

Introduction

Studies highlight that the existence of attention biases (AB) play a major role in the etiology and maintenance of anxiety disorders (Bar-Haim et al., 2007). Therefore, Attention Bias Modification treatment (ABMT) needs to be further established along with a clarification of its mechanism of action. To-date, unlike to the large number of studies supporting the effectiveness of ABM for other anxiety disorders and trait anxiety (see meta-analyses by Linetzky et al., (2015), a smaller number of studies support the effectiveness of ABMT in social anxiety e.g. Amir et al., (2009); Lazarov et al., (2018) and other do not e.g. Carlbring et al., (2012). The mixed results may be due to the limited attention that has been devoted to crucial questions. These questions refer to the mechanism of change in ABMT, and specifically which attentional processes change after intervention e.g. Boettcher et al., (2013), as well as to the processes which moderate effectiveness, e.g. state anxiety (Bögels & Mansell, 2004; Shechner et al., 2012). Lastly, except the studies of Heeren et al., (2012); Lazarov et al., (2017), which measured skin conductance changes after intervention, no other studies measured autonomic changes to an emotional stimuli.

Aims of the present study

This study aims to compare the typical ABMT training away from threat with training towards threat and a placebo condition measuring the effect with different ways including somatic changes. In addition, this study examines state anxiety as a potential manipulation factor that can lead to a more effective intervention.

Method

Sample:

Students meeting inclusion and exclusion criteria: e.g. SAD based on ADIS

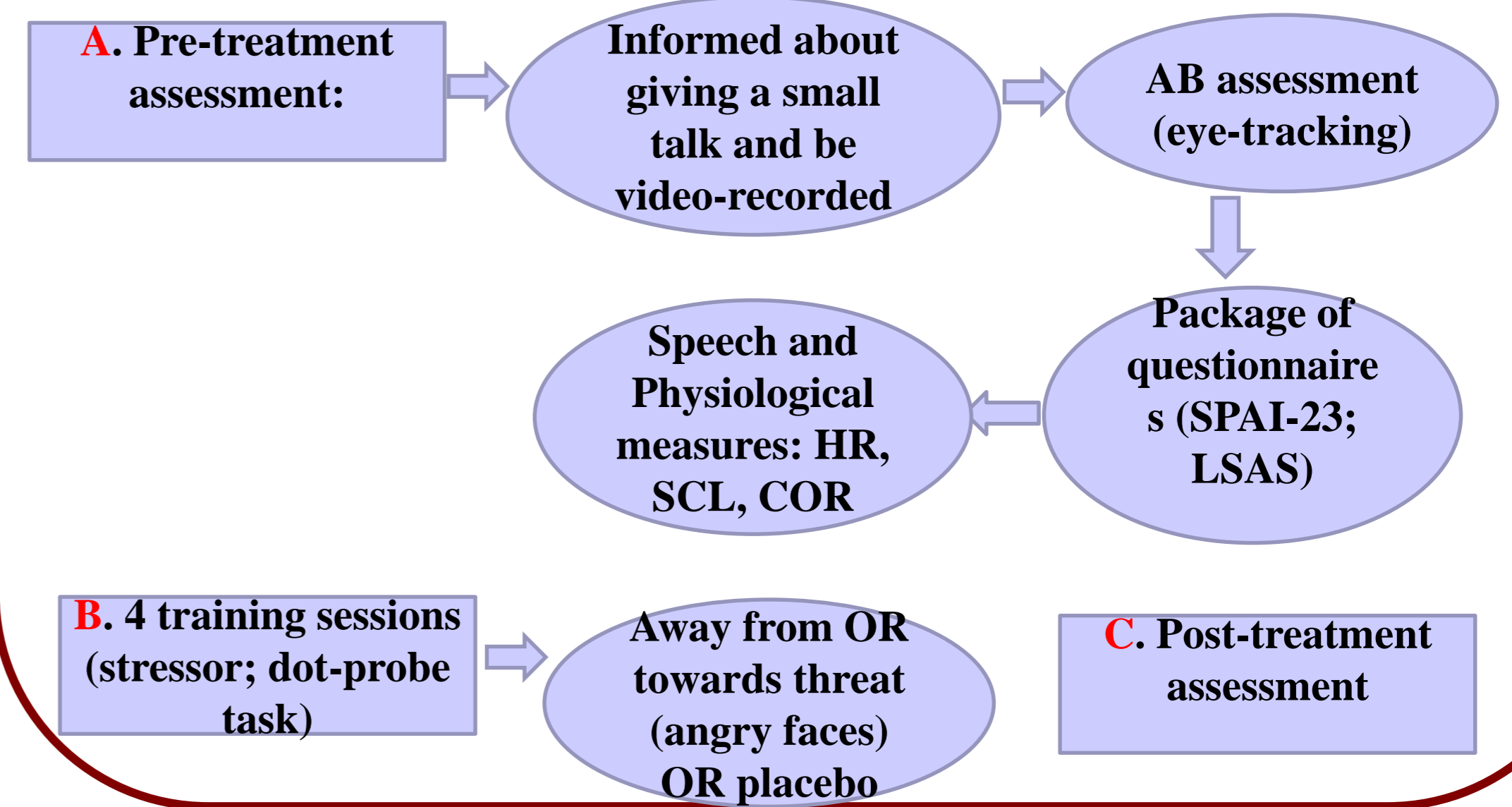
Training away from threat (n=28)

