Bölüm 15

Investigation of the Effect of Individuals' Empathy Levels on the Perception of Ewom Messages By Electroencephalography (EEG)[1]

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Abstract

With the advancement of technology, word of mouth (WOM), which is an important channel for consumer communication, has moved to the online world, and the concept of electronic word of mouth (eWOM) has taken its place in the literature. Many demographic and psychological factors shape the effect of eWOM messages on consumer decisions. One of them has been reported as empathy levels. Despite the indirect emphasis on empathy in the consumer behavior literature, no study directly addresses whether the degree of empathy has affected consumer perception of eWOM messages. Based on this research gap, this study aims to determine the effect of the consumers' empathy degree on the positive, and negative e-WOM messages, which are to be handled with the electroencephalography (EEG) method, which is one of the neuroscience techniques. At the first step of the study, an experimental design that included positive and negative eWOM comments on eight brands was prepared through the Paradigm program. Then, the empathy levels of the 65 participants included in the experiment were determined,

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and low- high-empathy experimental groups were formed. During the experiment, the cognitive activities of individuals were recorded with EEG. Data on participants' empathy levels and cognitive activities against eWOM comments were subjected to independent sample t-test analysis via the SPSS program. As a result of the analyses carried out, it was determined that the p300 amplitude in the parietal region differed significantly in the face of positive and negative eWOM messages from individuals with low and high empathy levels. In other words, it has been determined that the effect of eWOM messages on individuals differs according to the level of empathy exhibited by individuals. It is foreseen that the results obtained will help understand the effect of empathy, which indicates individual motivation and will benefit practitioners in using eWOM platforms, which are critical for today's online organizations.

Introduction

Empathy is a key factor in human interaction, which infers feeling and understanding others' emotions (Singer & Lamb, 2009). As studies indicated, a person's empathy level affects his or her perception of others' good or bad experiences (Cohen & Hoffner, 2013; Pedersen, 2021). Despite the significance of empathy in customer perception, this subject has not yet been directly addressed in the eWOM literature. Of course, to initiate empathy, the individual must first develop attention to the stimulus and trigger a cognitive process (Morgan & Morgan, 2005; Gu & Han, 2007). Therefore, attention is accepted as the first step toward empathy (Van Zonneveld et al., 2017; Li et al., 2020).

Research also indicates that people are under the effect of social norms while reporting their empathy reactions toward other people's suffering or happiness (Eisenberg et al., 2010; Nook et al., 2016). In other words, people tend to say they feel sad even when they are not when seeing another person in a painful situation (Fehr & Fischbacher, 2004). Social norms are institutionalized behavior patterns that are expected to adapt to people, and it is known that human beings, as social creatures, easily learn social norms and behave according to them (Mu et al., 2015). This is an important problem for scientific research focusing on the issues that social norms affect. That's why in our research we used electroencephalogram (EEG) methods to test our hypotheses. The most important advantage of EEG is that it allows an understanding of real emotions and feelings concealed by social norms (Perry & Bentin, 2009). In other words, because the EEG method does not depend on participants' self-reports, social norms do not affect the results, and researchers can make a reliable and valid measurement. An EEG provides information about a consumer's brain activity that can be used to

clarify the empathy process when positive and negative eWOM comments are interpreted by consumers. Furthermore, researchers also find out that the EEG method is an effective way to measure people's empathic reactions via oriented attention in real-time (Oshaka et al., 2007; Neumann & Westbury, 2011; Kim et al., 2013).

Together with these findings, the present study attempts to explore whether and how consumers' empathy degree affects the perception of positive and negative eWOM comments addressed with EEG measurement. To measure empathy levels, directed attention, which indicates the beginning of cognitive activation (Li et al., 2020), was detected by EEG, and the empathy levels of individuals were determined using these signals. In other words, there is a gap in eWOM literature that indicates the importance of empathy for consumers' eWOM experiences. To fill this gap, we predict that consumers with different levels of empathy might display different patterns of eWOM behavior when they interpret negative and positive comments.

