



Contents lists available at ScienceDirect

Journal of Behavior Therapy and Experimental Psychiatry

journal homepage: www.elsevier.com/locate/jbtep



Public speaking avoidance as a treatment moderator for social anxiety disorder



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ARTICLE INFO

Article history:

Received 21 May 2016

Received in revised form

6 November 2016

Accepted 20 November 2016

Available online 23 November 2016

Keywords:

Social anxiety

Moderator

Treatment outcome

Cognitive behavioral therapy

Acceptance and commitment therapy

ABSTRACT

Background and objectives: Cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT) have both garnered empirical support for the effective treatment of social anxiety disorder. However, not every patient benefits equally from either treatment. Identifying moderators of treatment outcome can help to better understand which treatment is best suited for a particular patient.

Methods: Forty-nine individuals who met criteria for social anxiety disorder were assessed as part of a randomized controlled trial comparing 12 weeks of CBT and ACT. Pre-treatment avoidance of social situations (measured via a public speaking task and clinician rating) was investigated as a moderator of post-treatment, 6-month follow-up, and 12-month follow-up social anxiety symptoms, stress reactivity, and quality of life.

Results: Public speaking avoidance was found to be a robust moderator of outcome measures, with more avoidant individuals generally benefitting more from CBT than ACT by 12-month follow-up. In contrast, clinician-rated social avoidance was not found to be a significant moderator of any outcome measure.

Limitations: Results were found only at 12-month follow-up. More comprehensive measures of avoidance would be useful for the field moving forward.

Conclusions: Findings inform personalized medicine, suggesting that social avoidance measured behaviorally via a public speaking task may be a more robust factor in treatment prescription compared to clinician-rated social avoidance.

Published by Elsevier Ltd.

1. Introduction

Cognitive behavioral therapy (CBT) is a well-established treatment for social anxiety disorder (Butler, Chapman, Forman, & Beck, 2006; Hofmann & Smits, 2008). Recently, acceptance and commitment therapy (ACT), a third-wave behavioral therapy, has garnered support as another effective treatment for social anxiety (Bluett, Homan, Morrison, Levin, & Twohig, 2014; Swain, Hancock, Hainsworth, & Bowman, 2013) with comparable treatment outcomes to CBT (Craske, Niles, Burklund, Wolitzky-Taylor, Vilardaga, Arch et al., 2014). Clinically significant response rates of individual

patients following these interventions are around 50–55%, ranging from 43% to 70% (for a review see Loerinc, Meuret, Twohig, Rosenfield, Bluett, & Craske et al., 2015; Craske et al., 2014; Leichsenring, Salzer, Beutel, Herpertz, Hiller, Hoyer et al., 2014; Lincoln, Rief, Hahlweg, Frank, Von Wittleben, Schroeder et al., 2005). Identifying treatment moderators may be a key to improving response rates, as they clarify for whom and under which circumstances treatments have different effects. Knowledge of such moderators can help clinicians better match patients with existing treatments from which they are likely to glean the greatest benefit (Kraemer, Wilson, Fairburn, & Agras, 2002).

Unfortunately, though several predictors of treatment outcome have been identified, little research exists on treatment moderators. This is likely due to the fact that the majority of prior studies on social anxiety disorder do not compare two active treatments, which is required for assessing treatment moderators. To our knowledge, only a few papers have reported moderators of

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psychological treatments for individuals with social anxiety disorder. The findings are detailed below.

In a previously published article on the current sample, individuals with social anxiety disorder who were rated as high in experiential avoidance (i.e., self-reported unwillingness to accept negative emotions) measured by the Acceptance and Action Questionnaire reported greater symptom reduction at 12-month follow-up in CBT than ACT (Craske et al., 2014). The same pattern of moderation was found in a separate study with a mixed anxiety sample (Wolitzky-Taylor, Arch, Rosenfield, & Craske, 2012). We speculated that individuals with high experiential avoidance benefit more from CBT in the long-term because they are motivated to practice skills (e.g., exposures) designed to decrease avoidance of anxious thoughts, feelings, and sensations. Compared to CBT, ACT emphasizes acceptance rather than reducing uncomfortable internal experiences. Conversely, in the same mixed anxiety sample, individuals with high behavioral avoidance of negative physical sensations (i.e., unwillingness to continue a hyperventilation task) were more likely to benefit from ACT than CBT (Davies, Niles, Pittig, Arch, & Craske, 2015). However, this study did not examine moderators separately by diagnosis and thus it is possible that this finding was driven by patients with anxiety primarily related to bodily sensations (e.g., those with panic disorder and health anxiety), which is a common but not essential or primary component of social anxiety disorder.

A measure of avoidance that is more specific to social anxiety disorder would be avoidance of social situations. Behavioral measures of social avoidance including public speaking tasks are ecologically valid and easily implemented in research, but rarely used in clinical assessments (Beidel, Turner, Jacob, & Cooley, 1989; Hofmann, Newman, Ehlers, & Roth, 1995; Levin, Saoud, Strauman, Gorman, Fyer, Crawford et al., 1993; Moscovitch, Suvak, & Hofmann, 2010). Instead, clinicians typically make judgments of behavioral avoidance based on patient self-report. However, anxious patients' estimates of their avoidance can be at odds with their actual behavior (Rachman & Lopatka, 1986; Taylor & Rachman, 1994). To our knowledge there is no previous study evaluating behavioral measures of social avoidance as moderators of treatment outcome for social anxiety disorder.

