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Outcome Expectancy as a Predictor of Treatment Response in Cognitive Behavioral Therapy for Public Speaking Fears Within Social Anxiety Disorder

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Abstract

Outcome expectancy, the extent that clients anticipate benefiting from therapy, is theorized to be an important predictor of treatment response for cognitive-behavioral therapy. However, there is a relatively small body of empirical research on outcome expectancy and the treatment of social anxiety disorder. This literature, which has examined the association mostly in group-based interventions, has yielded mixed findings. The current study sought to further evaluate the effect of outcome expectancy as a predictor of treatment response for public-speaking fears across both individual virtual reality and group-based cognitive-behavioral therapies. The findings supported outcome expectancy as a predictor of the rate of change in public-speaking anxiety during both individual virtual reality exposure therapy and group cognitive-behavioral therapy. Furthermore, there was no evidence to suggest that the impact of outcome expectancy differed across virtual reality or group treatments.

Keywords

outcome expectancy; public-speaking fear; social anxiety; multilevel modeling

Positive expectation for change, or outcome expectancy, is considered one of the most potent nonspecific factors related to treatment response (Arnkoff, Glass, Shapiro, & Norcross, 2002). Theorists have hypothesized that positive expectations may remoralize the client (Frank & Frank, 1991) or increase self-efficacy (Bandura, 1986). There is some evidence to suggest that expectations can be maximized at the beginning of treatment via the presentation of a strong treatment rationale (Ahmed & Westra, 2009). Empirical research has shown that high levels of early outcome expectancy are beneficial in that they are positively related to increased therapeutic alliance and homework compliance, and negatively related to attrition (for a review see Greenberg, Constantino, & Bruce, 2006). A recent meta-analysis demonstrated that early outcome expectations have a small but significant positive effect on treatment response across a variety of disorders and treatment modalities (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011).

However, empirical findings on the relation between early outcome expectancy and treatment response have varied somewhat according to the type of the disorder studied. Higher early outcome expectancy has been shown to be associated with improved treatment response for depression (Rutherford, Wager, & Roose, 2010). Findings with outcome expectancy and exposure-based treatments for anxiety disorders have been mixed

(Delsignore & Schnyder, 2007). For example, research with obsessive-compulsive disorder (OCD) has yielded primarily null findings (Freeston et al., 1997; Steketee et al., 2011; Vogel, Hansen, Stiles, & Götestam, 2006), whereas the empirical research for social phobia has yielded somewhat modest findings. The strongest evidence for the effect of early outcome expectancy and social phobia to date comes from Safren, Heimberg, & Juster, et al. (1997). The relation between a measure of combined outcome expectancy and treatment credibility was examined following cognitive-behavioral group therapy (Heimberg, 1991). Results showed that after controlling for pretreatment severity, early outcome expectancy accounted for a small portion of variance (1%–4%) of post-treatment severity for five of six measures of social phobia symptoms. Chambless, Tran, & Glass (1997) evaluated the efficacy of cognitive-behavioral group therapy for a broad range of social fears. Treatment credibility was found to only predict change from pretreatment to post-treatment for anticipatory anxiety for social situations. Westra, Dozois, & Marcus (2007) examined the relation between early expectancy and initial symptom change among a heterogeneous group of anxiety disordered patients receiving group-based cognitive-behavioral therapy (CBT). Although individuals with social anxiety disorder as their primary diagnosis did not change as a result of treatment, individuals with secondary social anxiety disorder reported fewer symptoms at posttreatment, and this change was positively related to pretreatment outcome expectancy. In the most recent study to date (Rapee, Gaston, & Abbott, 2009), participants diagnosed with social anxiety disorder were randomized to receive group therapy that consisted of (1) only cognitive restructuring and in vivo exposure, (2) an enhanced version of the previous treatment that sought to better integrate cognitive restructuring and the exposures, and (3) a stress management group. Participants across all three treatments reported comparable levels of early outcome expectancy and treatment credibility, but these constructs were not found to predict treatment response for any of the treatments.

Other studies have examined early outcome expectancy across different types of treatments for social phobia. Mattick, Peters, and Clark (1989) compared levels of outcome expectancy for participants randomized to receive cognitive restructuring and a combination treatment for social phobia. The results suggested that early outcome expectancy did not differ across the groups. Similarly, early outcome expectancy did not differ across participants assigned to cognitive therapy or exposure therapy with relaxation for social phobia (Clark et al., 2006). However, neither study specifically examined the association between outcome expectancy and treatment response for social phobia.