1. Electronic Word Of Mouth (eWOM)

As a result of the rapid developments in communication technologies, word of mouth (WOM) has evolved into a digital form which is called "electronic word of mouth (eWOM). eWOM has a wide range of communication techniques; e-mails, websites that are specifically designed for consumer experience, social media posts, blogs, videos, etc. However, the most commonly used eWOM source is "consumer reviews" about products and services (Cheng & Zhou, 2010). Online consumer reviews represent the statements of the consumers who buy, use, and have an experience with a product (Lee et al., 2011).

eWOM is considered one of the most effective communication models for monitoring consumer behavior, just like WOM, and even easier to measure compared to WOM (Bickart & Schindler, 2001; Park et al., 2011). eWOM messages, which are assessable as an online archive, can be tracked by marketing practitioners in real-time. Through this constant monitoring, changes in consumer behavior may be identified rapidly, allowing companies to enhance their value proposition (Dellarocaset al., 2007).

Conducted studies about eWOM show that eWOM has a strong positive effect on seeking information (Chang & Wu, 2014; Yang, 2017), attitude change (Kim et al., 2016; Park & Jeon, 2018), purchase intention (Weisstein et al., 2017; Bi et al., 2017) and perceived brand value (Kudeshia & Kumar, 2017). Despite this positive effect, intense information and negative comments from other users presented to the consumer with eWOM can

confuse, and thus they may give up purchasing (Furner & Zinko, 2017). For this reason, eWOM should have useful and sufficient content and should always be monitored by practitioners, (Stuart et al., 2014).

The triggers that direct the consumers to eWOM are similar to WOM. However, in addition to the common desire to give feedback in WOM, eWOM contains a few more dynamics like the desire for social interaction, the potential to enhance self-worth, and the desire for economic incentives (Hennig-Thurau et al. 2004).

Bansal and Voyer (2000) state that eWOM messages are considered reliable by consumers just like WOM messages. In the study of Bickart and Schindler (2001), consumers reported that they found other consumers' thoughts about the product or service more reliable, more exciting, and empathetic than brands' professional marketing communication messages. Parallel to those researches Park and Kim (2008) found in their studies on customer preference that the recommendations consisting of consumer evaluations were more effective than expert recommendations. Moreover, BrightLocal (2014) found that 88% of consumers read reviews to judge the quality of a local business, 85% read up to 10 reviews, and 88% trust online reviews as much as personal recommendations. These results verify the previous research's findings of eWOM's widespread effect on consumers (Bronner & De Hoog, 2010; Yang & Mundel, 2021).

The motivators that direct consumers to online reviews are quite diverse. Initially, consumers believe that they are reaching more "real" information as the reviewers don't have any financial interest in the brand (Willemsen et al., 2011). Consumers also think that they can easily access information (Khammash & Griffiths, 2011) and thereby reduce the risk of purchasing (Verma & Yadav, 2021) via eWOM. Additionally, according to Khammash and Griffiths (2011), customers may be interested in online reviews for socializing, curiosity, pleasure, enjoyment, understanding others, or just because they are bored. This statement shows that consumers do not only pursue functional benefits but also create a communication model with emotional dimensions (Ahmad et al., 2014).

Van Kleef (2010) states that individuals use the emotional expressions of others as a source of social information. This approach demonstrates the close link between eWOM and psychology. Emotional content in consumer reviews may make it easy for consumers to experience and internalize the entire process (pre-buying, post-buying) of the product. Establishing emotional connections with others may improve empathy and empathy may both speed up and facilitate making decisions about the product (Ahmad

et al., 2014). Considering the determining importance of emotions in the purchasing process (Kim et al., 2012), it can be stated that consumer reviews that address emotions may shape the decision about purchasing to a great extent. Undoubtedly the personal background and psychological characteristics of the people who face the online review are as important as the person who creates that (Sweeney et al., 2012). Some individuals are more skeptical of others' views, while others may have higher empathy. This may affect the internalization of online reviews and may affect the decision-making processes.

