, CBT, exposure, safety behaviors, speech anxiety

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In a commentary on communicating with severely ill patients, Dr. Steven Pantilat stated, “Words matter. What clinicians say and how they say it hugely affects patients” (2009, pp. 1279). A wealth of empirical data in the field of medicine suggests that the way in which doctors communicate with their patients influences patients’ beliefs about treatment, which subsequently impact mood and health outcomes (e.g., Lienard et al., 2006; Schoefield et al., 2003). One of the greatest predictors of treatment success in the medical field is client beliefs and expectations of treatment efficacy (Benedetti, 2008; Colloca & Miller, 2011; Uhlenhuth et al., 1966).

The importance of word choice and beliefs can be extended to mental health clinicians conducting

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cognitive behavioral therapy (CBT). CBT is a form of talk therapy, and it is the therapeutic modality with the largest evidence-base in the treatment of social anxiety disorder (National Institute for Health and Care Excellence [NICE], 2013). CBT is a shorter term, goal-directed therapy whose primary mechanisms of change are cognitive restructuring and behavioral change (Hollon & Beck, 2013). The goal is to work collaboratively with clients to transform unhelpful cognitions and behaviors through conversations and activities, such as thought records, exposure therapy, and behavioral experiments. Proponents of CBT suggest collaborative empiricism as a primary mechanism of change in CBT (Tee & Kazantzis, 2011). Psychoeducation provided by the clinician plays a crucial role throughout therapy, as clinicians and clients work together to develop and agree to the goals and purposes of the treatment plan. Thus, it stands to reason that during psychoeducation, the ways in which clinicians communicate with clients may be of great significance to how the client understands and reacts to the treatment plan. Consequently, a clinician’s explanations may inform the client’s expectations and beliefs about treatment success. This is an unexplored topic in the CBT literature, yet this research has far reaching potential implications that transcend CBT to highlight the role of clinicians’ language choice. It is vital to begin to investigate the role of language and beliefs to optimize therapeutic outcomes, particularly given that not everybody experiences therapeutic benefits (e.g., Whittal et al., 2005).

Preliminary findings support the impact of treatment expectancy on treatment outcomes in mental health settings. For example, people with OCD whose treatment expectancy (i.e., the degree to which they believed their symptoms would change) increased from pretreatment to the fourth CBT session also demonstrated the greatest reductions in symptoms posttreatment (Vorstenbosch & Laposa, 2015). Treatment expectancy for both group CBT and individual virtual reality therapy predicted symptom reduction in individuals with public speaking anxiety (Price & Anderson, 2012). Moreover, client expectations are positively related to treatment outcomes and the therapeutic alliance (Dew & Bickman, 2005). Given these limited, but promising findings, there has been a call for researchers to focus more on the influence of client beliefs and expectations on treatment outcomes, with the suggestion that these factors may play a much larger role in treatment success than is currently understood (Greenberg et al., 2006; Westra et al., 2010). Given that client treatment expectations may have implications for CBT efficacy, the paucity of research related to the potential influence of clinician language is stark and problematic. What are clinicians saying during exposure, behavioral experiments, and cognitive restructuring?

Beliefs may be particularly important when it comes to safety behavior (SB) use during CBT for anxiety. SBs are overt or covert strategies that people use to attempt to reduce their anxiety in the moment. For example, an individual with speech anxiety may read from cue cards during a speech to avoid forgetting their words, and thus to potentially make them feel less anxious. When used frequently and excessively, SBs contribute to the development and maintenance of anxiety (Salkovskis, 1991; Sloan & Telch, 2002) by inhibiting people’s ability to gather disconfirmatory evidence. By using cue cards every time they give a speech, people will have limited opportunities to learn that they can deliver a speech without forgetting their words, that forgetting their words does not end in catastrophe, or in fact that they would likely deliver a better speech without the cue cards. As such, researchers agree widely that people seeking treatment for anxiety and related concerns will benefit most if they can ultimately eliminate their use of SBs (e.g., Deacon et al., 2010; Milosevic & Radomsky, 2008).

Although research robustly demonstrates that SBs are maladaptive in everyday life, the judicious use of SBs within the context of exposure therapy is a contentious topic among researchers and clinicians. Some researchers contend that SB use at any stage of therapy interferes with disconfirmatory learning and should be eliminated immediately (e.g., Abramowitz & Moore, 2007). Others highlight that clients with severe anxiety may be hesitant to eliminate SBs immediately and suggest a gradual removal of SBs over the course of completing an exposure hierarchy (e.g., Levy & Radomsky, 2014; van den Hout et al., 2011). Indeed, people attempting to complete CBT have high attrition as a result of fears of engaging in anxiety-provoking exercises (Mancebo et al., 2011). Judicious use and removal (i.e., rather than immediate elimination) of SBs may reduce early attrition rates and help clients to feel a greater sense of mastery and control (Bandura et al., 1974). A meta-analysis exploring the impact of SB use on exposure outcomes was inconclusive—results were too mixed to determine whether there was any helpful or detrimental effect of SBs on fear reduction (Meulders et al.,
impacted by anxiety. These mixed findings have led to a shift in clinical recommendations from a strict no-SB approach to a more balanced and graded approach. Indeed, presenting SBs from a more nuanced perspective using psychoeducation and approaching their role in exposure on a case-by-case basis may be most beneficial. However, we need to better understand what mechanisms are at play during exposure with and without SB use.

Given this historic divide in the literature, clinicians tend to also hold strong beliefs about the role of SBs during treatment (Deacon & Farrell, 2013; Deacon et al., 2013), which are likely communicated to the client. Response bias research demonstrates that experimenters can unconsciously influence participant responses simply by being aware of the study hypotheses (Rosenthal & Fode, 1963). Clinicians are no less susceptible to this type of bias, and consequently, clinicians’ beliefs about SB use during exposure therapy (as helpful or not) may unconsciously influence clients’ expectations of exposure success. Indeed, therapists who hold more negative beliefs about exposure therapy also use more cautious language in their exposure psychoeducation (Deacon & Farrell, 2013). Although that study highlights how clinician beliefs can bleed into the therapy session, much more research is needed on how they impact clients. If indeed there are potential therapeutic benefits of incorporating SBs judiciously (and not gratuitously) during exposure, this effect may be negated by negative expectancies adopted by the client. These effects would likely be even more prominent when clinicians explicitly present their beliefs about SBs.

