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.

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 \(\text{Mean before}=1.54; \text{Mean after}=1.46\).

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.