

Attribution of emotional state of mind modulates the size of facial expression aftereffects

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INTRODUCTION

- When we perceive the emotional facial expressions of other people, we not only process their facial features, but also (automatically) engage in mind and emotion reading [1].
- These top-down mentalising processes may in turn affect the perception of social stimuli [2,3,4].
- We investigated whether the magnitude of adaptation aftereffects to happy and angry facial expressions is influenced by the knowledge that the agent genuinely expressed the emotion, or faked it.
- We further investigated whether the duration of adaptation influences the effect that the top-down mentalising may have on the adaptation aftereffects.

METHODS

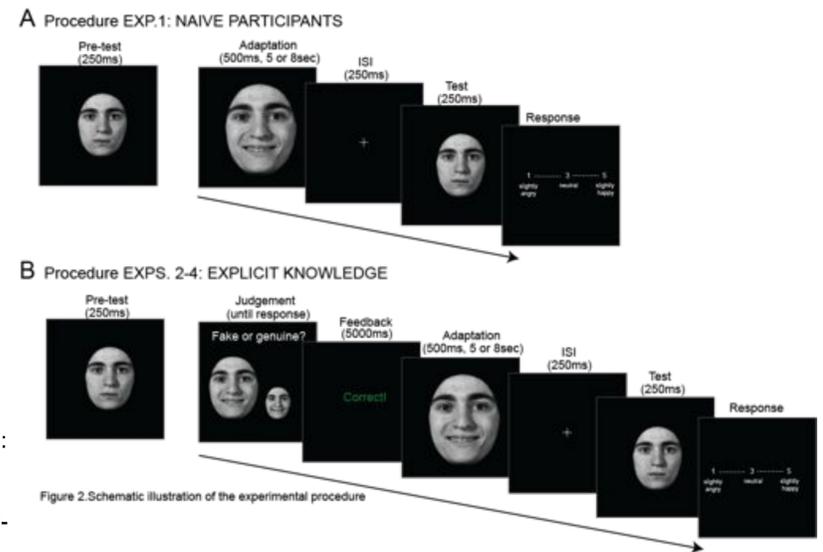
Prior to the experiments, the perceived intensities of the genuine expressions were matched with those of the faked expressions by independent observers (n=25).

EXPERIMENT 1: NAIVE PARTICIPANTS

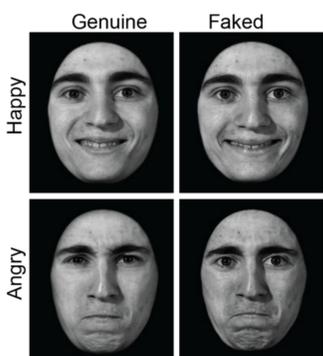
- Participants (n=22) completed a standard adaptation procedure (panel A). They were NOT told at the start of the experiment that some expressions were 'faked'.

EXPERIMENTS 2,3,4: PARTICIPANTS WITH EXPLICIT KNOWLEDGE

- On each trial participants (Exp.2: n=20, 5s adaptation; Exp.3: n=21, 500ms adaptation; Exp.4: n=20, 8s adaptation) first judged whether the emotion in the presented stimulus was faked or genuine (made easier by comparing it with a small-sized example of the 'opposite'), and received feedback. Next, they completed a standard adaptation procedure.



STIMULI



- Two male and two female professional actors were photographed when portraying genuine and faked expressions of happiness and anger.
- For genuine expressions actors underwent Stanislavsky [5] mood induction; for faked expressions they were trained to relax the muscles around the eyes and pose the expression.

RESULTS SUMMARY

EXPERIMENT 1: Naive participants (5 sec adaptation)

- Adaptation to both genuine and faked expressions resulted in adaptation aftereffects. The 'genuineness' of the facial expressions did NOT influence the magnitude of the aftereffects.

EXPERIMENT 2: With explicit knowledge (5 sec adaptation)

- The genuineness of the facial expressions influenced the magnitude of the adaptation aftereffects; aftereffects were more pronounced following adaptation to genuine expressions than faked expressions.

EXPERIMENT 3: With explicit knowledge (500 ms adaptation)

- The genuineness of the facial expressions influenced the magnitude of the adaptation aftereffects; aftereffects were more pronounced following adaptation to genuine expressions than faked expressions.

EXPERIMENT 4: With explicit knowledge (8 sec adaptation)

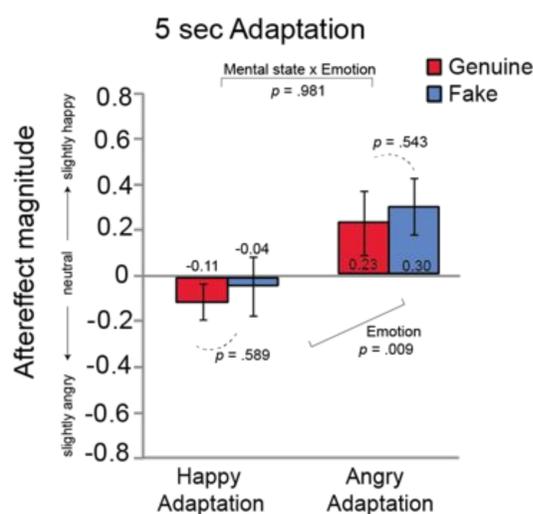
- The genuineness of the facial expressions did NOT influence the magnitude of the adaptation aftereffects.

