Understanding the role of brand mascots using consumer neuroscience research methods

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Abstract

The study presented in the paper aims to learn how consumers recognize brand characters (also known as brand mascots) and what pattern of brain activity is evoked in response to brand characters that have a strong association with a product in consumer perception. The study explores an approach to examining consumer perception of dairy brand product and the brand mascot vs. irrelevant animated characters based on visual event-related potentials. The experimental research was conducted in May and June 2018. The preliminary results support the difference in consumer reactions to brand relevant and irrelevant animated characters.

Keywords: neuromarketing, brand associations, electroencephalography

Track: Consumer Behavior

1. Introduction

In the neuromarketing literature, most papers are focused on the consumer perception of brand attributes such as logo, brand/product name and colors to identify consumers perception and preferences (Khushaba et al., 2013; McClure et al., 2004; Morin, 2011; Plassmann, Ambler, Braeutigam, & Kenning, 2007; Vecchiato et al., 2011). Despite the wide use of animated brand characters to promote the brand and improve its recognition, only few papers discuss brand mascots impact on consumer perception of brand (De Droog, Valkenburg, & Buijzen, 2011; Malik & Guptha, 2014; Neeley & Schumann, 2004; Pairoa & Arunrangsiwed, 2016). Thus, we would like to fill this research gap and find out how consumers recognize animated brand characters and what brain activity shows whether brand character has strong association with brand products in consumer perception.

The paper structure is as follows. Firstly, we focus on the literature on brand mascots and event-related potentials (ERP) in consumer research. Secondly, we give a brief overview of the research design and methodology, and share our findings from the preliminary data analysis. The last section provides proposals for future research.

2. Literature review

2.1 Brand and brand mascots

Despite the wide use of brand mascots in product packages and marketing communication, their impact on consumer perception of brand is not yet examined properly. Most of the studies were devoted to understanding influence of animated characters on children (Kraak & Story, 2015; Neeley & Schumann, 2004), while only few papers investigate characters perception by adult consumers. Neeley and Schumann (2004) specifically examine the impact of character action and voice on young children. Their results confirm the influence of child's attention towards ad and character on the product recognition and the attitude toward the product. Still, the relation between animated brand characters and consumer preferences, intention, and product choice is uncertain. De Droog, Valkenburg, & Buijzen (2011) showed that brand characters can increase children's request to purchase, but the effects did not differ for familiar and unfamiliar characters.

Garretson and Niedrich (2004) studied the relationship between specific animated brand character features and brand attitude. They showed that character trust is a significant mediator of the effects of spokes-character features on brand attitude. They also unveiled that brand experience moderates the effect of animated brand character trust on brand attitude.

Some recent papers are dedicated to the influence of mascots on adult consumer buying behavior (Malik & Guptha, 2014; Pairoa & Arunrangsiwed, 2016). In Malik and Guptha's survey only 25% of respondents claimed that brand mascots never influence their choice, others agreed that brand mascots influence them at least sometimes. The results obtained by Pairoa and Arunrangsiwed (2016) supported that use of brand mascots is positively related to consumer's decision and intention to purchase the products.

2.2. Event-related potentials (ERP) in consumer research

Visual event-related potentials (VERP) are the type of the brain activities that occur in response to a visual stimulus. A component of Visual event-related potentials is stable potential's deviation from basal line to a positive or negative area in a definite time interval. With regard to consumer behavior researches, some ERP components have been identified: P300 wave component (Guo, Zhang, Ding, & Wang, 2016; Jones, Childers, & Jiang, 2012; Polich, 2007; Treleaven-Hassard et al., 2010), the N200 (Fudali-Czyż et al., 2016; Harris, Ciorciari, & Gountas, 2018; Lin, Cross, Jones, & Childers, 2018; Ma, Wang, Dai, & Shu, 2007; Telpaz, Webb, & Levy, 2015; Yang, Lee, Seomoon, & Kim, 2018), and N400.(Braeutigam, 2014; Harris et al., 2018; Jin, Wang, Yu, & Ma, 2015; Jones et al., 2012; Kutas & Federmeier, 2011; Lin et al., 2018; Wang, Ma, & Wang, 2012).

P300 is the positive deflection of the brain's potential with an amplitude peak occurs nearly 300 ms after the stimulus. It is supposed that the appearance of this component in VERP is linked with the emotional significance of the stimulus, and this is quite perspective for neuromarketing. N200, P300 and N400 components have been studied in marketing-related topics quite intensive.