Although the results of these studies suggest that outcome expectancy has a relatively small impact on treatment response for social phobia, further research is warranted. The majority of the literature to date has examined group interventions, which not only limits the generalizability of the findings, but also has some methodological issues. Specifically, participants in group-based interventions have a shared experience that can enhance or diminish treatment processes and overall response (McRoberts, Burlingame, & Hoag, 1998). Experts have recommended using statistical procedures to account for the shared variance within each treatment group (Murray & Blitstein, 2003; Varnell, Murray, Janega, & Blitstein, 2004); however, none of the previously reviewed studies used such an approach.

Furthermore, only one study has evaluated the relation between early outcome expectancy and treatment response for virtual reality exposure (VRE) therapy, but this study used a sample diagnosed with specific phobia (Price, Anderson, Henrich, & Rothbaum, 2008). Outcome expectancy could be important for social phobia because of the key role of exposure. That is, a primary rationale for treatment is to help the sufferer “face the fear” in a therapeutic manner. In group therapy, exposure toward social fears can be done using other group members as confederates. It may be more difficult to do within-session exposure

during individual therapy, because a large number of confederates are needed to address public-speaking fears. To address this difficulty, VRE uses a head mounted display to present the feared stimulus (e.g., an audience) virtually and allows the virtual environment to move in a natural way according to the movement of the person. VRE for social phobia has been supported in a handful of small studies conducted thus far (Anderson, Zimand, Hodges, & Rothbaum, 2005; Klinger et al., 2005; Price & Anderson, 2011). VRE provides an interesting framework for testing the impact of early outcome expectancy on treatment response. The treatment rationale is essentially that of any exposure-based treatment, yet the individual faces one's fear virtually. Individuals must decide not only whether the rationale for exposure is credible, but also whether they believe they will benefit from exposure that is done virtually. As such, research on the association between early outcome expectancy and treatment response in VRE for social phobia is needed.

In sum, the findings for outcome expectancy as a predictor of treatment response for group-based interventions for social anxiety are unclear. Furthermore, there have not been any studies to date examining outcome expectancy for individual-based treatment of social anxiety. The current study evaluated early outcome expectancy as a predictor of improved treatment response across both individualized VRE (Anderson et al., 2005) and exposure therapy delivered in a group format (EGT; Hofmann, 2004) for social anxiety disorder. Increased early outcome expectations were hypothesized to be associated with improved treatment response for both VRE and EGT conditions. Data for this study were collected during a larger National Institute of Mental Health-funded randomized controlled trial evaluating the effectiveness of VRE to EGT for the treatment of social anxiety with a primary fear of public speaking.

Methods

Participants

Participants were 67 individuals diagnosed with social anxiety disorder, about half of which met criteria for the generalized subtype ($n = 33$). Participants were recruited broadly through newspaper advertising, posted flyers, and Internet-based outlets seeking participants with fears of public speaking. Inclusion criteria included speakers of English who met *Diagnostic and statistical manual of mental disorders-Fourth edition (DSM-IV; APA, 2000)* criteria for a diagnosis of Social Phobia with a primary fear of public speaking. Participants on psychoactive medication were required to be stabilized on their current medication(s) and dose(s) for at least 3 months and were to remain at the same dosage throughout the course of the study. Individuals meeting any of the following criteria were excluded: (a) history of mania, schizophrenia, or other psychoses; (b) current suicidal ideation; (c) current alcohol or substance dependence; (d) inability to tolerate the virtual reality helmet; (e) history of seizures.

The sample was predominately female (69%, $n = 46$) with an average age of $M = 40.31$, $SD = 11.55$. Participants self-identified as "Caucasian" ($n = 33$), "African American" ($n = 21$), "Hispanic" ($n = 3$), "Asian American" ($n = 2$), or "Other" ($n = 5$). The sample was well educated, with 44% completing college and with 34% reporting their relationship status as married. Most were middle class, with 47% having an annual income of \$50,000 or more. The majority of the participants did not have a comorbid diagnosis ($n = 59$, 88%).