Training towards threat (n=28)

Placebo (n=23)

Procedure:

The present study received approval from the National Bioethics



Results

Repeated measures ANOVA was used to test the effect of training (on attention bias and anxiety symptoms) with the pre and post measures being the repeated factor and Group (2 interventions, placebo) as the between factor.

1. No statistically significant changes:

- for Attentional Bias (AB) in Eye-tracking
- Social anxiety changes in self-report measures
- Behavioural measure changes (report of maximum Subjective Unit of Distress during the speech)
- Somatic symptoms – physiological measures changes of Heart rate and Skin conductance

2. Somatic symptoms – physiological measures changes of Corrugator:

no effect of Time, $F(1, 63) = 2.84, p = 0.09$ and no main effect of Group, $F(2, 63) = 0.82, p = 0.44$.

Statistically significant interaction between Group * Time, $F(2, 63) = 3.10, p = 0.05, \eta^2 = 0.09$.

Corrugator changes: Speech at pre-treatment in comparison with speech at post-treatment

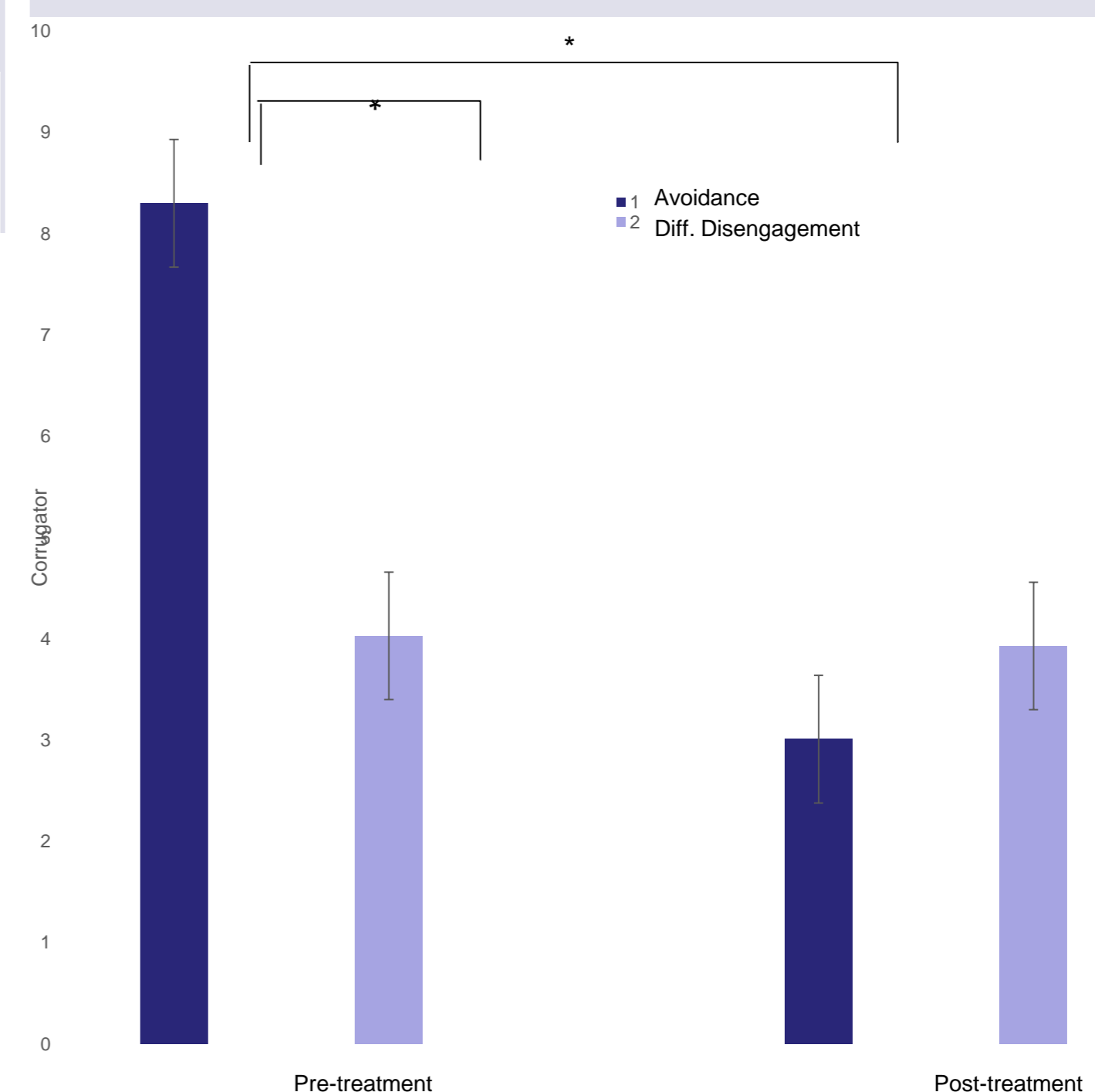
Group	Time	
	Pre-treatment	Post-treatment
Training towards	M (SD) 4.07 (0.67)	M (SD) 3.64 (0.46)
Training away*	5.65 (0.63)	3.64 (0.43)
Placebo	4.16 (0.67)	4.55 (0.46)

*The only statistically significant change:
 $F(1, 63) = 8.92, p < 0.01, \eta^2 = 0.12$

