An ERP study to identify consumer Likability (Dis-likability) towards brands

Abhimanyu Shekhawat[1,3], Ishita Malviya[1,3], Mayur Jartarkar[1,3], Gautam Kumar[1,2], Lizy Kanungo[1,2] Bharat Deshpande[3], Veeky Baths[1,2]

[1]Cognitive Neuroscience Lab [2]Dept. of Biological Sciences

[3]Dept. of Computer Science and Information Systems

Birla Institute of Technology and Sciences, K. K. Birla Goa Campus, Goa.

Introduction

- Consumer Neuroscience deals with understanding the neurophysiological responses when a person is subjected to marketing stimuli which ranges from advertisements to actual product experience.
- Experiences of a product are encoded in the long-term memory due to recurring exposure to stimuli.
- This ERP study tries to identify the neural correlates when exposed to a product that is deemed authentic versus another product that is known to be a counterfeit.
- This preliminary study looks at ERP signatures in the pre-frontal cortex(Decision center) and the medial temporal lobe(associative memory) of the brain.
- The model thus built could be used to evaluate the perception of a consumer when exposed to a new product design that he/she has never encountered before.

Objectives

- To identify the ERP signal associated with identifying a authentic product and a counterfeit product in the pre frontal cortex.
- To locate any change in associative memory regions when deciding the authenticity of a product.

Methodology

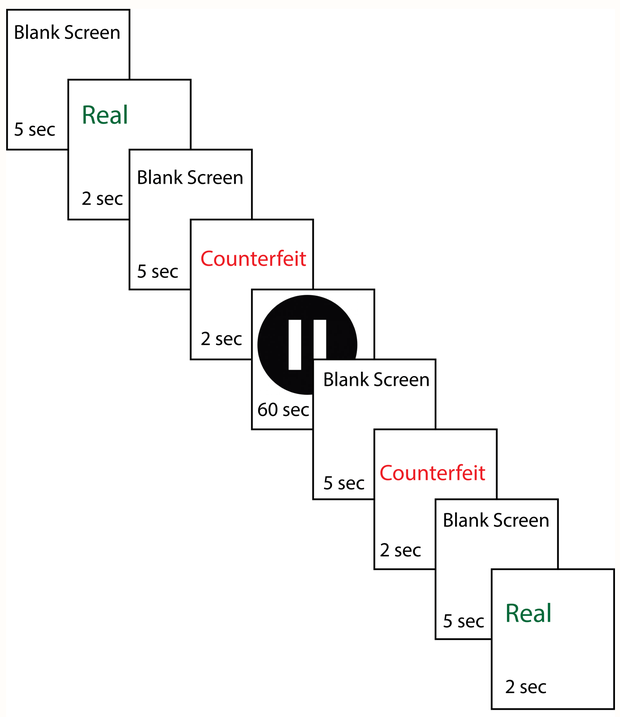


Figure 1: Modified Odd Ball Paradigm using product images

- Experiment is a variation of the Odd Ball paradigm.
- Highly occurring elements are of authentic products with visible logos.
- Rarely occurring elements are counterfeit products.

EEG Analysis

- The experiment uses a 32 channel EEG recording system from EGI Limited, a Philips company.
- Preliminary experiments were conducted on 4 participants(2 Male, 2 Female) aged between 19-25.
- EEG Data was filtered and analysis was done in MATLAB using EEGLab and ERPLab.