To date, there is no research contrasting the potential effects of expectancy of the helpfulness of SB use during exposure with the true effects of using SBs. Thus, the question arises are beliefs as important as actions?

Very little information exists on which mechanisms and/or outcomes may be impacted by beliefs and expectations in CBT. From a CBT perspective, anxiety consists of cognitive, behavioral, and emotional components. Consequently, we want to understand the cognitive, emotional, and behavioral processes at play when people use SBs, particularly since the research is equivocal on whether SBs should be dropped right away during exposure therapy (e.g., Milosevic & Radomsky, 2008; Rachman et al., 2008; Sy et al., 2011). In this study, we focused on variables that have been shown or proposed to be impacted by anxiety.

In terms of cognitive outcomes, we chose to investigate working memory capacity (WMC) and pre-to-post speech predictions as a proxy for ability to gather disconfirmatory evidence. WMC is limited and encompasses the ability to hold and manipulate information for brief periods of time (Baddeley, 2000; Baddeley & Hitch, 1974). A meta-analysis robustly demonstrates the association between working memory and anxiety (Moran, 2016). As anxiety increases, working memory is taxed (e.g., poorer performance on the digit span) and information is less likely to be stored and remembered (Moran, 2016). Given that state anxiety increases during exposure therapy and that a goal of exposure is to gather new disconfirmatory evidence, it stands to reason that these cognitive processes are impacted. SB use (or beliefs about the helpfulness of SBs) may mitigate anxiety and consequently, may increase the cognitive resources available to individuals during exposure tasks. As such, people who use SBs, but are told they are unhelpful, may experience elevated anxiety, and thus, a decreased ability to gather disconfirmatory evidence.

We measured participants’ emotional reactions using subjective measures. Specifically, we assessed state ratings of anxiety and experiences of having delivered the speech (i.e., tolerability, distress). If individuals use SBs and believe them to be helpful (as opposed to using them and believing they are unhelpful), they may feel a greater sense of preparedness (false though it may be), and consequently less anxiety prior to and during their speech. As a result, they may find the speech more tolerable and less distressing.

Our behavioral outcomes included speech duration, speech performance (both objective and subjective), and willingness to deliver future speeches. Objectively, people who use more SBs during a speech are perceived by others as less prepared and more anxious (Rowa et al., 2015). Subjectively, however, individuals who are told that SBs are helpful may have an increased sense of confidence if they are permitted to use them during their speech (under the false presumption that they will make them feel more prepared and in control of their anxiety during a speech). They may consequently speak for longer periods of time and feel more willing to deliver future speeches.

Finally, we were interested in the role of task credibility and expectancy (i.e., how much participants felt that the task made sense and would reduce their anxiety). Specifically, we were interested in whether...
credibility and expectancy would account for the relationship between condition and willingness to participate in future exposure exercises. Treatment expectancy particularly has been shown to correlate with treatment outcomes (Devilly & Borkovec, 2000). As such, participants who believe the speech task to be credible and successful in reducing their anxiety may be more willing to engage in future speeches.

In our previous study (Tutino et al., 2020), we found no effect of SB versus no-SB use conditions on WMC, pre-to-post speech predictions, psychophysiological arousal, subjective anxiety, or objective or subjective performance among a sample of speech anxious participants who engaged in a stressful speech task. The only difference found was that individuals in the no-SB condition were more willing to deliver an additional speech without the SBs compared to the SB condition. Moreover, we found that regardless of condition, individuals’ speech predictions improved over time, suggesting that individuals were able to gather similar amounts of disconfirmatory evidence regardless of SB use. In that study, people in both conditions (SB and no-SB) may have held similar beliefs about SBs, as participants were not provided with psychoeducation on SBs. Although SB use did not impact these variables in our previous work, we hypothesized that it may be beliefs, rather than actual use, that is important. Thus, in the current study, we aimed to test the same exposure-like outcomes, to understand whether it is SB use in and of itself, or rather, beliefs about SBs that may be more impactful on outcomes.

Current study

The method, hypotheses, and analyses of the current study were preregistered on the Center for Open Science 2 months into data collection, but prior to any data analysis [https://osf.io/pgxsw]. Our overarching goal was to better understand whether manipulating beliefs about the utility of SBs would influence exposure outcomes for speech anxiety. We tested the effects of beliefs about SB use (as helpful, unhelpful, or with no specific instructions) among people with high speech anxiety during an exposure-like speech task on WMC, pre-to-post speech predictions, subjective state anxiety, subjective (self-rated) and objective (other-rated) speech performance, speech duration, speech acceptability, and willingness to engage in another speech task (measured at a 1-week follow-up). We hypothesized that, compared to the Unhelpful and Control conditions, participants in the Helpful condition would:

1. demonstrate less restricted WMC during the anticipatory anxiety phase;
2. gather more disconfirmatory evidence about their feared predictions and demonstrate greater changes in pre-to-post comparisons of speech predictions;
3. report lower anxiety during the anticipatory and speech task phases;
4. report higher levels of treatment credibility and treatment expectancy;
5. speak longer during the speech task;
6. report better perceived speech performance following the speech;
7. demonstrate equivalent speech performance, as rated by objective observers; and
8. endorse greater exposure acceptability (i.e., lower distress and greater tolerability) and greater willingness to deliver another speech at a 1-week follow-up.

Method

Participants

Following institutional review board approval, we recruited undergraduate students with high self-reported speech anxiety (N = 1442) aged 17–42 years (M = 19.46, SD = 2.61) through the University of Ottawa’s participant pool website. Participants were eligible if they reported a score of four or greater on the following question on an eligibility question: On a scale of 1 (not at all) to 5 (extremely), how much do you fear public speaking? The eligibility question was one question on a long, diverse list of items. As such, participants were unaware that their responses determined their eligibility for this study and were compensated with course credit. Participants were required to be fluent in English. There were no other exclusion criteria. For self-reported sociodemographic characteristics, see Table 1.

Self-report measures

Demographic Questionnaire. Participants provided information regarding their age, sex, gender, first language, highest level of education, student status, and ethnicity. Participants also provided information regarding any prior or current mental health
diagnoses, as well as past or current treatment (both psychological and pharmacological).

**Exposure Distress and Tolerability Scale (EDTS).** The EDTS is a 4-item measure we created previously (Tutino et al., 2020). Participants rated how distressing they found the speech, how tolerable they found the speech, how willing they were to deliver another speech with SBs, and how willing they were to deliver another speech without SBs. People rated each statement on a scale from 0 (not at all) to 4 (extremely).