Theoretically, experiential and behavioral avoidance are two separate parts of anxiety. Whereas experiential avoidance is centered on avoidance of internal experiences such as thoughts, feelings, and physical sensation, behavioral avoidance is centered on avoidance of external experiences such as social events, public speaking, and meetings. It would seem likely that individuals who are avoidant of feared internal experiences would also be avoidant of feared external experiences. Moreover, both experiential avoidance and behavioral avoidance are indicators of poor emotion regulation (Craske, Street, & Barlow, 1989; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). From a deficit correction model, it is likely that those who show deficits in emotion regulation would benefit from a treatment that is targeting said deficit (e.g., CBT) compared to a treatment that is not targeting emotion regulation (e.g., ACT).

Given prior evidence that individuals who report high levels of experiential avoidance (indicator of poor emotion regulation) respond more positively to CBT than ACT, we hypothesized that those with the most overt social avoidance (another indicator of poor emotion regulation), would similarly respond more positively to CBT than ACT. To evaluate the effects of in vivo versus clinician-rated social avoidance, we analyzed avoidance via a public speaking task and clinician rating prior to treatment. To isolate the effect of social avoidance above social fear, we analyzed public speaking avoidance, clinician-rated social avoidance, public speaking fear, and clinician-rated social fear as moderators of all outcomes.

2. Materials and methods

2.1. Participants

Forty-nine individuals who met diagnostic criteria for principal or co-principal generalized social anxiety disorder as diagnosed using the Anxiety Disorders Interview Schedule IV (Brown, Di Nardo, & Barlow, 1994; see Craske et al., 2014; for more details) were included in the current analyses. Fifty-two participants completed treatment but follow-up behavioral and self-report data were missing for 3 individuals. A clinician severity rating of 4 or higher on the ADIS-IV indicated clinical severity and served as the cutoff for study eligibility. Individuals were a subset of a larger sample that included randomization to a waitlist condition (Craske et al., 2014). Because moderator analyses examine differential response to two active treatments and not differential response to active treatment versus control, we did not include participants assigned to the waitlist in these analyses. Demographics for the current subsample are in Table 1. There were no significant group differences on any demographic or diagnostic variable at baseline.

Exclusion criteria included active suicidal ideation, pregnancy, substance abuse or dependence within the last 6 months, bipolar disorder, psychosis, or certain medical diseases. Additional exclusion criteria (i.e., left handedness, metal implants, claustrophobia) were included due to a neuroimaging component. Individuals were permitted to receive concurrent psychotherapy or psychotropic medication if they were stabilized on benzodiazepines and beta blockers for a minimum of 1 month; on SSRIs, SNRIs, heterocyclics, and MAO inhibitors for a minimum of 3 months; and on non-anxiety related psychotherapy for a minimum of 6 months prior to study entrance. Individuals were recruited through online and newspaper advertisements as well as community flyers and

Table 1
Demographic and clinical characteristics of sample.

Characteristic	CBT (total = 28)	ACT (total = 24)
Gender (Female)	12	10
Reported Ethnicity		
Caucasian/European American	14	14
Hispanic/Latino/Mexican	5	4
Asian-American/Pacific Islander	7	4
Other	2	2
Age, in years	<i>M</i> = 28.18 <i>SD</i> = 6.54 Range: 18–43	<i>M</i> = 28.78 <i>SD</i> = 6.05 Range: 19–41
Education, in years	<i>M</i> = 15.57 <i>SD</i> = 1.93 Range: 12–18	<i>M</i> = 15.33 <i>SD</i> = 1.86 Range: 12–19
Marital status		
Married/Cohabiting	4	1
Single	23	21
Other	1	2
Children (1+)	2	1
Currently on psychotropic medication	5	7
Comorbid anxiety disorder	10	11
Comorbid depressive disorder	7	7
Social anxiety disorder CSR	<i>M</i> = 5.61 <i>SD</i> = 0.74 Range: 4–7	<i>M</i> = 5.58 <i>SD</i> = 1.02 Range: 4–7
Refused to do the public speaking task	2	3
LSAS-Fear	<i>M</i> = 44.12 <i>SD</i> = 8.21 Range: 28–62	<i>M</i> = 45.30 <i>SD</i> = 9.96 Range: 29–62
LSAS-Avoidance	<i>M</i> = 38.01 <i>SD</i> = 7.49 Range: 20–54	<i>M</i> = 40.96 <i>SD</i> = 13.71 Range: 14–66

CBT = cognitive behavioral therapy; ACT = acceptance and commitment therapy; CSR = clinician severity rating; LSAS = Liebowitz Social Anxiety Scale.

referrals from the greater Los Angeles area. The study took place at the Anxiety Disorders Research Center in the University of California, Los Angeles (UCLA).

2.2. Design

Individuals were assessed prior to treatment (i.e., pre-treatment), within 6 weeks after the end of treatment (i.e., post-treatment), 6 months after pre-treatment (i.e., 6-month follow-up), and 12 months after pre-treatment (i.e., 12-month follow-up).¹

2.3. Treatments

Individuals in CBT and ACT groups received 12 weekly, 1-hr individual therapy sessions based on standard manuals.² ACT and CBT were matched on number of exposure sessions but differed in framing of the intent of exposure. CBT and ACT were administered by advanced clinical psychology students at UCLA (see Craske et al., 2014). Therapists received a two-day training session in CBT and ACT by Drs. Craske and Hayes, respectively. They received weekly group supervision by Dr. Craske and members of Dr. Craske's and Hayes's teams.