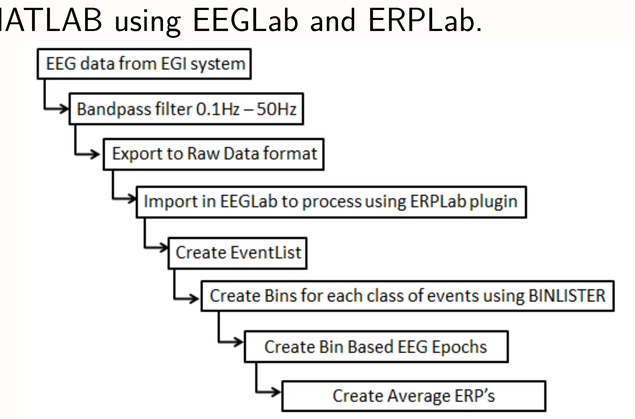


Figure 2: Modified Odd Ball Paradigm using product images

Results and Discussions

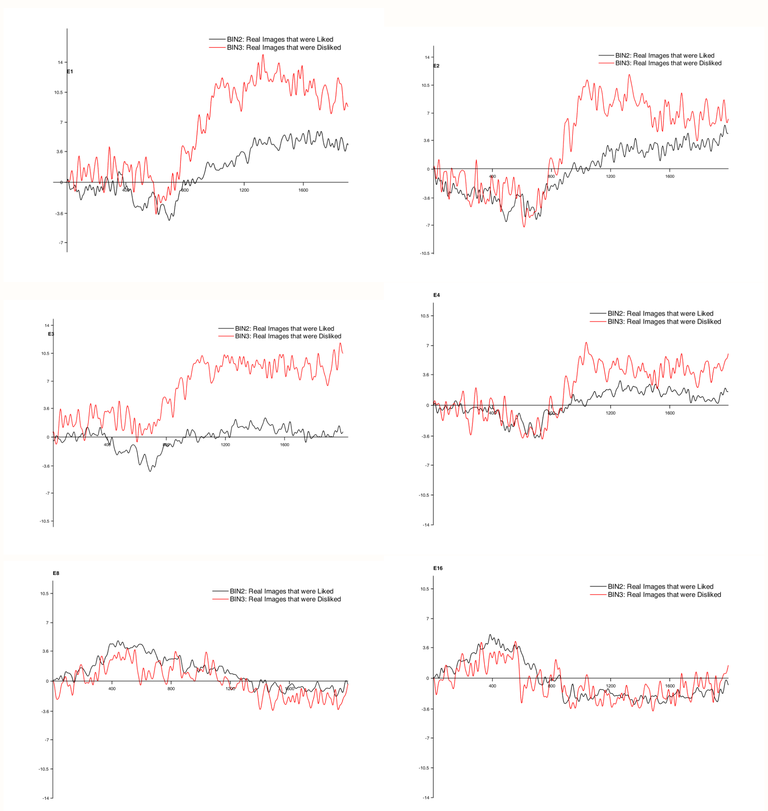


Figure 3: Like Vs Dislike ERP Waveform for Channels 1,2,3,4,8,16

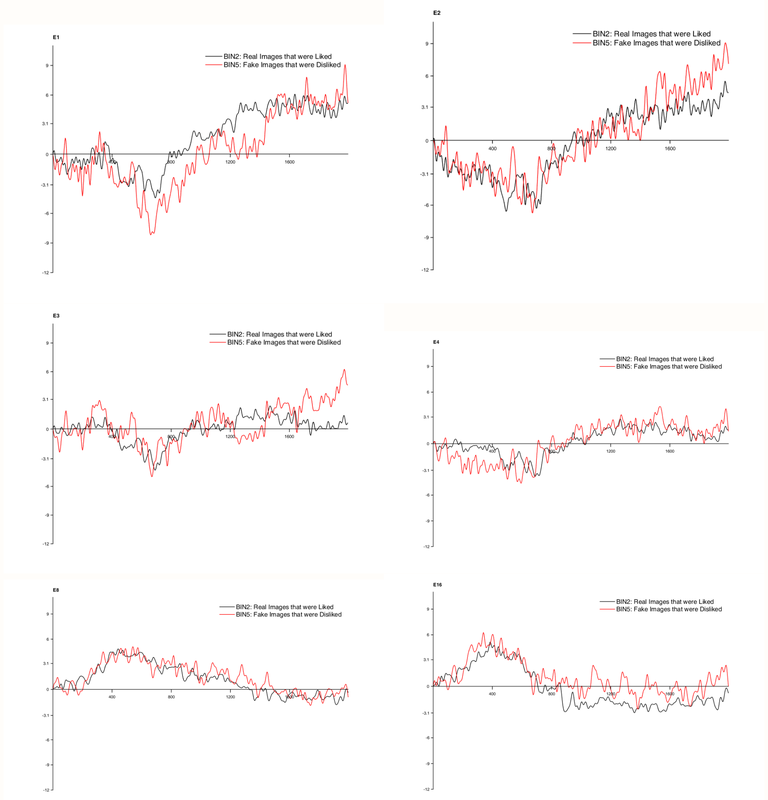
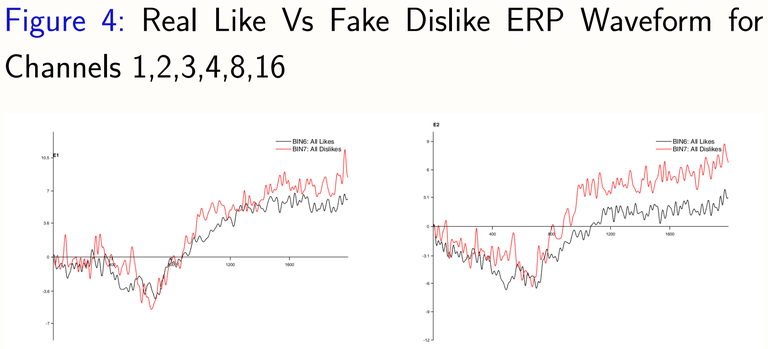


