

# How your **speech** responds to **stress**

The validation of acoustic, prosodic, and semantic speech features in a multi-paradigm stress-induction task

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## Introduction

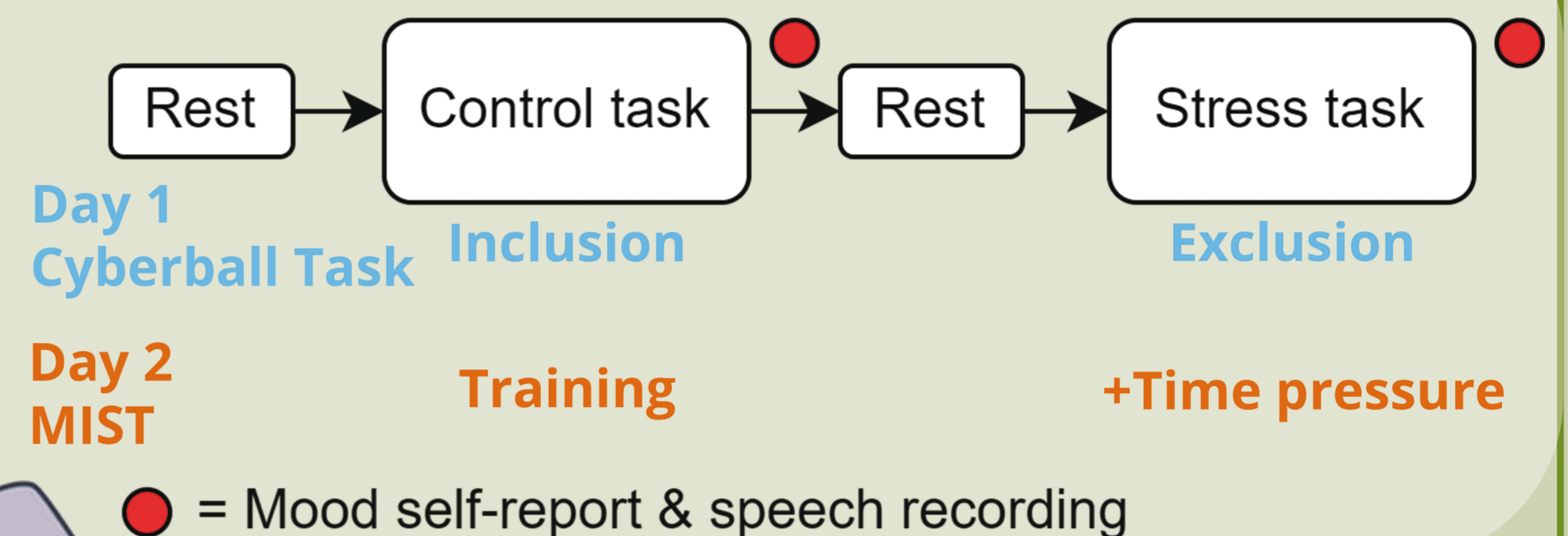
Stress is omnipresent in modern society, and a common risk factor for a variety of different mental and physical health problems.

The use of **speech** as an **ambulatory psycho-physiological measure** to detect **stress** levels is increasingly gaining attention, since it is **cheap, scalable, and non-intrusive** (Giddens et al., 2013, Kappen et al., 2021).