CBT. The 12-session CBT protocol has been effective for social anxiety disorder (Arch, Eifert, Davies, Vilardaga, Rose, & Craske et al., 2012; Craske et al., 2014). Session 1 included assessment, psychoeducation, and self-monitoring. Sessions 2–4 covered cognitive restructuring, hypothesis testing, and breathing retraining. Session 5–11 included exposures to social stimuli. Session 12 focused on relapse prevention.

ACT. Session 1 included psychoeducation and experiential exercises. Sessions 2–3 covered creative hopelessness. Sessions 4–5 covered mindfulness, acceptance, and cognitive diffusion. Sessions 6–11 honed previous skills and introduced value exploration. Exposures were used throughout to observe and accept anxiety as well as to engage in valued activities despite anxiety. Session 12 created a plan for future use of skills.

2.4. Moderator variables

2.4.1. Public speaking avoidance and fear

At pre-treatment, individuals were asked to give a 3-min speech in front of a video camera and two confederates. Speech topics included global warming and corporeal punishment. These topics were selected to be moderate in terms of difficulty and controversy. Individuals were given 5 min to prepare the speech on one or both topics. They were instructed to rate their fear level using a 0–100 Subjective Units of Distress Scale (SUDS; Wolpe, 1990) with 0 being *no fear* and 100 being *maximum fear* at the start of the speech, at each 1-min interval, and at the end of the speech. After 3 min, individuals were given the opportunity to continue speaking for up to 3 more minutes. Mean SUDS ratings were calculated for each individual and analyzed as a measure of fear on the public speaking task. Number of minutes spoken was used as a measure of avoidance. Individuals who refused the public speaking task altogether were given a score of 0 min and SUDS rating of 100. See appendix A for the brief protocol used to assess public speaking avoidance.

¹ 6-month follow-up was approximately 3 months after treatment completion and 12-month follow-up was approximately 9 months after treatment completion.

² See authors for a copy of the CBT treatment manual (CBT manual modified from Hope, Heimberg, Juster, & Turk, 2000); the ACT manual is published (Eifert & Forsyth, 2005).

2.4.2. Clinician-rated social avoidance and fear

As part of the pre-treatment ADIS-IV, clinicians rated individuals' avoidance and fear (0 = *none*, 8 = *extreme anxiety or avoidance*) of 13 social situations (e.g., dating, public speaking, speaking with unfamiliar people). Avoidance scores for all 13 situations were averaged to create a clinician-rated social avoidance score ($\alpha = 0.74$). Fear scores for all 13 social situations were also averaged to create a clinician-rated social fear score ($\alpha = 0.77$).

2.5. Outcome variables

2.5.1. Symptom composite score

The self-report version of the Liebowitz Social Anxiety Scale (LSAS-SR; Fresco, M., Coles, Heimberg, Liebowitz, Hami, Stein et al., 2001) is a 24-item measure of fear and avoidance of social and performance situations. Total ratings demonstrate good test-retest reliability ($r = 0.83$), internal consistency ($\alpha = 0.95$), convergent validity and the scale is sensitive to change following treatment (Baker, Heinrichs, Kim, & Hofmann, 2002). The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a 20-item measure of thoughts, feelings, and behaviors in social situations. The SIAS correlates highly with other measures of social phobia and has good internal consistency ($\alpha = 0.90$) (Osman, Gutierrez, Barrios, Kopper, & Chiros, 1998). The Social Phobia Scale (SPS; Mattick & Clarke, 1998) is a 20-item measure of being observed by others during routine activities (e.g., eating, writing). The SPS correlates highly with other measures of social phobia and has good internal consistency ($\alpha = 0.91$) (Osman et al., 1998). Alphas for the LSAS-SR, SIAS, and SPS were all at or above 0.90 in this sample across all time points (Niles, Mesri, Burklund, Lieberman, & Craske, 2013). To improve construct validity for the measurement of social anxiety severity, a composite was created from the three scales. Z-scores for each measure were combined to create a standardized measure with mean 0 and standard deviation 1. The composite score includes averages of all three measures at pre, post, and 12-month follow-up. The LSAS-SR was not administered at 6-month follow-up, which includes only the SPS and SIAS.

2.5.2. State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory – A State (STAI A-State; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) is a 20-item measure of temporary anxiety in response to a stressor. Example items include “I feel nervous” and “I feel tense.” Each item is rated on a scale from 1 to 4, with 1 being *not at all* and 4 being *to a great extent*. The STAI A-State demonstrates good internal consistency ($\alpha = 0.83 - 0.92$) (Spielberger et al., 1983). The STAI was administered at the start of the laboratory assessment (which included a hyperventilation task, a public speaking task, and computer tasks) in order to assess stress reactivity. Because the laboratory assessment was not conducted at 6-month follow-up, STAI data were analyzed only at pre, post, and 12-month follow-up.