DISCUSSION

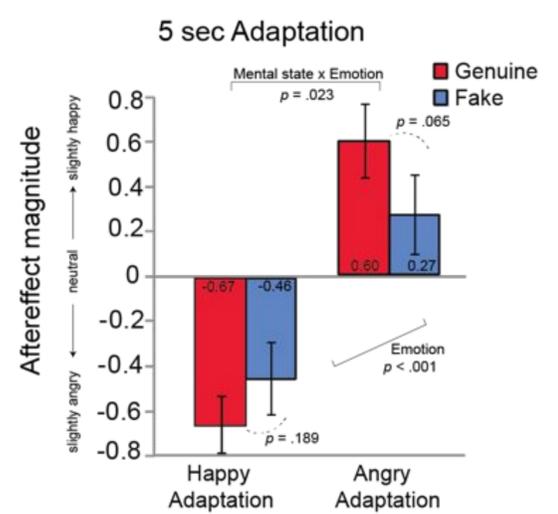
- The present study suggested that adaptation to facial expressions can be modulated top-down by Theory of Mind (ToM) processes.
- Explicit knowledge regarding the genuineness of the observed facial expression (genuine versus faked emotion) significantly affected the magnitude of the adaptation aftereffects following short (500ms) to mid-long (5 sec.) adaptation durations.
- When participants were *not* told, prior to the experiment, that some of the emotional expressions they will see were faked (Exp. 1), then the magnitude of their emotional adaptation aftereffects did not differ between the genuine and faked expressions. This suggests that a possible difference in intensity between genuine and faked expressions (in case it had not been completely removed by the intensity matching procedure) did not play a role.
- During longer adaptation (Exp. 4; 8 s) the 'advantage' of genuineness disappeared. This suggest that following longer exposure, the effects of the top-down, mind-reading processes that modulate the adaptation aftereffects 'wear off' and bottom-up perceptual processes take over.
- Our findings support the model of social perception [4] suggesting a bidirectional relationship between sensory processing and ToM, in which the perception of other's physical characteristics cannot be divorced from the processing of their mental states.

RESULTS

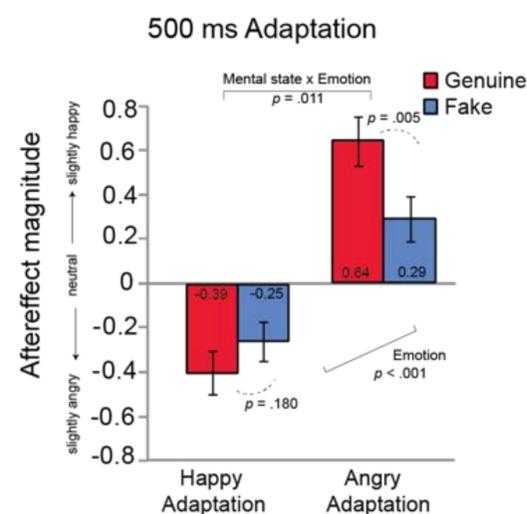
EXPERIMENT 1: NAIVE PARTICIPANTS



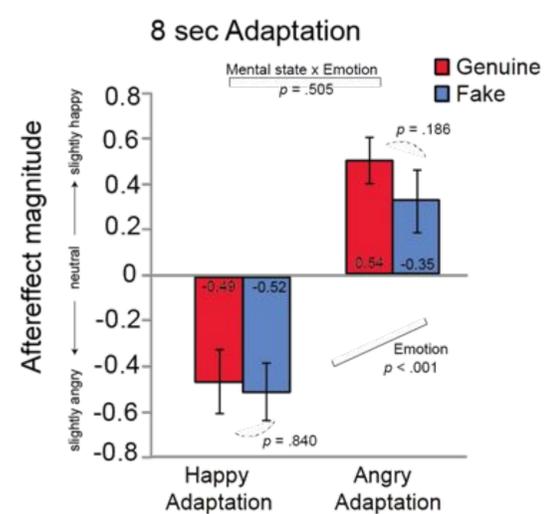
EXPERIMENT 2: EXPLICIT KNOWLEDGE



EXPERIMENT 3: EXPLICIT KNOWLEDGE



EXPERIMENT 4: EXPLICIT KNOWLEDGE



ACKNOWLEDGEMENTS



CONTACT



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