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BRIEF REPORT

Return to Baseline After an Interpretation Training as a Dynamic Predictor for Treatment Response in Social Anxiety Disorder

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Abstract

Background Despite considerable research efforts, consistent predictors of cognitive behavioral therapy (CBT) outcome for social anxiety disorder (SAD) are scarce. A dynamic focus on individual symptom reactivity and resilience patterns may show promise in predicting treatment response. This pilot study is the first to investigate whether rate of return to baseline after a one-session positive interpretation training indicates resilience and predicts CBT-response among individuals with SAD.

Method Participants ($N = 39$) completed an interpretation bias assessment before and after training, and once a day for three days after the training, followed by a six-week CBT-program. Participants completed SAD-assessments pre-treatment, during treatment, and post-treatment. Return to baseline was operationalized as the individualized slope of negative and positive interpretations across interpretation bias assessments.

Results Intention-to-treat analyses showed no significant relation between both negative and positive interpretation bias and CBT-response. Similarly, for completers-only, most analyses also showed no such relationship.

Conclusion These findings suggest that slower return to baseline as a resilience index does not have predictive value for CBT-outcome in individuals with SAD. Future studies should incorporate experience-sampling to capture subtle changes in interpretation bias.

Keywords social anxiety disorder · cognitive bias modification · interpretation · cognitive behavioural therapy · dynamic · resilience

Cognitive Behavioral Therapy (CBT) for social anxiety disorder (SAD), a persistent fear to be negatively evaluated in social and/or performance situations (APA, 2016), is effective for approximately 50% of treatment-seeking patients (Loerinc et al., 2015). Efforts focused on testing predictors for treatment success have proliferated. Previous research on pre-treatment outcome predictors has mainly focused on static predictors, such as demographics, baseline symptom levels or comorbidity (e.g., Eskildsen, Hougaard, & Rosenberg, 2010; Schneider, Arch, & Wolitzky-Taylor, 2015). Unfortunately, these efforts have not delivered consistent predictors of treatment outcome (Schneider et al., 2015). The prevalence and grave long-term outcomes of untreated SAD (Sareen & Stein, 2000) emphasize the importance of gaining a better understanding of individual treatment response. Several theoretical frameworks suggest that rather than solely focusing on static predictors, zooming in on individual symptom reactivity and resilience patterns may

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show promise in predicting shifts in anxiety (Chmitorz et al., 2018; Hayes, Yasinski, Ben Barnes, & Bockting, 2015; Scheffer et al., 2018).

The ability to bounce back or recover from negative or stressful experiences has received much attention in mental health literature under the term *resilience* (Chmitorz et al., 2018). There is a strong evidence-base showing that higher psychological resilience is related to positive mental health outcomes in many populations. Bouncing back quickly from adversity to a stable, psychologically healthy state is an important protective factor for developing stress-related disorders (Kalisch et al., 2017). A similar message can be distilled from recent applications of dynamic systems theory (DST) to psychopathology (Scheffer et al., 2018).

Applying DST to psychopathology, people suffering from SAD are considered to be 'stuck' in a stable state, a complex system of highly connected and interacting symptoms, such as safety and avoidance behaviors, negative interpretations, and blushing (e.g., Gelfand, Ervin, & Germ, 2018; Rodebaugh et al., 2018). Stable psychopathology could thus be conceptualized by a quick return to baseline after a positive event that disturbs the system. A positive comment during a conversation might cause a temporary reduction in anxiety for an individual with SAD, but the individual may quickly return to their high social anxiety state. Individuals with SAD who take longer to bounce back to their high social anxiety state, however, may more easily incorporate positive disturbances into their system and may thus be more resilient (Kalisch et al., 2017) and susceptible to change (Scheffer et al., 2018). Instead of framing resilience as bouncing back quickly after negative disturbances, in this operationalization, resilience could also be defined in the opposite direction, as benefitting longer from positive disturbances.