2.5.3. Quality of Life Inventory

The Quality of Life Inventory (QOLI; Frisch, 1994a, 1994b) is a measure of satisfaction with regard to 16 broad life domains. Each domain is first rated for importance on a scale from 0 to 2, with 0 being *not important* and 2 being *extremely important*. Then, individuals rate their life satisfaction with that domain on a -3 to $+3$ scale, with -3 being *very dissatisfied* and $+3$ being *very satisfied*. The QOLI demonstrates good test-retest reliability ($r = 0.80 - 0.91$), internal consistency ($\alpha = 0.77 - 0.89$) and is sensitive to treatment change (Frisch, Clark, Rouse, Rudd, Paweleck, Greenstone et al., 2005).

2.6. Statistical analyses

A multi-level model with repeated measures design was used. Pre-treatment scores were modeled as a covariate rather than a repeated measure to minimize the variance in the outcome measures (Tabachnick & Fidell, 2006). This model has been previously used in examining moderators of treatment outcome (Craske et al., 2014; Niles et al., 2013; Wolitzky-Taylor, Arch, Rosenfield, & Craske, et al., 2012).

Analyses were run in Stata 13 using the `xtmixed` command. A two level growth curve model was used. Time (post-treatment, 6-month follow-up, 12-month follow-up) was modeled on level 1 as a continuous linear predictor. On level 2, we included baseline levels of the outcome measures (as a covariate), Group (CBT or ACT), status (0 = completed 12-month measures, 1 = not completed 12-month measures) and the moderators. To test specificity of public speaking avoidance as a moderator above fear, we included fear during the public speaking task as a covariate. When testing public speaking fear, we included public speaking avoidance as a covariate. Pairwise correlations between public speaking avoidance and public speaking fear revealed only a moderate correlation, $r = -0.39$, $p < 0.001$. However, pairwise correlations between clinician-rated social avoidance and clinician-rated social fear revealed a strong correlation, $r = 0.81$, $p < 0.001$. Hence, we did not include clinician-rated social fear in the model when analyzing clinician-rated social avoidance and vice versa. Models were fitted using maximum likelihood. Random effects of intercept and time were included in all models.

Because moderators may interact with Group (CBT or ACT) or Time, both of these interactions, and the three-way interaction between moderator, Group, and Time were included in each analysis. Quadratic relationships between moderator, Group, and Time were assessed. If there was no quadratic relationship, Time was dropped and a moderation of Group without Time was assessed. Tests of simple effects were used to explain moderation effects. More specifically, 1 SD above and below the mean was used to categorize high avoidant/fear or low avoidant/fear individuals. 1 SD was used in order to capture representative avoidance or fear behavior in a social anxiety group and is typical in previous moderation studies (Niles et al., 2013).

3. Results

As reported in Craske et al. (2014), CBT and ACT were each more effective than a waitlist comparison control for symptoms of social anxiety, with no differences between them.

3.1. Moderator of symptom composite

Public speaking avoidance significantly interacted with Group and Time to moderate symptom composite, $z = -2.25$, $p = 0.045$ (see Fig. 1). Tests of simple effects revealed that at 12-month follow-up, more avoidant individuals (operationally defined as 1 SD above the mean) reported 0.87 SD fewer symptoms following CBT than ACT, 95% confidence interval (CI) = 0.05 to 1.70, $z = 2.07$, $p = 0.038$. No group differences were found for low avoidant individuals (1 SD below the mean), $p > 0.05$. Public speaking avoidance did not moderate post-treatment or 6-month follow-up, $ps > 0.05$. Neither fear on the public speaking task nor clinician-rated social avoidance or social fear were significant moderators of symptom composite at any time point, $ps > 0.05$.

3.2. Moderator of stress reactivity

Public speaking avoidance significantly interacted with Group

and Time to moderate stress reactivity (measured by STAI A-State prior to a stressful laboratory assessment), $z = -3.87$, $p < 0.001$ (see Fig. 2). Tests of simple effects revealed that at 12-month follow-up, more avoidant individuals reported 15.77 fewer points in stress reactivity following CBT than ACT, CI = 8.38 to 23.17, $z = 4.18$, $p < 0.001$. No group differences were found for low avoidant individuals, $p > 0.05$. Public speaking avoidance did not moderate at post-treatment or 6-month follow-up, $ps > 0.05$. Neither fear on the public speaking task nor clinician-rated social avoidance or social fear were significant moderators of stress reactivity at any time point, $ps > 0.05$.

3.3. Moderator of quality of life

Clinician-rated social fear significantly moderated quality of life, $z = -2.12$, $p = 0.006$ (see Fig. 3). Tests of simple effects revealed that at 6-month follow-up, less fearful individuals reported 1.32 fewer points in quality of life following CBT than ACT, CI = -2.33 to -0.31 , $z = -2.56$, $p = 0.010$ and more fearful individuals reported 1.26 more points in quality of life following CBT than ACT, CI = 0.003 to 2.52, $z = 1.96$, $p = 0.049$. There were no significant differences between high and low clinician-rated fearful individuals in CBT and ACT at post-treatment and 12-month follow-up, $ps > 0.05$. Therefore, this finding is no longer discussed in this paper. Public speaking fear, public speaking avoidance, and clinician-rated social avoidance were not significant moderators of quality of life at any time point, $ps > 0.05$.

4. Discussion

The current study tested social avoidance as a moderator of treatment outcome for social anxiety disorder. Understanding moderators of treatment outcome allow us to better match patients to a particular treatment, which has important implications for improving treatment outcome. Our findings suggest that individuals who are more avoidant during a public speaking task benefit more, in terms of long-term symptoms and stress reactivity, from CBT than ACT.