Materials

Social anxiety was assessed with two measures, the Personal Report of Communication Apprehension-Short Form (PRCA-SF; McCroskey, 1978) and the Self Statements during Public Speaking (SSPS; Hofmann & DiBartolo, 2000). The PRCA-SF is a 10-item self-

report questionnaire assessing anxiety for public speaking that was adapted from the longer form by selecting the items with highest correlation with the total score of the 24-item version. The PRCA-SF has shown excellent convergent validity with the long form ($r = .88 - .92$). Internal consistency estimates range from .87 to .90 with large adult samples. Responses are scored on a 5-point scale (1 = strongly agree, 5 = strongly disagree), and summary scores range from 10 to 50 with higher scores indicating greater public-speaking fears. The SSPS (Hofmann & DiBartolo, 2000) is a 10-item self-report questionnaire assessing fearful thoughts that are commonly experienced during public speaking. The measure contains positive and negative subscales that are scored on a 6-point scale (0 = do not all agree, 5 = extremely agree) with summary scores ranging from 0 to 25. The SSPS has shown to have good psychometric properties with clinical samples and good internal consistency for the positive ($\alpha = .80$) and the negative subscales ($\alpha = .86$). The negative subscale has been shown to be sensitive to treatment effects (Hofmann & DiBartolo, 2000).

Early outcome expectancy was assessed with a four-item questionnaire developed by Borkovec & Nau (1972). Scores range 4 to 36 with higher scores indicating greater expectancy. This measure has been used extensively with clinical populations and has shown to have good internal consistency ($\alpha > .80$) (Rodebaugh, 2004; Taylor & Alden, 2010), to be stable over time (Rapee et al., 2009), and to predict treatment response for cognitive and interpersonal therapies (Borge, Hoffart, & Sexton, 2010; Lester, Resick, Young-Xu, & Artz, 2010).

Procedure

Eligibility for the current study was determined through a two-part process that began with a telephone screen to determine if participants met obvious exclusion criteria. Candidates were then invited for an in-person assessment during which the Structured Clinical Interview for the DSM-IV was used to determine if the participant met inclusion criteria for a primary diagnosis of social anxiety and other comorbid disorders. Four doctoral candidates in clinical psychology conducted all assessment procedures. Doctoral students were trained in diagnostic interviewing by watching training tapes and by practice interviews, which were reviewed by a licensed clinical psychologist. Doctoral student assessors received weekly supervision, which included reviews of videotapes. A randomly selected subset (10%) of video-taped diagnostic interviews was evaluated by a licensed psychologist to calculate inter-rater reliability for the primary diagnosis, which was 100%.

Assessments—Participants were given self-report measures before being randomized to a treatment condition (pretreatment), at the end of the fourth session (midtreatment), and at the end of the last session (posttreatment). Waitlist (WL) participants completed self-report measures at pretreatment and after an 8-week waiting period. WL participants were subsequently randomly assigned to one of the two active treatments. Expectancy ratings were obtained after the first session of therapy, after the rationale for treatment had been given. Data from the current study consisted of all participants who completed treatment, including participants assigned to treatment following the WL period ($n_{VRE} = 5$; $n_{EGT} = 7$).

Treatment—Treatment was administered by five study therapists; two senior therapists were licensed psychologists with prior experience implementing manualized cognitive behavior therapy, and three junior therapists were doctoral students. Each therapist administered both treatments, so therapists were not nested within condition. Before administering therapy, study therapists attended two-day intense training workshops, led by the developers of the respective treatments.

Both treatments consisted of eight sessions of cognitive-behavioral therapy designed to target several processes shown to maintain social anxiety, including self-focused attention, negative perceptions of self and others, perceptions of lack emotional control, and realistic goal setting for social situations. The primary difference between the two therapies was the modality of exposure, delivered either in a group setting, using other group members for exposure (EGT; $n = 34$) or using virtual reality for exposure (VRE; $n = 33$). Both treatments were administered according to a manualized protocol (Anderson et al., 2005; Hofmann, 2004). The virtual reality (VR) scenarios included (1) a conference room (approximately 5 audience members), (2) a classroom (approximately 35 audience members), and (3) a large auditorium (approximately 100 audience members). These scenarios were presented via a head mounted display that consisted of a helmet with headphones and goggles.

EGT was conducted in groups that were co-led by a senior and a junior therapist. Exposures primarily consisted of having participants give brief speeches in front of the group, with the group members providing feedback. Later sessions involved exposure using social mishaps. The final session for both treatments discussed relapse prevention and reviewed what was learned during the course of therapy.

Ratings of adherence in delivering the protocols were provided by the developers of the respective treatments for a randomly selected subset of videotaped sessions (14%). Compliance was quite good for each treatment, with 92% and 93% of the essential elements of the protocol being completed for VRE and EGT, respectively, and one infraction for each treatment arm across all sessions reviewed.

