Author’s response to reviews

Title: Cognitive predictors of treatment outcome for exposure therapy: Do changes in self-efficacy, self-focused attention, and estimated social costs predict symptom improvement in social anxiety disorder?

Authors:

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Author’s response to reviews:

Dear editor and reviewers,

Below you will find our responses. I also included the response letter as a supplementary file to make it easier to read, especially the table.

Kind regards

Isabel Kampmann

Response letter:

Technical Comments: **Authors Contributions: Please provide the individual contributions of all authors.

Our response:

As suggested, we report the individual contributions of all authors on page 17, line 405-407. “All authors were involved in the study conceptualization and study design. Data collection and statistical analyses were carried out by IK. The first draft of the manuscript was written by IK and all authors contributed to and approved the final manuscript.”

Editor Comments: In line with the comments of the reviewers, please revise your introductory section to include a more comprehensive overview of the relevant literature, as numerous relevant articles have seemingly not been identified (e.g., Wong, Q. J. J. et al. 2017 Behav Ther,
Our response:

In response to the editor’s comment, we extended the introduction by adding the suggested literature and other relevant literature: “Moreover, in research on cognitive behavioural therapy, higher levels of maladaptive attentional focus predicted slower symptom improvement [8] and a decrease in self-focused attention predicted and mediated reductions in social anxiety (see [9], for a review).”(page 3, line 69-72)

“While some studies found that decreased estimated social cost mediated improvement during cognitive behavioural therapy [18,19,21] and exposure therapy [19], others found contradicting results. More specifically, Calamaras and colleagues [17] concluded from their study, that although change in cost bias mediated treatment outcome of cognitive behavioural therapy, cost bias at midtreatment did not significantly predict treatment outcome. Additionally, decreases in estimated costs did not precede decreases in anxiety levels during exposure therapy [20]. The association between estimated social costs and social anxiety levels might also depend on a temporal component, as suggested by Gregory and colleagues [22] who found cost bias to predict social anxiety levels in early but not in final stages of treatment.” (page 4, line 91-100)

“However, research suggests that working mechanisms can vary across treatment formats. A study by Hedman et al. [23] indicates that although symptom improvement during cognitive therapy was mediated by decreases in self-focused attention in both group and individually administered treatment, decreases in avoidance mediated effects of individual cognitive therapy only, and decreases in anticipatory and post-event processing mediated effects of group therapy only.”(page 5, line 103-108) Reviewer reports: Angela Fang (Reviewer 1): This paper assessed whether certain cognitive maintaining factors of social anxiety disorder (self-focused attention, self-efficacy, and social costs) predicted response to two formats of exposure-based therapy (traditional in-vivo exposure and virtual reality). The authors tested each of the predictors in separate models, as well as in a final model which included significant predictors from the previous analyses, and reported that changes in social costs were the only significant predictor of social anxiety outcome beyond the other factors. I understand this is a secondary analysis from a randomized controlled trial testing the efficacy of virtual reality exposure therapy for social anxiety disorder and consider this novel treatment to be a strength of the study. However, there are a few methodological issues I have concerns about, which I describe below.

There seems to be no valid basis for combining all patients who were randomized to begin with waitlist with the other patients who received an active treatment first. Differences between these groups need to be checked beforehand. The most important confound here is whether waitlisted patients already improved (or even worsened) in their social anxiety symptoms prior to beginning treatment, in which case these patients cannot be treated the same as those who began treatment right away. This confound needs to be explicitly addressed. Our response:

We agree with the reviewer that the two groups can only be pooled if there is no significant difference between the two groups with respect to social anxiety prior to starting treatment. In response to the reviewer’s comment, we now clearly state in the manuscript that we investigated this possible confound before conducting the analyses and did not find a significant change regarding social anxiety scores in the wait-list condition during the waitlist period. Page 10, line
To increase power, data were pooled for participants receiving treatment directly and participants receiving treatment after the wait-list period since there was no significant difference between the two groups prior to starting treatment as reported in Table 3 in Kampmann et al.[25].”

