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William J. Jones

Ramapo College of New Jersey, wjones@ramapo.edu

Kelene A. Fercho

Federal Aviation Administration

Lee A. Baugh

University of South Dakota

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Event-Related Potentials Differentiate Gender-Based Responses to Brands

William J. Jones

Ramapo College of New Jersey

Kelene A. Fercho

Federal Aviation Administration

Lee A. Baugh

University of South Dakota

EXTENDED ABSTRACT

Disentangling accounts of gender differences in branding from sociocultural interactions is complex. Because marketing scholarship has advanced ideas based on oversimplified inferences about the human brain (e.g., hemispheric asymmetries), it is important that the nascent subdisciplines of consumer neuroscience and neuromarketing assess the veracity of neuroscience ideas that academics conjecture upon for marketing practitioners (cf. Goodrich, 2014).

Male participants were shown men's clothing and female participants were shown women's clothing. Brands were evaluated for linking *and* wanting as they are thought to be subtended by partially separable neural processes (Berridge & Robinson, 2003). Regardless of gender, participants rated stimuli in the first task ("liking") and second task ("wanting") using the same structure. The stimuli set used in the second task was identical to the first except matched to their specific products.

Data analysis for the ERP was guided by previous studies interpreting the functional significance of the ERP components. P200, for example, is particularly sensitive to emotional processing with negative stimuli often exhibiting increased amplitudes/decreased latencies (Handy et al., 2009). Also, of central importance to the present results, Ma et al. (2014) observed N400 effects for dissimilar extensions in their study on distant versus related brand extensions, which the authors argue represents 'late analytical' brand-category discrimination. However, it should be noted that ERPs within the 400-time window can be related to (negative) familiarity effects.

Behavioral results suggested that females are more likely to combine brand liking with product liking to determine purchase likelihood whereas males seem to rely more heavily on reactions to the product directly.

Of neural effects, a P200 over the P4 electrode site within the 200-300 msec time window following brand presentation in isolation was the earliest apparent gender effect. Results showed that females exhibited larger P2 amplitudes ($M = 2.13 \mu\text{V}$) than males ($M = 0.78 \mu\text{V}$); however, no other effects were observed during this time. Unlike 'liking', P200 effects for 'wanting' were not observed. Results of an analysis on an observed N400-like component called the N350 showed a main effect of gender with females displaying more negative amplitudes ($M = -2.06 \mu\text{V}$) than males ($M = -0.84 \mu\text{V}$). A significant main effect was also demonstrated for electrode site, and post hoc tests found a frontocentral scalp distribution underpinning the relationship of the observed effect to familiarization. Fractional area latency effects were likewise noted. Follow-up analyses found significant effects of gender at the Fz channel with females showing delayed fractional latencies ($M = 329.41 \text{ msec}$) compared to males ($M = 313.89 \text{ msec}$) underscoring more elaborate familiarization processing among female consumers.

The results reported here for female consumers challenge selectivity theory but support it in several ways. Female consumers seem to consult negative emotions and familiarity feelings when making buying evaluations. Male consumers, on the other hand, seem to base their choices on overall liking independent of brand as demonstrated by a consistent P3a effect and underscored by behavioral results. The findings in this paper are likely the first to confirm, using brain imaging, that women view brands as two-way relationships (Monga, 2002).

Keywords: *Neuromarketing, Branding, Event-related Potentials, Gender, EEG, P200, N350*

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ABOUT THE AUTHORS

William J. Jones (Ph.D. University of Kentucky) is Assistant Professor of Marketing at Anisfield School of Business at Ramapo College of New Jersey. Billy conducts research at the

intersection of consumer behavior/sales and cognitive neuroscience. Dr. Jones has published in journals such as European Journal of Marketing, Psychology & Marketing, and Biological Psychology among others.

Kelene A. Fercho (Ph.D. University of South Dakota) is an Engineering Research Psychologist at Department of Transportation - Federal Aviation Administration. Kelene holds a doctorate in Human Factors Psychology and was previously Neuroimaging Core Manager at USD Sanford School of Medicine. Dr. Fercho's work has been published in a broad range of outlets such as Human Brain Mapping, Appetite, Proceedings of the Human Factors and Ergonomics Society Annual Meeting, Journal of Speech Language and Hearing Research, and others.

Lee A. Baugh (Ph.D. University of Manitoba) is Associate Professor of Neuroscience and Director of the Human Functional Imaging Core at USD Sanford School of Medicine. The Baugh Lab is particularly interested in the neuropsychology of dexterous movement, explored using noninvasive imaging techniques such as fMRI, EEG, EMG, and the advanced analysis of kinematic data. Dr. Baugh's research has been featured in journals such as Current Biology, Cell Reports, Neuropsychologia, PLoS One, and others.