



You Still Sound Mad at Me...

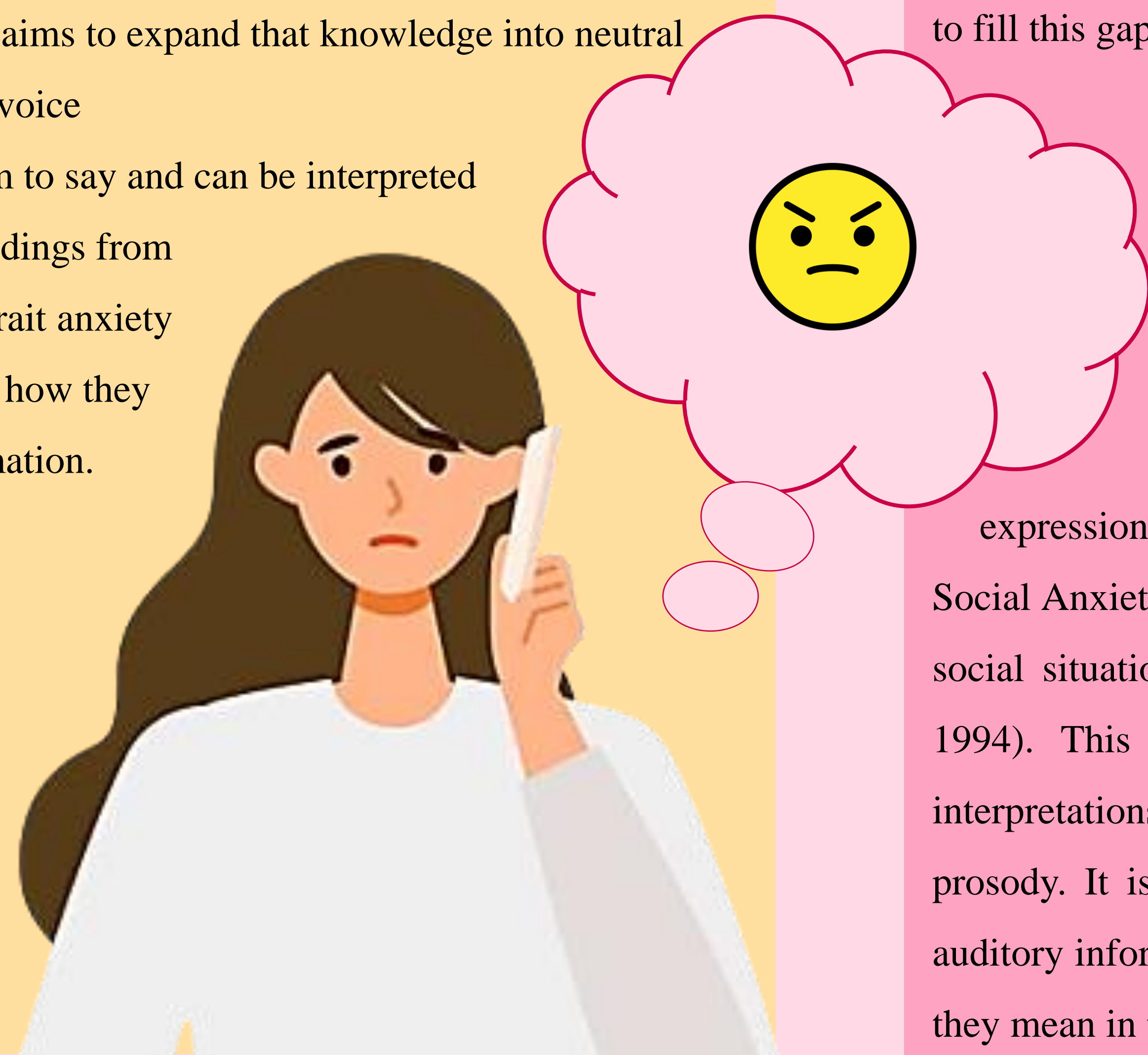
Affects of Trait Anxiety on Interpretation of Prosody



Jillian Kuusela; Faculty Mentor Dr. Michael Kaschak: Psychology

Abstract

Are you mad at me? Is a question you may hear a lot from your more anxious friends. It may feel like the slightest change can worry some people high in trait anxiety. There are many studies that attribute anxiety disorders to a likelihood to interpret neutral facial expressions or written words (like text messages) as threatening or negative. This study aims to expand that knowledge into neutral prosody, or tone, of voice. Tone of voice can convey a lot of what people aim to say and can be interpreted differently by different people. Findings from this study can help people high in trait anxiety because they can be more aware of how they are processing language and information. It can also help to dissipate stigma surrounding anxiety, because this interpretational bias may happen at an unconscious level.



Introduction

Current knowledge of interpretational bias in trait anxiety has shown that people with higher anxiety interpret neutral faces as more threatening than people with lower anxiety. These findings have not been extended to the interpretation of other stimuli, such as the prosodic aspects of language. This experiment is meant to fill this gap in the literature.

The main hypothesis in this paper is that participants with trait anxiety will respond to neutral, or ambiguous auditory stimuli as threatening prosody of language. This exact phenomenon is not answered in previous literature. However, many studies have discussed the effects of anxiety on speech processing and processing of neutral stimuli. It has been found that neutral facial expressions are much more likely to be interpreted as negative for people with Social Anxiety Disorder (SAD), an anxiety disorder characterized by worry about social situations and fear of being negatively judged by others (Winton et al 1994). This present study aims to expand previous findings on negative interpretations of neutral facial expressions, to negative interpretation of neutral prosody. It is meaningful to expand this research to auditory stimuli because auditory information is important in deciphering social cues. People convey what they mean in their words and how they say them (Kotz & Paulmann 2011).

