

# Combined Effects of Optimism Level and Caffeine Intake on QEEG Alpha Wave Power: A Pilot Study

Melissa Lenert & Dr. Luis Aguerrevere  
Stephen F. Austin State University



## Introduction

- ☐ Caffeine has a general effect on alpha brain waves (Diukova, 2010).
- ☐ Heavy caffeine users experienced increased neural activity compared to vasoconstriction (Gilbert et al., 2000)
- ☐ Purpose of the pilot study is to assess the effects of caffeine intake and optimism levels on alpha wave activity in heavy caffeine users.

## Method

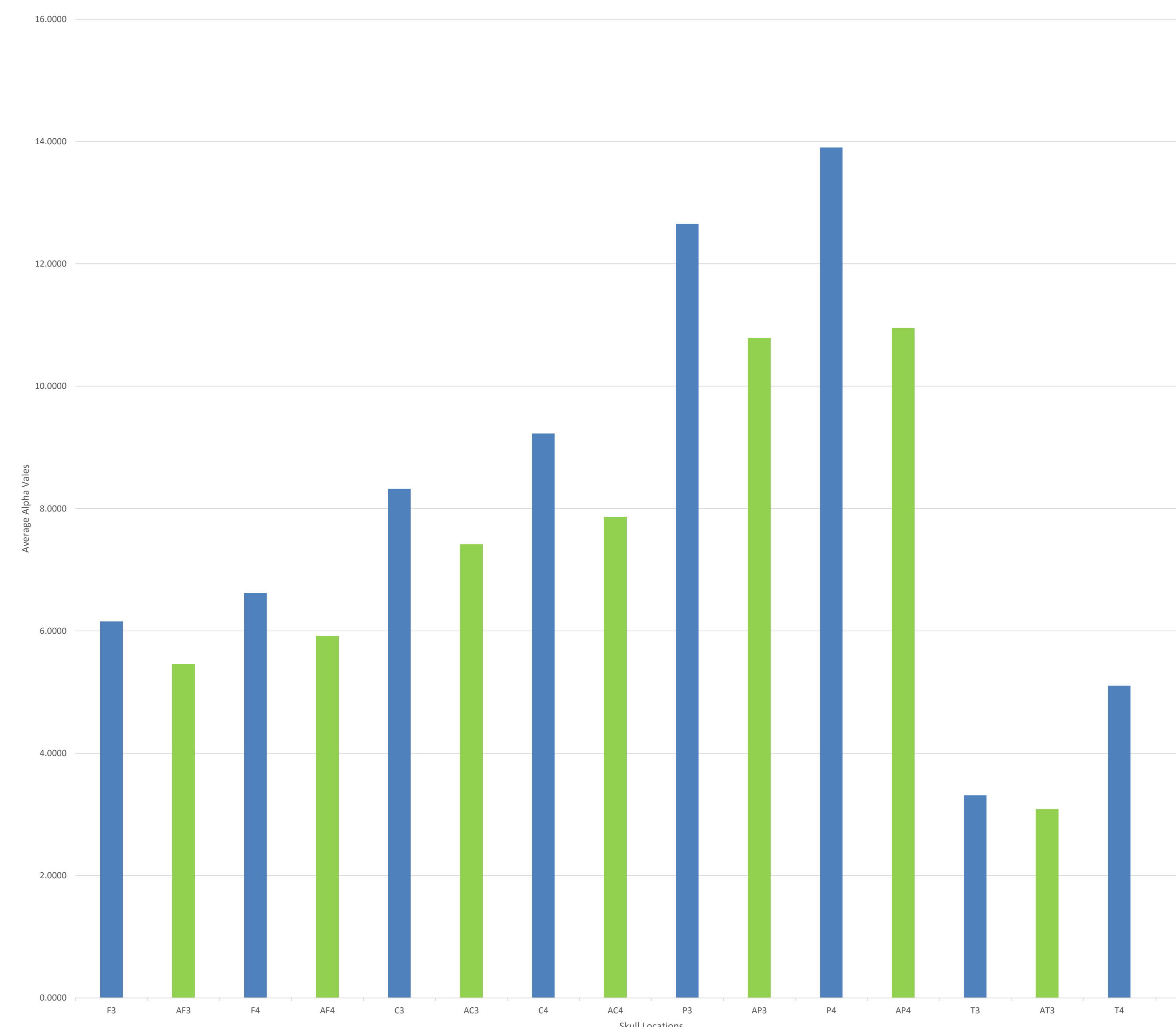
### Participants

- ☐ Six participants: three males and three females
- ☐ All participants are heavy caffeine users – defined as daily consumption of more than one cup of coffee

