INTRODUCTION

In normal adults, the startle eyeblink response is larger during negative emotional states (e.g., fear, anxiety) compared to pleasant emotional states (Bradley, 2000; Vrana et al., 1988). This phenomenon, known as affective modulation of the startle reflex (AMSR), has become a valuable tool for measuring emotional and physiological reactivity in normal, psychiatric, and neurologically impaired individuals.

METHODS

Case: 34-year-old woman with a 10 yr history of intractable OCD
- Psychiatric history described in Okun et al., 2004; normal neurologic exam; normal MRI
- Fear of contamination by bodily fluids, especially blood
- Avoided humans and objects perceived as contaminated
- Repeatedly performed complex cleaning rituals
- Unresponsive to multiple pharmaceutical agents and CBT
- Hamilton Depression Scale 17-item survey score = 12, mildly elevated; Met DSM-IV criteria for major depression
- Yale-Brown Obsessive Compulsive Scale = 38/40, extremely severe
- Approximately 6 months prior to the evaluation, underwent Deep Brain Stimulation (DBS) surgery for treatment of her OCD
  - Leads implanted bilaterally in the anterior limbs of the internal capsule
  - Motivational or valence marker
  - Primed under fear, anxiety, aversion
  - Inhibited during pleasant state
  - High arousal important

SAMPLE TRIAL

Patient tested across 3 sessions. During each trial, a picture was shown for 6 seconds, during which time a 95 db white noise was delivered via headphones to elicit a startle eyeblink. The magnitude of the startle response was recorded for each eye via electrodes over the orbiculans oculi muscles; these signals were amplified (gain = 30,000) and integrated (200 ms time constant). All measures were obtained on a trial-by-trial basis. Subjective ratings were also obtained.

Emotion Pictures

- 3 sets of standardized emotional pictures from the IAPS
- Each set consisted of 9 Pleasant, 9 Neutral, & 9 Unpleasant Pictures (27/set)

RESULTS

Typical aversion enhancement of startle: Unpleasant > Pleasant

Greatest startle reactivity to blood contamination

CONCLUSIONS

Our findings suggest that OCD patients with contamination preoccupations may show greatest startle reactivity to content specific to their contamination.

These findings are consistent with a recent fMRI study showing a similar pattern of activation for threat pictures comparing controls to OCD patients with contamination preoccupations, but a different pattern of activation for disgust pictures (greater activation for disgust pictures in the right insula, inferior frontal region, and parahippocampal region in OCD; Shapira et al., 2003).

The case study raises the possibility of using AMSR to evaluate treatment response.

Future research should evaluate emotional reactivity in treatment naïve OCD patients (CBT, Medication, DBS) and longitudinally following treatment.

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