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Uncovering the receiver's traits that moderate the effect of e-WOM valence on the purchase intentions of healthy food products

Descubriendo los rasgos del receptor que moderan el efecto de la valencia del e-WOM en las intenciones de compra de productos alimenticios saludables

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ABSTRACT

This study applies the information integration theory (IIT) to explore how individuals simultaneously combine several stimuli —electronic word-of-mouth (e-WOM) valence, information source, and brand expectations— depending on four traits —consumption product frequency, social media use frequency, health consciousness and susceptibility to social influence— to form intentions toward health food brands products commented in social media. A 2×2×2 experiment was designed, and 200 Mexican consumers recruited online were randomly assigned to a high or null brand expectation condition before being exposed to a combination of positive or negative e-WOM published by a digital consumer or an influencer. According to the IIT, a multiplicative algebraic model describes how the receiver's health consciousness, product category consumption frequency, and social media use moderate the relationship between e-WOM valence and consumers' purchasing intention. The moderator effect of two experimental factors, the information source and the brand expectations, plus the moderator effect of the consumer social susceptibility were not empirically supported; however, brand expectations directly influenced the purchase intention. This study contributes to the online consumer behavior and e-WOM literature by examining the nonconscious or semiconscious processing of e-WOM valence when combined with other stimuli and how the effect of e-WOM valence changes depending on individual behaviors and traits.

Keywords: e-WOM, social media, purchase intention, online consumer behavior, healthy food products.

RESUMEN

Este estudio aplica la teoría de integración de la información (IIT) para explorar cómo los individuos combinan simultáneamente varios estímulos —la valencia del boca a boca electrónico (e-WOM), la fuente de información y las expectativas de marca— dependiendo de cuatro características —la frecuencia de consumo de la categoría de productos, la frecuencia de uso de medios sociales, la conciencia sobre la salud y la susceptibilidad hacia la influencia social— para formar intenciones de compra hacia un alimentos de marcas saludables comentados en redes sociales. Se diseñó un experimento 2×2×2 y 200 consumidores mexicanos reclutados en línea fueron asignados aleatoriamente a un nivel de expectativa de marca alto o nulo antes de exponerlos a una combinación de e-WOM positivo o negativo publicada por un consumidor digital o un *influencer*. De acuerdo con la IIT, un modelo algebraico multiplicativo describe cómo la conciencia sobre la salud, la frecuencia de consumo de la categoría de producto y la frecuencia del uso de las redes sociales moderan la relación entre la valencia de e-WOM y las intenciones de compra de los consumidores. El efecto moderador de dos de los factores experimentales, la fuente de información y las expectativas de marca, además del efecto moderador de la susceptibilidad a la influencia social no se apoyaron empíricamente, sin embargo, las expectativas de marca tuvieron un efecto directo significante sobre las intenciones de compra. Este estudio contribuye a la literatura del comportamiento en línea del consumidor y del e-WOM al examinar el procesamiento no-consciente o semiconsciente de la valencia de e-WOM cuando ésta se combina con otros estímulos y cómo el efecto de la valencia de e-WOM cambia dependiendo de los comportamientos y rasgos de los individuos.

Palabras clave: e-WOM, redes sociales, intención de compra, comportamiento en línea del consumidor, productos alimenticios saludables.

1. INTRODUCTION

Currently, 59.4% of consumers worldwide spend more time on social media (e.g., Facebook, Instagram, and Twitter) than they did in the past (Statista, 2023). As consumers become overloaded by the large volume of online information, they have become more skeptical about traditional advertising and tend to use social media platforms to make informed purchasing decisions based on the comments of other consumers, trustworthy social networks, and experts (Verma & Yadav, 2021). This widespread use of social media has enhanced the role of electronic word-of-mouth (e-WOM) as one important informal source of information regarding products and services. According to Nielsen (2022), Internet users mainly trust the recommendations of people they know above any advertising while the opinions of digital consumers, particularly those who have experienced the product/service or are like-minded, are judged the second most reliable source of information. Previous research (Chevalier & Mayzlin, 2006; Sénécal & Nantel, 2004) also demonstrates how online product recommendations influence consumers' product choices.

e-WOM is "any positive or negative statement made by potential, actual, or former consumers about a product or company, which is made available to a multitude of people and institutions via the Internet" (Hennig-Thurau *et al.*, 2004, p. 39). Consumers create e-WOM in a variety of ways, such as online product reviews, personal e-mails, social media posts, discussion boards, and online communities (Babić Rosario *et al.*, 2020; Chu & Kim, 2018). e-WOM is considered the electronic version of the traditional WOM; however, e-WOM can be more easily obtained and spread primarily to other digital consumers at a remarkably higher speed than regular WOM (Huete-Alcocer, 2017). Therefore, e-WOM represents an unprecedented opportunity for marketers because it has the potential to significantly influence consumers' attitudes, perceptions toward brands, and purchase decisions (Sen & Lerman, 2007; Shabbir-Husain & Varshney, 2022).

Even though studies on e-WOM have substantially increased in the past two decades (Babić Rosario *et al.*, 2020) the effect of its valence (positive versus negative) on consumer behavior and decision-making is inconsistent. Some studies (Barcelos *et al.*, 2018; Lee & Ro, 2016) concluded that negative e-WOM has the strongest influence on consumer responses, whereas others (e.g., Manganari & Dimara, 2017) posit that positive e-WOM has the greatest effect. Therefore, the extant literature calls for further studies to increase the understanding of the variables that reinforce or hinder the effect of e-WOM on key consumers' responses (Jeong & Koo, 2015; Verma *et al.*, 2023). To address this need, this study aims to test the moderator effect that brand expectations and the receiver's traits have on the relationship between the e-WOM valence and consumer's purchase intentions for healthy food products. The receiver's traits studied include two psychographic traits (susceptibility to social influence and health consciousness), and two behaviors (frequency of product usage and frequency of use of social media). To the best of the authors' knowledge, some of these variables have been scarcely studied in the e-WOM literature, particularly brand expectations, frequency of product usage, health consciousness, and frequency of use

of social media. Additionally, previous studies have not simultaneously examined the moderating effect of this set of variables that seem important in the context of healthy food products.