2. Role of Empathy in Communication Behaviors

Empathy is one of the most important elements of human behavior and social interaction. It is also a popular topic of scientific interest, and there is a huge literature about empathy. Despite the expanding literature, there is no consensus definition of empathy. Mainly, empathy refers to the psychological phenomenon of experiencing another's feelings (Pfeifer et al., 2008; Gerdes & Segal, 2009) and imaginative apprehension of another's mental state (Lawrence et al., 2004). At a basic phenomenological level, empathy enables us to "*put ourselves in someone else's shoes*" (Singer & Lamb, 2009, p. 82). It is also described as "*an affective response more appropriate to someone else's situation than to one's own*" (Hoffman, 1987, p. 48). The basis of the definition confusion that exists in empathy research is related to the problem of whether empathy refers to an emotional or cognitive construct.

Recent neuroscience studies have provided new explanations for the existing conflicts in the literature about empathy. Research examining mirror neurons in the human brain correlates effective and perspective-taking components of empathy (Decety & Ickes, 2009; Decety & Lamm, 2009). Goubert et al. (2009) also demonstrate that the experience of empathy is an emotional simulation process that activates the limbic system. Therefore, when a person experiences empathy, the perspective-taking process operates in the prefrontal cortex and the temporal cortex, which means the person tries to develop a reaction to emotional stimulation (Shamay-Tsoory, 2011). In addition to this, if a person experiences other people's pain or stress, which is strongly related to empathy, this is followed by the emotion regulation process, such as helping other people (Eisenberg & Eggum, 2009). All these findings on empathy indicate that, besides the affective dimension of empathy, the cognitive dimension has an important effect on human behavior. In addition to that, these findings showed that there are commonalities in both affective and cognitive constructs (Blötner et al.,

2021). At this point, the present study considers the concept of empathy as both an effective and cognitive construct.

Empathy also seems to play a central role in consumer behavior. Researchers have examined the degree of empathy that influences the perceptions and behavior of consumers and marketing strategy (Chowdhury & Fernando, 2014). According to Kolko (2004), empathy provides product success, which affects sales rates. Similarly, Simon (2013) found that empathy provides consumer loyalty and increases purchase behavior. However, these studies focus on the effect of empathy in the face-to-face interaction process and indirect ways. Today, most purchasing behavior and customer relations are realized through online channels. At this point, the eWOM literature represents an important accumulation for understanding online consumer behavior (Park & Lee, 2009; Chu & Kim, 2011).

Studies in eWOM literature mention the importance of empathy in online consumer behavior. For instance, product information on online forums helps consumers empathize with the product experience and increases product-oriented reliability (Bickart & Schindler, 2001). eWOM also affects consumer economic value perceptions and loyalty intentions because it has higher credibility, empathy, and relevance to customers (Gruen et al., 2006). Additionally, eWOM allows consumers to share information, which is a credible source of voice for consumers and generates more empathy from each other (Kou et al., 2012).

However, little is known about the direct impact of the empathy level of consumers on eWOM. Our study seeks to extend the eWOM literature by addressing the lack of research on the direct impact of empathy. eWOM platforms include consumers' positive and negative comments about products and services, which affect consumers' product choices and purchase decisions. In this process, psychological aspects such as personality traits (Hu & Kim, 2018), self-enhancement (Hennig-Thurau et al., 2004), and a sense of belonging (Cheung & Lee, 2012) affect the interpretation of positive and negative comments. As is expected, consumers' level of empathy may change the interpretation and also affect the perception of positive and negative comments about products and services. The main hypothesis of the study was established to test this statement:

H1: The impact of eWOM messages differs according to the empathy level of consumers.

2.1 Neuroscience Approach For Analyzing Empathy

The goals of marketing, updated from a sales-oriented approach to a motivation to create value for all parties, began to evolve in the early 2000s to understand the behavior and mind of the consumer (Ciprian-Marcel et al., 2004). This historical evolution of marketing has led to the addition of a new area to the qualitative and quantitative research methods often used in marketing research, and the concept of "neuroscience" has very quickly entered the marketing literature.