**The Credibility and Expectancy Questionnaire (CEQ).** The CEQ (Devilly & Borkovec, 2000) is a 6-item self-report measure of treatment credibility (e.g., “How logical does the treatment offered to you seem?”) and expectancy (“How much improvement in your symptoms do you really feel will occur?”). Participants rated each item on either a 9-point scale (where 1 = very unhelpful and 5 = very helpful) or an 11-point scale (beginning at 0% and going up to 100% in 10% increments). The CEQ has demonstrated good internal consistency (α = .85) and test-retest reliability (r = .75–.82; Devilly & Borkovec, 2000). The internal consistencies for the present sample for all measures are presented in Table 2.

**Manipulation Check.** To verify whether participants viewed SBs as helpful or unhelpful, we asked participants “To what extent do you believe that using safety behaviours during a speech is helpful in a) reducing anxiety, and b) improving speech performance?” These 2 items were rated on a 5-point scale (where 1 = very unhelpful and 5 = very helpful) following the completion of the speech task.

**The Performance Questionnaire (PQ).** The PQ (Rapee & Lim, 1992) is a 17-item self-report measure of perceived public speaking performance. This measure can be completed by both the speaker and an objective observer. For the current study, it was completed by the speaker and five research assistants who viewed a video recording of each speech. The five research assistants were trained individually and completed their ratings independently. They were unaware of the study goals, conditions, and hypotheses. Five video coders were selected to increase variability and reliability for the score of objective participant performance. People rated each item on a 5-point scale (where 0 = not at all and 4 = very much). It comprises specific performance items (e.g., “Kept eye contact with audience”) and global performance items (e.g., “Kept audience interested”). The PQ demonstrated good internal consistency (α = .89) and good interrater reliability (r = .86–.93; Rodebaugh & Chambless, 2002). Inter-rater reliability in the current sample was calculated using intraclass correlation.
coefficients to assess whether the five coders were similarly scoring participant performance using the PQ. An intraclass correlation coefficient demonstrated high agreement between the five video coders on objective performance \((r = .82)\).

**Personal Report of Confidence as a Speaker-Short Form (PRCS-12).** The PRCS-12 (Hook et al., 2008) is a 12-item self-report measure of public speaking self-confidence. People rated each item as being either true or false. Sample items include “I am terrified at the thought of speaking before a group of people” and “I feel disgusted with myself after trying to address a group of people.” The PRCS-12 demonstrated good internal consistency \((\alpha = .85)\), convergent validity with other public speaking measures, and discriminant validity with mood state questionnaires (Hook et al., 2008).

**Social Phobia Inventory (SPIN).** The SPIN (Connor et al., 2000) is a 17-item self-report measure of social anxiety. It includes three subscales, which measure dimensions of fear (e.g., “Being criticized scares me a lot”), avoidance (e.g., “I avoid talking to people”)

| Table 2. Descriptive statistics by condition for all variables of interest. |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Variable        | Helpful Mean (SD) | Unhelpful Mean (SD) | Control Mean (SD) | Range |
| SPIN            | 33.63 (15.00)    | 37.34 (13.55)    | 35.36 (13.27)    | 2–66 10–56 4–60 .92 |
| SAFE1           | 97.69 (23.37)    | 103.81 (22.75)   | 101.76 (24.60)   | 59–151 57–141 58–152 .92 |
| SAFE2           | 82.21 (20.39)    | 83.00 (22.30)    | 85.32 (18.76)    | 45–141 45–150 54–135 .89 |
| PCRS-12         | 8.12 (2.63)      | 8.89 (2.24)      | 8.91 (2.30)      | 2–12 2–12 4–12 .71 |
| SATI1           | 61.84 (20.04)    | 65.28 (17.75)    | 65.88 (18.8)     | 1–94 25–96 25–96 .95 |
| SATI2           | 53.85 (23.68)    | 55.05 (23.07)    | 58.65 (23.27)    | 8–95 11–96 15–91 .96 |
| SATI3           | 80.71 (20.77)    | 83.40 (22.43)    | 83.07 (23.07)    | 46–120 27–120 32–120 .97 |

Note. SPIN = Social Phobia Inventory; SAFE1 = Subtle Avoidance Frequency Examination, First Administration; SAFE2 = Subtle Avoidance Frequency Examination, Second Administration; PCRS-12 = Personal Report of Confidence as a Speaker–Short Form; SATI1 = Speech Anxiety Thoughts Inventory, First Administration; SATI2 = Speech Anxiety Thoughts Inventory, Second Administration; SATI3 = Speech Anxiety Thoughts Inventory, Third Administration; PQ-S = The Performance Questionnaire-Self Report; PQ-O = The Performance Questionnaire-Other Report; Tolerate = Exposure Distress and Tolerability Scale, Tolerability; Distress = Exposure Distress and Tolerability Scale, Distress; SB = Exposure Distress and Tolerability Scale, Willingness with SBs; NoSB = Exposure Distress and Tolerability Scale, Willingness without SBs; Willing = Willingness to Deliver Future Speech; SUDS1 = Subjective Units of Distress Scale, Baseline; SUDS2 = Subjective Units of Distress Scale, Anticipatory; SUDS3 = Subjective Units of Distress Scale, Peak during speech; SD = Speech Duration (in seconds—a score of 0 indicates the participant did not complete the speech task); Long1 = Digit Span Longest Score, First Administration; Long2 = Digit Span Longest Score, Second Administration; Total1 = Digit Span Total Score, First Administration; Total2 = Digit Span Total Score, First Administration; MC1 = Manipulation Check, Anxiety Item; MC2 = Manipulation Check, Performance Item; SB: safety behavior.
I don’t know”), and physiological arousal (e.g., “I am bothered by blushing in front of people”). People rated each item on a 5-point Likert-type scale (0 = not at all and 4 = extremely). The SPIN demonstrated excellent internal consistency (α = .92), good test-retest reliability at 1–3 week intervals (r = .86), and good convergent and discriminant validity with related and unrelated measures, respectively (Anthony et al., 2006).