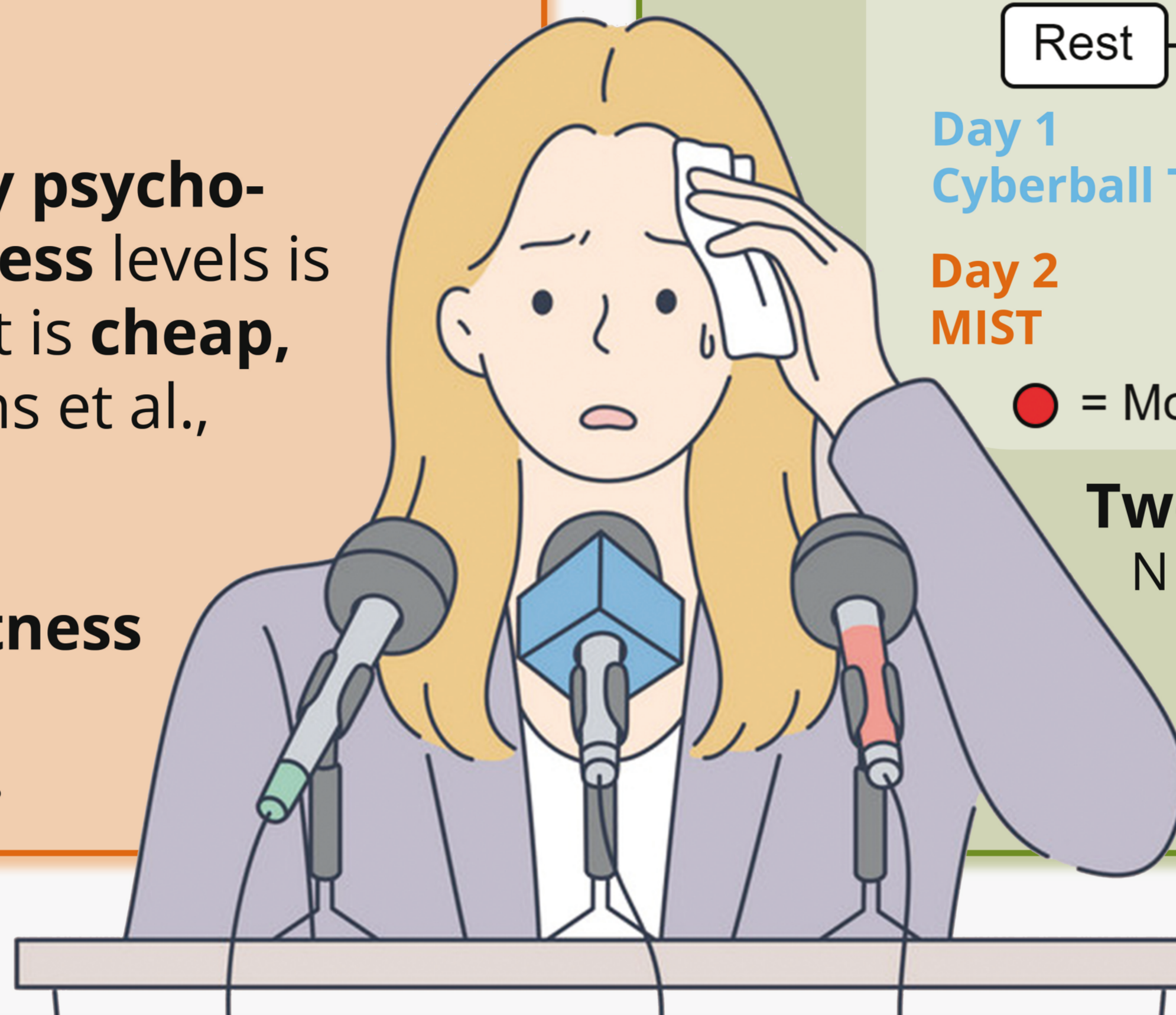
In this study, we **validate the robustness** of speech features in stress by using multiple renowned stress paradigms.

