Effects of Individual Differences in Disgust Sensitivity on Responses to Taboo Speech

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Introduction

- **Disgust has been cited as one of the core dimensions guiding the semantics of taboo speech** (Jay, 1999), corroborated by prior research revealing that words denoting body parts, disease, and body acts are consistently perceived as among the most taboo (Reilly et al. 2020).
- **Disgust is tightly linked with physiological arousal**, with highly disgust-sensitive individuals demonstrating an increased arousal response (Rohrmann et al. 2008, Rohrmann et al. 2009)
- Here, we use the Disgust Scale-Revised as a measure of **individual, context-dependent disgust sensitivity** as well as pupil diameter as an index of arousal to examine **how individual differences in disgust sensitivity modulate the arousal response to taboo speech**.

Methods

Participants

• 31 neurotypical adults (*M* = 24.63, 10m/21f)

Materials

• Disgust Scale-Revised (see example items)
• Stimuli for the taboo reading task consisted of 60 taboo and 90 non-taboo words, matched on length in letters as well as concreteness and frequency

Procedure

• After completing the DS-R, participants performed a read-aloud task in which 30 taboo and 30 non-taboo words appearing in green font served as targets to be read, with participants instructed to remain silent during presentation of remaining items, presented in black font. During the reading task, pupil data was continuously recorded at a sampling rate of 1000 Hz.

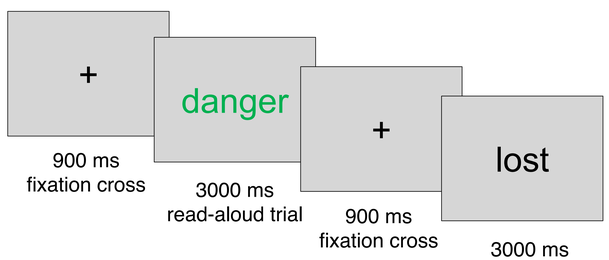

Figure 1. Trial structure

Examples of items from DS-R

If I see someone vomit, it makes me sick to my stomach. (*Core*)

It would bother me tremendously to touch a dead body. (*Animal Reminder*)

I never let any part of my body touch the toilet seat in a public restroom. (*Contamination-Based*)

Results

Pupil Data Processing

Preprocessing included linear interpolation across eyeblinks, bandpass filtering, and correction for abnormally rapid pupil dilation, and smoothing.

Pupil Measures

Tonic Pupil Size reflects the sustained component of the pupil response. The mean of the 3000ms post-stimulus onset period of uncorrected pupil data across all trials.

Evoked Pupil Response reflects the stimulus-evoked component of the pupil response. The maximum value of the 3000ms period of data following subtractive correction for a 500ms baseline period preceding stimulus onset for taboo trials only.

Tonic Pupil Size

Participants with high levels of disgust sensitivity demonstrated significantly higher tonic pupil amplitudes than those with low disgust sensitivity, $t(26.57) = 2.25$, $p < .05$

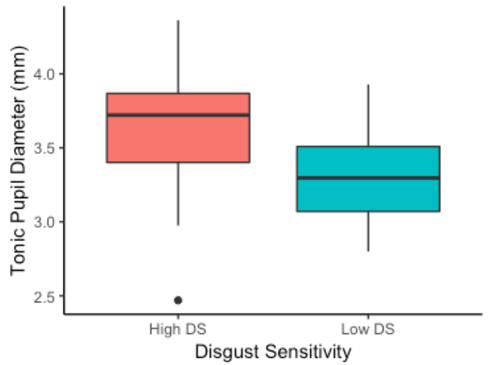

Figure 2. Tonic pupil diameters by level of disgust sensitivity

Disgust Sensitivity, Tonic Pupil Size, and Evoked Pupil Response

The effect of tonic pupil diameter on the magnitude of participants' evoked pupil responses on trials when taboo items were viewed significantly depended on level of disgust sensitivity, $R^2 = 0.42$, $F(3,27) = 8.32$, $p < .05$

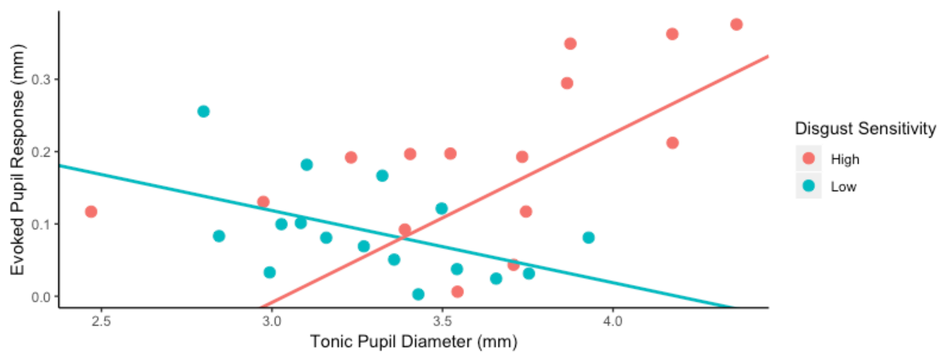

Figure 3. Interaction plot showing effect of tonic pupil diameter on evoked pupil response at high and low disgust sensitivity

Conclusions

These preliminary data indicate that disgust sensitivity modulates the tonic, or sustained, pupil response to taboo speech. Participants with a high level of disgust sensitivity exhibit higher-magnitude evoked responses to taboo words at higher tonic pupil diameters, while participants with low disgust sensitivity exhibit the opposite pattern.

Based on prior work demonstrating that the evoked pupil response scales linearly when tonic pupil size is modulated by light (Reilly et al., 2019), these initial analyses indicate that more investigation is required to discover whether the magnitude of an evoked response scales differently when tonic pupil size is modulated by disgust-induced arousal.

Disgust here is treated as a homogenous construct, but the DS-R is comprised of three subscales that measure core disgust (aversion to general offensiveness and the treat of disease), animal reminder disgust (aversion to the animal nature of humans), and contamination-based disgust (aversion to the threat of transmission of contagions). Future work could examine these dimensions independently, as some may prove more relevant to the semantics of taboo speech.

Additional measures not presented here, including religiosity and self-reported use of profanity, also correlated with participants' disgust sensitivity, indicating a more complex picture of how individual differences affect responses to taboo speech.

References

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