Neuromarketing is an extremely beneficial research method when it comes to uncovering the responses that consumers develop with their tendency to conform to social norms or internal dynamics of which they are not even aware, without relying on their statements and analyzing their consistency (Robaina-Caldern & Martin-Santana, 2021). The method, which is positioned in research models as a complement to other traditional research methods, is considered one of the most promising approaches to explaining the gap between marketing theories and practice (Fisher et al., 2010).

Empathy, which is the main focus of our current research, is also a subjective tendency shaped by individual characteristics, situational variables, and inner motivations. For this reason, neuromarketing has the potential to offer a significant advantage as it is an approach that makes it possible to exclude factors such as individual biases or social influence in determining empathy levels.

After all, empathy is not a cognitive notion that can be directly detected by neuroimaging methods in all conditions. However, there are important neural markers that show the individual's empathy levels. Especially in empathy for pain (Meng et al., 2019), studies show that the most prominent of these markers that can be detected by neuroimaging methods is attention. As physical pain is modulated by attention (Choi & Watanuki, 2014), empathy is directly related to oriented attention, which is one of the top-down controlled mechanisms. The anterior cingulate cortex and the insula, which are involved in empathy for pain, became active when the unpleasant part of the stimulus was focused on, but not when the focus was switched to another aspect of the stimulus (Gu & Han, 2007). The temporal patterns of ERP (event-related potential) responses support the attentional restriction on the processing of pain empathy (Coll, 2018; Meng et al., 2019). The relationship between sensitivity to first-hand pain and empathy for pain is likely dependent upon top-down attentional modulations since the brain correlates of empathetic pain processing are responsive to such modulation.

Thus, individuals with a high level of empathy show a higher orientation towards the positive or negative conditions of others, while individuals with a low level of empathy tend to avoid these conditions. In other words, empathy levels are related to the attention directed by individuals, which can be tracked by the brain's event-related potentials. For the aforementioned reasons, in this study, ERPs are used to assess participants' attention to eWOM messages and gauge their levels of empathy. Based on the summarized literature, the following hypotheses predict that the P300 potential, which can be monitored by EEG and is an important marker of attention, differs in line with the empathy levels of individuals.

H1a: During the negative eWOM condition, consumers with lower empathy levels would have lower P300 amplitudes than customers with high empathy levels.

H1b: During the positive eWOM condition, consumers with higher empathy levels would have larger P300 amplitudes than customers with lower empathy levels.

3. Method and Analysis

The methodological process followed within the scope of this study, which deals with the effect of empathy level on the perception of eWOM messages with EEG, consists of four main steps: preparation of the experiment procedure, creation of the participant pool, data collection, and analysis.

The first step of the experimental procedure is to determine the demographic information and empathy levels of the people who are planning to participate in the research. The first part of the questionnaire prepared for this purpose consists of questions about demographic information (gender, age). In the second part of the questionnaire, the empathy scale developed by Gokalp and Inel (2021) was adopted.

The scale, which has a single dimension, consists of 7 items and includes the highest 28 points (high empathy) and the lowest 7 points (low empathy) to measure the empathy levels.

The second step of the preparations for the experiment is related to the determination of the eWOM interpretations to be presented as stimuli. In this step, 8 different fictional brand names (Fornia, Fulin, Lotti, Satao, Champi, Coren, Bulgar, and Prommi) and positive and negative eWOM messages related to these brands (4 positives, 4 negatives) were used by the researchers to prevent cognitive deviations and prejudices. Prepared brands and comments were shared with the participants who were accepted before

the experiment, and it was ensured that the participants were informed about the relevant brands and the eWOM messages developed for these brands.

The last step is related to the preparation of the experimental slide to be used in the data collection process via EEG. Using the Paradigm Experiment software, the eight brands and the positive-negative eWOM messages were inserted on the experiment slide. All stimuli were placed on blocks with a 1920x1080 screen resolution. Luck (2014) recommends showing each stimulus at least 50 times for an experiment to achieve accurate data by calculating all neural responses' means. Based on this information, 4-step visual stimuli were created in five different presentation blocks. In each block, the stimuli were shown randomly 120 times, and after each block, a break was given upon the request of the participants.

