Background and Significance

- Emotion/Affect and Learning
  - Research suggests that higher academic performance correlates with certain affective states.\(^1\)
  - Affective states describe emotions, feelings, and moods grouped into a single topic.\(^2\)

- CVC trigrams
  - Three letters consisting of a consonant-vowel-consonant.\(^3\)
  - Ensures there is no previous knowledge that can give the participant an advantage.\(^4\)

- Independent variable: Different Affective states (Engagement, Focus, Excitement, Stress, Interest, Relaxation)
- Dependent variable: Pass or Fail Test Score (60%)

Hypothesis
Higher academic performance on solving complex problems and memory tasks will be correlated with specific affective states, comparing correlational differences using an ANOVA statistical test.

Methods

Memorization
- Baseline is collected
- Student memorizes nine CVC trigrams with corresponding definitions

Testing
- Students construct three grammatically correct sentences with the CVC trigram definitions

Analyzing
- Student classified as passing or failing by 60% as passing.
- Affective states connected to their test scores to determine a possible correlation of performance

Results

Pass and Fail Comparison: Normalized Averages

Pass and Fail: Normalized Percent Difference Averages

Discussion and Conclusion

- This data suggests overall that there is no significance between test scores and the 6 affective states

- However there may be a negative correlation between the test score and the focus affective state
  - Could indicate the level of difficulty with the CVC trigram test

- This data also may suggest a positive correlation between engagement and interest

Challenges & Lessons Learned

- EEG equipment malfunctions
- COVID-19 prevented further testing and a larger data set
- Gathering participants and testing time coordination
- Led to growth in resilience and adaptability

Future Directions

- Implement methods approved by IRB
- Increase sample size
- Expand data collection
- Repetition of trials

References

2. IGI global: Disseminator of Knowledge (n.d.). What is an affective state retrieve from: https://www.igi-global.com/