So far, applications of DST to psychopathology have focused on predicting *increases* in psychopathology. A handful of studies found that a slower return to baseline after naturally occurring negative disturbances preceded the development of more severe psychopathology. For example, it has been shown that slower recovery in symptom levels preceded worsening of depressive symptoms and relapse into a depressive episode (i.e., early warning signals, see for example Kunkels et al., 2021; Wichers, Groot, Psychosystems, ESM Group, & EWS Group, 2016). To date, however, efforts to identify slower return to baseline have not been applied to SAD and have not been linked to *positive* events that may disturb the system and subsequent symptom *reduction*. Furthermore, previous studies have focused on naturally occurring disturbances, but have not studied standardized, experimental disturbances. Identifying return to baseline after a positive disturbance as a predictor of readiness to change would be an important indicator for clinical practice as it holds promise for personalized treatment timing and clinical decision making (Rubel, Fisher, Husen, & Lutz, 2018).

Cognitive Bias Modification for Interpretations (CBM-I) is a computerized interpretation training that might be a suitable, positive, experimental disturbance as it has shown to successfully modify negative interpretation bias, the tendency to interpret ambiguous social situations as negative, and effects of CBM-I tend to transfer to anxiety measures (Fodor et al., 2020). A negative interpretation bias is a core symptom and critical maintenance factor of SAD (Clark & Wells, 1995). CBM-I is highly standardized, providing a unique means to disturb the SAD-system in a systematic manner across individuals. Based on ideas from resilience theory and DST, we hypothesize that the rate of return to baseline after interpretation training could be a proxy of resilience. Specifically, the amount of time it takes individuals to bounce back to their stable SAD state, may reveal readiness to incorporate new knowledge during treatment. Those individuals that hold on longer to a positive interpretation style may be more likely to benefit from subsequent evidence-based treatment. Indeed, Clarke, Chen and Guastella (2012) found that individual differences in readiness to acquire a positive attentional processing style among individuals with SAD predicted decreases in anxiety after CBT. These results show that a focus on individual responses may prove valuable in predicting treatment response (see also: Olthof et al., 2020).

This pilot study provides a dynamic perspective on speed of recovery from a positive disturbance and its relation to treatment outcome by examining whether individual reactivity patterns to an experimental, positive interpretation training predict treatment response among individuals with SAD. Dynamic predictors of positive and negative interpretations (Steinman, Portnow, Billingsley, Zhang, & Teachman, 2020) were created to predict subsequent CBT-response. Although the set-up of this study is exploratory, cautious expectations were formulated. It was expected that individuals who benefit longer from the interpretation training in terms of slower return to baseline would show stronger reductions in their anxiety symptoms in response to CBT. These predictors were assessed in the context of a traditional pre- to post-CBT outcome as well as specific session-to-session changes during CBT.

Methods

Participants

Thirty-nine participants (76.9% female, M_{age}=25.90, SD_{age}=6.09, range = 20–47 years) diagnosed with SAD

participated in this study. Participants with a total score ≥30 on the Liebowitz Social Anxiety Scale (LSAS-SR; Liebowitz 1987), a total score ≥16 on the Personal Report of Confidence as a Speaker (PRCS; Phillips, Jones, Rieger, & Snell, 1997), or a total score ≥20 on the Brief Fear of Negative Evaluation Scale (BFNE-II; Carleton, Collimore, & Asmundson, 2007), and a primary SAD diagnosis, being at least 18 years old could participate in the study. Exclusion criteria were: currently receiving evidence-based psychological treatment elsewhere, concrete suicidal ideation, change in psychotropic medication within 8 weeks prior to study onset, concurrent substance dependence other than nicotine dependence, concurrent psychotic complaints, no internet access, and insufficient Dutch literacy. Participants received €30,- compensation. This study received approval from the Ethics Review Board of the University of Amsterdam (2016-DP-6501). For the participant flow, see Supplementary Materials A.