Results

Descriptive statistics for all variables can be found in Table 1. Early outcome expectancy did not differ across the treatment conditions. There were no significant differences across the VRE and EGT conditions, $F(1, 65) = 3.11, p = .12$. Furthermore, there were no significant differences across those initially assigned to VRE, EGT, and WL, $F(2, 64) = 1.18, p = .33$. Outcome expectancy did not significantly differ across participants that dropped out of treatment and those that completed treatment, $F(1, 65) = .12, p = .75$. Multilevel Modeling (MLM) was used to assess the extent that outcome expectancy predicted the rate of change during the course of treatment and if the effect of outcome expectancy differed across treatments. Separate three-level linear change models indicated that scores on the PRCA-SF, SPSS-negative, and SSPS-positive improved during treatment (Table 2). To test the hypothesis that outcome expectancy predicted the rate of change during the course of treatment, a model was fitted to the data that contained a level 1 fixed effect for the rate of change during treatment (γ_{100}). The level 2 model examined the extent that outcome expectancy (γ_{110}) and treatment condition (γ_{120}) impacted the rate of change. An interaction between these fixed effects ($\gamma_{110} \times \gamma_{120}$) was included to determine if the effect of outcome expectancy varied across the treatment conditions. The level 3 model accounted for the partial nestedness of the data. Partially nested data refers to a scenario in which subsample of participants are placed in groups and the remainder are left as individuals (Bauer, Sterba, & Hallfors, 2008). For the current study, participants assigned to the EGT condition completed treatment in groups, whereas those in the VRE condition received treatment individually. The participants in the EGT condition may have related outcomes due to shared aspects of their treatment experience, such as group member effects, socialization, and/or a common treatment provider. This type of partially nested data is handled by including an additional level in the model in which a random effect is added to the EGT intervention (u_{11}), but not the individual intervention, to account for the variance across the EGT treatment groups.

Outcome expectancy was found to be associated with a greater rate of change for all measures of public-speaking fears in the expected direction: PRCA-SF ($\gamma_{120} = -.29, p < .01$), the SSPS-negative ($\gamma_{120} = -.05, p < .01$), and the SPSS-positive ($\gamma_{120} = .21, p < .01$). Effect sizes calculated with the pseudo- R^2 indicated that expectancy had a medium-to-large effect on the rate of change, accounting for 33% of the variance for PRCA, 16% of the variance for the SSPS-negative, and 18% of the variance for SSPS-positive. Taken together, these findings suggest that higher outcome expectancy at the start of treatment was associated with a greater rate of change for all measures of public-speaking fear.

To determine if the effect of outcome expectancy on treatment response differed across the EGT and VRE conditions, an interaction term between these variables ($\gamma_{110} \times \gamma_{120}$) was added to the level 2 model. Model fit significantly decreased when the interaction term was included for all outcome measures. Furthermore, across all measures, the interaction was not significant: PRCA: $\gamma_{130} = -.24, p = .34$; SSPS-negative: $\gamma_{130} = .01, p = .97$; SSPS-positive: $\gamma_{130} = -.01, p = .95$. Due to the power limitations of detecting a significant interaction with a small sample, the effect of outcome expectations was examined separately for each treatment condition. The findings suggested that outcome expectancy was related to treatment response for both VRE and EGT (VRE: PRCA-SF, $\gamma_{110} = -.29, p < .01$; SSPS-positive, $\gamma_{110} = .20, p < .01$; SSPS-negative, $\gamma_{110} = -.10, p < .05$. EGT: PRCA-SF, $\gamma_{110} = -.31, p < .01$; SSPS-positive, $\gamma_{110} = .22, p < .01$; SSPS-negative, $\gamma_{110} = -.11, p < .05$. These findings do not provide evidence for a differential effect of outcome expectancy on treatment response across EGT and VRE.