## Methods

ECG (HRV) + EDA recording throughout

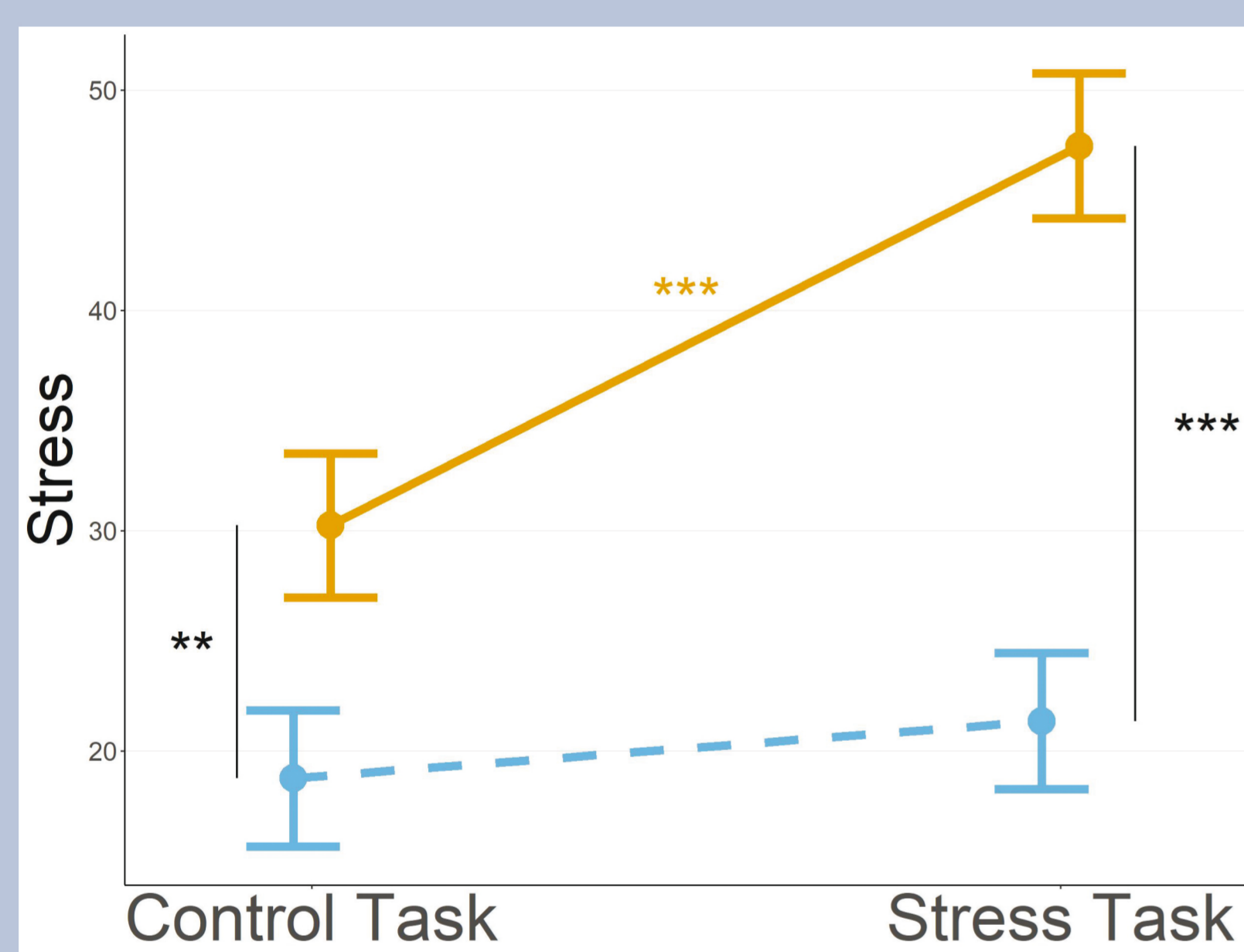


**Two-day stress paradigm** (one week apart)  
N = 