Materials

Structured Clinical Interview DSM-IV Axis-I (SCID-I; First, Spitzer, Gibbon, & Williams, 1994). The SCID-I is a structured clinical interview that is used to screen for and diagnose Axis-I disorders according to the DSM-IV criteria. Only the SAD section of the SCID-I was used in this study.

Personal Report of Confidence as Speaker (PRCS; Paul, 1966; Phillips et al., 1997). The PRCS assesses public speaking anxiety using 30 true/false self-report items. Higher scores indicate higher public speaking anxiety. The PRCS has excellent psychometric properties (Phillips et al., 1997).

Liebowitz Social Anxiety Scale (LSAS-SR; Liebowitz 1987). The LSAS-SR assesses anxiety and avoidance in response to a wide range of social situations using 24 items which are scored on a four-point Likert scale (0 = *none/never* to 3 = *severe/usually*). Higher scores indicate higher levels of social anxiety. Previous research has indicated excellent psychometric properties (Rytwinski et al., 2009).

Brief Fear of Negative Evaluation Scale-II (BFNE-II; Carleton et al., 2007). The BFNE-II assesses fear of negative evaluation by means of 12 items rated on a five-point Likert scale (0 = *not at all characteristic of me* to 4 = *extremely characteristic of me*). Higher scores indicate more fear of negative evaluation. Previous research has shown that the BFNE-II showed sensitivity to effects of CBT (Carleton et al., 2007).

Personal Report of Public Speaking Anxiety (PRPSA; McCroskey, 1970). The PRPSA assesses affective and behavioral responses to public speaking situations by means of 34 self-report items, rated on a five-point Likert scale 1 = *strongly disagree* to 5 = *strongly agree*). Higher scores indicate higher levels of public speaking fear. Previous research indicated excellent psychometric properties (McCroskey, 1970).

Speech Anxiety Thoughts Inventory (SATI; Cho, Smits, & Telch, 2004). The SATI assesses dysfunctional beliefs related to public speaking with 23 items scored on a five-point Likert scale (1 = *I do not believe this statement at all* to 5 = *I completely believe this statement*). Higher scores indicate higher dysfunctional belief levels. The SATI has good psychometric properties and showed sensitivity to effects of CBT (Balon, 2007; Cho et al., 2004).

Social Anxiety Session Change Index (SASCI; Hayes, Yasinski, Barnes, & Bockting, 2008). The SASCI is a self-report scale measuring subjective improvement at the start of each treatment session relative to the start of treatment using four items concerning social anxiety levels, avoidance, and interference of anxiety on a 7-point Likert scale (1 = *much less than the start of treatment* to 7 = *much more than the start of treatment*). The SASCI has good psychometric properties (Hayes et al., 2008).

Interpretation Bias

Interpretation Bias Modification. To modify interpretation bias, a single session of positive interpretation training consisting of 64 ambiguous social scenarios was presented in eight separate blocks with optional resting blocks in-between. The scenarios were used in previous studies (Mathews & Mackintosh, 2000; Salemink, van den Hout, & Kindt, 2007). Adaptations ensured that ambiguous scenarios reflected public speaking (36) and social evaluative (28) scenarios. The scenarios consisted of three lines presented in a self-paced manner, line-by-line on a computer screen after pressing the spacebar. After the full scenario was visible, a spacebar press would reveal a word fragment that participants were required to complete by filling in the missing letter as soon as possible when recognizing the word. Completing the word fragment always resulted in a positive, non-threatening outcome (see Table 1).