Relatedly, the rationale given for combining patients from both active treatment conditions is due to power concerns (p.10). However, it seems worth clarifying that the purpose of the study was to assess cognitive predictors of pure exposure-based therapies, rather than whether cognitive predictors differentially predict outcomes from these two types of interventions. It is an advantage that treatment condition was included as a moderator in the regression analyses to additionally test whether there were differential effects based on treatment, although this could also be more clearly articulated in the analysis section too. Our response:

In response to the reviewer’s comment, we now describe in the analyses section that we investigated the predictors of treatment response independent of treatment modality and that we controlled for possible differences between VRET and iVET by adding treatment condition as a moderator variable to the regression analyses. “Furthermore, analyses were based on the aggregated sample of the two treatment groups because we aimed to investigate possible cognitive predictors of exposure therapy independent of treatment modality. However, to control for possible differences between the two groups, we included treatment condition as a moderator variable in the analyses.” (page 10, line 260-263)

If patients were assessed before and after the waitlist period, the true test of the specificity of cognitive predictors for impacting social anxiety symptoms during exposure-based treatments and not during the waitlist period, would be the best evidence from these data that cognitive factors predict outcome in exposure therapy. Can this be looked at? Our response:

We agree with the reviewer that investigating differences in the association of changes in predictor variables and social anxiety symptoms between the treatment groups and the waiting list condition could provide interesting information. Given that we did not assess the predictor variables before and after the waitlist period, we could not carry out these analyses.

Did the authors include patients with past experience with CBT (not just within the past year)? If so, is it possible that symptom improvement varied differentially based on past CBT treatment, and thus changes in social costs were more predictive of outcome for patients who had received CBT in the past? Our response:

We assessed CBT treatment in the past year as an exclusion criterion but we did not assess lifetime therapy experience. Therefore, we unfortunately cannot investigate past CBT treatment as a moderator of symptom improvement.

Although reference to the original randomized controlled trial was made in the methods section, it may be worth repeating for ease of interpretation that both exposure therapies performed better than waitlist in reducing social anxiety symptoms. Our response:
As suggested by the reviewer, we now describe the results of the efficacy study in the manuscript:

“A detailed description of the treatment and the analyses of treatment efficacy can be found in Kampmann et al. [25]. The results revealed that both VRET and iVET lead to significant reductions in SAD symptoms when compared to a waiting-list condition, with iVET being superior to VRET.” (page 9, line 217-221)

Internal consistency for each of the cognitive predictor measures should be given based on the current sample, particularly because subscales were often used. Our response:

As requested by the reviewer, we now report the internal consistency for each predictor measure in the material and method section:

“The internal consistency has been reported to be good (Cronbach’s α = .76; [31]) and was good in the present study (Cronbach’s α = .72).” (page 7, line 151-152)

“The internal consistency has been reported in the literature to be high (Cronbach’s α = .82;[13]) with Cronbach’s α = .69 in the current study.” (page 7, line 161-163)

“The estimated costs related to social situations were assessed using the social event subscale of the Social Costs Questionnaire (SCQ; [18]) which is a 20-item self-report questionnaire (10 items on social performance situations and 10 items on social nonperformance situations with Cronbach’s α = .56 and .51, respectively, in the present study) rated on a 9-point Likert scale ranging from 0 (not at all bad) to 8 (extremely bad).” (page 7, line 164-168)

There is relevant literature missing from the introduction. In particular, Hofmann (2000) reported changes in self-focused attention after exposure therapy for social anxiety disorder:


We thank the reviewer for this suggestion and added the findings by Hofmann (2000) to the introduction: “Hofmann [10] showed that exposure therapy, although it does not explicitly target cognitions, can lead to reduced self-focused attention in patients with SAD after treatment.” (page 3, line 72-74)