66 (53F, 13M), Mean Age = 21.29

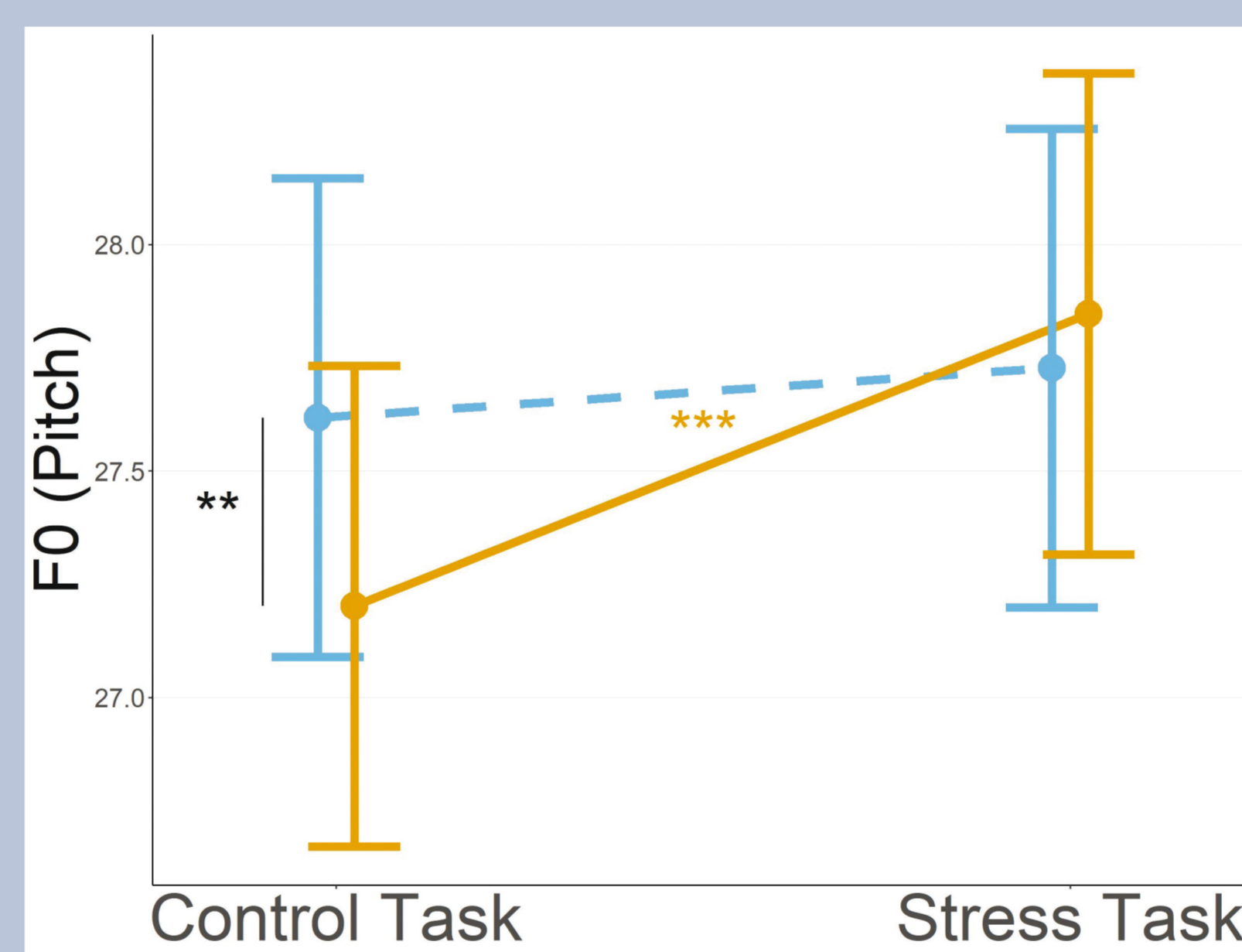


## Results

We found during **MIST** but not during **Cyberball**..