Interpretation Bias Assessment. A recognition task (RT) was used to assess the effects of the interpretation training on positive and negative interpretations using six ambiguous social scenarios. The assessment consists of word fragments that participants needed to complete, but did not resolve the ambiguity of the scenario, followed by presentation of the title of each scenario, a negative and positive interpretation and were asked to rate the interpretations on their similarity to the meaning of the scenario on a four-point Likert scale (1 = *very different in meaning* to 4 = *very similar in meaning*). Mean positive and negative similarity ratings per RT were calculated. Higher scores indicate a stronger positive/negative interpretation style. For each

Table 1 Interpretation Bias Modification Training Scenario Examples

Scenario	Word fragment	Comprehension question
Public speaking You are at a course that your institution has sent you on. Your tutor asks each member of the group to stand up and introduce themselves. After your brief presentation, you guess that the others thought you sounded…	Con-id-nt (Confident)	Did the members of the group think you sounded uncertain? Answer: No Feedback: Correct, you delivered your presentation with confidence.
Social evaluation Together with a friend, you're having lunch at a café. With a friendly smile, you're trying to catch the waiter's attention. The waiter looks at you and thinks: such a … person.	Fri-ndly (Friendly)	Does the waiter think you're a pleasant customer? Answer: Yes Feedback: The waiter thinks you are friendly.

assessment point, sets consisting of different scenarios were created (three social evaluative, three public speaking). The RT has been shown to validly assess interpretational styles (Salemink & van den Hout, 2010).

Treatment

CBT consisted of six weekly, 2-hour group (5–6 participants per group) sessions (Hofmann & Otto, 2008). The sessions covered psychoeducation, exposure, video feedback and cognitive restructuring, all focused on public speaking situations in line with the participant's worst fears. Participants completed homework assignments focused on public speaking exposure exercises and social interactions. A licensed health care psychologist and a clinical psychology graduate student (under supervision) provided treatment.

Procedure

Participants who endorsed public speaking as their primary fear were recruited via social media and with flyers distributed via study advisory boards of higher education institutions in the Western Netherlands. Potential participants were directed to the study's webpage where they could sign up for the study, provide informed consent and complete the screening (PRCS, LSAS-SR, BFNE-II). If participants scored above the cut-off, a trained clinical psychology graduate student contacted them by telephone to provide study information and a diagnosis of SAD was (dis)confirmed using the SCID-I.

When eligible, participants entered the one-week training phase: On day 1, participants practiced with the interpretation bias assessment at home. On day 2, participants came to the lab for CBM-I. Participants signed informed consent and completed the BFNE-II, SATI, PRPSA, and a demographics questionnaire. Next, participants took place in a sound-proof cubicle to complete the pre-training interpretation bias assessment (a), three practice trials (neutral scenarios), the interpretation training and the post-training interpretation bias assessment (b). This session took approximately 1 hour. During the consecutive three days (day 3–5) participants completed daily online interpretation bias assessments (c-e) at home. Participants received automated reminders via e-mail/text message. Participants were able to contact the researchers by phone/e-mail with questions. After the training phase, participants started the six-week treatment phase. They were divided into CBT groups (5–6 participants) based on availability. Participants completed the SATI, BFNE-II and PRPSA at the start of the first CBT-session and one week after the last CBT-session. The SASCI and SATI were also assessed at the beginning of each session. Therapists were unaware of the results of the interpretation training.

Data Analysis

To minimize multiple testing and increase power, a composite score of the BFNE-II, SATI and PRPSA was created to index SAD-symptoms at pre- and post-treatment (sum of *z*-scores of the total scores/3). Correlations between these questionnaire scores were all positive (for the pre-treatment scores and post-treatment scores respectively: BFNE and PRPSA: $r = .581$, $p < 001$, $r = .461$, $p = .018$; BFNE and SATI: $r = .625$, $p < .001$, $r = .314$, $p = .081$; SATI and PRPSA; $r = .671$, $p < .001$, $r = .490$, $p = .004$). Analyses were conducted on an intention-to-treat basis and repeated for completers ($n = 32$). Return to baseline after the interpretation training was operationalized as the individual slope across the interpretation assessments (b-e), while controlling for their baseline assessment (a). First, to create these predictors, two Bayesian mixed models (BMM) were fitted to account for the multilevel nature of the data. These models included the effect of the training on interpretations, that is the similarity ratings for the positive or negative interpretations. Time (b-e) was added as a fixed effect and random slope, while controlling for the baseline assessment (a). Individualized random slopes of the similarity ratings for negative and positive interpretations were derived from these models by extracting Best Linear Unbiased Predictors (BLUPs). These random slopes reflect the individual's deviation from the mean regression slope, hereby representing the effect for every individual. For negative interpretation slopes for example, larger negative values represent slower return to baseline and a relative decrease in negative interpretations, indicating that a person benefits longer from the interpretation training, whereas smaller negative values or