The Speech Anxiety Thoughts Inventory (SATI). The SATI (Cho et al., 2004) is a 23-item measure that assesses maladaptive beliefs related to speech anxiety. It is composed of two subscales, which assess cognitions related to predictions of poor performance (e.g., “My speech will be incoherent”) and fear of negative evaluation by the audience (e.g., “If I make a mistake the audience will think I’m stupid”). People rated each item on a 5-point scale (where 0 = I do not believe the statement at all and 4 = I completely believe the statement). The SATI demonstrated excellent internal consistency (α = .95), acceptable test-retest reliability after a 4-week period (r = .71), good convergent and discriminant validity with related and unrelated measures, respectively (Cho et al., 2004). Similar to Tutino et al. (2020) and for the purposes of this study, we added 2 items to the SATI to facilitate measuring speech predictions and learning: “My anxiety will last the whole speech” and “I will shake, tremble, or blush noticeably when I give my speech.”

In addition, we used a second modified version of the SATI. All items in the SATI are future-oriented (e.g., “I’ll get tongue-tied”). In this modified version, all items were modified to the past tense (e.g., “I got tongue-tied”). In our previous study (Tutino et al., 2020), modified SATI scores demonstrated excellent internal consistency at Time 1 (α = .94 and Time 2; α = .97).

Subjective Units of Distress Scale (SUDS). The SUDS (Wolpe, 1958) is a measure of subjective state distress. People rate the extent to which they feel distress on a scale from 0 (not at all distressed) to 100 (the worst distress you can imagine). For the purposes of this project, participants rated the extent to which they felt anxious, rather than distressed.

The Subtle Avoidance Frequency Examination (SAFE). The SAFE (Cuming et al., 2009) is a 32-item self-report measure of SB use related to social anxiety. It is composed of three subscales, which measure active SB use (e.g., “Avoid eye contact”), subtle restriction of behavior (e.g. “Rehearse sentences in your mind”), and concealment behavior (e.g. “Wear clothes or makeup to hide blushing”). People rated each item on a 5-point Likert-type scale (1 = never and 5 = always). The SAFE demonstrated excellent internal consistency (α = .91) and good discriminant validity between individuals with and without social anxiety disorder (Cumming et al., 2009). For the purposes of this study, 5 items were added to the SAFE to provide additional SBs that participants could have access to during their speeches: sitting down, hiding their bodies behind a podium, holding onto a stress ball or small object, having a bottle of water on hand, or engaging in deep breathing. After completing the SAFE (at Time 1 only), participants were asked to review all of their answers and to select the five SBs that they use most frequently in everyday life.

Follow-up questionnaire. We created a survey to measure participants’ willingness to engage in future exposure exercises. One week after the in-laboratory visit, participants were sent an online questionnaire informing them that our laboratory would be looking to recruit volunteers to participate in additional exposure exercises for our research. Participants were asked (1) whether or not they would be willing to participate in future exposures [yes/no]; (2) whether we could contact them to engage in future exposures [yes/no]; (3) how willing they would be to participate in future exposures on a scale from 0 to 10; and (4) if no, to explain their reasoning for not wanting to engage in future exposure exercises. Participants were also sent a linked survey of the SATI to complete to measure their speech beliefs 1 week after completing the speech task.

Cognitive tasks

Backward digit span. The backward digit span (Wechsler, 2008) task is a simple measure of WMC. A research assistant reads a string of numbers aloud and participants are asked to repeat these numbers in reverse order. There are eight blocks, each of which consist of two strings of numbers. A number is added to each string so that the difficulty increases progressively in each block. Administration stops after participants incorrectly recall two number strings within the same block. Total score and longest span score were recorded. Given that the digit span was administered at two time points, the numbers were swapped
during the second administration (e.g., all 2 s became 9 s) to reduce potential practice effects.

**Behavioral tasks**

**Behavioral speech task.** Participants were informed that their speech would be video recorded, and that the content of their speech would be evaluated by a group of researchers for clarity, accuracy, content, poise, and style. These instructions are designed to elicit anxiety during the speech task. In actuality, the content of the videotaped speeches was viewed by five research assistants, who were unaware of the study goals, design, and hypotheses, who coded for specific and global performance using the PQ (Rapee & Lim, 1992). Participants were given 5 min to prepare and were encouraged to speak for 5 min. After describing the procedure, participants were given a list of 10 controversial topics and were asked to choose up to three. The 10 topics included: global warming, terrorism, migrant and refugee crises, television violence and censorship, obesity epidemic, capital punishment, gun control, euthanasia, legalization of marijuana, and animal testing. To end the speech, participants said “Stop” or raised their hand to signal the end of the speech. Similar speech task paradigms have been used in previous studies (e.g., Larson et al., 2001) and elicit strong anxiety and physiological arousal responses (Larson et al., 2001).

**Apparatus**

**Video recording.** The speech task was recorded using a Sony Handycam CX455 HD Flash Memory Camcorder with a micro SD Sony 128 GB 70MB/s memory card. The video recorder was mounted on a Sony VCT-R640 tripod.

**Procedure**

Upon arriving at the laboratory for the in-person portion of the study, participants were informed that they were participating in a two-part study (one in-person session and one follow-up online questionnaire) aiming to better understand anxiety and stress in undergraduate students, with the goal of testing different components of treatment. Participants were provided with a consent form that detailed the study goals, tasks, and potential positive and negative consequences, which they signed, indicating their informed consent. Participants were not informed of the specific study goals (e.g., whether manipulating beliefs about SBs influences working memory and speech outcomes, self-reported anxiety and psychophysiology, and exposure acceptability). Moreover, participants were told that they would be asked to engage in cognitive and behavioral tasks as part of the study procedures, but the specific nature of the behavioral task (i.e., a speech task) was not specified. These omissions were necessary to preserve participants’ baseline scores and to reduce the likelihood of response bias attributable to participants’ awareness of the study goals.

After informed consent, participants completed an initial SUDS rating, the sociodemographic questionnaire, and a questionnaire package including The SAFE (Cumming et al., 2009), the SPIN (Connor et al., 2000), and the PRCS-12 (Hook et al., 2008). These questionnaires were presented in a completely randomized order on Qualtrics™ Research Suite (Qualtrics, Provo, Utah, USA), an online questionnaire server. A trained research assistant then verbally administered the backward digit span task as a baseline measure of WMC.

Then, participants were provided with psychoeducation about exposure therapy where they were informed that exposure is an effective component of treatment for anxiety. They were then informed about the exposure exercise for the current study (i.e., the speech task).