References were reported somewhat haphazardly in the text. These should be revised to be numbered, in square brackets, in the order in which they are cited in the text, consistent with the format of BMC Psychiatry. Our response:

As recommended, we now report references according to the BMC Psychiatry format. Amanda Morrison (Reviewer 2): The authors report one study in which 60 participants with SAD completed either in vivo or virtual reality exposure therapy. Three types of cognition were assessed before (or at session 3) and after the first six sessions of therapy and change in these cognitions were used to predict post-treatment social anxiety (after controlling for pre-treatment
The cognitions included self-reported self-focused attention, self-efficacy in social situations, and estimated social costs. Although change in each cognition predicted treatment outcome if alone in the model, only changes in estimated social costs predicted treatment outcome above-and-beyond other predictors.

1. The paper would benefit from a sharpening and strengthening of the motivation for the analyses. There are a few issues. The first has to do with the idea of "prediction" which is how the analyses are framed. This seems slightly inaccurate, as the "predictors" are measured in an overlapping time frame as the outcome (although the outcome is post-treatment LSAS, pre-treatment LSAS is controlled for, therefore making the outcome akin to change in LSAS from pre- to post-treatment). If the analyses were framed as "association between early changes in [variables] and treatment outcome" then it would be more accurate. Our response:

In response to the reviewer’s comment we now describe association instead of prediction when referring to the aim and results of our analyses. (e.g. page 2, line 31, 37, 39, page 4, line 75, 81, page 5, line 11, page 12, line 284)

2. The second issue with the motivation for the analyses is that it is unclear why the authors motivate their analyses by referring to tests of mediation (eg, Hofmann et al). Tests of mediation are conceptually and statistically different from what the authors do in the paper, but this is not made clear in the Intro or Discussion. Our response:

As suggested by the reviewer, we now clearly state in the discussion section that we investigated associations while for example Hofmann (2004) tested for mediation and that this was done as a first step to investigate possible cognitions that might function as working mechanisms of exposure therapy which could be investigated using mediation in future research. Page 14, line 342-348: “While Hofmann [19] and Smits et al. [20] used mediation analyses, we investigated associations between the change in cognitions and treatment outcome rather than causal relationships. This was a first step in order to gather information on possible variables that could function as working mechanisms of exposure therapy. As suggested by Cole and Maxwell [38], for mediation analyses, multiple assessment points throughout treatment are necessary to investigate temporal precedence, which was not feasible within this study.”

3. Related to #2, it is unclear why the authors do not test mediation, which seems to be a stronger approach to test what the authors are after. If the authors test mediation, then the current framing of the rationale for the study (ie, as focused on extending prior research to the context of individual (vs group) therapy and to individuals with varied social fears (vs just public speaking fears)) would fit better. If the authors maintain the focus on association/prediction, then it seems the primary rationale for the study should be that this hasn't been examined yet using these variables, in addition to the fact that the therapy is an exposure-only treatment not explicitly targeting cognitive change. Our response:

In response to the reviewer’s comment, we now more clearly describe the focus of the present study: “The aim of the current study was to examine the association between change in SAD-related cognitions and treatment outcome in individually administered exposure therapy (without
any cognitive components) for SAD” (page 5, line 112-114) and discuss the limitations of our analyses in the limitation paragraph of the discussion and recommend mediation analyses for future research.

“A limitation of the present study is the temporal overlap between the assessment of the predictor variables and the outcome measure given that we controlled for pre-treatment social anxiety in the analyses. While Hofmann [19] and Smits et al. [20] used mediation analyses, we investigated associations between the change in cognitions and treatment outcome rather than causal relationships. This was a first step in order to gather information on possible variables that could function as working mechanisms of exposure therapy. As suggested by Cole and Maxwell [38], for mediation analyses, multiple assessment points throughout treatment are necessary to investigate temporal precedence, which was not feasible within this study. Therefore, as a next step, future research should assess the session-to-session change in self-focused attention, self-efficacy, social costs and social anxiety levels within the framework of mediation analyses, to investigate changes in cognitions as a possible working mechanism of exposure therapy.” (page 14, line 340-351)