Table 2 Demographic and Clinical Characteristics of the Sample at Baseline

	Pre-treatment assessment		Treatment session					
	Lab ($n=39$)	1 ($n=39$)	2 ($n=35$)	3 ($n=34$)	4 ($n=28$)	5 ($n=31$)	6 ($n=32$)	Post ($n=31$)
Age, *M* (*SD*)	25.90 (6.09)							
Sex (%)	76.9% female							
Higher education completed (%)	100%							
Age of onset SAD-complaints, *M* (*SD*)	14.29 (4.10)							
LSAS, *M* (*SD*)	29.38 (10.27)							20.53 (9.05)
BFNE-II, *M* (*SD*)	34.31 (8.46)	32.82 (8.80)						25.53 (10.43)
PRPSA, *M* (*SD*)	142.21 (12.46)	141.21 (12.48)						107.38 (16.05)
SATI, *M* (*SD*)	83.97 (13.00)	83.56 (12.21)	83.54 (9.88)	73.56 (12.96)	68.52 (13.78)	63.19 (14.22)	54.56 (13.49)	50.13 (11.66)
SASCI, *M* (*SD*)			4.25 (0.96)	3.65 (0.73)	3.47 (0.96)	3.26 (1.07)	2.70 (1.02)	2.50 (0.80)
SAD-composite, *M* (*SD*)	86.83 (8.63)	85.86 (9.71)						61.01 (10.01)

Note. LSAS = Liebowitz Social Anxiety Scale; BFNE-II = Brief Fear of Negative Evaluation Scale-II; SATI = Speech Anxiety Thoughts Inventory; PRPSA = Personal Report of Public Speaking Anxiety; SASCI = Social Anxiety Session Change Index.

positive values indicate faster return to baseline or a relative increase in negative interpretations, indicating that a person benefits for a shorter amount of time from the training.

To assess whether individual interpretation recovery slopes predict treatment response, four additional BMMs were conducted. Two models included the SAD-composite score as the dependent variable, Time (pre/post-treatment) as fixed effect and the positive or negative interpretation BLUPs as fixed effect. To examine change during treatment, two BMMs included the SASCI as the dependent variable, either the positive or negative interpretation BLUPS as fixed effects and Treatment session (1–6) as fixed effect. All models included the interactions between the fixed effects, a random intercept and random slopes for the fixed effects. Time effects were represented by treatment contrasts. Significance was established when credible intervals [CI] did not contain zero. See Supplementary Materials B for additional model details and results. See https://osf.io/grfzx/ for access to the data and R script.

Results

For demographic and clinical characteristics of the sample, see Table 2. For additional details on the models and missing data, see Supplementary Materials B.

Change in pre- to post-treatment SAD-complaints. Intention-to-treat analyses for the BMMs with negative and positive interpretation recovery slopes predicting pre- to post-treatment change on the SAD-composite score showed that there was no significant effect of Time ($B=0.15$, SE = 0.19, 95%-CI[-0.22, 0.52]), B=-0.03, SE = 0.19, 95%-CI[-0.42, 0.35], respectively). Similar effects of Time were found for the completers-only analyses (see Supplementary Materials C). When controlling for baseline SAD-complaints, there was a significant effect of Time in both the positive interpretation as negative interpretation slopes model, respectively (B=-0.70, SE = 0.26, 95%-CI[-1.22, -0.18], B=-0.60, SE = 0.26, 95%-CI[-1.11, -0.08]). Similar significant negative effects for Time were found in the completers-only analyses when controlling for baseline SAD-complaints (see Supplementary Materials C). This indicates that participants indicated a decline in SAD-complaints from pre- to posttreatment when controlling for baseline SAD-complaints. Additionally, exploratory models were conducted separately for each of the questionnaires making up the SAD-composite score. See Supplementary Materials D for the results.