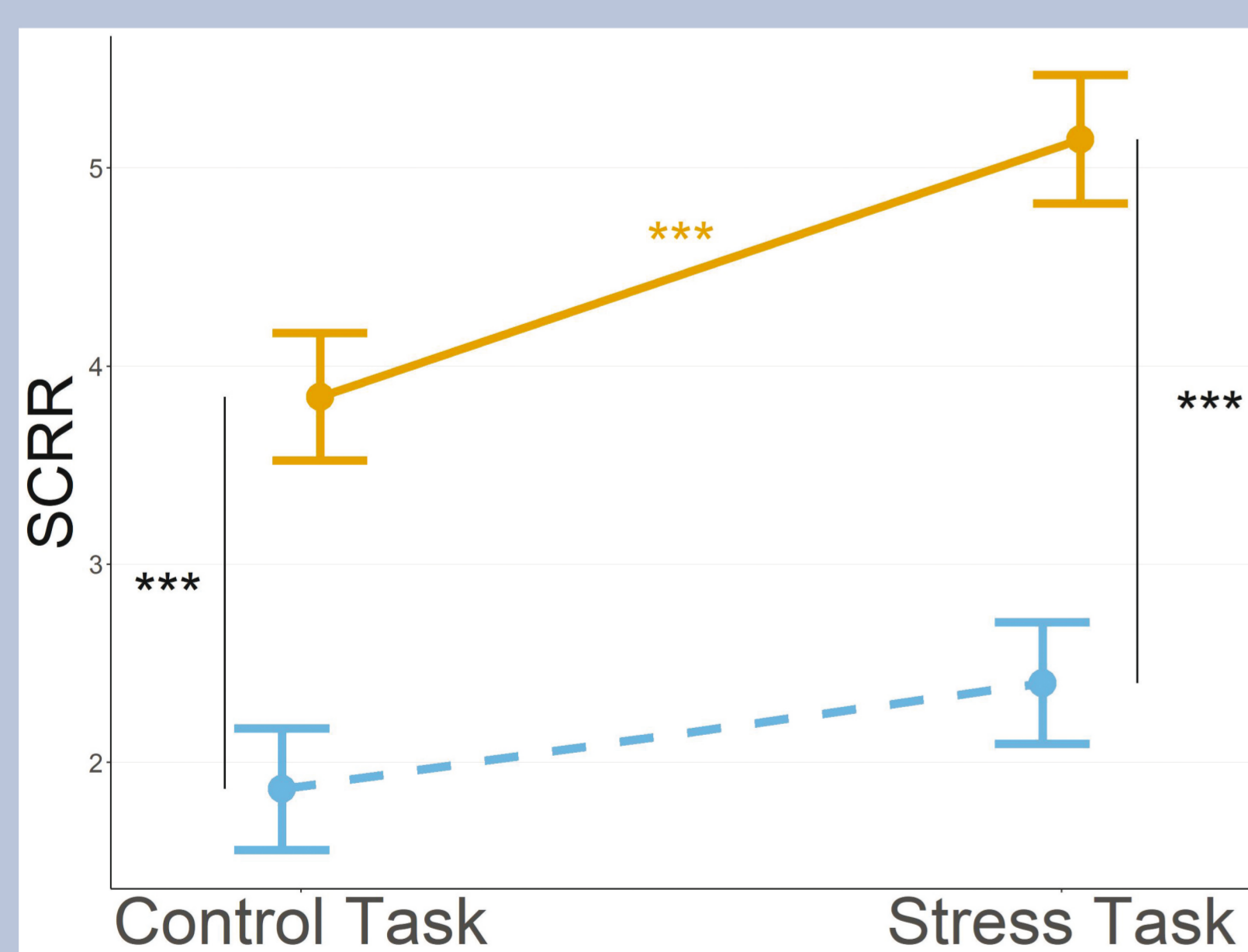
Increased self-reported stress



Increased vocal pitch



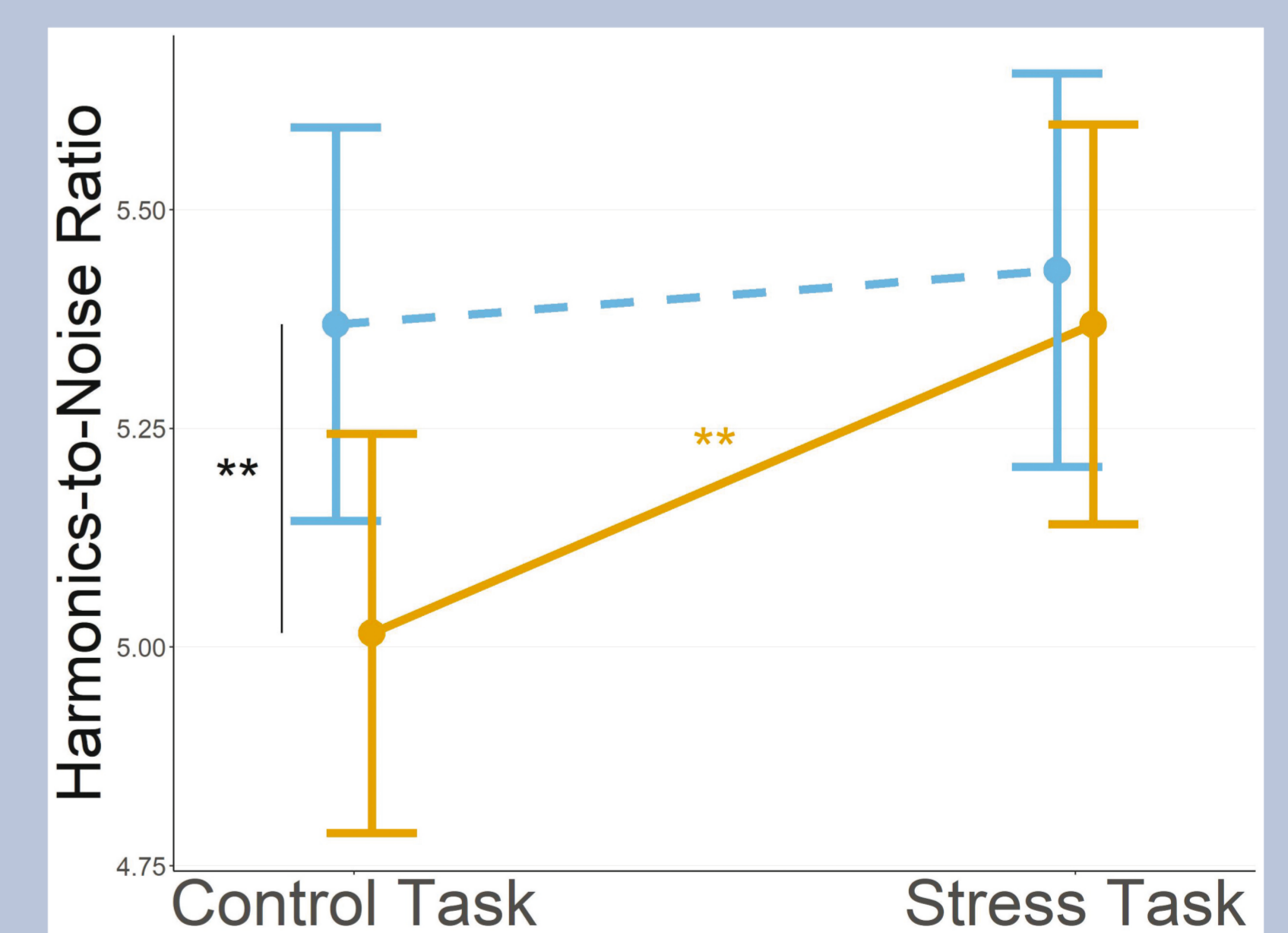
Decreased pitch consistency



Increased Skin Cond. Responses



Increased talking speed



Increased vocal clarity

## Conclusion

- The MIST induces stronger stress reactions than the Cyberball, in self-reports and physiology.
- Task-induced stress affects multiple speech features.
- This is the first study to produce these results in freely spoken speech rather than read-out-loud.
- Follow-up analyses will investigate differences in language production under stress.
- This study makes a solid move towards real-world application of speech as a biomarker for stress.

Come see my talk on Thursday, September 29, 2022, 8:30-10:00 a.m. Big Ideas Session: New Methods in Psychophysiology

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