We chose a healthy food product category as many consumers have made eating healthily a higher priority in their lifestyles after the pandemic of COVID 19. According to the 2023 Data Bridge Market Research Report, the size of the global health and wellness food market size was USD 878.84 billion in 2023 and is projected to increase its value to USD 1,816.44 billion by 2031, with a compound annual growth rate of 9.50% from 2024 to 2031. The online survey performed by McKinsey (Grimmelt *et al.*, 2022) reports different age cohorts are interested in consuming healthy and sustainable food but they are confused about what manufactured products contribute to their goals of adopting healthier lifestyles. Countries like Mexico have introduced front labels in the packaging of food and beverages that provide a general idea of how healthy a manufactured-packed product is. However, although Mexican consumers support the implementation of front-of-package warning labels (e.g. if it has a large amount of sugar), their introduction has not increased their consumption (Ayuzo del Valle *et al.*, 2022). Other actions beyond classifying food as "good" or "bad", such as providing nutritional education, improving taste, and promoting positive e-WOM for healthy food products seem more promising.

The literature review on e-WOM performed by Akdim (2021) in the travel sector showed that the message valence, relevance, understandability, and visual cues are the most important antecedents of the consumer's behavioral intentions; source credibility is the sender characteristic that most affect the consumer's behavioral intentions, and susceptibility to interpersonal influence is the receiver characteristic that most influence attitudes and behavioral intentions. This study contributes to the online consumer behavior and e-WOM literature by providing empirical evidence about other receiver's traits (health consciousness, frequency of consumption of the product category, and frequency of social media use) that moderate the relationship between e-WOM valence and purchase intentions for the case of healthy food products. In addition, the information integration theory (IIT) (Anderson, 1981, 2014), a scarcely used theoretical approach (Babić Rosario *et al.*, 2020) is used to explore the effect of e-WOM valence on consumers' responses, by proposing how consumers unconsciously or semiconsciously process information to form attitudes and intentions (Anderson, 1981; Carlson & White, 2008).

The IIT proposes that the information is organized by individuals using a goal-direct method of processing through three sequential operations: valuation, integration, and response. The valuation process transforms observable stimuli into subjective representations or psychological values. The integration process transforms subjective representations into an internal judgment. The action process transforms this judgment into an observable response (Anderson, 1981, 2014). Accordingly, the e-WOM valence is an external stimulus that the individual receives, weighs, and integrates to produce a response. A consumer exposed to positive/negative e-WOM may process the post regarding the product of a healthy brand depending on the source that gives the message, their expectations regarding the brand, and their personal traits.

We discuss the research framework, describe key constructs, and state hypotheses in the section following this introduction. Next, we present data collection, measure validation, analytical procedures, and results. Finally, we discuss the implications, limitations, and future research directions.

2. THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

2.1. e-WOM valence and source of information

Valence is defined as the positive, negative, or neutral characteristics of the statements in a message (Tirunillai & Tellis, 2014). A positive statement is associated with satisfying consumer experiences, while a negative statement is associated with consumer complaints (Tsao, 2014). The content's valence provides readers with positive or negative guidance, while a neutral review offers descriptive information without any evaluative direction (Manganari & Dimara, 2017).

The literature on WOM valence has focused on assessing what type of content valence people prefer to share (Mishra & Maheswarappa, 2019) and what drives individuals to share positive or negative content (Amatulli *et al.*, 2019). Additional literature has explored the effect of content valence on consumers' attitudes and behavior (Lee & Ro, 2016; Manganari & Dimara, 2017; Roy *et al.*, 2019) and which type of content (positive or negative) has the most impact (Lee & Ro, 2016; Park & Nicolau, 2015; Sen & Lerman, 2007; Shabbir-Husain & Varshney, 2022; Tsao, 2014).

In terms of the influence of content valence, the literature suggests that consumers consider negative reviews to be more significant or helpful (Barcelos *et al.*, 2018; Lee & Ro, 2016; Park & Nicolau, 2015; Shabbir-Husain & Varshney, 2022). Sen and Lerman (2007) suggested that people are more likely to attend and read negative reviews of commodity products than positive ones. However, Tsao (2014) found that the influence of valence depends on how the information is used. For example, negative reviews have a greater impact on movie selection than positive ones, while positive reviews have a greater impact on movie evaluation than negative ones. Roy *et al.* (2019) found that reviews that contain both positive and negative justifications simultaneously have a more positive impact on online purchase intention than those that only contain positive or negative reviews.

This study follows the stream of research that claims negative e-WOM has the greatest effect on consumer behavior but also acknowledges that the influence of e-WOM on purchase intention depends on the homophily, trustworthiness, expertise, and informative scope of the source of information. This second essential element of e-WOM communication that affects consumers' responses has two main categories: regular digital consumers or well-known individuals perceived as reliable sources acknowledged as influencers. The extant literature has focused on evaluating what type of e-WOM source has the greatest effect (Chen *et al.*, 2016; De Veirman, Cauberghe, & Hudders, 2017) and what source's characteristics (e.g., credibility) are more desirable (Gross & Wangenheim, 2018; Lou & Yuan, 2019) and influential (Manchanda, Arora, & Sethi, 2022; O'Reilly *et al.*, 2016; Zainal, Harun, & Lily, 2017).

Studies on the e-WOM source suggest that the information spread by influencers is more credible and likely to reach a wider audience (De Veirman *et al.*, 2017) because influencers have desirable characteristics and qualities that increase their impact over others (Gross & Wangenheim, 2018; Lou & Yuan, 2019) and, as a result, have many followers. Lou and Yuan (2019) analyzed the effect of social media influencers on consumers in the context of marketing and discovered that credibility, attractiveness, and the sense of identity felt by followers have a positive impact on consumer behavior and purchase intentions. According to Audrezet *et al.* (2020), influencers positively affect consumer-based brand value. Folkvord *et al.* (2020) compared the effectiveness of promoting healthy food in digital media by a real versus a fictitious influencer and concluded that parasocial interaction mediates the effect of the type of influencer on consumers' attitudes and purchase intention regarding healthy food products. Real social influencers who establish a strong connection (fit) with their followers deliver more effective messages than those with weaker connections. According to Sánchez-Fernández and Jiménez-Castillo (2021), followers' emotional attachment to the influencer and the value they place on the information they share impact WOM and purchase intentions.

As stated in the IIT, the information source and valence are external stimuli received and integrated by the individual to produce a response. We propose that individuals process posts concerning healthy food brands as stimuli depending on their content (if negative or positive) and the source's characteristics (credibility, expertise, immediacy, or attractiveness). Thus, individuals may integrate quantitative judgments into the same post differently depending on how the stimulus is combined during the valuation process. Therefore, we propose the first research hypothesis:

H1: Negative e-WOM has a greater (negative) effect on purchase intention than the (positive) effect of positive e-WOM, but these effects are strengthened when the source of information is an influencer.