Discussion

This study is still in the preliminary stages, so there are no definitive results to be shared. However, the possible uses of the results of this study, as well as possible setbacks, can be discussed.

Implications

Examining the extent to which people with trait anxiety will respond to neutral tone as threatening could provide a deeper understanding for the unconscious worries that plague those diagnosed with anxiety. Anxiety disorders are the largest category of mental illnesses, and often considered a disability; if anxiety disorders aren't treated properly, they can lead to the onset of other conditions, like depression (Craske et al, 2017). Therefore, it is imperative that anxiety disorders are well understood in order to aid in treatment. Many challenges associated with anxiety can also come from stigma, defined as attributing characteristics that discredit and taint a person (Wood et al 2014). Providing better comprehension of how anxiety can truly affect perception of stimuli, specifically neutral stimuli, can aid in dissipating negative stigma.

Possible Setbacks

Due to the findings of Miller et al's study in 2010 about perceiving threat, it is plausible that participants will interpret more threat in the voice of the opposite sex. The study found that when perceiving an "out-group", or a person that is not the same race or sex as you, people will find it to be more threatening. Because this study uses both male and female voices, it is possible that female participants will interpret the male audio as more threatening, and vice versa.

Methods

100 participants will complete the Qualtrics survey. The survey will include some demographic questions, different anxiety assessment tools, examples of neutral and non-neutral written sentences, and neutral and non-neutral audio clips.

State Trait Inventory Assessment (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983): Consists of 21 questions answered on a four-choice Likert scale, (Almost Never-Sometimes-Often-Almost Always).

Behavioral Inhibition/Avoidance Scale (Carver & White, 1994): Consists of 24 questions on a different four-point Likert Scale (very true for me-somewhat true for me-somewhat false for me-very false for me).

PHQ 9 (Kroenke & Spitzer, 2002): 9 questions again utilizing a Likert scale (Not at all-Several days-More than half the days-Nearly every day). Used to assess depression levels.

Written Neutral Sentences (Ben-David et al, 2011): Sentences pulled from a paper emphasizing the importance of having a baseline of written language for interpreting emotional expression in spoken word. It is also necessary to have a set of sentences that are linguistically associable and a lexical example of ambiguous meaning in order to test for interpretation of emotion in spoken language (Ben-David et al, 2011); (Simpson 1984).

Audio files from The Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS) (Livingstone & Russo, 2018): This database includes the voices of 24 actors, 12male and 12 female, all with a Northern American accent. The available sentences contain the emotions: calm, happy, sad, angry, fearful, surprise, and disgust. However, for the sake of time in this experiment it has been decided to narrow down the use to only neutral, happy, sad, angry, and fearful.

CREMA-D: Crowd-sourced Emotional Multimodal Actors Dataset (Cao et al, 2014). This database contains sentences also in different emotional categories, utilizing only neutral, happy, sad, and fearful for the consolidation of this experiment.



References

Ben-David BM, van Lieshout PH, Leszcz T. A resource of validated affective and neutral sentences to assess identification of emotion in spoken language after a brain injury. *Brain Inj.* 2011;25(2):206-20. doi: 10.3109/02699052.2010.536197.

Cao H, Cooper DG, Keutmann MK, Gur RC, Nenkova A, Verma R. CREMA-D: Crowd-sourced Emotional Multimodal Actors Dataset. *IEEE Trans Affect Comput.* 2014 Oct-Dec;5(4):377-390. doi: 10.1109/TAFFC.2014.2336244. PMID: 25653738; PMCID: PMC4313618.

Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology*, 67, 319-333.

Craske, M. G., Stein, M. B., Eley, T. C., Milad, M. R., Holmes, A., Rapee, R. M., et al. (2017). Anxiety disorders (primer). *Nature Reviews: Disease Primers*, 3(1) doi: <https://doi.org/10.1038/nrdp.2017.24>

Kotz, S.A. and Paulmann, S. (2011). Emotion, Language, and the Brain. *Language and Linguistics Compass*, 5: 108-125. <https://doi.org/10.1111/j.1749-818X.2010.00267.x>

Kroenke, K. & Spitzer, R.L. (2002). The PHQ-9: A new depression and diagnostic severity measure. *Psychiatric Annals*, 32, 509-521.

Livingstone, S. R., & Russo, F. A. (2018). The Ryerson Audio-Visual Database of Emotional Speech and Song (RAVDESS): A dynamic, multimodal set of facial and vocal expressions in North American English. *PLoS ONE*, 13(5), Article e0196391. <https://doi.org/10.1371/journal.pone.0196391>

Miller, S. L., Maner, J. K., & Becker, D. V. (2010). Self-protective biases in group categorization: Threat cues shape the psychological boundary between "us" and "them". *Journal of Personality and Social Psychology*, 99(1), 62-77. <https://doi.org/10.1037/a0018086>

Simpson, G.B. (1984). Lexical ambiguity and its role in models of word recognition. *Psychological Bulletin*, 96, 316-340.

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press

Wood L., Birtel M., Alsawy S., Pyle M., Morrison A. Public perceptions of stigma towards people with schizophrenia, depression, and anxiety. *Psychiatry Res.* 2014 Dec 15;220(1-2):604-8. doi: 10.1016/j.psychres.2014.07.012.