4. A final note related to framing in the Intro has to do with why the authors looked at change in cognitive variables as a predictor, rather than, for example, baseline cognitive variables as a predictor. It is currently unclear why the authors chose this approach and what it might offer readers (e.g., could there be clinical utility to being able to predict treatment outcome based on degree of change in estimated social costs by mid-treatment?). Our response:

In response to the reviewer’s remark, we added the following sentence to the introduction session in order to illustrate the clinical utility of our research question: “If changes in these cognitions are associated with treatment outcome, these findings might form the base for further research on working mechanisms of exposure therapy. Eventually, this research can help to improve the efficacy of exposure treatments by informing us on which cognitions we need to focus on during therapy and which related changes we need to facilitate.”(page 5, line 119-123)

5. For the regression analyses, when an interaction term is included, all lower order effects involved in the interaction must be included, and these analyses appear to forget to include the effect of treatment. Because of that, both the interaction and the effect of cognitive change in the context of the interaction are not interpretable (and the lack of the treatment term might explain why the cognitive change effects become non-significant when the interaction term is included). As such, I cannot evaluate the results or conclusions related to moderation by treatment type. Our response:

As suggested by the reviewer, we added the effect of treatment to the regression models when entering interaction terms and reported the results in Table 3, accordingly.

Table 2. Individual Predictor and Moderator Analyses (a-c) and Final Model (d) with LSAS-SR as Outcome Measure
a) Estimated social costs

<table>
<thead>
<tr>
<th>Step</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>p</th>
<th>sr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.71</td>
<td>9.24</td>
<td>.938</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSAS-SR pre</td>
<td>0.65</td>
<td>0.13</td>
<td>.56</td>
<td>&lt;.001</td>
<td>.31</td>
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<tr>
<td>Step 2</td>
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<tr>
<td>Constant</td>
<td>18.07</td>
<td>8.88</td>
<td>.042</td>
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<tr>
<td>LSAS-SR pre</td>
<td>0.47</td>
<td>0.12</td>
<td>.40</td>
<td>&lt;.001</td>
<td>.15</td>
</tr>
<tr>
<td>SCQ Δ</td>
<td>-0.41</td>
<td>0.08</td>
<td>-.52</td>
<td>&lt;.001</td>
<td>.24</td>
</tr>
<tr>
<td>Step 3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>31.38</td>
<td>10.54</td>
<td>.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSAS-SR pre</td>
<td>0.47</td>
<td>0.12</td>
<td>.41</td>
<td>&lt;.001</td>
<td>.15</td>
</tr>
<tr>
<td>SCQ Δ</td>
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<td>0.34</td>
<td>-.52</td>
<td>.224</td>
<td>.02</td>
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<tr>
<td>Treatment</td>
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<td>4.59</td>
<td>-.42</td>
<td>.051</td>
<td>.04</td>
</tr>
<tr>
<td>SCQ Δ × treatment</td>
<td>0.03</td>
<td>0.19</td>
<td>.06</td>
<td>.894</td>
<td>.00</td>
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</table>

b) Self-focused attention

<table>
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<th>Step</th>
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<th>SE</th>
<th>β</th>
<th>p</th>
<th>sr2</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.71</td>
<td>9.24</td>
<td>.938</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSAS-SR pre</td>
<td>0.65</td>
<td>0.13</td>
<td>.56</td>
<td>&lt;.001</td>
<td>.31</td>
</tr>
<tr>
<td>Step 2</td>
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</tr>
<tr>
<td>Constant</td>
<td>2.30</td>
<td>8.81</td>
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<tr>
<td>LSAS-SR pre</td>
<td>0.64</td>
<td>0.13</td>
<td>.55</td>
<td>&lt;.001</td>
<td>.30</td>
</tr>
<tr>
<td>FAQ Δ</td>
<td>-1.41</td>
<td>0.70</td>
<td>-.26</td>
<td>.044</td>
<td>.07</td>
</tr>
<tr>
<td>Step 3</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Constant</td>
<td>24.68</td>
<td>10.86</td>
<td>.023</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LSAS-SR pre 0.59 0.13 .51 <.001 .23
FAQ Δ -0.33 1.97 -0.06 .867 .00
Treatment - 4.46 -0.62 .003 .10
FAQ Δ × treatment -0.74 1.40 -0.20 .598 .00

