

Introduction

- Hormonal changes, brain morphology, and changes in stress-coping abilities mark **the pubertal transition**.¹
- **Adolescence** is a period of increased **social interaction** with an increased risk of **victimization and interpersonal conflicts**.²
- **EEG** (electroencephalogram) measures neurological activity that uses **ERP** (event-related potentials) to evaluate **social reward responsiveness and rejection**.

Objective

Characterizing social rejection in female adolescents.

Methods

Enrollment

- Female adolescents 11-14 years old
- Within 1-year of menarche
- Complete survey and clinical interview

Menstrual Cycle

- Daily surveys and urine collection for 28 days or one menstrual cycle (up to 48 days).

Luteal Lab Session

- EEG Social Rejection task
- Surveys and saliva collected

Average age: 12.73 years old

Demographics: White: 69.2%, African American: 8.9%, Asian: 5.1%, bi- or multi-racial: 14.1%, unknow: 2.6%

EEG

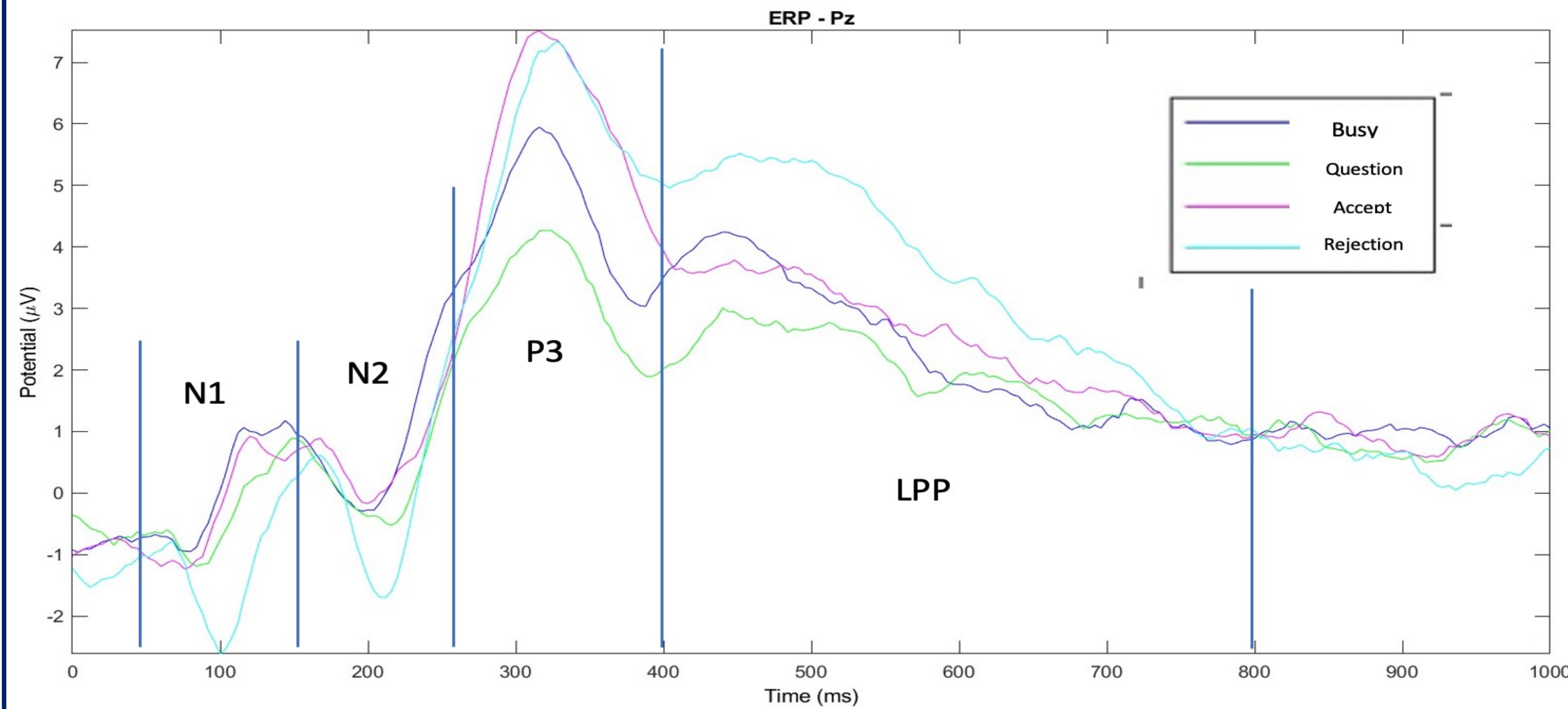
Social feedback task: Measures response to social feedback. First, participants made a profile about themselves, complete with a picture, that was sent to “peer raters.” Then, then we recorded EEG while the participant received the feedback (thumbs up = accept friendship; thumbs down= reject friendship; question mark= still considering; hourglass=busy, not available). Rejection and uncertain feedback trials increased as the task progressed.