2.2. Brand expectations as moderator of the e-WOM valance on purchase intentions

Although social media research claims that consumers have pre-existing brand expectations, how they influence online consumer behavior has been barely examined (Krishnamurthy & Kumar, 2018). According to IIT, specific expectations are shaped when a consumer receives information from a brand (López & Sicilia, 2014), which depend on factors such as the brand's communication and marketing efforts (Karanges *et al.*, 2018). Consumers embrace a stronger interest and passion for an object when they have higher expectations about it (Zaichkowsky, 1985). Moreover, consumers with high brand expectations are less likely to change their impressions of the brand regardless of its negative aspects (Oflaç, Sullivan, & Baltacioğlu, 2012).

Tsao (2014) explored the influence of expectation and online reviews of moviegoers on movie selection and evaluation and concluded that expectations moderate the effect of review valence on movie selections and subsequent evaluations. Mov-

iegoers with low expectations were more receptive to e-WOM from other viewers and the ratings of film critics. Therefore, based on this limited existing literature and the first research hypothesis, we expect brand expectations influence how consumers perceive and interpret e-WOM valence. If a brand has set high expectations and consistently meets them, positive e-WOM will reinforce these expectations, potentially leading to purchase intentions. Conversely, if the e-WOM is negative, consumers with high brand expectations may perceive it as less credible or relevant, thereby moderating its impact on purchase intentions, but the moderating effect will be stronger. In the context of healthy food, brand expectations can play an even more crucial role. Consumers often rely on brand expectations as a heuristic to gauge product healthiness and quality, given the complexity of nutritional information. Therefore, we formulate the next research hypothesis.

H2: *Brand expectations moderate the effect of e-WOM valence on consumers' intentions to purchase a healthy food brand. Negative e-WOM has a greater negative effect on consumers' purchase intentions than the favorable effect of positive e-WOM when brand expectations are higher.*

2.3. Psychographic and behavioral variables as moderators of the effect of e-WOM valence on purchase intentions

Psychographic variables have been shown to explain consumer responses toward e-WOM (e.g., Lee & Koo, 2012; Lee & Ro, 2016¸ Zou, Yu, & Hao, 2011). For example, Valkenburg and Peter (2013) state that individual differences may moderate the effect of media use on cognition, emotions, attitudes, beliefs, physiology, and behavior. Additional studies suggest that susceptibility to interpersonal influence significantly impacts consumer decision-making (Bearden, Netemeyer, & Teel, 1989; Chu & Kim, 2011; Stöckli & Hofer, 2020; Teo, Leng, & Phua, 2019). Consumer susceptibility to social influence (CSSI) is the tendency to modify one's attitudes or behavior in response to the activities of others (Bearden *et al.*, 1989; Blank, Walther, & Isemann, 2017); in the e-WOM context, it is conceptualized as the tendency to learn about products and services by seeking information from others when making purchase decisions (Park *et al.*, 2011). Individuals who are more susceptible to the impact of information place a higher weight on the message's information, while individuals more susceptible to normative social influence place a higher weight on the transmission and relationship processes (Chu & Kim, 2011). Stöckli and Hofer (2020) showed that susceptibility to normative social influence predicts the extent to which Facebook users comply with the behavior of others (e.g., buying, or visiting what users on other online social networks post).

Zhou and Guo (2017) found that reviewers' susceptibility to social influence from previous reviewers depends on the reviewers' characteristics (connectedness and expertise), characteristics of the review itself (valence and length), and a temporal factor (time distance). De Pelsmacker *et al.* (2018) evaluated the moderating role of review readers' product category involvement and susceptibility to interpersonal influence on the relationship between the text valence of online reviews and readers' WOM

intention and concluded that the review text valence effect is more significant for more highly involved and socially susceptible people.

In terms of healthy choices, which is the context in which the present study is developed, health consciousness (HC) is one of the key psychographic factors that impact consumers' decisions (Ali & Ali, 2020). Health-conscious individuals are motivated to improve and maintain good health, seek information regarding nutritious diets, engage in more physical activity, and care about disease prevention (Michaelidou & Hassan, 2008; Nagaraj, 2020; Shin & Mattila, 2019; Wardle & Steptoe, 2003). In addition, health-conscious consumers are more likely to search for health and nutrition information on social media and the Internet (Ahadzadeh, Sharif, & Ong, 2018; Castillo, Carrete, & Arroyo, 2022). According to Nagaraj (2020), HC has a positive impact on consumers' attitudes and, as a result, on the intention to purchase organic food products. Several studies examined the moderating role of HC on consumers' attitudes and behaviors (Sakib, Zolfagharian, & Yazdanparast, 2020; Suttikun, 2021).

Adapting the previous findings to the context of e-WOM for healthy food brands, this study proposes the fourth and fifth research hypotheses:

H3: *The influence of e-WOM valence on the intentions to purchase a healthy food brand is greater when a consumer is highly susceptible to social influence.*

H4: *The influence of e-WOM valence on the intentions to purchase a healthy food brand is greater for more health-conscious consumers.*

Last, previous studies (Lin & Lin, 2007) suggest that consumers with higher product knowledge, which includes awareness of product categories, product beliefs, and previous experience using products, evaluate products based on their perceptions of the product's attributes (e.g., quality) as they are confident in their product knowledge. Product experience can be directly related to the frequency of product consumption, making it a suitable proxy. For example, Kaplan *et al.* (2007) show the frequency of product consumption (FPC) has a (direct or indirect) impact on consumers' decision to purchase a customized product within a base category. Other authors, such as Samson (2010), concluded that the FPC within a particular product category has a significant impact on the number of WOM conversations. Furthermore, the analysis of panel data from five product (including healthy food) trial campaigns shows WOM is less effective among loyal product users (i.e., those who frequently use a particular brand) than it is among non-loyal users. According to Lee and Koo (2012), negative reviews have a significant negative impact on message credibility, which is moderated by the consumer's objective information and subjective knowledge. Thus, further research on the interaction between FPC and WOM is recommended.