Most importantly, neither the personalized negative nor positive interpretation recovery slopes significantly interacted with Time (B=-1.95, SE = 1.00, 95%-CI[-3.90, 0.04], $B=0.15$, SE = 0.89, 95%-CI[-1.58, 1.92], respectively), indicating that the individual speed of recovery slopes for negative or positive interpretations were not related to a change in SAD-complaints from pre- to post-treatment. Similar results were found when controlling for baseline SAD-complaints. See Supplementary Materials C for all statistics. Repeating the analyses for the completers-only, however, showed that the negative, but not the positive interpretation slopes, significantly interacted with Time (negative interpretation slopes: B=-2.82, SE = 0.96, 95%-CI[-4.68, -0.91]), positive interpretation slopes: $B=0.69$, SE = 1.00, 95%-CI[-1.27, 2.67]; see Supplementary Materials C). The interaction between Time and negative interpretation slopes

remained significant when controlling for baseline SAD-complaints in the completers-only group (negative interpretation slopes: $B = 3.09$, SE = 1.19, 95%-CI[0.73, 5.45]). This indicates that the individual speed of recovery slopes for negative interpretations were positively related to pre- to post-treatment changes in SAD-complaints, meaning that individuals who return to baseline faster or display a relative increase in negative interpretations, report more positive change in treatment.

Change during treatment in SAD-complaints. The models predicting change across sessions on the SASCI, showed a significant, negative effect of Time for the negative interpretation slopes model (session 1–2: B=-0.56, SE = 0.20, 95%-CI[-0.95, -0.17]), session 2–3: B=-0.62, SE = 0.23, 95%-CI[-1.06, -0.17], session 3–4: B=-0.82, SE = 0.22, 95%-CI[-1.24, -0.39], session 4–5: B=-1.54, SE = 0.22, 95%-CI [-0.96, -1.11], session 5–6: B=-1.63, SE = 0.21, 95%-CI[-2.06, -1.21]). Similar negative significant effects for Time were found in the positive interpretation slopes model and for the completers-only analyses (see Supplementary Materials C). This indicates that participants reported a decline in their SAD-complaints across sessions and that treatment had an effect on their SAD-complaints.

Importantly, neither the individualized negative nor positive interpretation recovery slopes significantly interacted with Time in the intention-to-treat analyses (negative interpretation slopes: ranging from B=-1.76 to B=-0.59, positive interpretation slopes: ranging from $B = 0.46$ to $B = 2.00$). These results did not change when repeated for completers-only (see Supplementary Materials C for all model results). This indicates that the individual speed of recovery slopes for negative or positive interpretations were not related to a change in SAD-complaints measured during treatment.

Discussion

This study provided a first dynamic perspective on recovery from an interpretation training and its value for predicting treatment outcome among individuals with SAD. We investigated whether a proxy for resilience indexed by return to baseline after a one-session positive interpretation training can be used as a predictor for positive CBT response. Contrary to our expectations, overall no evidence was found for our hypothesis that a slower return to baseline was related to more positive treatment response. Intention-to-treat analyses showed no significant relation between both negative and positive interpretation bias and CBT-response. Similarly, for treatment-completers, most analyses also showed no such relationship. However, we did find tentative evidence in one of the treatment-completers only analyses, that individuals who showed a relative increase in negative interpretations, that is individuals who benefitted less from the CBM-I and showed a faster return to baseline, benefitted more from CBT.

