

Low-level acoustic feature perception differs across affective prosody

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Introduction

Affective prosody conveys emotional information about the speaker through e.g., stress, intonation, and rhythm. Emotion recognition can be predicted by acoustic features (Banse & Scherer, 1996).

Reduced accuracy in emotion perception is associated with Autism Spectrum Disorder (ASD) (Rosenblau et al., 2017).

Research Question: Does low-level auditory feature perception differ across emotional prosodies and vary with socio-cognitive functioning?

Aims

1. Identify differences in pitch and loudness perception across three emotional states: happy, angry, and neutral.
2. Explore the relationship between pitch and loudness sensitivity and socially relevant psychopathology traits in a typical population.

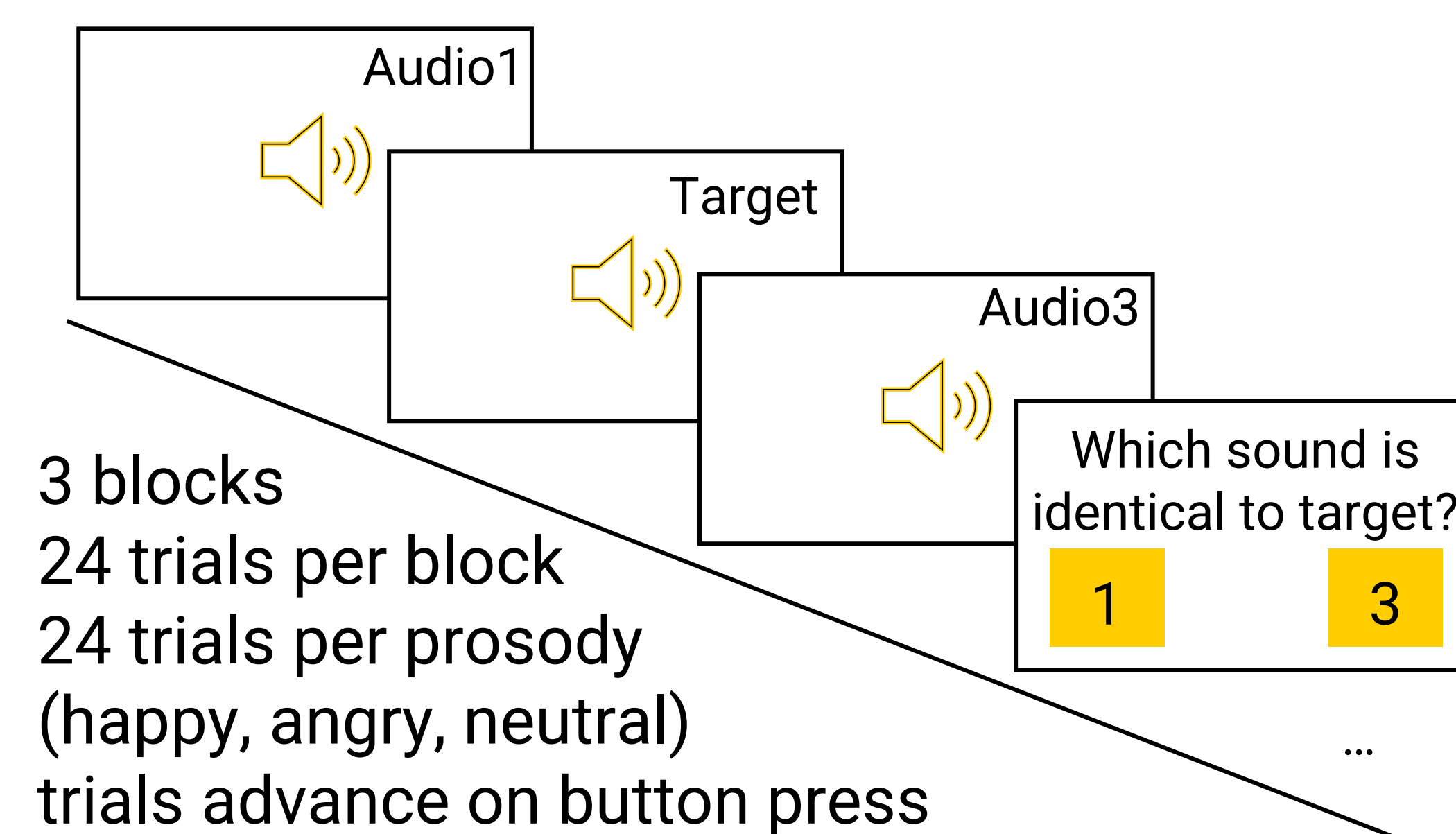
Methods

Stimuli: Semantically neutral sentences in happy, angry, and neutral prosody from the Emotional Speech Database and the Emotional Voices Database (2 – 4 seconds duration)