c) Self-efficacy

Step 1

Constant 0.71 9.24 .938
LSAS-SR pre 0.65 0.13 .56 <.001 .31

Step 2

Constant 13.43 9.70 .166
LSAS-SR pre 0.57 0.13 .49 <.001 .23
SESS Δ 0.73 0.24 .34 .003 .11

Step 3

Constant 30.13 12.01 .012
LSAS-SR pre 0.52 0.13 .45 <.001 .16
SESS Δ 0.15 0.85 .07 .857 .00
Treatment - 4.43 -0.59 .004 .09
SESS Δ × treatment 0.33 0.51 .26 .517 .01

d) Final model

Step 1

Constant 0.71 9.24 .938
LSAS-SR pre 0.65 0.13 .56 <.001 .31

Step 2

Constant 16.74 9.15 .068
LSAS-SR pre  |  0.48 |  0.12 |  .41  | <.001 | .15
SCQ Δ      | -0.34 |  0.12 | - .43 |  .006 | .09
FAQ Δ      | -0.59 |  0.68 | - .11 |  .384 | .01
SESS Δ     | -0.02 |  0.31 | - .01 |  .953 | .00
Treatment  | -9.35 |  4.43 | - .43 |  .036 | .04

Note. a) R²=.56; b) R²=.39; c) R²=.43; d) R²=.57;

FAQ = Focus of Attention Questionnaire; LSAS-SR = Liebowitz Social Anxiety Scale-Self Report; SCQ = Social Costs Questionnaire; SESS = Self-Efficacy Scale; Δ = change scores.

Significant p-values (p < .05) are marked in bold.

We also added these results to the results section of the manuscript (p.11, line 270-282): “When including the main effect of treatment condition and the interaction between each predictor and treatment condition, the predictors did not remain significant in Step 3 of the individual predictor models. While the main effects of treatment were significant for self-focused attention (β = .62, p = .003, sr² = .10) and self-efficacy (β = -.59, p = .004, sr² = .09), and approaching significance for estimated social costs (β = -.42, p = .051, sr² = .04), none of the predictors showed a significant interaction with the variable treatment condition. This indicates that treatment condition was associated with treatment outcome but that the associations of social costs, self-focused attention, and self-efficacy with treatment outcome did not vary depending on treatment condition. The results of the multiple regression analysis, including all significant predictors from the initial individual predictor analyses, showed that social costs (β = -.43, p = .006, sr² = .09) and treatment condition (β = -.43, p = .036, sr² = .04) remained significant predictors of outcome on the LSAS-SR.” and examined them in the discussion section (p.12,line 288-297): “The results revealed that, when social costs, self-focused attention, and self-efficacy were separately examined, patients who showed a decrease in estimated social costs during the first six sessions reported a greater decrease of social anxiety symptoms after treatment and decreases in self-focused attention and self-efficacy during treatment were significantly associated with symptom improvement. When treatment condition (VRET and iVET) was part of the separate models, neither of the three predictors was significantly associated with treatment outcome. However, when social costs, self-focused attention, and self-efficacy were combined in one model, not only treatment condition but also social costs were significantly associated with treatment outcome.” and “Although the association of treatment and symptom improvement seems to differ between VRET and iVET, which is in line with the results of Kampmann et al. [25], our results suggest that the association of social costs and symptom improvement seems to be consistent across treatment modalities in exposure-based interventions.” (p.13, line 303-307)