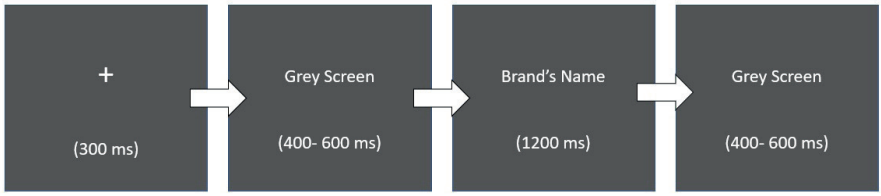

Figure 1. Presentation of stimuli in a block

Methodologically, the another important step in conducting the research is to assemble a group of participants. In this regard, Foul et al. (2009) rely on the power analysis presented. Specifically, the sample size for the experiment was set at 65 participants as a result of the calculations carried out with a confidence interval of 95%, an effect size of 0.5, and a power of 0.80. In addition to the sample size, the profile highlighted by the participants is also an issue that influences the process. At this point, studies in the literature were considered in determining the participants, and it was ensured that consumers aged 18–35 years whose activity in e-WOM channels was highlighted the most were included in the study (Yang, 2013; Cheung, 2014; Zhang et al., 2017; Lam et al., 2019). In addition, to increase the quality of the EEG measurement, the presence of a psychiatric or neurological condition, the presence of right-handedness, and the fact that they had made at least one online purchase in the last month were accepted as conditions for the selection of candidates.

Taking into account the relevant conditions, participant announcements were made through social media channels to create a sample pool. In the first stage, the empathy levels of 220 participants involved in the process

were measured, and 65 subjects with the highest (28 points) and lowest (7 points) empathy levels were determined as the main sample group, and a data collection calendar was prepared according to these participants. In the data collection phase, informed consent was obtained from the participants before the experiment, and the informing procedure was completed by the researchers about the experiment.

The EEG device used for data acquisition is a Nautilus an EEG model with 32 channels, dry electrodes, and wireless Before the experiment, participants were seated in a fixed seat 100 cm away from the LCD monitor. All participants were shown a 4-minute learning exercise that had similar features to the real experiment so that they could gain experience with the procedure.

The electrodes were placed on an EEG electrode head (g.GAMMAcap) that complies with the extended international 10/20 system. Once the device was placed on the skull, the g.Recorder program was used for recording. When configuring the EEG device, the input range (Input Range) was set to 375 mV (44.70 nV), the bandpass (Bandpass) to 0.5–30 Hz, and the notch selection to 48–52 Hz.

All data obtained with the EEG device were first cleaned of artifacts using EEGLAB 14.1.0 running under Matlab software. A 30 Hz low-pass filter was applied to remove excessive deviations in the data (Luck, 2014). Then, the data were divided into periods 200 ms before the onset of the stimulus and 1000 ms after the encounter with the stimulus, and the baseline was corrected by averaging the interval before the stimulus.

Afterward, the Independent Component Analysis (ICA) algorithm, which is used to remove artifacts caused by eye movement, blinking, and heartbeat, was applied (Jung et al., 2001). In this process, as a result of ICA made through ERPLAB 14.1.0, periods with voltage deviations exceeding 100 V in 100 ms periods of the signals were also eliminated. Periods with voltage deviations exceeding ± 100 V in 50 ms temporal windows in EEG signals were automatically eliminated by the analysis program. As a result of the operations, the amplitude of the P300 potential, which refers to the participant's attention to the stimulus, was clarified.