Conversely, fear during the public speaking task did not moderate the treatment effects, suggesting that the results were specific to public speaking avoidance versus fear. Moreover, clinician-rated social avoidance did not moderate treatment effects, which could imply that the results were specific to avoidance of public speaking in particular rather than social avoidance in general. Alternatively, these results may suggest that clinicians may not be particularly accurate judges of a patient's degree of social avoidance in their daily life. Such judgments are likely to be heavily reliant on a patient's self-report, particularly at an initial assessment when the clinician has limited information about the patient, and self-report of avoidance behavior may not be an exact indicator of actual avoidance behavior in laboratory paradigms (Gamez, Kotov, & Watson, 2010; McNeil, Ries, & Turk, 1995, pp. 202–231).

We found that more avoidance on the public speaking task predicts better long-term outcome in CBT than ACT. One possible explanation is that CBT targets avoidance in a structured way through creation of an exposure hierarchy followed by in-session and homework exposure assignments. Avoidant individuals may benefit from this structure. A similar finding has been reported in a panic disorder sample that was randomly assigned to exposure therapy with an active therapist who guided patients through exposures or a less active therapist who was not present during assigned exposures (Hamm, Richter, Pané-Farré, Westphal, Wittchen, Vossbeck-Elsebusch, Deckert et al., 2016). Overall, panic disorder patients benefitted from exposure therapy; however, patients with greater public speaking avoidance benefitted even more

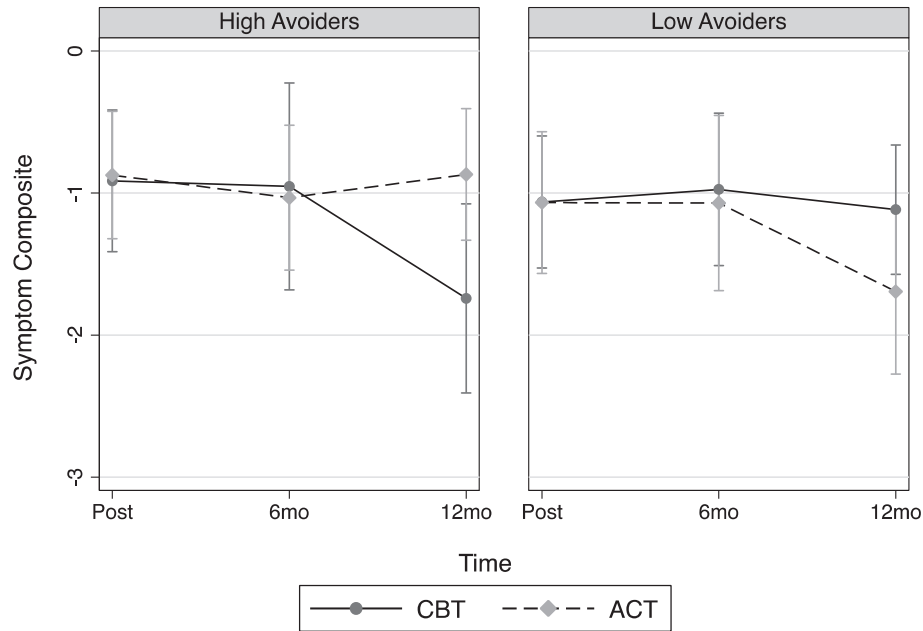


Fig. 1. Public speaking avoidance significantly interacted with Group and Time to moderate symptom composite. By 12-month follow-up more avoidant individuals reported fewer symptoms following CBT than ACT. CBT = cognitive behavioral therapy; ACT = acceptance and commitment therapy.

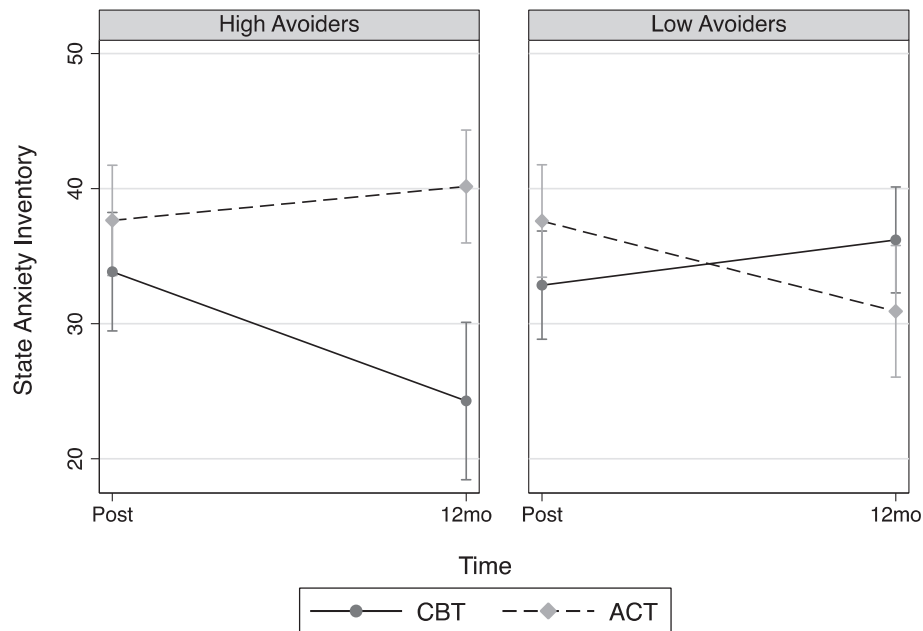


Fig. 2. Public speaking avoidance significantly interacted with Group and Time to moderate stress reactivity. By 12-month follow-up more avoidant individuals reported less stress reactivity following CBT than ACT. CBT = cognitive behavioral therapy; ACT = acceptance and commitment therapy.