Prior to preparing their speech, participants completed a paper and pencil copy of the SATI (Cho et al., 2004). They were then randomly assigned to one of three conditions: SBs helpful, SBs unhelpful, or control condition. Participants in the SBs helpful condition were given the following instructions:

We know that people tend to get really anxious right before and during a speech. Research tells us that using different tools and strategies during a speech can help to reduce anxiety, and help people to feel more in control of how they feel during a speech. We call these tools safety behaviours. When you first came in, you completed a questionnaire that measures common safety behaviours. You said that you sometimes like to use (top 5 listed SBs were verbally recited to the participant) when you feel anxious in social situations. You can use as many of these strategies as you would like during your speech today. Remember that this can help to increase how comfortable you feel during your speech.

Participants in the SBs unhelpful condition were given the following instructions:

We know that people tend to get really anxious right before and during a speech. Research tells us that using
different tools and strategies during a speech can actually be counterproductive and increase anxiety, and cause people to feel less in control of how they feel during a speech. We call these tools safety behaviours. When you first came in, you completed a questionnaire that measures common safety behaviours. You said that you sometimes like to use (top 5 listed SBs were verbally recited to the participant) when you feel anxious in social situations. You can use as many of these strategies as you would like during your speech today. Remember that this can decrease how comfortable you feel during your speech.

Participants in the control condition were given the following instructions:

We know that people tend to get really anxious right before and during a speech. When you first came in, you completed a questionnaire that measures tools and strategies you sometimes use when you feel anxious in social situations. We call these tools safety behaviours. You said that you sometimes like to use (top 5 listed SBs were verbally recited to the participant) when you feel anxious in social situations. You can use as many of these strategies as you would like during your speech today.

Participants then completed the CEQ (Devilly & Borkovec, 2000) to assess the extent to which they viewed the exposure exercise as credible and expected the exposure to be successful in helping to reduce their anxiety. They were then told: “You have five minutes to prepare your speech. You can speak for as long as you would like, but please try to speak for a minimum of five minutes.” After the 5 min passed, the research assistant reentered the room with the video camera, and participants were informed that the speech was about to start. They were asked to rate their anticipatory anxiety using the SUDS and the research assistant readministered the backward digit span task (modified version). Participants then delivered their speech and were asked to retrospectively rate their peak anxiety during the speech, using the SUDS. Moreover, speech duration was recorded.

Participants were then told:

Prior to your speech, you completed a questionnaire that asked you to rate what you thought would happen during your speech. Here is what you thought would happen before your speech (participants were handed their original copy of the SATI). Here is a blank version of the same questionnaire (participants were handed the modified SATI). Please rate what you feel actually happened during the speech you just gave.

This was done in order to mimic the therapeutic process of completing a behavioral experiment in which outcome predictions of a feared event are reviewed after the fact in order to assess their accuracy. Participants completed the modified SATI, the EDTS, a manipulation check assessing participants’ beliefs about the utility of SBs, The PQ (Rapee & Lim, 1992), and a second copy of the SAFE to identify which specific SBs participants used during their speech.

Participants were partially debriefed, and the research assistant assessed participants’ levels of distress to ensure that no participant left the laboratory feeling distressed or anxious. One week later, participants completed the second portion of the study online. Upon completing the follow-up survey, participants were provided with a full debriefing form outlining information regarding study goals and hypotheses. All participants received a list of resources, including psychological services, self-help books, informational websites, and scientific article references.

Data cleaning and analysis

Although we recruited 144 participants, 12 participants (n = 5 in the unhelpful condition, n = 4 in the helpful condition, n = 3 in the control condition) terminated the study prematurely upon learning that they would be asked to deliver a speech (i.e., post-manipulation). Consequently, these individuals have missing data for measures and outcomes collected post-speech, but were still given the opportunity to complete the 1-week follow-up questionnaire, since they terminated the study after receiving the manipulation instructions. There were otherwise no missing data values. The dataset was analyzed for impossible values, and none were found. We calculated skewness and kurtosis indices for all outcome measures; all values fell within the normal distribution. We conducted one-way analyses of variance (ANOVAs) to identify any preexisting differences on demographic variables, as well as SPIN, SAFE, and PCRS-12 scores between the three conditions. Our sample scored within the clinical range observed in other studies on the SPIN (Connor et al., 2000) and SAFE (Cuming et al., 2009), indicating an overall speech anxious sample. No statistically significant differences between conditions were found (all Fs < 1.25, all ps > .17). For descriptive statistics, see Table 2.
Hypothesis testing

**Cognitive outcomes**
We conducted two 3 (condition) × 2 (time) mixed-ANOVA to test the hypothesis that condition would have an effect on WMC. We conducted a 3 (condition) × 3 (time) mixed-ANOVA to assess the effect of condition on learning disconfirmatory evidence (i.e., changes in speech predictions) at three phases: pre-speech, post-speech, and 1-week follow-up.

**Emotional outcomes**
We conducted a 3 (condition) × 3 (time) mixed-ANOVA to assess the effect of condition on self-reported state anxiety (SUDS) at three phases: baseline phase, anticipatory phase, and exposure phase.

We conducted independent samples t-tests to test whether exposure credibility, exposure expectancy, and perceptions of treatment acceptability differed between conditions.

**Behavioral outcomes**
We conducted independent samples t-tests to test whether speech duration, perceptions of speech success, and willingness to participate in additional exercises differed between conditions.

**Mediation analyses**
We conducted two bootstrapped (5000 samples) mediation analyses using PROCESS (Hayes, 2018) to assess whether the relationship between condition and willingness to deliver additional speeches was mediated by exposure credibility or exposure expectancy. Although we did not make specific hypotheses related to these analyses, we did preregister these exploratory analyses on the Centre for Open Science at the same time as our other analyses. As per recommendations by Hayes (2018) for antecedent multivariate predictors, condition was dummy coded, with the control condition set as the intercept (i.e., both the helpful and unhelpful conditions were compared to the control condition).