There are a limited number of studies on how the frequency of social media usage (FSMU) affects consumer behavior. Most studies on the impact of social media use have focused on the psychological context, for example, when looking at personality traits that result in the increased usage of social networks (Gil de Zúñiga *et al.*, 2017). Other studies have focused on predicting FSMU

based on the number of likes in particular categories and group memberships, privacy settings, and the time since comments are made (Ballings & Van den Poel, 2015; Greenwood, 2013). López and Sicilia (2014) showed a quadratic relationship between a consumer's Internet experience and the effect exerted by e-WOM. Experienced and novice Internet users are more influenced by e-WOM than consumers with medium experience. Novice Internet users seem to experience difficulties in distinguishing the fairness of online opinions and rarely question whether they are based on true evidence. In contrast, expert Internet users check information to discriminate fake from honest online posts, learn where to search for e-WOM, and thus are more likely to follow recommendations. The only study that explored the impact of FSMU (among other variables) on the consumption of conven-

tional foods is the one reported by Sumaedi and Sumardjo (2021). Although the study did not find a direct effect of this variable on conventional food consumption, FSMU may modify consumers' behavior by increasing the effect of e-WOM. Therefore, this study proposes the sixth and seventh research hypotheses:

H5: *The influence of e-WOM valence on the intentions to purchase a healthy food brand is greater if the individual consumes more frequently products within a base category.*

H6: *The influence of e-WOM valence on the intentions to purchase a healthy food brand is greater if the consumer uses social networks frequently compared to those who use them infrequently.*

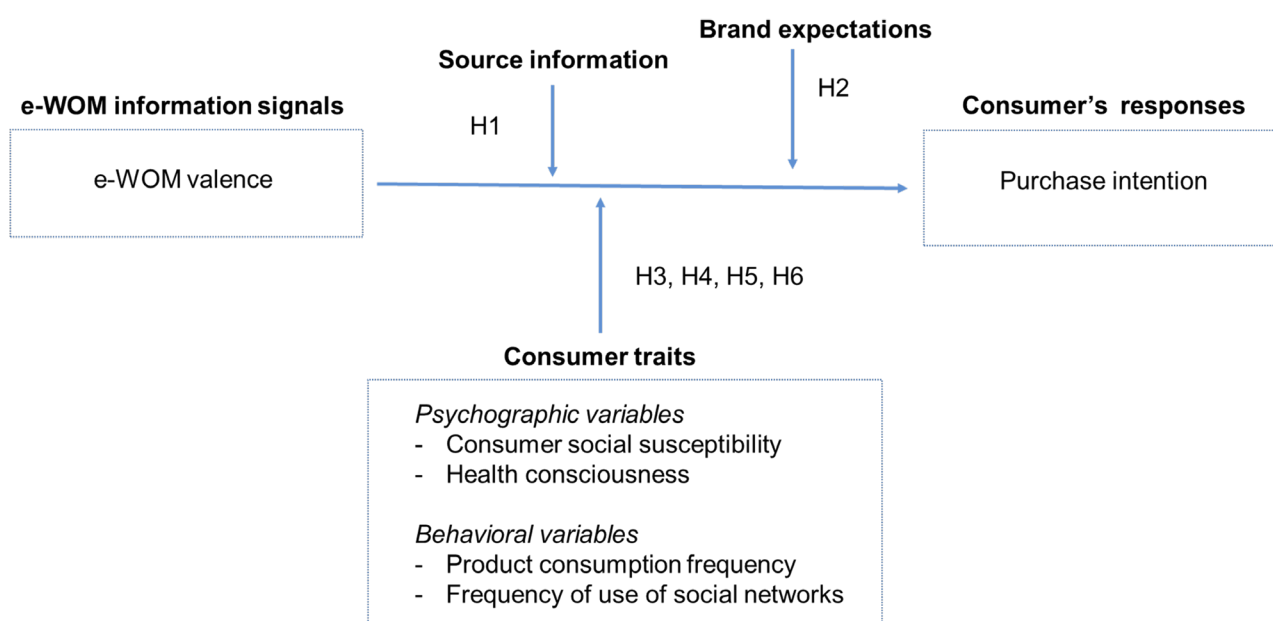Figure 1 shows the model that integrates all research hypotheses.

Figure 1
Conceptual Framework
Source: Own elaboration.

3. METHODOLOGY

3.1. Experimental design

A randomized factorial 2×2x2 experiment was conducted to test the research hypotheses H1–H6. Factorial experiments are the basic design for Information Integration Theory (Anderson, 2014) to manipulate variables and infer the cognitive algebraic model individuals utilize to interpret stimuli. The primary method of data presentation in IIT is factorial graphs that display the mean response at various factor combinations.

The first experimental factor is the e-WOM valence (positive versus negative), the second is the source of the e-WOM (a regular digital consumer versus an influencer), and the third is the expectation of a healthy brand (null versus high). e-WOM valence is operationalized by providing positive or negative comments about a fictitious health food product. A fictitious brand rather than an actual brand was used to eliminate any poten-

tial effect of other variables, such as the brand's image, on the participants' expectations and reactions toward posts (Rao, Qu, & Ruekert, 1999; Hem, De Chernatony, & Iversen, 2003). The fictitious healthy food product was a fortified ready-to-eat cereal with characteristics of existing brands, such as Special-K, All-Bran, and Nestle Fitness. A cereal was selected because it belongs to a product-based category that includes healthy products (Drewnowski, 2010).

After revising actual comments regarding healthy cereals sold by various brands, 24 comments were collected: 12 negative and 12 positive. The comments were used as a reference to create a distinctively positive and negative e-WOM for the fictitious cereal brand. Then, a total of 144 undergraduate and graduate students enrolled in a university in northern Mexico were recruited to evaluate the valence of the comments. The e-WOM valence was tested as a within-subjects factor, i.e., each participant randomly assessed the assigned positive and negative comments. The participants rated each comment using a bipolar

scale of positive/healthy to negative/unhealthy (1 = not healthy and 5 = very healthy). The ratings assigned to each post were compared with a paired *t*-test (*t* = 121.267, *p* = 0.000). The average for the e-WOM positive valence (average = 4.41, SD = 0.17) was significantly higher than for the e-WOM negative valence (average = 1.50, SD = 0.19).

The source of information was operationalized by creating a fictitious profile for a regular digital consumer, Ricky_201, and for an influencer named Laura's healthy lifestyle. The influencer differed from the regular consumer in that she had many more followers and a considerably larger number of comments, indicative of her "expertise" in healthy food. A brief introduction about her life before she endorsed the new healthy cereal was provided to complete the "influencer" profile (see Appendix 1).