from therapist-directed exposures than self-directed exposures. This finding may highlight the added benefit of structure during exposures (which may be more present in CBT than ACT) for patients with high public speaking avoidance. Although ACT includes exposure, these exposures are less structured and their focus is not on fear reduction. Rather, in ACT, individuals conduct exposures in order to be present, open, mindful, and accepting of their anxious feelings with the eventual goal of taking committed action toward their values. Thus, in contrast to CBT in which exposures are a critical strategy for alleviating symptoms, the connection between exposures and treatment goals is more removed in ACT and

possibly simply one of many approaches toward valued living. Indeed, there was greater adherence to behavioral exposures in CBT than ACT in the present sample (Craske et al., 2014).

Moderation was found only at the 12-month follow-up, which replicated our prior studies in the same and different samples (Craske et al., 2014; Niles et al., 2013; Wolitzky-Taylor et al., 2012). In prior studies, we proposed that experiential avoidance motivated continued exposure practice over the months following treatment, in turn leading to improved long-term outcomes (Wolitzky-Taylor et al., 2012). Perhaps those who were most avoidant of public speaking similarly perceived the benefits of continued exposure

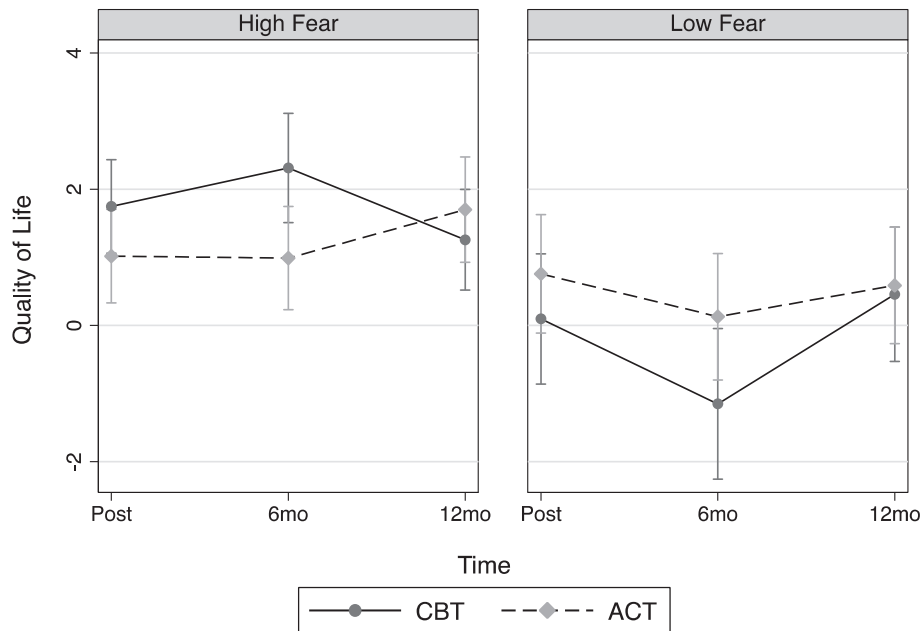


Fig. 3. Clinician-rated social fear significantly moderated quality of life. At 6-month follow-up, less fearful individuals reported significantly lower quality of life in CBT than ACT, whereas higher fear individuals had a non-significant trend for higher quality of life in CBT than ACT. CBT = cognitive behavioral therapy; ACT = acceptance and commitment therapy.

practice following the end of treatment resulting in better long-term outcome in CBT than ACT. It is also important to note that CBT was supervised directly by Dr. Craske and her team, whereas ACT was only supervised by Dr. Hayes's team and not himself. It is possible that if Dr. Hayes had supervised the therapists, outcomes from ACT may have differed. Moreover, more comprehensive measures of avoidance would be useful for the field moving forward.

Despite limitations, this is one of few studies that investigated moderators of ACT and CBT for social anxiety disorder. Asking patients to give a speech and identifying how long they are willing to speak may be a simple way of assessing behavioral avoidance. It may provide useful long-term prognostic information not gleaned by traditional methods such as rating levels of social avoidance based largely on patient self-report. Furthermore, should these results be replicated, they suggest that those who are more behaviorally avoidant may benefit more from CBT than ACT.

Funding

This project was funded by the National Institutes of Mental Health 1 R21 MH081299.

Appendix A

Brief clinician protocol for assessing public speaking avoidance

"I would like you to give a 3-min speech while standing up. I will be observing you and may also videotape you in order to evaluate the speech on content and delivery later. I would like you to talk about global warming and/or corporeal punishment. You can talk about one or both of the topics. I will give you 5 min to prepare your speech. You can write notes on a piece of paper but you cannot use the paper when you are speaking."

Give patient pen and notepad

After 5 min, ask patient to stand and give the speech. Time the patient.

After 3 min have elapsed say: "Would you be willing to continue speaking? You may continue for any amount of time up to 3 min. It's up to you. Would you like to continue speaking?"

Record duration of speech.