**Results**

**Manipulation check**
Because we were interested in the impact of beliefs about SBs on our outcome measures, we conducted independent samples t-tests to verify whether participants in the helpful condition perceived SBs as being more helpful in reducing anxiety and improving speech performance compared to those in the unhelpful and control conditions. There were no statistically significant differences between conditions on their perceptions of SB helpfulness in terms of anxiety or speech performance (all ps > .21). Given that the manipulation check was conducted after the speech, rather than after the manipulation instructions, it is likely that these results were diluted by participants’ personal experiences of having used the SBs during their speech. Frequency statistics demonstrated that none of the participants in our study rated SBs as being “very unhelpful” in either reducing anxiety or impacting speech performance. As such, the variability of this scale was severely restricted, reducing our ability to detect potential between-group differences. Frequency statistics also revealed that participants in the helpful (57.7%) and control (62.2%) conditions rated SBs as being helpful or very helpful in reducing anxiety, compared to 38.3% in the unhelpful condition, suggesting that our manipulation did shift beliefs, such that people in the unhelpful condition were less likely to rate SBs as helpful. Given our frequency findings and that our manipulation may still have impacted implicit beliefs or expectations (even if explicit beliefs were not affected), and thus may have important implications nonetheless for word choice during psychoeducation, we proceeded with our hypothesis testing.

**Cognitive outcomes**
We found no main effect of condition on digit span total scores, \( F(1,127) = 1.95, p = .15, \eta^2_p = .03 \), digit span longest scores, \( F(1,127) = 0.86, p = .42, \eta^2_p = .01 \), or pre-to-post speech predictions, \( F(2,123) = 0.25, p = .78, \eta^2_p = .04 \). Similarly, we found no interaction between condition and time for any of these outcome variables (all \( F_s < 1.53; \) all \( p_s > .22; \) all \( \eta^2_{ps} < .02 \)). No main effect of time was found on digit span total, \( F(1,127) = 0.00, p = .95, \eta^2_p = .00 \), or longest span scores, \( F(1,127) = 0.11, p = .74, \eta^2_p = .00 \). There was a main effect of time on pre-to-post speech predictions, \( F(2, 246) = 138.91, p < .001, \eta^2_p = .53 \), such that individuals’ actual experiences of the speech were more positive than their predictions prior to the speech, \( t(129) = 4.95, p < .001, d = 0.40 \). Conversely, participants’ speech predictions were most negative at 1-week follow-up, \( t(125) = -17.93, p < .001, d = 1.16 \).
Emotional outcomes

We found no main effect of condition on self-reported state anxiety, \( F(2,126) = 1.95, p = .82, \eta_p^2 = .00 \), and no interaction between condition and time on self-reported anxiety, \( F(4,252) = 1.14, p = .33, \eta_p^2 = .02 \). There was a main effect of time on self-reported anxiety, \( F(2, 252) = 243.09, p < .001, \eta_p^2 = .67 \), such that SUDS scores increased significantly from baseline to anticipatory, \( t(136) = -16.58, p < .001, d = 1.36 \), and from anticipatory to peak speech, \( t(131) = -4.74, p < .001, d = 0.34 \). Moreover, we found no differences between the helpful and unhelpful conditions on perceptions of exposure credibility, \( F(2, 132) = 0.13, p = .88 \), willingness to deliver another speech with SBs, \( F(2, 132) = 1.72, p = .18 \), willingness to deliver another speech without SBs, \( F(2, 132) = 0.61, p = .55 \), exposure tolerability, \( F(2, 132) = 0.27, p = .76 \), or exposure distress, \( F(2, 132) = 1.54, p = .22 \). People in the helpful condition perceived the exposure exercises as more likely to succeed than those in the unhelpful condition, \( t(92) = 1.96, p = .05, d = 0.42 \) or control condition, \( t(86) = 2.28, p = .03, d = 0.48 \). Moreover, people in the helpful condition were more willing to deliver future speeches than were those in the control condition, \( t(76) = 1.99, p = .05, d = 0.44 \).

Behavioral outcomes

We found no statistically significant differences between conditions on speech duration, \( F(2, 143) = 1.39, p = .25 \), or objective speech performance, \( F(2, 121) = 0.86, p = .43 \). However, individuals in the unhelpful condition rated their own performances more favorably than did those in the control condition (but not the helpful condition) on subjective speech performance, \( t(83) = 2.01, p = .05, d = 0.44 \). This result is marginally significant and demonstrates a small to medium effect size.

Mediation models

In the first mediation model (see Figure 1), condition was entered as the predictor variable, and the credibility subscale scores of the CEQ were entered as the mediator. Willingness to engage in future exposure exercises was entered as the outcome variable. Neither the helpful \( (a_1 = 0.26, 95\% \text{ CI} = -1.64–2.16) \) nor unhelpful \( (a_2 = -0.43, 95\% \text{ CI} = -2.37–1.51) \) condition predicted credibility scores compared to the control condition. Credibility did predict willingness to deliver another speech \( (b = 0.17, 95\% \text{ CI} = 0.05–0.29) \). There was a significant total \( (c_1 = 1.29, 95\% \text{ CI} = 0.10–2.48) \) and direct \( (c'_1 = 1.25, 95\% \text{ CI} = 0.09–2.40) \) effect of the helpful condition on willingness to deliver another speech, but no significant indirect effect \( (a_1b = 0.04, 95\% \text{ CI} = -0.32–0.39) \). There was no significant total \( (c_2 = 0.14, 95\% \text{ CI} = -1.08–1.36) \), indirect \( (a_2b = -0.07, 95\% \text{ CI} = -0.48–0.24) \), or direct effect \( (c'_2 = 0.21, 95\% \text{ CI} = -0.97–1.39) \) for the unhelpful condition. This model explained 22.71% of the variability in willingness to deliver another speech.

In the second mediation model (see Figure 2), condition was entered as the predictor variable, and the expectancy subscale scores of the CEQ were entered as the mediator. Willingness to engage in future exposure exercises was entered as the outcome variable. The helpful condition \( (a_1 = 19.61, 95\% \text{ CI} = 19.61–20.77) \) predicted expectancy scores compared to the control condition, but the unhelpful condition did not \( (a_2 = 3.76, 95\% \text{ CI} = -13.25–20.77) \). Expectancy did predict willingness to deliver another speech \( (b = .02, 95\% \text{ CI} = 0.01–.03) \). There was a significant total...
effect \((c_1 = 1.29, 95\% CI = 0.10–2.48)\) and indirect effect \((a_1b = 0.39, 95\% CI = 0.03–0.87)\), but no significant direct effect \((c'_{1} = 0.90, 95\% CI = -0.28–2.08)\) of helpful condition on willingness to deliver another speech. In other words, people in the helpful condition also reported greater willingness to deliver another speech, and this relationship was accounted for by the degree to which they expected using SBs to be helpful. There was no significant total \((c_2 = 0.14, 95\% CI = -1.08–1.36)\), indirect \((a_2b_2 = 0.07, 95\% CI = -0.30–0.42)\) or direct effect \((c'_{2} = 0.07, 95\% CI = -1.11–1.25)\) for the unhelpful condition. This model explained 22.71% of the variability in willingness to deliver another speech.