The manipulation check to verify the high versus null expectations was performed by recruiting 150 students; students were randomly assigned to one of two conditions. Participants assigned to the high-expectation condition were informed about the functional and healthy attributes of the cereal, including that it was made from organic wheat. Participants assigned to the null-expectation condition only received information regarding the origin of the brand's name. Then, we assessed whether the information concerning the brand induced high versus null brand expectations by asking participants to rate their brand expectations on a five-point scale, from 1 = very low to 5 = very high. The following statements, adapted from Gupta and Stewart (1996), comprised the brand expectation scale going from 1= low to 5 = high: (1) What health benefit do you expect if you consume Triticum cereal? (2) How much do you think Triticum cereal will help you to maintain a healthy lifestyle? (3) What extra nutritional value do you expect the product to have over other cereals? (4) What do you expect the quality of the product to be? (5) What is your expectation regarding the taste and texture of the cereal? The scores of the two groups were then compared using a two-sample independent *t*-test. Significant differences were found between the two conditions (*t* = 14.506, *p* = 0.000). The high-expectation group had an average score of 4.02 (SD = 0.53) versus 2.86 (SD = 0.46) for the null-expectation group. Therefore, the results confirmed that brand expectations toward the fictitious food were properly operationalized. Samples of students were used in this research only to perform simple manipulation checks while a sample of actual consumers was used to assess the complexity of the moderating relationships among the stimuli and the receiver's traits.

3.2. Experimental subjects

Two hundred individuals were recruited through social media to participate in the experiment following the European Society for Opinion and Marketing Research and Global Research Business Network guidelines for the quality of online samples (ESOMAR & GRBN, 2015). Criteria for inclusion were that participants had to repeatedly eat cereal (at least once per week) and be at least 18 years old (Appendix 2 shows the respondents' profiles). In academic research, recruitment via social media has increased and Fazzino *et al.* (2015) found no significant differ-

ences between participants recruited through social media and traditional methods.

The participants were randomly assigned to any of the two conditions (high and null brand expectations) before being randomly assigned to a single stimulus corresponding to a combination of the other two experimental factors (source of information and e-WOM valence). After reviewing the comments, participants responded to a structured questionnaire containing valid scales that operationalize all constructs of the model in Figure 1. HC was measured using a five-item scale from Michaelidou and Hassan (2008), e.g. "I am alert to changes in my health." Susceptibility to social influence (SSI) was measured using a seven-item scale adapted from Tkaczyk (2015), e.g. "I often use information from my friends and family before buying a product." Purchase intention was measured using a two-item scale adapted from Putrevu and Lord (1994), e.g., "I will most likely buy the new cereal brand." The participants specified their level of agreement or disagreement with all statements using a five-point Likert scale, going from 1 = totally disagree to 5 = totally agree.

The frequency of consumption of cereal (portions per week) was measured on an ordinal scale (1 = daily, 2 = three to six times per week, and 3 = once to twice per week), where the participant indicated "How often eat portions of cereal per week." FSMU was measured by asking the respondent, "How often do you use social networks?" (1 = several times a day to 5 = never). Questions regarding the participants' age, gender, and marital status were also included.

4. RESULTS AND DISCUSSION

4.1. Scale validation

The current study ascertains the presence of Common Method Bias (CBM) by employing Harman's one-factor test through Exploratory Factor Analysis (EFA), utilizing a non-rotated method in MINITAB 21. The results indicated that a unique factor accounted for just 36.5% of the variance, a percentage below the suggested threshold of 0.50 by Podsakoff *et al.* (2003) while the three-factor solution accounted for 68%. These results signify the absence of notable bias originating from a single data source.

Then, a confirmatory factor analysis was conducted using the scale-free least squares estimation method in SPSS AMOS. All goodness-of-fit indexes indicate a good fit for the measurement model: the goodness-of-fit index (GFI) was 0.989, the adjusted goodness-of-fit index (AGFI) was 0.986, and the root-mean-square error of approximation (RMSA) was 0.043 (Browne & Cudeck, 1993; Hair *et al.*, 2014). The scales' unidimensionality, reliability, and convergent validity were assessed using the standardized factor loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). Table 1 shows the results. All standardized factor loadings were near or above 0.7, Cronbach's alphas ranged from 0.894 to 0.949, all CR exceeded 0.89, and AVE values were above the recommended thresholds of 0.7 and 0.5 (Hair *et al.*, 2014); thus, the convergent validity of the scales is supported.

Table 1
Reliability and validity of the measurement model

Construct	# items	Factor loading	α	CR	AVE
Purchase intention	2		0.949	0.949	0.903
	PI1	0.945			
	PI2	0.956			
Health consciousness	5		0.897	0.898	0.639
	HC1	0.736			
	HC2	0.791			
	HC3	0.761			
	HC4	0.849			
	HC5	0.854			
Susceptibility to social influence	7		0.894	0.896	0.553
	SSI1	0.766			
	SSI 2	0.668			
	SSI 3	0.805			
	SSI 4	0.778			
	SSI 5	0.755			
	SSI 6	0.719			
	SSI 7	0.706			

Note: α = Cronbach's alpha; CR = Composite reliability; AVE = Average Variance Extracted

Source: Own elaboration based on the measurement model results.

Discriminant validity was evaluated by comparing the intercorrelation among PI, SSI, and HC against the square root of the AVE of the factor in question. The AVE's square root is higher than the other correlations thus supporting the discriminant scale according to the Fornell–Larcker (1981) criterion (see Table 2). Because the Fornell-Larcker criterion may be overly conservative, the Heterotrait-Monotrait (HTMT) criterion was also applied. HTMT values below 0.85 are considered acceptable levels of discriminant validity. All HTMT values between constructs are below 0.6, indicating good discriminant validity among the three multi-item constructs.

Table 2
Intercorrelation matrix

	Purchase intention	Health consciousness	Susceptibility to social influence
Purchase intention	0.9035[a]		
Health consciousness	0.0174	0.639[a]	
Susceptibility to social influence	0.0010	0.1109	0.553[a]

Note: (a) Entries on the diagonal are the square roots of AVE.
Source: Own elaboration.

4.2. Data analysis

The general linear model routine of Minitab 21 was used to empirically test the conceptual model (Figure 1) (Perpetuini *et al.*, 2019). The psychographic variables (HC and SSI) and the two behavioral variables (FPC and FSMU) were set as covariates in the model because they were not manipulated but registered as individual characteristics. The demographic variables (age and sex) were also included as control variables. The full factorial model was fitted, including the two- and three-letter interactions among the factors (brand expectations, e-WOM valence, and information source) under the standard assumption of no interaction between the factors and covariates (parallel lines), unless moderator effects were anticipated. A hierarchical model was fitted, where all lower-order terms (main effects) contained in the interactions also appear in the model because although direct effects were hypothesized for none of the behavioral and psychographic traits, including main effects in a factorial model is statistically recommended.