These findings indicate that no preliminary support for our operationalization of individual return to baseline as an index for resilience in response to a standardized, positive disturbance was found when predicting CBT outcome for SAD. Rather, these results show that a faster return to a higher level of negative interpretations may be related to more SAD symptom reduction from pre- to post-treatment. This is not in line with an earlier study showing that readiness to acquire a positive attentional style predicted anxiety decrease after CBT (Clarke et al., 2012). It is important to note that readiness to acquire an attention bias in Clarke et al.'s study was assessed only before and after a complete training, whilst the current study focused on interpretation bias, included only one training session, and incorporated three additional interpretation assessments after the training as we were interested in how long individuals would benefit. It seems likely that differences in cognitive bias, number of assessments, and number of sessions explain the discrepancy in findings.

Possibly, the assessment intervals of interpretation bias on a daily level in the current study were not sensitive enough to capture the likely subtle changes in interpretation bias we were interested in. This was supported by the visualization of the positive interpretation slopes showing that for some participants the mean number of positive interpretations returned to baseline after a day or remained stable across assessments (see Supplementary Materials E). A key next step is to incorporate experience-sampling to assess changes in interpretation bias on a state level to capture possibly subtler changes using more frequent time-intervals (Myin-Germeys et al., 2009). This is a challenge, as currently no such state questionnaire for anxiety-related interpretation bias exists.

Another consideration is that there was large variability in the similarity ratings for positive and negative interpretations across individuals such that not all individuals displayed a strong bias at the start of the training. Although in the current design, the standardized manner of delivering the interpretation training was an advantage, the training session may not have sufficiently disturbed all individuals, as interpretation bias may not be the core symptom for everyone, resulting in insufficient change to occur in other SAD symptoms (Rodebaugh et al., 2018). This leaves room for future studies, as alternative, possibly personalized, disturbances focused on maintenance mechanisms central to that specific individual with SAD may provide more sensitive disturbances. Also, there may have been a mismatch in the index for resilience (i.e., return to baseline) and the outcome (i.e., change in response to CBT). Possibly, predicting

the trajectory of symptom return/relapse during the follow-up period after CBT would be a better match with return to baseline measure derived from the training.

In line with expectations, treatment had a positive effect on both pre- to post-treatment SAD scores as well as session-to-session changes in social anxiety symptoms. These results are positive, considering the short nature of this group-CBT format and the resulting decrease in SAD symptoms. It is important to point out that, in the absence of a control or waitlist condition, it is not possible to rule out other effects, such as the effects of time. Nevertheless, these results are consistent with a large body of research showing that CBT is an effective treatment for SAD (see for a meta-analysis, Carpenter et al., 2018). It is important to note that these results are on the group level, and when that not each and every individual benefited. Herewith, stressing the need for CBT outcome predictors on the individual level.

This study had several strengths, including a novel experimental, standardized approach to index resilience based on an existing validated training (Salemink & van den Hout, 2010), and the use of a sample with diagnosed SAD. However, we also note some limitations, including the relatively high number of analyses conducted in a restricted sample size which leads to the need to be cautious in interpreting our findings, no information on SES or background, the lack of a training or treatment control group, the usage of solely self-report questionnaires to assess treatment outcome and recruitment of non-treatment seekers. The results require replication in a larger, treatment-seeking sample incorporating a control group and the addition of clinician-rated SAD-complaints to assess treatment outcome.

To summarize, this study did not find evidence for the predictive value of slower return to baseline as an index for resilience for treatment prediction in individuals with SAD. Despite the preliminary nature and limitations, these results extend prior work on static predictors and experimental paradigms to modify mechanisms underlying SAD by combining these fields and taking a novel approach to identify resilience indicators. Although this study did not find an indication for the usefulness of individualized slopes for positive treatment response, the results do assist in designing future studies aiming to identify dynamic predictors for treatment outcome in SAD. Herewith providing a key step in moving the field towards capturing the dynamic nature of psychological variables that may predict treatment response over time.

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Declarations

Conflict of interest None.

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