P300 is widely used in consumer neuroscience researches (Polich, 2007) (Guo et al., 2016; Jones et al., 2012) (Treleaven-Hassard et al., 2010). Some studies show that it relates to internal decision-making and resource allocation of attention and memory processes (Polich, 2007). It also reflects P300 reflects consumers' propensity to purchase or the cognitive process of selection based on value measurement (Guo et al., 2016). Moreover, the researchers suggested to analyze consumer evaluation of the price offer with P300 as a predictor (Schaefer, Buratto, Goto, & Brotherhood, 2016).

N200 is a negative deflection in the scalp potent of the brain’s potential starting 200ms after stimulus demonstration (Telpaz et al., 2015). Telpaz, Webb and Levy (2015) used a combination of EEG and ERP (N200) measurements to predict product preferences.

High N200 is associated with familiar sources vs. unfamiliar sources (Guo et al., 2016). In a study on extended branding and product category, the N200 component was enhanced when encountering a new clothing brand, especially under the influence of primed negative emotions (Ma et al., 2007). This finding suggested that both emotions and product category played a role in the perception of brand extensions (Lin et al., 2018).

N400 amplitude depends on the congruence between two stimuli: the more incongruent the pair is – the bigger amplitude of the N400 can be. It can be used in researches of associative links between the logo and the product or between the product and the brand mscot. It is generally assumed that the N400 is related to semantic memory. N400 can be used to identify the incongruities between the objects, consumer associations (Lin et al., 2018; Wang et al., 2012) or how the price offer meet consumer expectation (Jones et al., 2012; Kutas & Federmeier, 2011). Harris, Ciorciari and Gountas (2018) consider N400 as a language potential that occurs in response to semantic incongruities. Wang, Ma and Wang (2012) described a cognitive reaction that elicited the N400 if the product's attributes were atypical to the category of the brand.

According to Jin, Wang, Yu and Ma (2015), the N400 could serve as an index of brand strategy evaluation because it can show the association between the brand name and product name. Their study confirmed that brand extension could not be the best brand strategy and to create a new brand could be better than an inappropriate extension.

Moreover, it has been suggested that neuronal responses at 400 ms reflect gender specific cognitive strategies in choice making in real life situations. (Braeutigam, 2014)

Recently, Fudali-Czy˙z et al. (2016) showed that N200, P300 and N400 components were responsive to incongruence between the original brand name and extended product name. Yang, Lee, Seomoon and Kim (2018) applied it to service-to-service brand extension.

While ERP commonly used in consumer neuroscience researches to examine brand expansion and price offers, the consumer perception of brand mascots remains insufficiently studied.

3. Experiment

Research hypothesis 1 (H1): The mean amplitude of ERP component N200 for a target product is significantly different for congruent vs. incongruent brand mascots.

Research hypothesis 2 (H2): The mean amplitude of ERP component N400 for a target product is significantly different for congruent vs. incongruent brand mascots.

3.1. Research objective

We have chosen one of the leading brands in Russian dairy products market – Prostokvashino. It has high brand awareness and use as a brand mascot a very familiar for Russian consumers cartoon character – Matroskin the Cat.
As a target product we used a picture of a milk bottle. It has typical shape and colors for Prostokvashino brand (Figure 1).