6. The justification for choosing just before Session 7 as Time 2 is unclear. The authors explain that this was chosen because a treatment completer was defined as someone who
completed at least six sessions, but that doesn't seem relevant since someone could have completed two sessions prior to Session 7 and then completed Sessions 7, 8, 9, and 10 and be considered a completer. So, by Session 7, this person would have completed perhaps one or no exposures, whereas a different person might have completed four exposures (Sessions 3-6). It seems more accurate to say that Session 7 was chosen because this marked a certain point in the treatment (it's just past halfway so I'm not sure what mark it would be) or a theoretically or practically important number of exposure sessions. Consistent with the latter option, the authors could decide to allow Time 2 to be individually-varying across participants, e.g., if the cutoff was three exposures, that could be prior to Session 7 for a number of folks or Sessions 8, 9, or 10 for others. At minimum, further explanation of this choice of Time 2 would be helpful. Our response:

We thank the reviewer for this remark and her suggestions but in the present study, the scenario described by the reviewer, was not possible due to the following reasons. Participants were only considered completers when they completed the first six sessions or the first five sessions plus session 10. There are two possible content-related scenarios that were possible for completers (see below). Therefore, completers differed in a maximum of only one exposure session.

Scenario 1:

Session 1: Therapy rationale
Session 2: Exposure hierarchy
Session 3: Exposure
Session 4: Exposure
Session 5: Exposure
Session 6: Exposure

Scenario 2:

Session 1: Therapy rationale
Session 2: Exposure hierarchy
Session 3: Exposure
Session 4: Exposure
Session 5: Exposure
Session 10: Relapse prevention and evaluation of the treatment

We added the following sentence to the manuscript (page 7, line 173-178): “All completers therefore received Session 1 (therapy rational), Session 2 (exposure hierarchy), and then four exposure sessions (Session 3-6, in case they continued treatment) or three exposure sessions (Session 3-5) and a closing session containing relapse prevention and evaluation of the treatment (content of Session 10) in case they were going to stop treatment after six sessions. Therefore, completers could only differ in a maximum of one exposure session.”

7. For Table 2, are the presented intercorrelations of the Time 1 measures? If so, I’m unclear as to the purpose of providing these intercorrelations. It seems the authors may want to rule-out multicollinearity among predictors so they can conduct the multiple regression, but if so, intercorrelations should be between the change scores. Our response:

We agree with the reviewer that former Table 2 did not have any additional value and therefore deleted Table 2 altogether.

8. For the Participants section, it would be helpful to include basic demographics and comorbidities so the reader doesn’t have to refer to another paper. Our response:

As suggested by the reviewer, we now report basic demographics and comorbidities in the participant section (page 6, line 126-132): “Sixty participants (Mage = 36.9 years, age range: 18-65 years, 63.3% women) meeting the diagnostic criteria for a primary diagnosis of SAD [24]) were included in the present study after being recruited via online and newspaper advertisements, and project related websites. Of these participants, 90% reported Dutch as native language, 48.3% high, 46.7% middle, and 5% low education, 60% had a paid employment status, and 50% were married. Furthermore, 11.7% fulfilled the criteria for a comorbid anxiety disorder, 10% for a depressive disorder, and 26.7% for a avoidant personality disorder.”