E.g., “Suppose I take grandmother a fresh vegetable.”

Task: Identify audio (1 or 3) similar to target via button press

Auditory Modulation: Loudness (3.5% louder/softer) and pitch (via time stretch; 3.5% shorter/longer) modulations

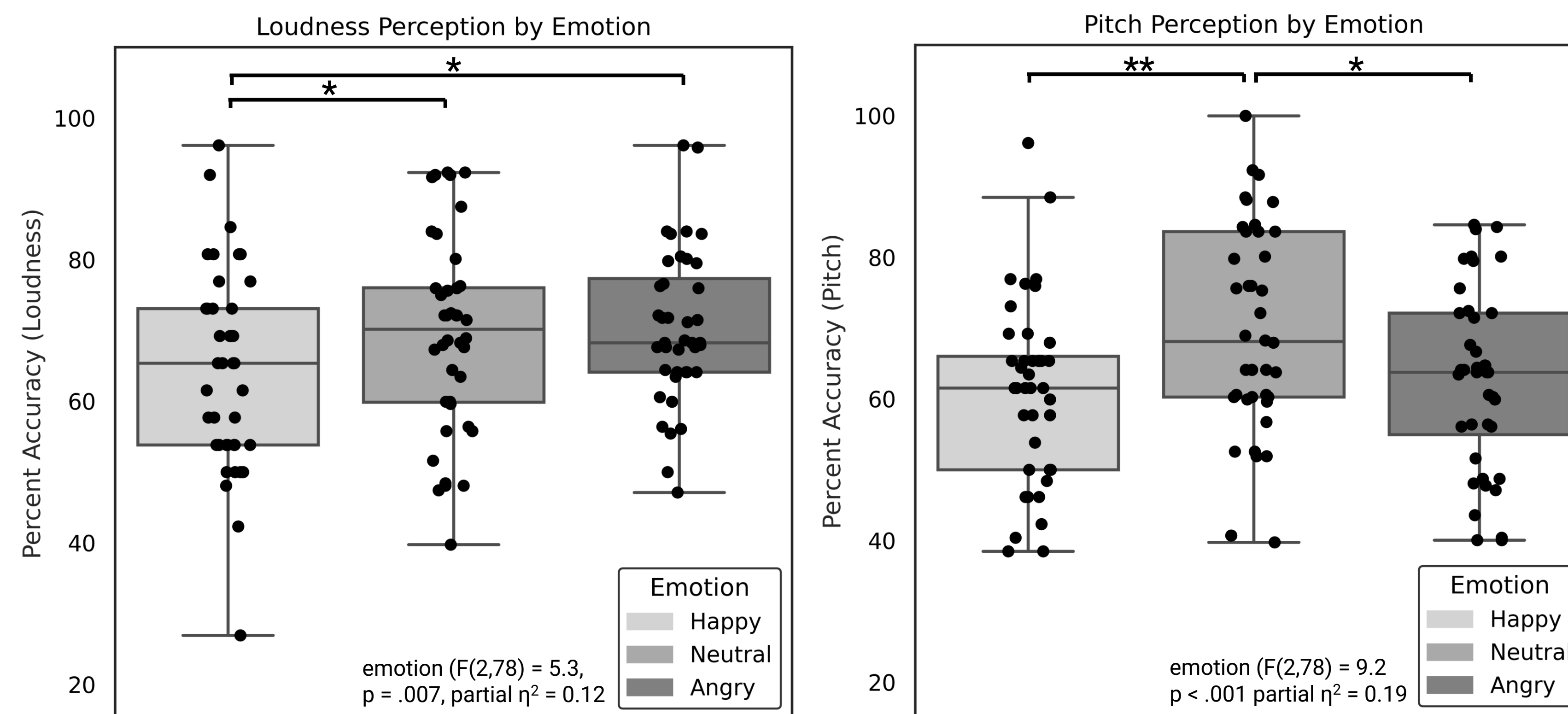


Participant Demographics

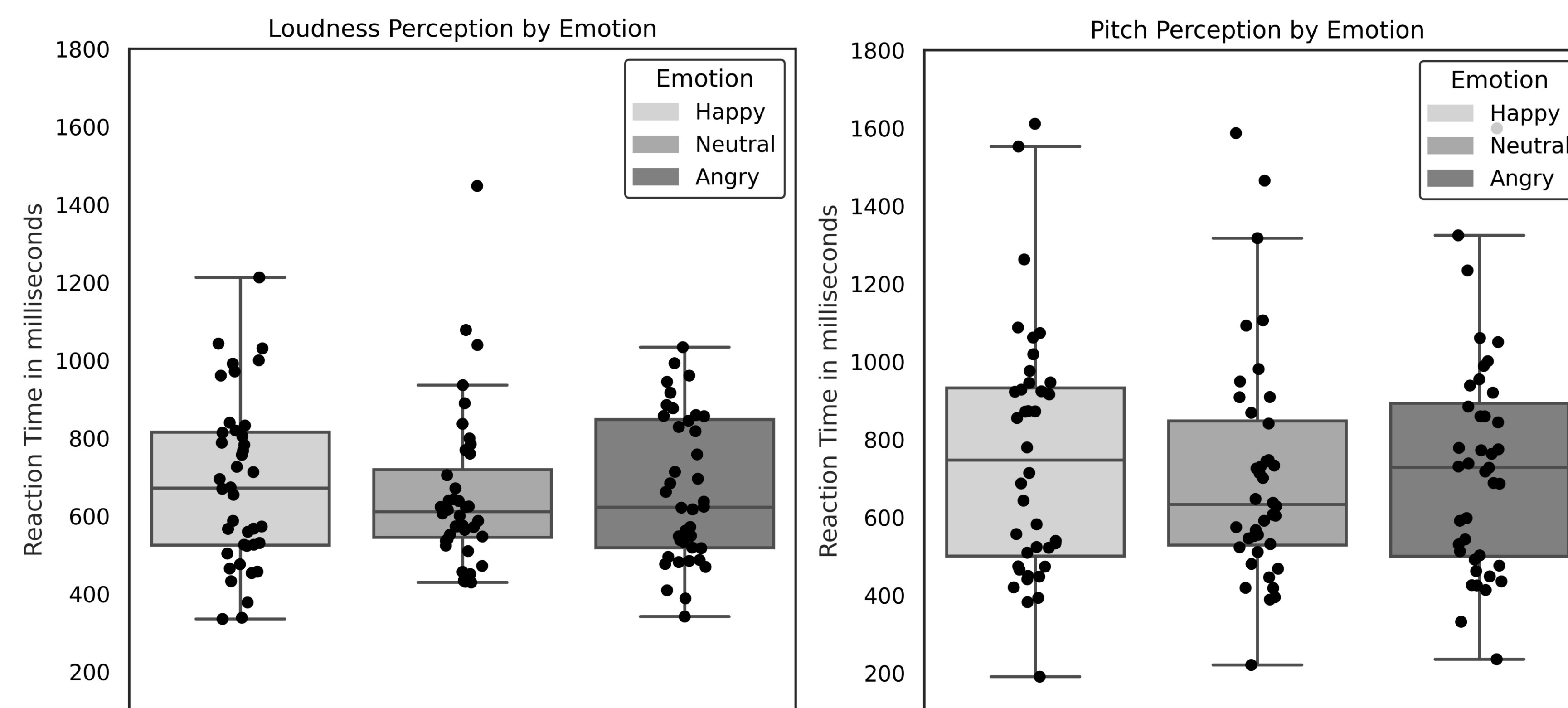
Characteristic		N = 40
Age	mean years (range)	18.6 (18 - 24)
Gender	women men unreported	27 12 1
Ethnicity	Caucasian/White Asian Hispanic/Latinx unreported	36 2 1 1