Discussion

Within the small extant literature on this topic, the findings of the current study provide the most positive evidence to date for a relation between early outcome expectancy and treatment response for public-speaking fears among those with social anxiety disorder. The current study suggested that early outcome expectancy accounted for a greater proportion of variance (16% – 33%) than the only other study to show positive results with a primary diagnosis of social anxiety disorder (1% – 4%; Safren et al., 1997). Furthermore, these findings were obtained across two different types of treatment, an individual virtual reality-based treatment and a group-based treatment. Although there were differences in the method of delivery of exposure therapy, both interventions were exposure based (i.e., virtual reality, group, individual). A recent meta-analysis found that the effect of outcome expectations varies across studies of heterogeneous pathology and treatment modalities (Constantino et al., 2011). The current study provides evidence that outcome expectations may have a more consistent effect on treatment response for exposure-based interventions. However, prior work on obsessive-compulsive disorder has demonstrated that outcome expectancy is unrelated to treatment response for interventions using exposure and response prevention (Freeston et al., 1997; Steketee et al., 2011; Vogel et al., 2006). The null findings with regard to the differential effect of early outcome expectations across treatment may have been attributed to insufficient power to detect the small effect typically associated with interaction terms. Therefore, additional work is needed to better understand how the effect of outcome expectations varies across exposure-based interventions and across anxiety disorders.

The findings conflict with those of Chambless et al. (1997) and Rapee et al. (2009), who found no impact of outcome expectancy on treatment change for public-speaking fears. The differences in findings may be attributed to characteristics of the sample, outcome measures, or the analytic approach. MLM has been shown to be a more accurate method of assessing change over time and is especially useful when determining how interindividual characteristics, such as early outcome expectancy, impact intraindividual variation.

Additionally, the analyses of the current study accounted for clustering of participants into groups. Furthermore, MLM provides a measure of the rate of change, an estimate of a client's progress over the entire therapy process, rather than an estimate of a discrete change from pretreatment to posttreatment. The rate of change estimate is conceptually more congruent with the actual therapy process of gradual improvement (Price et al., 2008).

The findings of the current study have implications for clinical work in that outcomes can potentially be improved through maximizing the client's expectations for change at the start of treatment. However, there has been relatively little research as to how to enhance outcome expectancy at the start of treatment. There is some evidence to suggest that expectations can be maximized at the beginning of treatment via the presentation of a strong treatment rationale (Ahmed & Westra, 2009). Theorists also have suggested that addressing a client's concerns about therapy and setting appropriate goals may be methods to improve expectancies (Ilardi & Craighead, 1994). Alternatively, feelings of hopelessness and depression at the start of treatment may mitigate the effect of outcome expectations on treatment response. Although prior research has demonstrated that outcome expectations are associated with enhanced treatment for depression (Meyer et al., 2002), comorbid depressive symptoms may dampen the effect of outcome expectancy on the treatment response for other disorders. Additional research should account for potential comorbid symptoms when assessing this relation in future samples. Greater efforts should be taken to examine the effect of outcome expectancy in effectiveness samples where rates of comorbidity and complex symptoms presentation are likely to be higher. Finally, hopelessness and depressive symptoms may themselves confound outcome expectations such that reduced outcome expectations may indicate greater depressive symptom severity. Efforts should be taken to tease apart depressive symptom severity and outcome expectations in future work on this topic.

Additional work should also focus on better understanding the specific mechanisms of treatment that are impacted by increased early outcome expectations. Outcome expectancy may improve a client's willingness to engage in exposures, compliance with homework exercises, or to be more open about concerns. A study by Westra et al. (2007) showed that homework compliance mediates the relation between outcome expectancy and treatment response for panic disorder and generalized anxiety disorder, but not for social phobia. Research is needed to better understand the method by which outcome expectancy improves response for social anxiety.

The current study is consistent with recent calls by experts for research to evaluate the effects of nonspecific factors on treatment outcome (Kazdin, 2005). Further research should focus on parsing the unique effects of outcome expectancy and other closely associated nonspecific factors, such as treatment credibility. Treatment credibility is defined as the extent that a client perceives a treatment to be effective at resolving their current symptoms (Kazdin & Wilcoxon, 1976). There has been some discrepancy in the literature as to the distinction between outcome expectancy and treatment credibility; indeed, both constructs have been assessed using the four-item measure developed by Borkovec & Nau (1972). For example, two of the previously reviewed studies used this measure to assess outcome expectancy (Chambless, et al., 1997; Clark et al., 2006), whereas others used it as a measure of treatment credibility (Mattick et al., 1989; Rapee et al., 2009). Interestingly, the only other study to show a positive impact of outcome expectancy on treatment response (Safren et al., 1997) used the Reaction to Treatment Questionnaire (Holt & Heimberg, 1990), a measure that included the items from the Borkovec & Nau (1972) measure.