Minor points

9. There were a few sentences that were difficult to understand and would benefit from refinement. The two that stood out the most were the following:

   a. P 4 unclear sentence: "For cognitive behavioural therapy, changes during treatment regarding self-efficacy in social situations and in the therapy context are associated with treatment outcome"

Our response:

In response to the reviewer’s comment we modified the sentence to the following:
Research on cognitive behavioural therapy indicates that in-treatment changes in self-efficacy in social situations [12,13] and in therapy context [14] are associated with treatment outcome. (page 4, line 80-81)

b. Discussion: second sentence, clarify that change during first 6 sessions in these cognitive variables was used as predictor (it wasn't that these variables themselves were used as predictors)

Our response:

As suggested by the reviewer, we now clearly state that we investigated whether change during the first six sessions of the variables was associated with treatment outcome: “For this purpose, we examined whether change during the first six sessions regarding self-focused attention, self-efficacy in social situations, and estimated social costs were associated with symptom change in individuals with SAD receiving exposure therapy.” (page 12, line 286)

10. Intro P 4: it would help to spell out what the "contradicting results" were since this is central to the paper; why would one think that group format or public speaking anxiety would function differently in terms of predictors (or mediators) than individual therapy or other social fears?

Our response:

In response to the reviewer’s comment, we now clearly describe the contradicting results: “While some studies found that decreased estimated social cost mediated improvement during cognitive behavioural therapy [18,19,21] and exposure therapy [19], others found contradicting results. More specifically, Calamaras and colleagues [17] concluded from their study, that although change in cost bias mediated treatment outcome of cognitive behavioural therapy, cost bias at midtreatment did not significantly predict treatment outcome. Additionally, decreases in estimated costs did not precede decreases in anxiety levels during exposure therapy [20].” (page 4, line 91-97) and the importance of investigating predictors of individual treatment in addition to group treatment: “However, research suggests that working mechanisms can vary across treatment formats. A study by Hedman et al. [23] indicates that although symptom improvement during cognitive therapy was mediated by decreases in self-focused attention in both group and individually administered treatment, decreases in avoidance mediated effects of individual cognitive therapy only, and decreases in anticipatory and post-event processing mediated effects of group therapy only.”(page 5, line 103-108)

11. Throughout the paper, some references are typed out rather than numbered

Our response:

We now report the references in the text using numbers.
12. For the organization of predictors in the Method section, it would be helpful to use parallel structure as the Intro (self-focused attention first, then self-efficacy, then social costs)

Our response:

As suggested by the reviewer, we now report the predictors in the Method section in the following order: self-focused attention first, then self-efficacy, then social costs (page 6, line 148-178)

13. Would be helpful to provide internal reliability coefficients of your measures in your sample.

Our response:

This was also suggested by reviewer 1. Please see page 2 of this response letter for our response.

14. It seems unnecessary to include the final sentence of the Method ("Furthermore, analyses were based on the aggregated sample...") since this is assumed by the fact that there's a moderator of treatment condition in the model.

Our response:

Given that that reviewer 1 recommended to specify the content of this sentence, we choose not to delete this sentence.

15. In the first paragraph of the Discussion and in the Conclusion it seems that it should be emphasized that each variable predicted treatment outcome alone, but that only change in estimated social costs predicted when all three change scores were in the model. Right now, it sounds like the other variables didn't predict at all.

Our response:

In response to the reviewer's comment we added the following sentences to the discussion and conclusion section:

“The results revealed that, when social costs, self-focused attention, and self-efficacy were separately examined, patients who showed a decrease in estimated social costs during the first six sessions reported a greater decrease of social anxiety symptoms after treatment and decreases in self-focused attention and self-efficacy during treatment were significantly associated with symptom improvement. When treatment condition (VRET and iVET) was part of the separate models, neither of the three predictors was significantly associated with treatment outcome. However, when social costs, self-focused attention, and self-efficacy were combined in one
model, not only treatment condition but also social costs were significantly associated with treatment outcome.” (page 12, line 288-297)

“Changes in self-focussed attention and self-efficacy during treatment were not significantly associated with symptom improvement anymore when examined in combination with social costs. This suggests that self-focussed attention and self-efficacy did not predict symptom improvement beyond social costs.” (page 16, line 372-376)

16. Table 3 note - it would be helpful to explain in the table note what the delta symbol stands for. Our response:

As suggested by the reviewer, we added an explanation of the delta symbol to Table 2 (former Table 3): “Δ = change scores.”