Figure 4: Real Like Vs Fake Dislike ERP Waveform for Channels 1,2,3,4,8,16



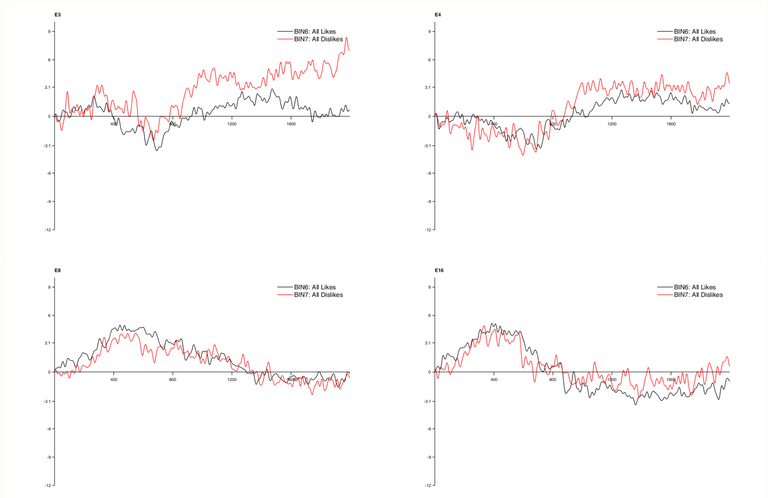


Figure 5: Real Like Vs Real Dislike ERP Waveform for Channels 1,2,3,4,8,16

- For Like and Dislike of real images, we can observe an higher amplitude for Like ERP waveform between 1000-1200ms at the prefrontal cortex(Channel 1 and 2).
- For Real images that are Liked and counterfeit images that are Disliked, change in signal polarity can be observed at the 1200 ms mark in the pre frontal channels.
- No significant changes are observed in the medial temporal region.

Conclusion

- ERP can be used to identify the perceived authenticity of an unknown product.
- There is no long term memory component change between recollecting an authentic versus a counterfeit product.

Future Scope

- The findings need to be further validated for a larger population.
- A model can be created that predicts or identifies the perception of a product in the consumer brain.

Acknowledgements

We thank the Department of Science and Technology, Government of India for their support towards all research at the Cognitive Neuroscience Lab through project ID: SR/CSRI/50/2014(G), Dept. of Biological Sciences and Dept. of Computer Science and Information Systems, BITS Pilani, K. K. Birla Goa Campus.

References

[1] Ma, Q., Wang, X., Shu, L., and Dai, S. (2008). P300 and categorization in brand extension. Neuroscience letters, 431(1), 57-61.

[2] Raslau, F. D., Mark, I. T., Klein, A. P., Ulmer, J. L., Mathews, V., and Mark, L. P. (2015). Memory Part 2: The Role of the Medial Temporal Lobe. American Journal of Neuroradiology, 36(5), 846-849.