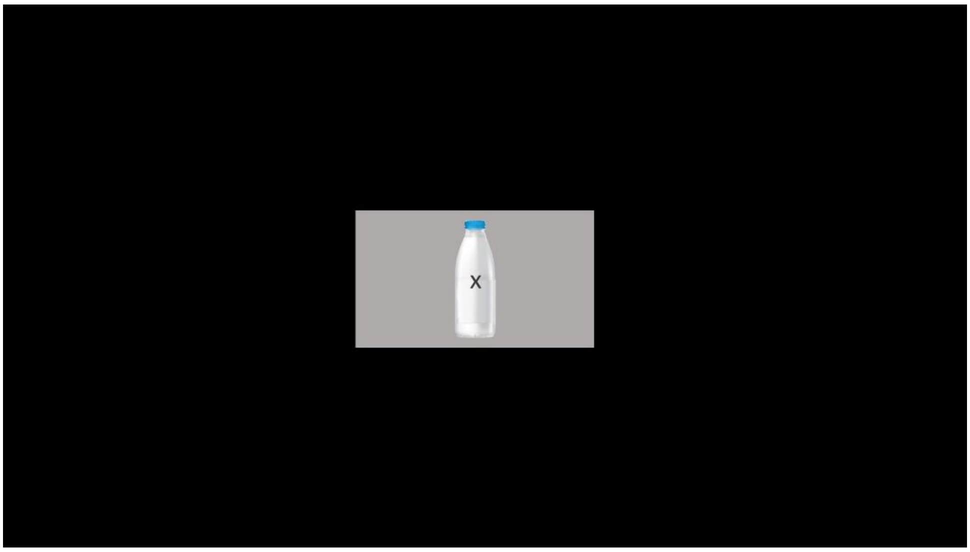
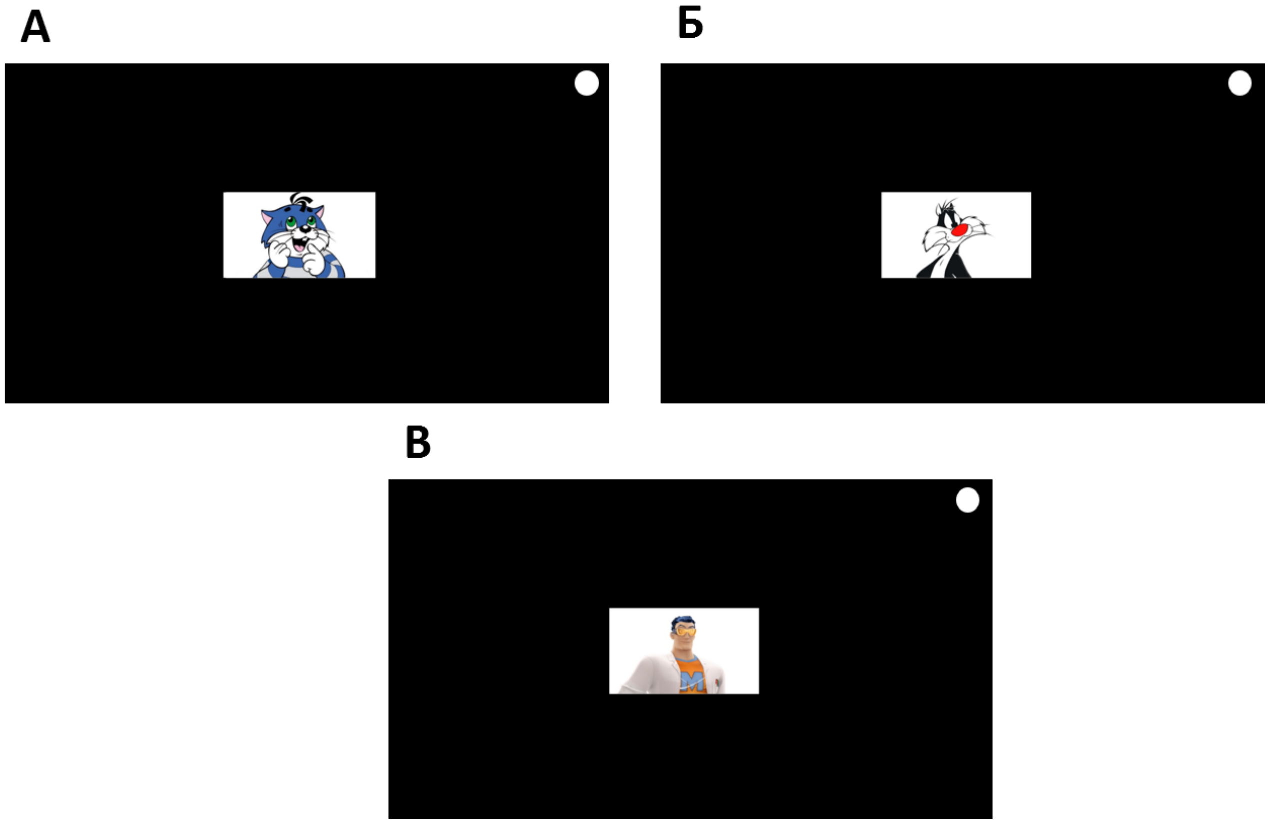


Figure 1. The image with a fixation cross presented during the interstimulus interval.

Three brand mascots (differentiated brand relevance) were selected for the experiment (figure 2):

1. Matroskin the Cat – Prostokvashino brand mascot.
2. Silvester the Cat (the character of the Looney Tunes cartoon by Warner Bros., low brand relevance);
3. Mr. Muscle (the mascot of a hard-surface cleaner brand, irrelevant to Prostokvashino brand).

The top right corner of each screen shows a white circle that was presented simultaneously with mascot images. It served as the photosensor target.



3.2 Research design and methodology

Registered parameters

Equipment	Parameters
NVX 24	1. Monopolar EEG in 11 locations: Fz, F3, F4, Cz, C3, C4, Pz, P3, P4, Oz, O1, O2. Left hemisphere and midline locations were registered relative to the left ear, right hemisphere locations were registered using the right ear as reference. 2. Binocular EOG were recorded for eye-movement artifact detection.
Photosensor “MCS”	Annotations that mark stimulus onset

The sample size was 15 respondents (8 male, 7 female; age 18-30; no health problems).