References

- Arch, J. J., Eifert, G. H., Davies, C., Vilardaga, J. C. P., Rose, R. D., & Craske, M. G. (2012). Randomized clinical trial of cognitive behavioral therapy (CBT) versus acceptance and commitment therapy (ACT) for mixed anxiety disorders. *Journal of Consulting and Clinical Psychology, 80*(5), 750–765. <http://dx.doi.org/10.1037/a0028310>.
- Baker, S. L., Heinrichs, N., Kim, H. J., & Hofmann, S. G. (2002). The Liebowitz social anxiety scale as a self-report instrument: A preliminary psychometric analysis. *Behaviour Research and Therapy, 40*(6), 701–715. [http://dx.doi.org/10.1016/S0005-7967\(01\)00060-2](http://dx.doi.org/10.1016/S0005-7967(01)00060-2).
- Beidel, D. C., Turner, S. M., Jacob, R. G., & Cooley, M. R. (1989). Assessment of social phobia: Reliability of an impromptu speech task. *Journal of Anxiety Disorders, 3*(3), 149–158. Retrieved from <http://search.proquest.com/docview/617697184?accountid=14512>.
- Bluett, E. J., Homan, K. J., Morrison, K. L., Levin, M. E., & Twohig, M. P. (2014). Acceptance and commitment therapy for anxiety and OCD spectrum disorders: An empirical review. *Journal of Anxiety Disorders, 28*(6), 612–624. <http://dx.doi.org/10.1016/j.janxdis.2014.06.008>.
- Brown, T. A. D., Nardo, P. A., & Barlow, D. H. (1994). *The anxiety disorders Interview Schedule for dsm IV (adis IV)*. San Antonio, TX: Psychological Corporation/Graywind Publications Inc.
- Butler, A. C., Chapman, J. E., Forman, E. M., & Beck, A. T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*(1), 17–31. <http://dx.doi.org/10.1016/j.cpr.2005.07.003>.
- Craske, M. G., Niles, A. N., Burklund, L. J., Wolitzky-Taylor, K., Vilardaga, J. C. P., Arch, J. J., et al. (2014). Randomized controlled trial of cognitive behavioral therapy and acceptance and commitment therapy for social phobia: Outcomes and moderators. *Journal of Consulting and Clinical Psychology, 82*(6), 1034–1048. <http://dx.doi.org/10.1037/a0037212>.
- Craske, M. G., Street, L., & Barlow, D. H. (1989). Instructions to focus upon or distract from internal cues during exposure treatment of agoraphobic avoidance. *Behaviour Research and Therapy, 27*(6), 663–672. Retrieved from <http://search.proquest.com/docview/617724854?accountid=14512>.
- Davies, C. D., Niles, A. N., Pittig, A., Arch, J. J., & Craske, M. G. (2015). Physiological and behavioral indices of emotion dysregulation as predictors of outcome from