3. Repeated Measures ANOVA examined the intervention's effectiveness on **Corrugator** with the **Group (2 interventions, placebo)** and **type of pre-existing AB (PAB; difficulty of disengagement, avoidance)** at pre-intervention as between subject variables and **Time** as the within subject variable with two levels (pre-treatment and post-treatment).

Statistically significant three-way interaction of Group x PAB x Time, $F(2, 53) = 4.78, p = 0.01, \eta^2 = 0.15$.

Training away from threat: $F(1, 18) = 9.25, p < 0.001, \eta^2 = 0.35$.



Discussion

Results showed no changes of AB and self-reported levels of anxiety at post-treatment. The only exception was the reduction of Corrugator from pre- to post-treatment, which was found only in the training away from threat group. This result shows that training away from threat is related with a reduction of negative affect during a social stressor. Additionally, it seems that training away from threat worked better for avoiders than those with difficulty of disengagement, suggesting that treatment helped attentional avoiders in their perception of the situation (speech), which became less negative. This finding suggests tentatively that changes in experienced valence may be an important outcome for attention bias modification treatments. Understanding what changes as a result of these interventions will better help socially anxious individuals to cope during the stressful situations (Rappee & Heimberg, 1997), especially avoiders who tend to present higher negative emotions during these challenges.