**Discussion**

The primary goal of this study was to investigate whether manipulating beliefs about SBs (as being helpful, unhelpful, or without any specific information regarding helpfulness) impacts cognitive, behavioral, and emotional outcomes related to an exposure-like exercise. Treatment expectations are a predictor of outcomes in the field of medicine (Lienard et al., 2006; Schoefield et al., 2003), yet few studies have examined the role of expectancy in CBT. This study was designed to be a proxy for the ways in which clinicians may directly or indirectly influence client perceptions of exposure with or without judicious SB use, given the contentious nature of judicious use in our field. To our knowledge, this is the first experimental study to explore the influence beliefs may have on participant experiences of SB use and exposure.

Contrary to many of our hypotheses, we did not find a significant influence of SB beliefs on working memory, pre-to-post speech predictions, speech duration, exposure credibility, or measures of exposure acceptability. There were, however, some notable differences between the helpful, unhelpful, and control conditions. We must be cautious in interpreting all of our between-condition findings, given that the evidence about the effectiveness of the manipulation was equivocal. However, given that people rated their belief about the helpfulness of SBs after completing the speech, their rating was likely heavily influenced by their perceived speech performance more so than by the manipulation instructions.

After receiving psychoeducation on exposure therapy and SB use, people in the helpful condition rated the exposure as being more likely to be successful (i.e., exposure expectancy) than did people in either the unhelpful or control conditions. Furthermore, individuals in the helpful condition were more willing to deliver a future speech when asked at the 1-week follow-up compared to the control condition. However, this difference was relatively small, with individuals in the helpful condition being only approximately 10% more willing (on a scale from 1 to 10) to engage in future exposures.

These results were supported by our mediation analyses, which demonstrated that expectancy mediated the relationship between the helpful condition (but not the unhelpful condition) and willingness to deliver future speeches. This mediation represents the chronology of our study—people first received the manipulation instructions on the helpfulness of SBs, then rated their expectancy, and then 1 week later rated their willingness to engage in future exposure exercises. Thus, it appears that SBs presented as helpful increased people’s expectancies related to how helpful an exposure task could be, which further increased their willingness to engage in future exposures. Clinically, this finding may be particularly relevant to reducing early attrition rates often observed in CBT and exposure therapy (Fernandez et al., 2015; Salmoiraghi & Sambi, 2010). SBs presented as helpful for a given task (when warranted by the case conceptualization) may be more in line with participants’ preexisting beliefs about the usefulness of SBs. Thus, people may be more confident that completing the exposure exercise with the SBs would help reduce their anxiety. We must note here that we are discussing specifically judicious SB use—that is, using a SB for a specific exposure exercise when an individual would be unlikely to otherwise complete the task, with the ultimate goal of eliminating that SB use over time (Raehman et al., 2008).

There were no differences between the helpful and unhelpful conditions on any other outcomes. This lack of difference is notable—it suggests that while participants may have held beliefs about the SBs as helpful or unhelpful, they appeared to have limited impact on their experience (e.g., emotional, cognitive, or behavioral) of the speech exposure. Therefore, it may not be so much about exactly how we prepare clients for exposure therapy, but rather, what the experience is actually like for them. Consistent with our previous suggestion (Tutino et al., 2020), we contend that people believe that SBs are more helpful than they actually experience them to be. Conversely, researchers previously found that individuals with high social anxiety may indeed be aware that SBs are counterproductive, and worry that others (i.e., audience members)
evaluate them negatively as a result (Vassilopoulos, 2009). Nonetheless, people with high social anxiety use more SBs than those with lower social anxiety (McManus et al., 2008), likely because they believe that the potential repercussions of delivering a speech without SBs (e.g., forgetting words and looking stupid) outweigh those of delivering a speech with SBs.

If people deliver a speech without SBs (or after being told that SBs are unhelpful), they may have more confidence in their ability to deliver a speech without SBs and feel more comfortable dropping them over time. This may explain why individuals in the unhelpful condition evaluated their speeches more favourably than individuals in the control condition (but not the helpful condition). For clients, it can be empowering to complete an activity they did not believe they could do due to their anxiety. This scenario also creates the optimal condition for expectancy violation, a proposed core mechanism of effective exposure therapy (Craske et al., 2008; Craske et al., 2014). For example, a client who is told “you can use these cue cards during your speech, but we know that people tend to feel even more anxious when they use them” might be less inclined to use the cue cards during their speech, realize that they do not need to use cue cards to successfully complete their speech, and may consequently feel more confident in their performance. We note here that although some of the significant findings between groups were marginally significant, effect sizes were small to medium. Additionally, nonsignificant findings had much larger p-values and much smaller effect sizes, so we are confident that the marginal significance likely illustrates a true difference between groups.

Overall, these findings are consistent with those of our previous study (Tutino et al., 2020), which found no impact of SB (vs. no SB) use on the majority of cognitive, behavioral, or emotional outcomes, but did find an impact of time on anxiety and pre-to-post speech predictions. In both studies, participants experienced an increase in state anxiety from baseline to anticipatory and speech phases. In addition to SUDS scores increasing over time, the inverse pattern was observed with pre-to-post speech evaluation scores. Pre-speech evaluations were more negative than post-speech evaluations, suggesting that individuals catastrophized prior to completing their speech, and were able to gather some disconfirmatory evidence during their speech.

In the current study, participants also completed the SATI at a 1-week follow-up to explore their cognitions and emotions related to delivering a future speech. We developed this survey as a proxy behavioral outcome—because this follow-up questionnaire was framed as being a part of an upcoming study, participants were more likely to indicate their willingness to participate only if they truly were willing to engage in additional exposures. However, participants were largely unwilling to come back in (with a mean score under 5 on a scale from 1 to 10). The majority of participants reported they did not want to complete additional exposure exercises due to the discomfort of the first exposure (e.g., feeling insecure, anxious). This highlights that regardless of beliefs and expectancies, in the current study, the experience of engaging in a single exposure exercise was anxiety-provoking enough that participants were not highly willing to engage in future exposures.