Experimental procedure:

1) Electrode placement.
2) EEG registration with eyes open and eyes closed (1 minute in each state).
3) Registration of ERP. A participant sits in a comfortable chair in front of a monitor for stimulus presentation. Images of different brand mascots were used as stimuli. They were presented in accordance with the following timeline:
   - 1000 ms – stimulus presentation duration
   - 3000 ms – interstimulus interval.

Overall, we used 50 onsets of each stimulus presented in random order. An image of a milk bottle was displayed during the interstimulus interval. In the center of the image there was a fixation cross on which participants were instructed to focus in order to minimize eye-movement artefacts.

Stimulus images size was adjusted to minimize eye movements during picture viewing. Image position on screen was manipulated so that the most attention-attracting elements, such as the eyes and the nose, were located in the center. The same reasoning was used to avoid simultaneously showing a mascot and the product on the screen, contrary to what was originally intended. Otherwise, participants would make uncontrolled saccades between the two images, which could lead to EEG data contamination with eye movement artefacts. After the experiments respondents were asked whether the brand mascots were familiar for them.

4. Results

Here we share findings from the preliminary data analysis on the most differentiated by congruency pair of stimuli: Matroskin the Cat (relevant character) and Mr. Muscle (irrelevant character). EEG data of six respondents were satisfactory quality to be included in this analysis. Electrode Pz was used for ERP evaluation due to its sensitivity to N2, P300 and N400 components.

Since our study employed a unique experimental paradigm, the ERP components varied across participants. For this reason, comparison of ERP amplitude averages was performed in the following time windows: 200-250 ms, 250-300 ms, 300-350 ms and 350-400 ms from stimulus onset.

So far, the only reliable amplitude difference was observed in the 200-250 ms window, before the standard latencies of P300 and N400 components. Mean amplitude of the signal was higher for irrelevant character than for the relevant one ($p=0,027$) as shown in figure 3.

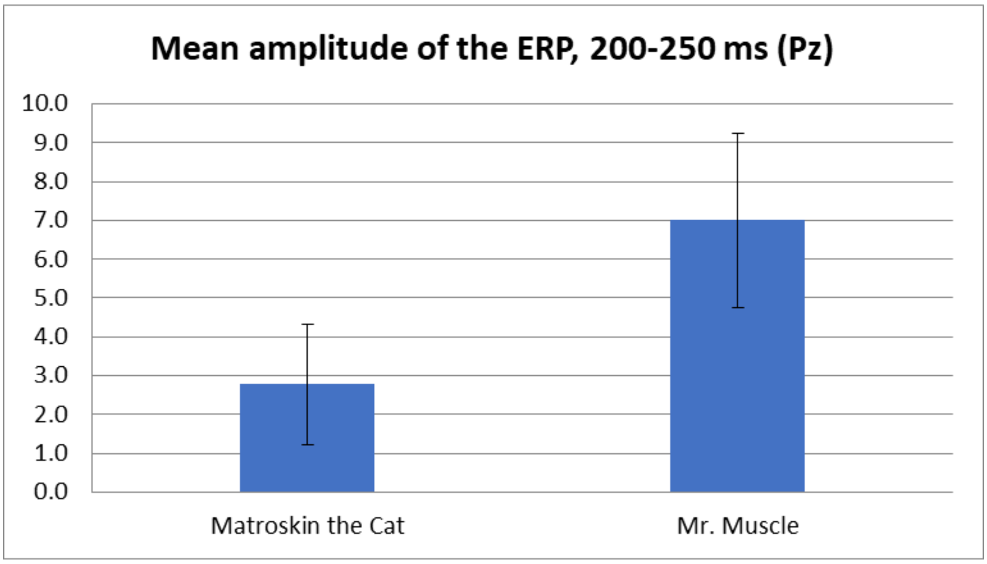


Figure 3. Mean amplitude of the ERP in Pz in the time interval 200-250 ms after the stimulus onset.

RH1 was supported. Analysis to test RH2 is in process.

5. Future research

For the future detailed analysis more subjects are needed as well as the comparison not only the amplitude in time windows but also the latencies of the components. The paradigm is quite labile; it allows researchers to use new ideas and to change the stimulation scheme. For example, the next upgrade of our paradigm is based on the idea to combine it with the classical chess pattern to model an interaction of subjects with stimuli like the images on brand-walls.

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