The P300 potential offers the opportunity to measure the unconscious mental reactions of individuals 300 ms before, which are active in the parietal region (Zhou et al., 2010). Thus, studies in the empathy literature indicate that the P300 potential is effective in determining empathy-oriented cognitive arousal, which points to attention. Based on this information,

the cleaning steps in the analysis process were carried out to clarify the cognitive arousal in the parietal region. Finally, the obtained signals were digitized through the Matlab software, and the data were transferred to the IBM SPSS 22 program. In this process, first of all, basic descriptive statistics were carried out. Then, testing the research hypotheses and comparing the changes in the mean amplitude values for P300 according to the empathy level of the participants were analyzed with the independent samples t-test, and the significance level was accepted as p =.05. Moreover, ethics committee approval for the experiment process was obtained with the decision numbered E-25403353-050.99-115632 taken at the meeting of the Eskişehir Osmangazi University Non-Interventional Clinical Research Ethics Committee dated March 11, 2020.

4. Findings

Sixty-five individuals aged 20–27 years participated in the data collection, which was conducted in November–December 2021. The demographic data of the participants are shown in Table 1.

Table 1. Demographics of participants

Variables	Categories	F	%
Gender	Women	35	53,3
	Men	30	46,7
Age	18-20	10	15,7
	21-23	30	46,3
	24-26	20	31,9
	27 and above	4	6,1

Participants' empathy level was assessed using the empathy scale developed by Gokalp and Inel (2021). The Cronbach's Alpha value of the scale, which was subjected to reliability analysis, was determined to be 73.2%. Looking at the distribution of scores obtained with the empathy scale, 35 participants (53.8%) who obtained a score of 28–25 were classified as having high empathy, while 30 participants (46.2%) who obtained a score between 7 and 10 were classified as having low empathy (Table 2).

Table 2. The distribution of participants' empathy levels

Empathy levels	**High (28-25)**	**35**	**53,8**
	Low (7-10)	30	46,2

Independent sample t-test results regarding the differentiation of P300 potentials that are collected in the parietal region based on empathy levels are given in Table 3.

Table 3. Independent sample t-test results

Type of eWOM	Event-related potentials (ERP)	Brain region	Empathy levels					
			Low		High			
			M	SD	M	SD	df	t
Negative	P300	Parietal	-114.408	889.404	1925.957	1899.587	63	-6.219*
Positive			-233.508	1090.012	1326.800	933.192	63	-5.394*

As shown in the results presented in Table 3, the P300 amplitude in the parietal region was found to be significantly different in the face of positive and negative eWOM messages from individuals with low and high empathy levels. In other words, the effect of eWOM messages on individuals differs according to the level of empathy displayed by individuals. This result supports the H1 hypothesis.

Similarly, it was found that individuals with high levels of empathy paid more attention to both negative and positive eWOM messages than individuals with low levels of empathy. Similarly, individuals with low empathy were found to have a lower tendency to consider eWOM and to be less influenced by eWOM messages than consumers with high empathy. These two findings were accepted as support for sub-hypotheses H1a and H1b.

5. Conclusion and Discussion

As in many other areas of life, the digitalization of shopping has opened up a new battlefield for today's marketing academics and practitioners. In this new dual world order, where digital and physical environments collide, brands must develop new strategies to survive and maintain their competitiveness.

At the beginning of these increasingly important phenomena is the understanding of the new consumers who are constantly active, whose interactions with each other are becoming unlimited and extremely easy, who trust the comments of others, and who tend to direct their shopping behavior in this direction in an environment where positive or negative comments can grow geometrically.

Although consumers' interest in the opinions of others (Berger, 2014), their level of trust (Walsh & Mitchell, 2010), and the determinants of this interaction on purchase decisions (Ahmad et al., 2014) and subsequent satisfaction (Anderson, 1998) have long been known in the literature, Although it finds a place for itself (Engel et al., 1969), studies on eWOM, which is the equivalent of this dynamic effect on digital platforms, only span a few decades.

eWOM, the electronic equivalent of word of mouth, has become a focal point for both academia and real markets with the development and spread of communication technologies. eWOM, which can be thought of as a network among consumers, can pose a serious threat when it comes to negative comments but also offers important opportunities for brands, such as feedback and the creation of a voluntary and organic audience.