Indeed, SATI scores were highest at the 1-week follow-up, suggesting that participants’ predictions about their speech performance abilities were even more negative than they were on Day 1 of the study. This was true not only for the helpful and unhelpful conditions but also for the control condition who were given no information about the helpfulness of SBs. This phenomenon may be accounted for by postevent processing commonly experienced by individuals with social anxiety (Rachman et al., 2000). Despite experiencing a decrease in negative expectations from pre-to-post speech, participants may have selectively attended to aspects of their performance they interpreted as most negative and ruminated about their speech between completing their speech and the follow-up questionnaire. Post-event processing is higher after speeches compared to other social situations (e.g., conversations; Makkar & Grisham, 2011), likely due to the fact that speeches are ambiguous (i.e., no direct feedback is given), and thus, negative self-perceptions increase over time. This has important clinical implications for exposure therapy and its high attrition rates. The majority (64.6%) of participants were unwilling to come back for a follow-up exposure exercise, with the most commonly cited reason being the anxiety-provoking nature of the speech. Providing psychoeducation following exposure exercises on post-event processing and planning for more frequent sessions during the in vivo phases of exposure therapy may help mitigate early drop out.

There is another important possible explanation for the increased SATI scores at follow-up. All participants were permitted to use SBs, and thus, participants may have attributed any perceived exposure success to...
the SBs. Research findings suggest that SB use interferes with the optimal conditions necessary for inhibitory learning, expectancy violation, and belief change to occur (e.g., Blakey & Abramowitz, 2016; Craske et al., 2014); it is possible that SB use interfered with the consolidation of longer term learning that may have been observed in a no-SB condition. However, given that we did not include a no-SB control condition, we cannot be confident in this interpretation.

Taken together, these between- and within-condition effects (and lack thereof) suggest that beliefs about SB may have only a minor influence on exposure outcomes. Our goal for this study was to better understand how language and beliefs influence exposure outcomes. Clients may be more likely to believe that SBs are helpful than unhelpful, yet we have no evidence that suggests that clinicians should encourage clients to use SBs, particularly when, experientially, SBs do not make the experience of a speech more tolerable. Conversely, research findings do not support SBs as being solely unhelpful. Presenting SBs from a more nuanced perspective using psychoeducation and approaching their role in exposure on a case by case basis may be most beneficial. For example, a client who is unwilling to begin exposure therapy without a particular SB may benefit from using that behavior initially, while building confidence and gathering disconfirmatory evidence to allow them to complete it again later without the SB (e.g., Rachman et al., 2008). Our current findings, in tandem with previous findings (Milosevic & Radomsky, 2013; Tutino et al., 2020), suggest that participants are able to gather disconfirmatory evidence (at least temporarily) regardless of SB use or beliefs. Thus, what might be most important in exposure therapy is the cognitive and emotional work following the exposure to reduce post-event processing and consolidate disconfirmatory learning.

Our study implications must be addressed within the context of our limitations. Although we recruited participants based on high reported speech anxiety, we did not conduct a formal clinical interview and participants consisted largely of White, female undergraduate students. Consequently, this study serves as a proxy for processes that may be at play during exposure therapy for people with clinically diagnosed anxiety disorders, but we limit our interpretation of our results to its laboratory context. Moreover, the manipulation check presents challenges related to the interpretation of our findings. There were no statistically significant differences between groups on their perceptions of SBs as being helpful or unhelpful in reducing anxiety or improving speech performance. It is unclear whether there was no difference between the groups because the manipulation was not effective, or if these results were muddled by the fact that the manipulation check was completed after people completed the speech. Statistically significant differences between conditions on their perceptions of exposure success (immediately following the manipulation instructions) suggest that the manipulation did work as intended, but that participants’ experiences of delivering the speech were anxiety-provoking regardless of SB beliefs, thus also impacting their beliefs post-speech. The timing of the manipulation check within our study protocol may have diluted our findings. In highlighting this limitation and its impact on the interpretation of our results, we also hope that this will cue future researchers to pay particular attention to when they administer their manipulation checks.

This is a novel study and the first of its kind to explore the effects of beliefs about SBs on cognitive, behavioral, and emotional outcomes related to an exposure-like task. Despite the limitations described above, the study also had considerable strengths. We used an experimental design with a 1-week follow-up among a relatively large sample of high speech anxious participants, which enabled us to investigate causal relationships between condition and various outcomes. By using multimethod data collection (e.g., self-report questionnaires, cognitive tasks, video recording), we explored multiple, relevant outcomes that are important for exposure research and theory. Additionally, we preregistered our design and analyses and did not conduct any exploratory analyses outside of our initial plan. A challenge in the design of studies exploring SB use is the decision whether to provide limited or unlimited SB options, thus either limiting internal or external validity respectively. To increase the ecological validity of the study, and to increase the likelihood that participants use idiosyncratic SBs that are most helpful and relevant to them (Levy & Radomsky, 2014), participants in this study were permitted to use any and all SBs that they believed would be most helpful to them.

Thus, we return to our original question: do beliefs matter? Our preliminary analyses on this important yet understudied topic in the field of CBT suggests that words may be particularly important in influencing initial client beliefs and expectancies, which then may be overridden by personal experience completing an exposure activity. Future researchers may benefit...
from exploring word choice, beliefs about SBs, and SB use within a clinical context, as these differences may be exaggerated and outcomes may be differentially impacted within a clinically diagnosed sample. Overall, research on SBs has increased significantly over the years, yet findings on the impact of SB use on exposure outcomes remain mixed and unclear. Continued investigation of the individual differences, contextual factors, and mechanisms that underlie the impact of SBs on treatment outcomes is warranted.

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Supplemental Material
Supplemental material for this article is available online.

Notes
1. A justification of minor deviations from our preregistration is available as supplementary online material (Appendix A).
2. See Appendix B in supplementary online material for a detailed a priori power analysis.
3. For the current study, we followed a very similar procedure to Tutino et al. (2020). Consequently, there is significant overlap between the information published in our previous paper and the current Method section.
4. See Appendix C in supplementary online material for a diagram of the method and procedures.
5. See Appendix D in supplementary online material for exposure psychoeducation script.
6. In response to an anonymous reviewer’s suggestion, we reran all primary analyses with SAFE scores after the speech included as a covariate. We found no significant differences in comparison to our original findings. These results can be found in supplemental materials (Appendix E).

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