### Materials and Methods

- ☐ Participants abstained from caffeine for 12 hours prior to assessment
- ☐ Assessments occurred between 8am and 11am
- ☐ Standard QEEG assessments using the 10-20 system
  - ☐ First assessment prior to coffee
  - ☐ Participants drank one cup of black coffee
  - ☐ Second assessment 20 minutes after coffee

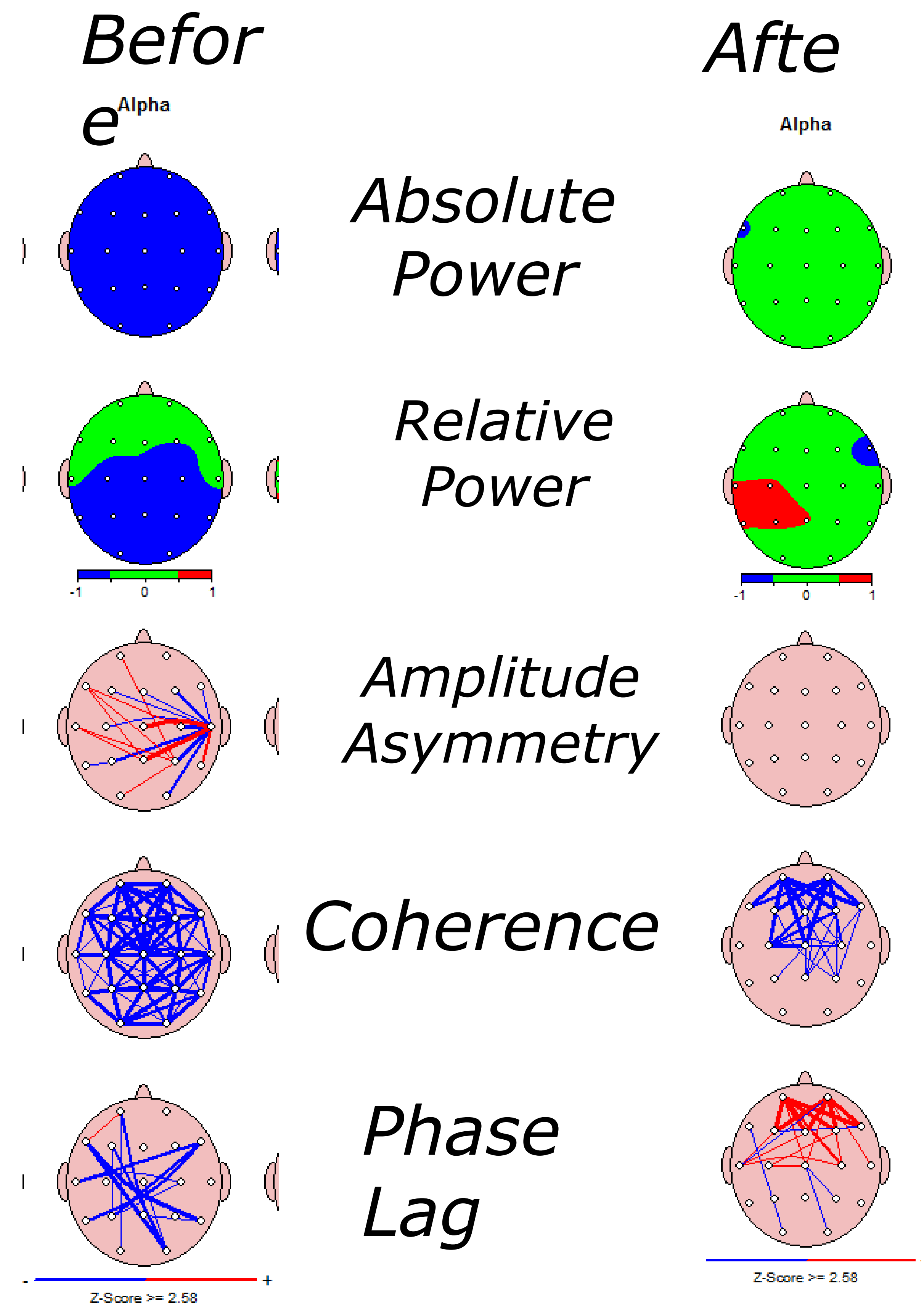
## Mean Alpha Activity vs Location



## Results

- ☐ Strong correlations between absolute power and optimism in frontal (before  $R=-0.345$ ; after  $R=-0.447$ )
- ☐ Greater caffeine activity correlated with optimism in frontal ( $R=0.413$ ) and central ( $R=0.359$ ) locations
- ☐ Interhemispheric differences in temporal areas (Mean before=1.54; Mean after=1.46)

## Z-Scored Alpha Activity Example



## Conclusion

Caffeine has a general effect on alpha wave activity and optimism scores in heavy users. Although the sample size is small, the trend is significant enough to warrant further study.