Table 3 results confirm purchase intentions significantly change depending on the e-WOM valence, in agreement with the results of previous studies (M = 4.0460 for positive e-WOM and M = 2.2056 for negative e-WOM). Compared to the overall mean of purchase intention (3.1117), positive e-WOM increases purchase intention by 0.929 units while the mean of negative e-WOM is 0.9061 units below the overall mean. The mean difference between these relative changes is non-significant (P = 0.584). Therefore, the magnitude of the effect of positive or negative e-WOM on purchase intention is statistically equal. The source of information (digital regular consumer versus an influencer) does not enhance the effect of negative or positive valence since the information source by e-WOM valence interaction is non-significant, thus H1 is unsupported.

Brand expectations have a direct significant effect on purchase intentions (P = 0.005). Tukey's test indicates a significant difference (P = 0.05) between the mean purchase intentions toward the cereal depending on the brand expectations (Mean-high expectations = 3.332 / Mean-null expectations = 2.968). However, the moderator effect of brand expectations stated in H2 was not empirically supported (all two and three-letter interactions involving brand expectations and e-WOM valence are not significant). The difference between positive and negative e-WOM for high brand expectations is 1.7867 which is not statistically different from the difference of 1.933 for null brand expectations. In other words, the effect of e-WOM valence on purchase intentions is not enhanced for high brand expectations.

The moderating effect of susceptibility to social influence on the relationship between e-WOM valence and purchase intention (i.e., the interaction between susceptibility to social influence and e-WOM valence) is not significant. Therefore H3 is not supported. This finding contradicts previous research in other sectors, which concludes that consumer susceptibility to interpersonal influence is the receiver characteristic that most significantly influences attitudes and behavioral intentions (Akdim, 2021). According to the cross-country study conducted by PYMNTS and Cybersource (2022), Mexican consumers want

and expect online merchants to support in-store navigation apps, delivery and pickup apps, and a multichannel experience that facilitates online purchasing. Unless the friction shopping experiences of consumers in Mexico are eased, the effect of e-WOM among more socially susceptible consumers can be unappreciated, especially in growing niche markets such as the health and wellness market and consumers may prefer to rely on personal recommendations from the members of their close social groups.

Table 3
Analysis of Variance: Response is Purchase Intention

Variable	df	Adj. SS	Adj. MS	F-test	P-value
Age	1	2.532	2.5318	3.33	0.069
Sex	1	1.386	1.3857	1.83	0.178
Educational level	1	0.711	0.7107	0.94	0.335
Frequency of social networks usage (FSMU)	1	0.705	0.7052	0.93	0.336
Frequency of product usage (FPU)	1	1.066	1.0664	1.40	0.238
Susceptibility to social influence (SSI)	1	0.504	0.5042	0.66	0.416
Health consciousness (HC)	1	4.074	4.0740	5.37	*0.022*
Brand expectations	1	6.183	6.1832	8.14	*0.005*
Source of information	1	0.062	0.0621	0.08	0.775
e-WOM valence	1	3.020	3.0203	3.98	*0.048*
SSI*e-WOM valence	1	0.999	0.9990	1.32	0.252
Freq use social networks*e-WOM valence	1	3.673	3.6726	4.84	*0.029*
Freq cereal consumption*e-WOM valence	1	12.499	12.4995	16.46	*0.000*
Health consciousness*e-WOM valence	1	29.026	29.0256	38.23	*0.000*
Brand expectation*Information source	1	0.002	0.0021	0.00	0.960
Brand expectation*e-WOM valence	1	0.000	0.0004	0.00	0.989
Information source*e-WOM valence	1	1.248	1.2482	1.64	0.201
Brand expectation*Inf source* e-WOM valence	1	0.303	0.3031	0.40	0.528
Error	181	137.432	0.7593		
Total	199	366.728			

Source: Own elaboration.

Figures 2, 3, and 4 were built to understand how the other variables comprising the receivers' profile (HC, frequency of cereal consumption, and frequency of social media use) moderate the influence of e-WOM valence on the consumer's purchase intention. According to Figure 2, positive e-WOM increases purchase intention meanwhile negative e-WOM strongly decreases purchase intentions as the health-consciousness of consumers increases, then H4 is supported. Similarly, Figure 3 shows that frequent consumers of cereal (daily consumption) who assess the new product seem to complement the evaluation of the new brand product using their pragmatic subjective and objective knowledge about the category. Therefore, they are less susceptible to negative e-WOM than low–medium (once to six times per week) frequency cereal consumers who are less knowledgeable about the new cereal and respond more negatively to negative comments about the new cereal, providing empirical support to H5 (Park *et al.,* 1994).
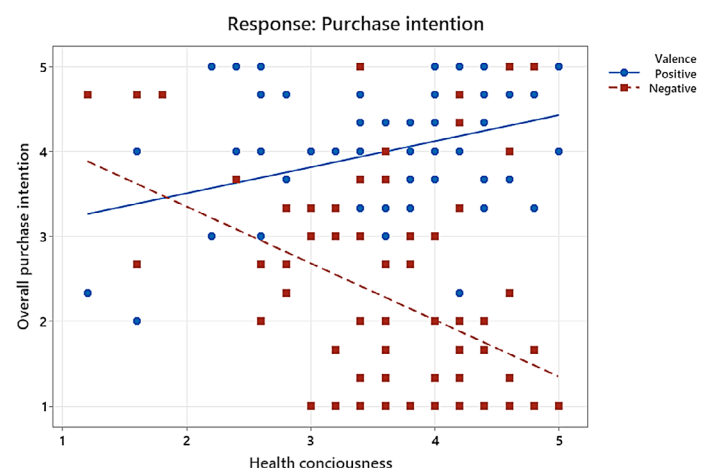

Figure 2
Moderator effect of health consciousness on the effect of e-WOM valence on PI

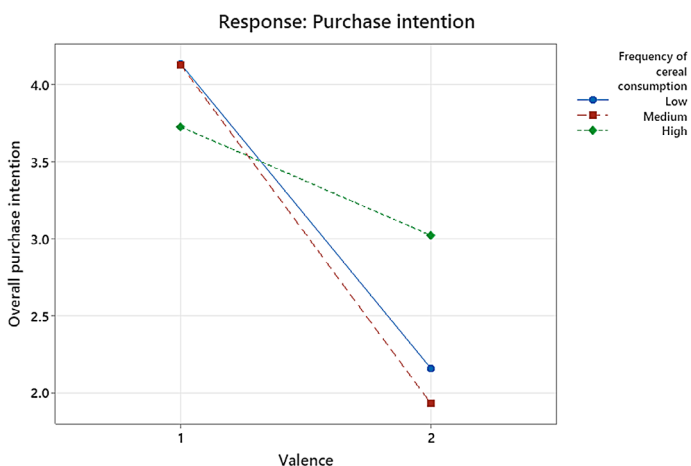*Source:* Own elaboration based on the measurement model results.