- cognitive behavioral therapy and acceptance and commitment therapy for anxiety. *Journal of Behavior Therapy and Experimental Psychiatry*, 46, 35–43. <http://dx.doi.org/10.1016/j.jbtep.2014.08.002>.
- Eifert, G. H., & Forsyth, J. P. (2005). *Acceptance and commitment therapy for anxiety disorders: A practitioner's treatment guide to using mindfulness, acceptance, and values-based behavior change strategies*. Oakland, CA: New Harbinger Publications, Inc.
- Fresco, D. M., Coles, M. E., Heimberg, R. G., Leibowitz, M. R., Hami, S., Stein, M. B., et al. (2001). The Liebowitz social anxiety scale: A comparison of the psychometric properties of self-report and clinician-administered formats. *Psychological Medicine*, 31(6), 1025–1035. <http://dx.doi.org/10.1017/S003291701004056>.
- Frisch, M. B. (1994a). *Manual and treatment guide for the quality of life inventory*. Minneapolis, MN: Pearson (Assessments).
- Frisch, M. B. (1994b). *Quality of life inventory (QOLI)*. Minneapolis, MN: National Computer Systems.
- Frisch, M. B., Clark, M. P., Rouse, S. V., Rudd, M. D., Pawelek, J. K., Greenstone, A., et al. (2005). Predictive and treatment validity of life satisfaction and the Quality of Life Inventory. *Assessment*, 12(1), 66–78. <http://dx.doi.org/10.1177/1073191104268006>.
- Gamez, W., Kotov, R., & Watson, D. (2010). The validity of self-report assessment of avoidance and distress. *Anxiety, Stress & Coping: An International Journal*, 23(1), 87–99. <http://dx.doi.org/10.1080/10615800802699198>.
- Hamm, A. O., Richter, J., Pané-Farré, C., Westphal, D., Wittchen, H., Vossbeck-Elsebusch, A. N., et al. (2016). Panic disorder with agoraphobia from a behavioral neuroscience perspective: Applying the research principles formulated by the research domain criteria (RDoC) initiative. *Psychophysiology*, 53(3), 312–322. <http://dx.doi.org/10.1111/psyp.12553>.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*, 64(6), 1152–1168. <http://dx.doi.org/10.1037/0022-006X.64.6.1152>.
- Hofmann, S. G., Newman, M. G., Ehlers, A., & Roth, W. T. (1995). Psychophysiological differences between subgroups of social phobia. *Journal of Abnormal Psychology*, 104(1), 224–231. Retrieved from <http://search.proquest.com/docview/618639825?accountid=14512>.
- Hofmann, S. G., & Smits, J. A. J. (2008). Cognitive-behavioral therapy for adult anxiety disorders: A meta-analysis of randomized placebo-controlled trials. *Journal of Clinical Psychiatry*, 69(4), 621–632. <http://dx.doi.org/10.4088/JCP.v69n0415>.
- Hope, D. A., Heimberg, R. G., Juster, H. A., & Turk, C. L. (2000). *Managing social anxiety: A cognitive-behavioral therapy approach client workbook*. New York, NY: Oxford University Press.
- Kraemer, H. C., Wilson, G. T., Fairburn, C. G., & Agras, W. S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of General Psychiatry*, 59(10), 877–883. <http://dx.doi.org/10.1001/archpsyc.59.10.877>.
- Leichsenring, F., Salzer, S., Beutel, M. E., Herpertz, S., Hiller, W., Hoyer, J., et al. (2014). Long-term outcome of psychodynamic therapy and cognitive-behavioral therapy in social anxiety disorder. *The American Journal of Psychiatry*, 171(10), 1074–1082. <http://dx.doi.org/10.1176/appi.ajp.2014.13111514>.
- Levin, A. P., Saoud, J. B., Strauman, T., Gorman, J. M., Fyer, A. J., Crawford, R., et al. (1993). Responses of “generalized” and “discrete” social phobics during public speaking. *Journal of Anxiety Disorders*, 7(3), 207–221. [http://dx.doi.org/10.1016/0887-6185\(93\)90003-4](http://dx.doi.org/10.1016/0887-6185(93)90003-4).
- Lincoln, T. M., Rief, W., Hahlweg, K., Frank, M., Von Wittleben, I., Schroeder, B., et al. (2005). Who comes, who stays, who profits? Predicting refusal, dropout, success, and relapse in a short intervention for social phobia. *Psychotherapy Research*, 15(3), 210–225. Retrieved from <http://search.proquest.com/docview/620850857?accountid=14512>.
- Loerinc, A. G., Meuret, A. E., Twohig, M. P., Rosenfield, D., Bluett, E. J., & Craske, M. G. (2015). Response rates for CBT for anxiety disorders: Need for standardized criteria. *Clinical Psychology Review*, 42, 72–82. Retrieved from <http://search.proquest.com/docview/1753450076?accountid=14512>.
- Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy*, 36(4), 455–470. [http://dx.doi.org/10.1016/S0005-7967\(97\)10031-6](http://dx.doi.org/10.1016/S0005-7967(97)10031-6).
- McNeil, D. W., Ries, B. J., & Turk, C. L. (1995). *Behavioral assessment: Self-report, physiology, and overt behavior. Social phobia: Diagnosis, assessment, and treatment*. New York, NY: Guilford Press. Retrieved from <http://search.proquest.com/docview/618783810?accountid=14512>.
- Moscovitch, D. A., Suvak, M. K., & Hofmann, S. G. (2010). Emotional response patterns during social threat in individuals with generalized social anxiety disorder and non-anxious controls. *Journal of Anxiety Disorders*, 24(7), 785–791. <http://dx.doi.org/10.1016/j.janxdis.2010.05.013>.
- Niles, A. N., Mesri, B., Burklund, L. J., Lieberman, M. D., & Craske, M. G. (2013). Attentional bias and emotional reactivity as predictors and moderators of behavioral treatment for social phobia. *Behaviour Research and Therapy*, 51(10), 669–679. <http://dx.doi.org/10.1016/j.brat.2013.06.005>.
- Osman, A., Gutierrez, P. M., Barrios, F. X., Kopper, B. A., & Chiros, C. E. (1998). The social phobia and social interaction anxiety Scales: Evaluation of psychometric properties. *Journal of Psychopathology and Behavioral Assessment*, 20(3), 249–264. <http://dx.doi.org/10.1023/A:1023067302227>.
- Rachman, S., & Lopatka, C. (1986). Match and mismatch in the prediction of fear: I. *Behaviour Research and Therapy*, 24(4), 387–393. [http://dx.doi.org/10.1016/0005-7967\(86\)90003-3](http://dx.doi.org/10.1016/0005-7967(86)90003-3).
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the state-trait anxiety inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Swain, J., Hancock, K., Hainsworth, C., & Bowman, J. (2013). Acceptance and commitment therapy in the treatment of anxiety: A systematic review. *Clinical Psychology Review*, 33(8), 965–978. <http://dx.doi.org/10.1016/j.cpr.2013.07.002>.
- Tabachnick, B. G., & Fidell, L. S. (2006). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson.
- Taylor, S., & Rachman, S. J. (1994). Stimulus estimation and the overprediction of fear. *British Journal of Clinical Psychology*, 33(2), 173–181.
- Wolitzky-Taylor, K., Arch, J. J., Rosenfield, D., & Craske, M. G. (2012). Moderators and non-specific predictors of treatment outcome for anxiety disorders: A comparison of cognitive behavioral therapy to acceptance and commitment therapy. *Journal of Consulting and Clinical Psychology*, 80(5), 786–799. <http://dx.doi.org/10.1037/a0029418>.
- Wolpe, J. (1990). *The practice of behavior therapy* (4th ed.). Elmsford, NY: Pergamon Press. Retrieved from <http://search.proquest.com/docview/618036173?accountid=14512>.