ERP (event-related potential)- average voltage deflections measured at the scalp: N1- negative deflection 50-150 ms post-stimulus onset; N2- negative waveform 150-250; P3-positive, 250-400ms post-stimulus; LPP-late positive potential, 400-800ms.

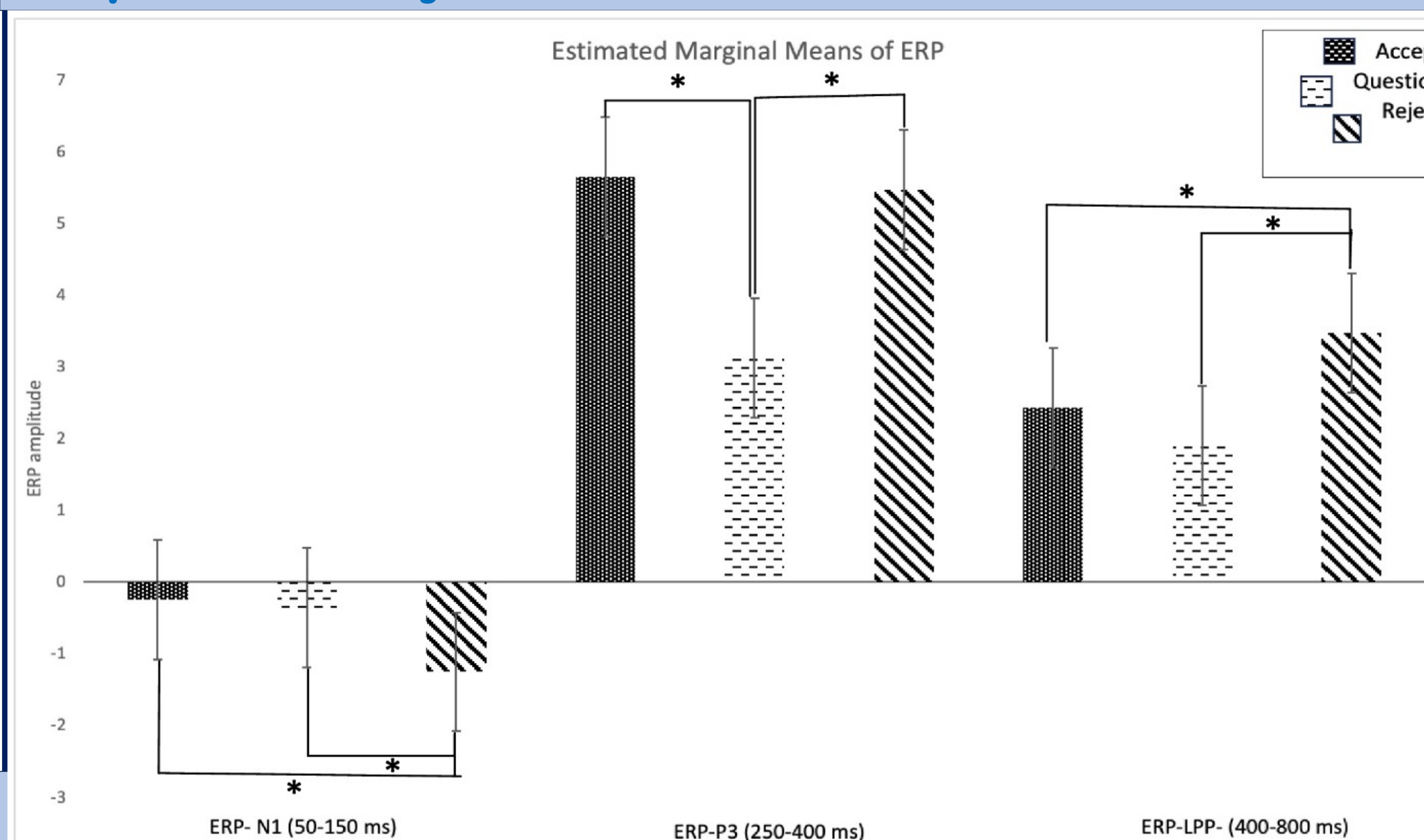
Measures

SSR (subjective stress rating)- evaluates affect six times throughout the lab. This analysis focused on the rejection question.

Results



LPP, an index of emotional reactivity, was significantly greater for rejection trials compared to other trial types, indicating greater emotional response to rejection.



Rejection trial ERP is significantly larger for N1, P3, and LPP

SSR survey results: Rejection peaked after the feedback task and slowly decreased following the task.

Discussion

- Results show rejection sensitivity in adolescent females from both EEG and surveys.
- Results show that the feedback task can accurately show the EEG response to rejection. When the EEG and SSR relationship is examined, the task is a good neurophysiological measure of rejection
- Future studies consider baseline rejection sensitivity to show the degree of rejection sensitivity.

Citations

Citations : 1. Andersen, et al., 2023 2. Sontag, et al., 2008.

Funding: National Institute of Mental Health K01MH121575; Foundation of Hope for Research and Treatment of Mental Illness, Seed Grant