Figure 3
Moderator effect of frequency of cereal consumption on the effect of e-WOM valence on PI
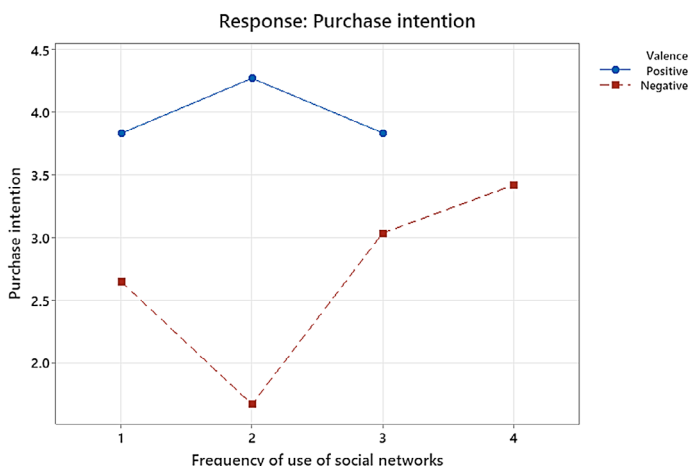*Source:* Own elaboration.

Figure 4
Moderator effect of frequency of use of social networks on the effect of e-WOM valence on PI
Source: Own elaboration.

Finally, FSMU also moderates the effect of e-WOM valence on purchase intention (see Figure 4), then H6 is supported. Negative e-WOM remarkably decreases the intention to purchase the cereal (largest change in purchase intention) among intermediate social media users (code 2 = 5–7 times per week) compared to sporadic (codes 4 = 1–2 times per month and 5 = less than one time per month) and intensive users (code 1 = several times per day). Therefore, our results agree with the results of López and Sicilia (2014) regarding the quadratic relationship between consumers' Internet experience and e-WOM influence. However, this study distinguishes between e-WOM valence and provides an even clearer picture of how the social media experience affects the reception of e-WOM and subsequently the consumer's behavior. Moderate social media users are more prone to notably decrease their purchase intentions for a new healthy product when they receive negative comments (M = 1.6667, SD = 0.8087, Mdn = 1.3333) and increase their intention if they are exposed to positive e-WOM (M = 4.2695, SD = 0.7108, Mdn = 4.3333).

Also, consistent with López and Sicilia (2014), frequent social media users seem to know where to search for fair and reliable e-WOM; thus they are less influenceable in their behavior, although as expected they react favorably to positive e-WOM (M = 3.8298, SD = 0.7514, Mdn = 3.6667) and warily to negative e-WOM (M = 2.6458, SD = 1.31694, Mdn = 3.6667). Note that according to the graph of Figure 4, the difference between positive versus negative e-WOM is the largest (2.2762 units) for moderate social media users and the lowest (0.8) for relatively infrequent (1-2 times per month) media users.

Table 4 summarizes the analytical results.

Table 4
Empirical support for the research hypotheses.

Hypotheses	Relationship	Decision
H1	Negative e-WOM has a greater effect on purchase intention than the effect of positive e-WOM if the information source is an influencer	Unsupported
H2	Brand expectations moderate the relationship between e-WOM valence and Consumers' purchase intentions	Unsupported
H3	Consumer susceptibility to social influence moderates the relationship between e-WOM valence and Consumers' purchase intentions	Unsupported
H4	Health consciousness moderates the relationship between e-WOM valence and Consumers' purchase intentions	Strongly supported
H5	Frequency of consumption of the product category moderates the relation between e-WOM valence and Consumers' purchase intentions	Strongly supported
H6	Frequency of social media use moderates the relationship between e-WOM valence and Consumers' purchase intentions	Supported
Post hoc findings		
Brand expectations have a direct effect on consumer's purchase intention		

Source: Own elaboration.

5. CONCLUSIONS

The Internet has become the primary source of information for many consumers and radically influenced their behavior. One of the main changes in modern consumer behavior has been the transition from a passive to an active and informed consumer. Social media customers share their opinions and experiences with goods, services, and brands with online consumers interested in obtaining more information from people and "experts" who have experience with products due to new consumption trends such as healthy eating. Thus, e-WOM has

become an important communication tool a consumer uses to make a purchase decision (Shabbir-Husain & Varshney, 2022), especially if the goods and services are not still positioned in the market as it occurs with new healthy products.

This study aimed to examine how individuals with different profiles (consumption product frequency, social media use frequency, health consciousness, and susceptibility to social influence) simultaneously combine several stimuli —electronic word-of-mouth (e-WOM) valence, information source, and brand expectations— to form intentions toward health food brands products, a category of products that is increasing its value in the food market. The study found negative e-WOM and positive e-WOM have similar effects on the purchase intention of healthy food brands, but obviously in opposite directions. Brand expectations, one of the stimuli evaluated, did not moderate the effect of e-WOM valence on purchase intentions as hypothesized but directly promoted the interest to trail the product, that is purchase intentions are greater for high brand expectations.

5.1. Theoretical implications

The present study makes several important contributions to online consumer behavior and e-WOM literature. This study examined the moderator effect of six variables on the influence of e-WOM valence on the purchase intention of healthy food. To the best of the authors' knowledge, four of these variables have been scarcely studied in the e-WOM literature. These are brand expectations (H2), health consciousness (H4), frequency of product usage (H5), and frequency of use of social media (H6). Our study provides evidence of the significance of three of them: frequency of product usage, health consciousness, and frequency of use of social media. These consumer traits seem to be important, especially in the context of healthy food products, a finding that contributes to increasing the understanding of the variables that reinforce the effect of e-WOM on key consumers' responses, (Jeong & Koo, 2015; Verma *et al.*, 2023).

The analysis of experimental data shows that frequent cereal consumers who assess a new healthy product based on their subjective and objective knowledge are less susceptible to negative e-WOM than low–medium frequency cereal consumers who may be less knowledgeable about the category's healthy options as hypothesized. Negative e-WOM has a larger damaging effect on more health-conscious consumers and intermediate social media users than sporadic and expert users. In other words, a moderate use of social media makes consumers more likely to pay attention to negative reviews about healthy products.

