

Exploring the Website Impression Formation: A Cross-Cultural Study Using Electroencephalography

Yu-feng Huang, Feng-yang (Bob) Kuo, Phan Luu, Don Tucker

Corresponding author: yufeng.huang@duke-nus.edu.sg

The study of cognitive processes underlying how Internet users form impressions, such as usefulness and hedonic attractiveness, of briefly viewed website is important to understand as this information may inform ways to improve the impact of website design. To capture the transient processes in website impression formation, we applied dense-array (128 and 256 channels) electroencephalography (EEG) to conduct an experiment in two cultural groups (n=23 in USA vs. n=19 in Taiwan). Dense-array EEG technology has excellent temporal resolution (compared with fMRI) and is more powerful for the capture of transient EEG patterns than traditional low-channel count EEG systems. Furthermore, dense-array EEG allows researchers to conduct source localization to explore the brain sources of the EEG patterns. Based on IS studies of website evaluations and social psychology studies on impression formation, we developed an experiment to investigate the semantic and emotional component of the impression formation process. Subjects in USA and Taiwan made usefulness and hedonic evaluations of 160 website logos (presented at 1200 ms) indigenous to their cultural groups. Current analysis focuses on two EEG patterns that are related to semantic processing (N400) and emotional processing (P300).

The current analysis appears to indicate that in the USA group, participants employ both semantic and emotional components during hedonic evaluations, and only the semantic component for usefulness evaluation. However, in the Taiwanese group, participants adopted only the emotional component for hedonic evaluation, and the semantic component for usefulness evaluation. The finding suggests that semantic and emotional components are differentially used by the two groups to form website impressions and the implication to IS studies are discussed. In addition, the study demonstrates the ability of EEG to explore transient cognitive processes that cannot be shown in behavior responses. Source localization was also conducted to explore the brain areas responsible for these EEG patterns.