

ATTENTIONAL BIAS AND POST-EVENT RUMINATION IN SOCIAL ANXIETY: AN EYE-TRACKING STUDY OF NATURALISTIC SOCIAL INTERACTIONS

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Introduction And Background

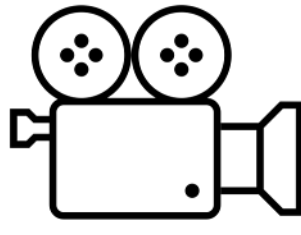
- Social anxiety disorder (SAD)** is characterized by an intense fear of negative evaluation in social situations, often rooted in a negative self-image that leads to anticipation negative evaluations from others.
- Research suggests that socially anxious individuals show **attentional biases** toward negative emotional information and socially threatening stimuli, such as cues signaling disapproval or criticism (Liu et al., 2024).
 - However, findings about the direction of this bias remains inconsistent. Some studies showed vigilance toward threat and others showed avoidant pattern.
 - Most importantly, these biases might be heightened in self-relevant contexts and naturalistic social encounters.
- Post-event rumination (PER)** is a repetitive and negative mental replay of social encounters, a key mechanism maintaining SAD.
- While **attentional bias and post-event rumination** have been independently linked to social anxiety, the **interplay** between them remains underexplored.

Aims & Hypotheses

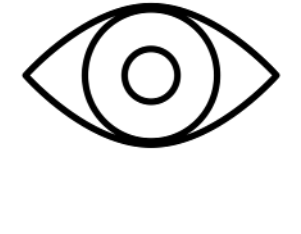
Following a **naturalistic dyadic social interaction**, the current study investigated **attentional biases** during a performance review and evaluation task. In addition, the study also examines the interplay linking post-interaction anxiety with post-event rumination via the indirect association of attentional bias. We hypothesized that:

- Socially anxious** individuals would report **higher state anxiety (right after interaction) and PER** 24 hours after the interaction.
- Socially anxious individuals** would exhibit **attentional bias** toward the evaluative figure while watching the interaction recording **AND more frequent and prolonged fixation on negative self-evaluative analogs**.
- Attentional bias** toward **negative self-evaluations** will have a significant indirect effect on the relationship between post-interaction anxiety and PER 24 hours later, with a **stronger effect in the social anxiety group**.

Methods



Live Interaction: 83 duos (1 SA + 1 Control)



Recording Watching



Performance Evaluation Form (2 pages)

My interaction partner thought I...

1. Looks comfortable during the interaction

2. Demonstrated effective communication skills

3. Listened to my partner very well

4. Was very confident during the interaction

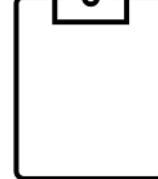
My interaction partner...

1. Looks comfortable during the interaction

2. Demonstrated effective communication skills

3. Listened to me very well

4. Was very confident during the interaction



Post-Event Rumination (24 hours later)

Eye-Tracking Indices

Fixation Count (Frequency)

Area Fixation Count_Page 1

Area Fixation Count_Page 2

Log Transformed Dwell Time (Duration)

Area Dwell Time_Page 1

Area Dwell Time_Page 2

Results

	SA Group (Mean ± SD)	Control Group (Mean ± SD)	t(df)	p	Hedges' g
T ₀ State anxiety	46.31 ± 9.48	33.03 ± 8.80	t(159) = 9.21	<.001	1.45
T ₁ State anxiety	44.88 ± 9.54	30.21 ± 8.95	t(159) = 10.05	<.001	1.58
PHQ-8	10.80 ± 5.50	5.29 ± 4.11	t(148) = 7.22	<.001	1.13
P-E Rumination	28.58 ± 10.28	16.76 ± 4.66	t(112) = 9.41	<.001	1.47

- Socially Anxious (SA)** individuals reported significantly **higher** levels of state anxiety before and after social interaction, depressive symptoms, and PER during the first 24 hours after social interaction

- SA** participants had significantly **more frequent fixations** made across all 3 figures (Self, Experimenter, Interaction partner), while watching their own interaction recording.
- However, the total fixation duration did not differ significantly between group.
- SA** individuals had **more frequent** fixation and spent **longer** time on **negative self-evaluation** analogs, compared to controls.
- Both Groups** focused significantly **more** on **positive** evaluation analogs (Self and Partner), compared to negative analogs.

Conditional Indirect Associations			
Indirect Path	Effect	BootLLCI	BootULCI
Anx (T ₁) → ADT _{s_n} → PER (SA)	0.024	-0.028	0.105
Anx (T ₁) → ADT _{s_n} → PER (Controls)	0.061	0.008	0.126

- Significant indirect associations were found in **Controls**.
 - Results should be interpreted cautiously given modest sample sizes per group and limited temporal separation between state anxiety and attentional bias.

Discussion and Conclusion

- SA** participants frequently shifted their gaze while watching their own interaction recording, suggesting a hypervigilant scanning and impaired sustained attention.
- SA** participants showed a heightened attentional bias toward negative self-evaluations, suggesting a negative self-image and serving a starting point of maladaptive post-event process.
- Both groups preferentially attended to positive evaluation analogs. However, the processing of such positive information between SA and Control participants might be different (Song et al, 2022).
 - SA** participants might need more time and attention to process information that does not match their existing self-image
 - Desire for social acceptance in low to moderate SA individuals
- Post-interaction anxiety predicted PER in both groups, with stronger effects in the **SA** group, highlighting momentary anxiety as a driver of post-event processing in the 1st 24 hours.
- Future study should focus on replication with a longitudinal design.
 - And consider broader and later stage cognitive biases may play a more central role in PER, instead of attentional bias only.

References

- Liu, C., Elhai, J.D., Montag, C. et al. Social anxiety and attentional bias to negative emotional information: the relationship and intervention. *BMC Psychiatry* 24, 508 (2024).
- Song, S., Zhao, S., Gao, Z., Lu, M., Zhang, M., Gao, S., & Zheng, Y. (2022). Influence of affective verbal context on emotional facial expression perception of social anxiety. *International Journal of Psychophysiology*, 181, 141–149.