INTRODUCTION

Individuals high in social anxiety (HSA) experience biased processing of emotional information. More specifically, they perceive negative facial expressions as more threatening than individuals low in social anxiety (LSA) (Coles, Heimberg, & Schofield, 2008). It is maintained that this biased perception is rooted in fear of negative judgment from others, and thus results in hypervigilency to negative expressions. In order to further investigate the mechanisms behind this hypervigilency, we propose a novel approach to quantify biases in the emotional processing of faces through the technique of face adaptation. Adapting to a given feature or dimension of a face can alter the perceptual experience of the face. For example, adapting to an unambiguously female face will bias one’s perception of an androgynous face to be more masculine (reviewed in Webster & MacLeod, 2011). Due to biases in the perception of emotion, is the basic mechanism of adaptation also biased in individuals with high social anxiety?

In this study, (1) we investigate baseline biases in judging the emotional content of faces, (2) we quantify the magnitude of the adaptation to the emotional content of faces, happy and angry, and (3) measure reaction time differences of judgments to emotional faces across individuals with high and low social anxiety.

METHODS: FACE ADAPTATION

Participants viewed a series of morphed faces along an emotional continuum (happy to neutral to angry), and rated faces as happy or angry using a two-alternative forced choice button-press paradigm. Based on these responses, we established each participant’s baseline point of subjective equality (PSE), where they perceive the face as equally happy and angry. Then participants were adapted to a series of either 100% happy or 100% angry faces. Following adaptation, participants viewed and rated the same morphed faces and we quantified the change in PSE.

Stimuli

Face stimuli were selected from the NonStim database (Tottenham et al., 2009). Adaptation included 30 unique faces (15 female) with either 100% happy or angry emotion. Probe images included a subset of the adaptation faces, 8 unique faces (4 female) morphed using Morphm, along an emotional continuum of angry to neutral to happy, including 80%, 40%, 20% 10% or of a given emotion.

Participants

43 participants (24 HSA, 19 LSA) participated in this study. Participants were screened into LSA and HSA groups based on the Brief Fear of Evaluation Scale, Straightforward (Rabbie et al., 2004, Weeks et al., 2005). All participants were screened with a brief interview to confirm their group placement. Participants with a Depression and Anxiety Stress Scales (Lovibond & Lovibond, 1995) score >77 were excluded.

ANALYSIS: FIT A PSYCHOMETRIC FUNCTION & DETERMINE PSE

PSE at baseline is a 5% happy. After adaptation, the same morph appears 21% happy. PSE at baseline is a 5% angry. After adaptation, the same morph appears 21% angry.

CONCLUSIONS

1) Baseline: Individuals with HSA show no difference in PSE compared to individuals with LSA, contrary to what has been stated in the literature. However, differences in latency between groups were obtained. HSA tend to show slower latencies to 100% angry faces compared to LSA, suggesting hypervigilency to threatening emotion. Conversely, LSA tend to show faster latencies to 100% happy faces compared to LSA.

2) Post-adaptation to angry faces: In support of our hypothesis, individuals with HSA tend to show weaker adaptation to angry faces compared to LSA. Also, HSA tend to show increased latencies to 100% angry faces compared to LSA, which shows decreased latencies possibly due to a reduced negative bias. Interestingly, HSA show similar decreased latencies to 100% happy faces.

3) Post-adaptation to happy faces: Interestingly, individuals with HSA tend to show stronger adaptation to happy faces compared to individuals with LSA. Also, HSA tend to show larger decreases in latencies to 100% happy faces compared to LSA, possibly due to positive social priming reducing the salience of angry probe. Interestingly, HSA show increased latencies to 100% happy faces.

4) Implications and Limitations: Our research provides insight into potential perceptual biases contributing to high social anxiety. Using novel methods to investigate possible factors contributing to social anxiety may lead insight into future treatments. Our study is limited by potential response bias, and it remains to be seen how gender correlates with these measures.

REFERENCES


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