Although many studies show that consumers trust other users' comments more than brands' communication efforts (Akyüz, 2013; Sarma & Choudhury, 2015), it cannot be assumed that these messages always reflect objective reality. eWOM messages may have content that is shaped in light of individual experiences, that is intentionally defamatory, or that is damaging to brand equity even though it is not targeted. Depending on the content of the message and the importance consumers attach to it, this situation can get in the way of the brand's marketing efforts and cause lasting damage. From a different angle, the question of whether positive comments reflect the truth should be discussed for the same reasons. A customer's satisfaction with the product may be perceived by others as a deliberate marketing effort, or it may not be consistent.

The inherent fluidity of the platform and eWOM makes it extremely difficult for brands to track and control all these phenomena. This is because interpersonal communication, which is an extremely complex issue in the physical environment, can also become much more complex on digital platforms where identities, norms, or social roles are relatively in the background.

In light of the difficulties and uncertainties, this study was designed by focusing on the phenomenon of empathy to understand the dynamics underlying the eWOM behaviors of individuals and the communication between each other. The starting point of the research was that individuals' empathy levels can be effective in their evaluations of eWOM messages, just as they determine the interaction between individuals (Redmond, 1989; Feng et al., 2004; Jemczura, 2004).

The hypotheses of the research were prepared with the assumption that the cognitive attention developed by individuals with low and high empathy levels towards positive and negative eWOM messages would be different from each other. The electroencephalograph, a neurometric measurement instrument frequently used in marketing and communication applications, was used, and specifically, the P300 potential was accepted as a marker, which was defined as a psychophysiological response for attention (Spencer & Polich, 1999; Egner & Gruzelier, 2004) and involvement (Aleksandrov & Maksimova, 1985; Hajcak & Foti, 2020).

When the P300 potentials of the two groups, consisting of participants with low and high empathy levels, were compared, it was found that the empathy level of the individuals caused an extremely important cognitive difference in the evaluation of eWOM messages.

Participants with high empathy levels were significantly more affected by both positive and negative eWOM messages than participants with low empathy levels. In other words, people with high empathy are significantly affected by other people's comments. As predicted, the role of empathy in cognitive responses to eWOM messages may be an important clue to understanding online consumer behavior. Because the results obtained show that empathy is an important dynamic underlying the power of communication and interpersonal interaction, it was found to be effective not only in positive messages but also in negative eWOM messages.

Measuring the interest and attention towards eWOM messages free from participants' self-reports via EEG, which is the adopted technique for our research, constitutes the original aspect of the paper. Thus, in this way, it was possible to detect and evaluate a cognitive function that occurs in an ms-level time interval following the encounter with the stimulus. Therefore, it is thought that cognitive responses that can be monitored simultaneously are important to understand how eWOM messages are processed at the individual level and how they are reflected in consumer behavior.

The relationship between empathy and consumer behavior has been proven in previous studies with its effects on consumers' perceptions of corporate social responsibility studies (Xie et al., 2015), services (Wei et al., 2020), and product evaluations (Chen et al., 2021). However, the relationship between eWOM, cognitive attention, and empathy, which is one of the most important issues in digital markets and is increasing in importance day by day, is still a new field of study for both literature and practice.

Considering the determinative power of eWOM on consumers' purchasing decisions (Alhidari et al., 2015), it is seen that the effects of all cognitive elements subject to this interaction on each other and ultimately on purchase intention should be elaborated. Knowing the working principles of these forms of social interaction, which not only trigger consumers to buy but also enable them to develop an attitude towards the brand in the long run, will also be an important clue for shaping communication with consumers.

According to the results obtained, it is seen that the level of empathy, which is one of the individual characteristics, has an important role in social interaction in terms of marketing practices. In this context, the sensitivity of consumers with high levels of empathy towards positive and negative eWOM messages should be correctly analyzed by brands, and both brand communication and sustainable monitoring of consumer views on the brand should be ensured.

In this study, only eWOM messages are prioritized to represent the interaction between consumers. Further research on not only consumer-originated communication but also brand-originated communication efforts with a focus on consumer cognitive processes is thought to add to both the literature and practice.

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