More recent measures have sought to tease apart outcome expectancy and treatment credibility (for a thorough review see Constantino et al., 2011). In a revision of the original

four-item measure, Devilly & Borkovec (2000) developed a measure that has separate subscales for expectancy and credibility. The authors distinguished between the two constructs by stating that expectancy was an emotional belief, whereas credibility was a logic-based thought. Furthermore, a refined measure to assess expectancy, the Anxiety Change Expectancy Scale (Dozois & Westra, 2005) has also been developed. Additional research is needed to better understand the unique effects of each construct.

Another limitation of the current study is the use of only three measurement points during the course of therapy (pretreatment, midtreatment, and posttreatment). Using additional measurement points throughout the treatment process allows for a more accurate depiction of changes in symptoms during the course of treatment through the use of latent growth curve modeling or multilevel modeling. The current study was also unable to account for the administration of the treatment by multiple therapists, which have been shown to account for between-person differences in treatment response (Lutz, Leon, Martinovich, Lyons, & Stiles, 2007). However, accounting for therapist level variation requires large samples to sufficiently power such analyses. Intervention researchers are encouraged to collaborate in an effort to obtain samples that are large enough to evaluate a variety of nonspecific variables, including therapist effects. The rate of comorbidity in the current sample (12%) is lower than what is typically found for individuals with social anxiety disorder, although it is comparable to recent studies using Internet-based or virtual reality-based exposure therapy (7% – 12.5%; Andersson et al., 2006; Botella et al., 2008). Finally, the significant association between early outcome expectancy and treatment response for VRE may not generalize to other individual CBT-based treatments for social phobia. Expectations may play a larger role in VRE treatment response because participants must also believe that a virtual stimulus can elicit fear. As such, additional work should evaluate the effects of outcome expectancy on individual CBT for social phobia.

In summary, the findings of the current study suggest that early outcome expectancy is associated with the rate of change for public-speaking fears after cognitive– behavioral treatment. There was no evidence for a difference in this effect across VRE and EGT. This is the first empirical study to show that early outcome expectancy is related to treatment response for a virtual reality-based treatment for social anxiety. Further research is needed to better understand the mechanisms by which higher early outcome expectancy improves response for social anxiety and how to maximize expectations for treatment response.

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Table 1

Means and Standard Deviations for Measures of Public-Speaking Fears and Outcome Expectancy

	Pretreatment	Midtreatment	Posttreatment
PRCA-SF			
VRE	37.63 (6.16)	35.17 (6.99)	30.88 (6.67)
EGT	38.85 (6.31)	32.06 (7.43)	26.62 (6.83)
SSPS-negative			
VRE	15.05 (6.58)	13.94 (6.70)	8.81 (6.02)
EGT	15.69 (5.24)	10.44 (6.67)	5.64 (4.25)
SSPS-positive			
VRE	10.70 (5.69)	12.03 (5.66)	17.00 (5.71)
EGT	11.00 (4.97)	15.69 (5.25)	18.33 (5.25)
Outcome expectancy			
VRE	28.33 (4.92)	—	—
EGT	30.71 (4.85)	—	—

Note. $n_{VRE}=33$; $n_{EGT}=34$. Values in parenthesis are standard deviations. PRCA-SF = Personal Report of Communication Apprehension; SSPS = Self Statements during Public Speaking; VRE = virtual reality exposure therapy; EGT = exposure group therapy.

Table 2

Multilevel Linear Change Models Assessing the Extent That Outcome Expectancy Predicts the Rate of Change for Public-Speaking Fears

	Parameter	PRCA-SF	SSPS Negative	SSPS Positive
Fixed effects				
Pretreatment	γ_{000}	37.91 **	16.29 **	10.39 **
Rate of change	γ_{100}	-4.04 **	-1.15 **	3.63 **
VRE and EBT comparison	γ_{110}	-1.19	.29	-.33
Outcome expectancy	γ_{120}	-.29 **	-.05 **	.21 **
Treatment type $\times$ outcome expectancy	γ_{130}	-.24	.01	-.01
Random effects				
Level 1	e^2	16.39	15.75	13.94
Level 2	r_0^2	27.08 **	21.22 **	13.85 **
	r_1^2	1.43 *	.01	.33
Level 3	u_{11}	-.01	.07	-.01

Note. Outcome expectancy = treatment credibility scale. PRCA-SF = Personal Report of Communication Apprehension; SSPS = Self Statements during Public Speaking; VRE = virtual reality exposure therapy; EGT = exposure group therapy.

* Significant at $p < .05$.

** significant at $p < .01$.