Results

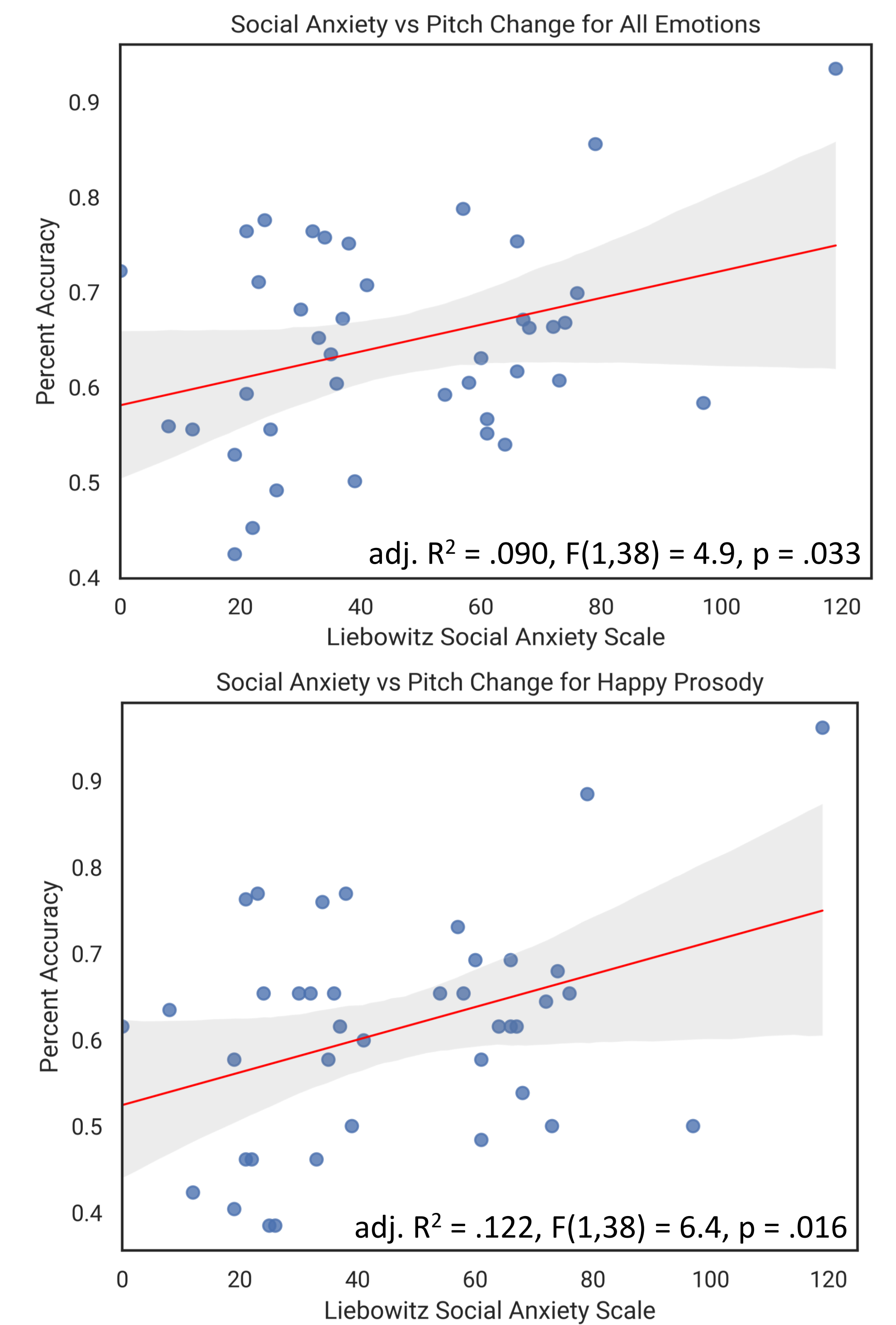
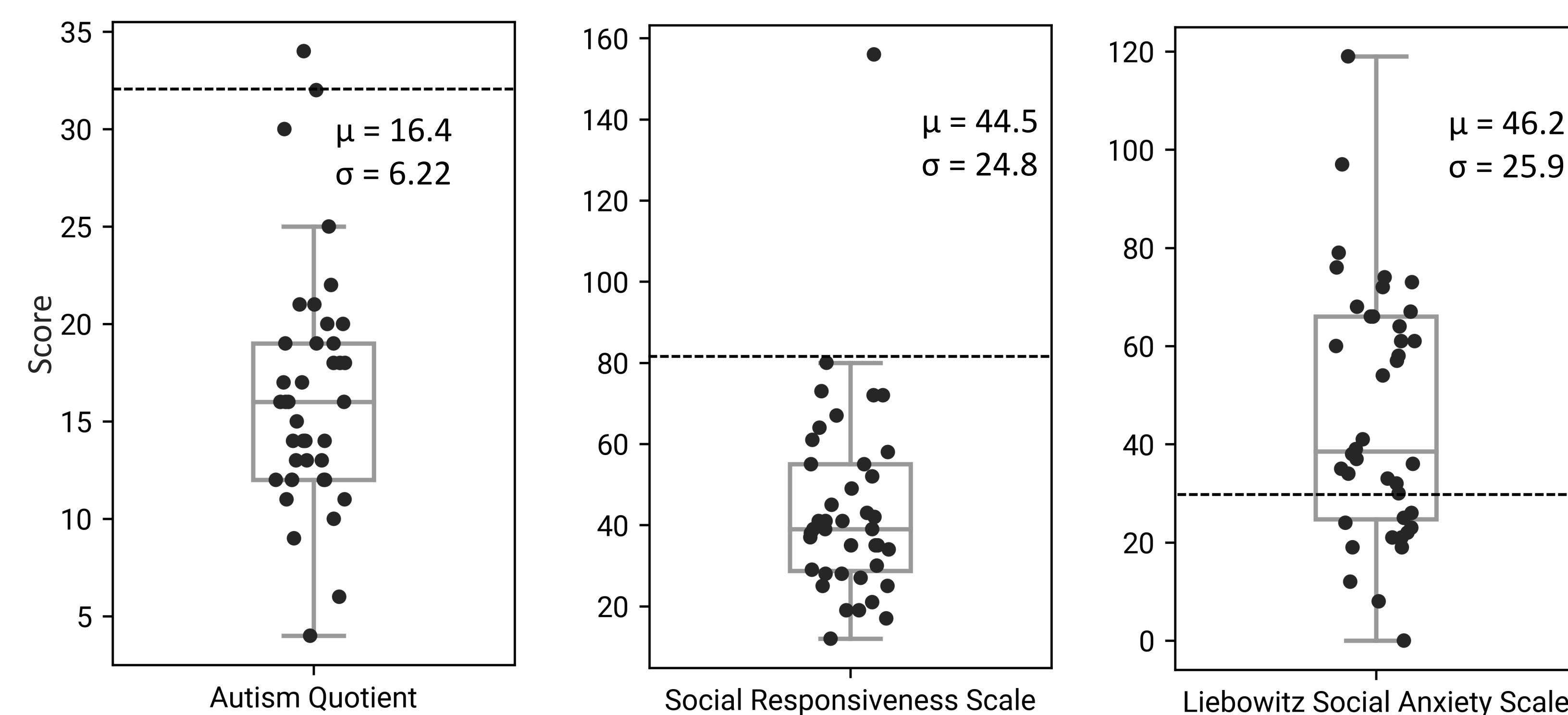
Accuracy in detecting low-level features is affected by emotional prosody.



Reaction time is not affected by emotional prosody ($p > .3$)



Psychopathology Trait Levels



Increased accuracy (all, happy) for higher levels of Social Anxiety. AQ and SRS not related to task performance.

Discussion

Detection of differences in low-level acoustical structure of neutral speech is affected by emotional prosody. Different acoustical feature modulation (loudness, pitch) shows idiosyncratic pattern of effects across emotional categories. Higher levels of social anxiety are associated with increased sensitivity for pitch modulation.

Future Directions

Control stimuli for spectral qualities across emotions. Expand acoustic features sets most relevant for emotion. Include psychopathology samples (ASD, SZ, Depression).

Acknowledgments

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