In addition, IIT provides another information processing-related theoretical perspective to explore how various psychological traits and behaviors of the e-WOM receiver moderate the relationship between e-WOM valence and purchase intentions (Liu, H. *et al.*, 2022). The results of this study suggest a simplified algebraic model (Anderson, 1981, 2014) to describe the purchase intention of health-conscious digital consumers with a low-medium frequency of cereal consumption and a moderate use of social media. The model can be written symbolically as follows: Purchase intention: e-WOM valence + brand expectations + e-WOM valence*receiver traits (health consciousness, frequency of cereal consumption, and frequency of social media use).

The multiplicative term (*) represents the moderator effect (interaction between variables in statistical terms) of the receiver's profile on the e-WOM influence.

This study may also contribute to the literature on healthy food brands (Anker *et al.*, 2011; Bui *et al.*, 2015; Chrysochou, 2010; Hartmann *et al.*, 2018) by enhancing the understanding of the factors that influence purchase intentions toward healthy products. Academics and food manufacturers are paying more attention to this product category as the market for healthy foods continues growing.

5.2. Practical implications

This study could assist managers of healthy food brands to inform and promote the nutritional value of their brand and products and, at the same time, regulate the influence of e-WOM, which appears to be more convincing for consumers than corporate advertising (Nielsen, 2022; Whitler, 2014).

One of the few tools that companies have to manage the e-WOM environment, especially among health-conscious consumers who are their target segment, is responding to negative comments (Zinko *et al.*, 2021). They should constantly monitor negative comments and must strategically respond to them by honestly stating the actions taken to address the undesirable properties of their products.

To reduce the impact of negative comments on the purchase intentions of infrequent (less knowledgeable) product consumers and intermediate social media users, managers should effectively manage e-WOM valence by promoting positive WOM and carefully managing consumers' expectations (Bughin *et al.*, 2010) about new products as a first step to generate credibility and induce a first trial of their products. In the case of healthy food products, managers may provide information that guarantees the quality and nutritional value of healthy food and conduct product trial campaigns that validate favorable expectations.

5.3. Limitations and future research

This study has some limitations: First, although the experimental design provides strong internal validity, the small sample size and composition may limit the generalizability of the findings to the Mexican consumers of healthy food. Additionally, the demographic profile of the participants (age under 40 years and with university degrees) may not fully capture the behavior of older and less educated digital consumers. This is particularly relevant in the case of heterogeneous populations where a larger sample might reveal other nuanced effects. Second, only one product category, i.e., cereals, was studied. Future studies can include other food categories considered healthy, such as dairy, and compare results with products judged unhealthy, such as salty high-fat snacks. Testing the model with different food categories might be beneficial in increasing the generalizability of the model.

Third, this study uses a fictional digital consumer and influencer. Further studies can examine how actual consumers' and influencers' comments impact the purchase intentions of healthy brands. Current studies have shown that the social relationship between receivers and communicators has a significant impact on e-WOM credibility. Given the simulated portrayals

and brief descriptions of the communicators in our study, any type of connection between participants and the influencer was very limited. The fictional stimulus can explain why the source of information did not enhance the positive (negative) effect of e-WOM as reported in previous research that shows homophily, trustworthiness, and perceived expertise between receivers and communicators significantly influence e-WOM credibility and its dissemination. Fourth, the attachment to the company and its reputation as a manufacturer of healthy products can shield it from the effect of negative e-WOM and enhance the credibility of the messages published to counteract negative posts (Roy *et al.*, 2022). Thus, the use of comments about actual healthy brands in the market is another extension of this research.

Fifth, future studies can examine the mediator effect of brand attitudes on the relationship between e-WOM from different sources and purchase intentions as recent research suggests that brand attitudes significantly mediate the effect of the relationship between the persuasion of digital influencers on purchase intention (Gomes *et al.* 2022; Su *et al.*, 2023). Last, although key psychographic and behavioral variables were included as moderators, according to Roy *et al.* (2022), relatively little attention has been given to other e-WOM receiver characteristics, such as emotions like sympathy or fear, and previous satisfying experiences which can also determine how consumers combine online information to decide the purchase of a product. We expect this study to encourage researchers to use information integration theory (IIT) and statistical experiments to understand how the combination of various communication elements of e-WOM such as the message, the sender characteristics, and the receiver traits influences the behavior of digital consumers (Akdim, 2021).

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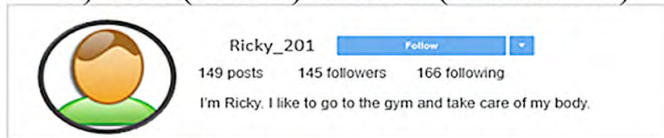
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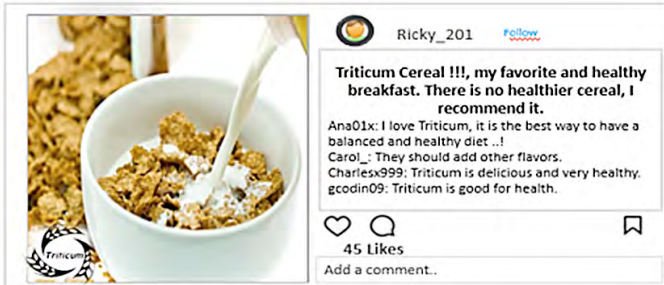
APPENDIX 1

Visual support for valence and source of information in the experimental study and Influencer's information

Source: Own elaboration.

Only under the influencer conditions did the participants read the following: "First, we would like you to know some facts about Laura's healthy life. Laura has more than 50,000 followers on multiple social media platforms, including Facebook and Instagram, and her followers believe she is an expert in healthy living, including health food brands. People who care about leading a healthy life follow Laura. Her story began when she had a severe illness, so she changed her lifestyle, mainly through improved nutrition. Laura created a blog with hundreds of healthy recipes using healthy foods and brands to promote health. Her food philosophy is more natural, less processed foods."

APPENDIX 2

Respondents' profile (N = 200)

Demographics and Characteristics		%
Gender	Male	50
	Female	50
Age (years):	18–20	9
	21–25	22
	26–30	30.5
	31–35	25
	36–40	7.5
	>40	6
Scholarship:	Elementary	1
	High school	27
	College	60
	Postgraduate	11.5
	Other	0.5
Marital status:	Single	62
	Married	24.5
	Separated	6.5
	Divorced	6.5
	Widower	0.5

Source: Own elaboration.