

Brain and arabic word processing: behavioral and electrophysiological studies

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Abstract

In a series of Experiments, Arabic word processing was investigated to examine the influence of selective attention, Color, Interhemispheric transmission times and word processing speed. In the first study, the orthographic complexity of Arabic words was examined under three different conditions of Perceptual load. Participants were instructed to differentiate between words and Pseudowords. EEG was used to measure brain activity while the participants performing lexical decision task. Results showed that there is a main effect of Perceptual load on the processing of Arabic words with increasing the neural activity on occipital temporal area. These findings suggested that orthographic complexity strongly depends on Selective attention (Mohamed, 2018 a). In the second study the Repetition effect of the Words were investigated by using repetition priming paradigm. Words were presented under load conditions by presenting 3 letter words, 6 letter words and 9 letter words. Participants were instructed to detect if both presentation of words are identical or, not identical. Results showed N250r which associated with word recognition units depend on attentional load. Repetition effects were clearly in both hemisphere for 3 letter words, while 6 letter words showed that effect only on left hemisphere. Interestingly, no repetition effects were reported for 9 letter words (Mohamed, 2018b). In the Third study a combined effect of selective attention and colors was investigated on the processing of Arabic words for university students. Poffenberger's experiment was used by presenting Arabic words with different length and colors to investigate how the Arabic words might influence interhemispheric transmission times. Results showed that interhemispheric transmission times is affected by color and perceptual load (Mohamed, Submitted). In the fourth study, the differences between gifted university students and Normal students was investigated according to interhemispheric transmission times and Selective attention. Results showed that there is no effect of load on interhemispheric transmission times for the processing of Arabic words, but in general, the results showed that gifted students are faster than normal students in interhemispheric transmission times for Arabic words processing (Mohamed, 2019). In the fifth study, I investigated the effects of Verbal (i.e., Arabic words) vs. nonverbal (faces) stimuli on the interhemispheric speed for ADHD, Dyslexic and Normal students. Results showed a different pattern, in that dyslexic patients did not have the ability to process Arabic words in the left hemisphere compared to ADHD or Normal. Interestingly ADHD Patients showed a different pattern of Processing Arabic words (Mohamed, Submitted b).

In conclusion, Brain Perceive language in a different way. Native language should be processed faster than other languages. Interestingly, we found that the brain Perceives stimuli differently. Arabic language is totally different in structures and syntax compared to other languages. Interestingly, no one reported these effects that was observed in Arabic language processing.



Biography

Tarik N. Mohamed has his expertise in Processing of words and Perceiving languages. He got PhD in the field of Cognitive Neuroscience from Friderich schiller university, Jena, Germany, 2011. Tarik's Conducted many of Experiments to investigate different aspects of language and Arabic word Processing. He published many articles in ISI journals as well he published many of Arabic articles about the Processing of verbal and Non- verbal word processing. Tarik's is associate Professor of Psychology at Suhag university, but he is currently working at KFUPM, Dhahran, Saudi Arabia at the Department of Global and Social Studies.

Publications

- Mohamed, TN (2018a). The influence of perceptual load on the orthographic complexity of Arabic words processing ERP Evidence. Trends in Neuropsychology, 24, 61-73
- Mohamed, TN (2018b). Combined effects of selective attention and repetition on event-related potentials of Arabic words processing. Trends in Neuropsychology, 23, 83-93.
- Mohamed TN (Submitted). Combined effects of selective attention and colors on the processing of Arabic words.
- Mohamed TN (Submitted b). Neurological indicators for ADHD, Dyslexic and Normal Students According to Processing Speed and interhemispheric transmission times.
- Mohamed, TN (2019). The differences between gifted and non-gifted students in processing Arabic words according to interhemispheric transmission Times and Selective attention and handedness. Published in Arabic Language in Journal of Education, Alexandria university, Egypt

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