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ORIGINAL EMPIRICAL RESEARCH

Let's face it: When and how facial emojis increase the persuasiveness of electronic word of mouth

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Abstract
Facial emojis have increasingly permeated electronic word of mouth (eWOM), but the persuasive consequences of this phenomenon remain unclear. Drawing on emotions as social information (EASI) theory, this research reveals that facial emojis influence persuasion (e.g., product choice) by affecting emotional arousal and perceived ambiguity. While the effect through emotional arousal is generally positive, the effect through ambiguity depends on the emojis' function in eWOM: facial emojis that replace a verbal expression increase ambiguity and therefore reduce persuasion, whereas those that reiterate a verbal expression decrease ambiguity and therefore enhance persuasion. Both the emotional-arousal and ambiguity pathways determine the net persuasive effect. This research also explores two situations (high verbal context richness and eWOM from strong ties) where replacing facial emojis can increase persuasion. Finally, the authors show that facial emojis' persuasive power is generalizable to online brand communications, influencing key management outcomes such as click-through rates for digital ads.

Keywords Emoji · Textual paralanguage · Electronic word of mouth · Persuasion

Introduction

Emojis, arguably the fastest-growing language in the world (Danesi, 2016), are increasingly part of electronic word of mouth (eWOM) on social media (e.g., Facebook) and review platforms (e.g., TripAdvisor). Consumers send more than six billion emojis every day (Rosenthal, 2016), which has sparked managerial and academic efforts to understand whether and how the use of emojis in eWOM influences other consumers' attitudes and behaviors.

EWOM refers to "consumer-generated, consumption-related communication that employs digital tools and is directed primarily to other consumers" (Babić Rosario et al., 2020, p. 425). It is one of the most powerful means of influencing consumer attitudes, intentions, and behaviors (Moore & Lafreniere, 2020). In fact, 91% of consumers consider eWOM before making purchase decisions (Bizrate, 2021), and 9% of purchases can be traced directly to consumer conversations on social media, accounting for more than $4.5 trillion in annual consumer spending in the US (Fay et al., 2019). From a managerial perspective, eWOM has the potential to persuade consumers to purchase a product or service, leading to an increase in sales (Babić Rosario et al., 2016). Hence, firms are increasingly deploying resources to understand what makes eWOM persuasive (Forbes, 2020). Identifying persuasive eWOM and stimulating the creation of persuasive eWOM are key challenges for marketers.

The power of eWOM to influence consumers lies at the heart of most eWOM research (e.g., Alexandrov et al., 2013; Berger & Schwartz, 2011; De Matos & Rossi, 2008). Most previous studies have focused on how verbal (i.e., textual/written) cues related to language style (e.g., Lee & Kronrod, 2020) and valence (e.g., Baker et al., 2016) influence persuasion. Notably, an emerging stream of literature has begun to emphasize the persuasive power of nonverbal cues (i.e., textual paralanguage; Luangrath et al., 2017) in the context of eWOM by investigating the consequences of

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capitalization (Folse et al., 2016) and exclamation marks (Yin et al., 2017). However, although "it is time to consider formats other than text" (Babić Rosario et al., 2020, p. 441) with respect to enhancing persuasion, research on nonverbal cues, especially facial emojis, remains scarce (see Web Appendix A for a detailed literature review).

Emojis are pictorial cues used in electronically mediated communication depicting facial expressions (e.g., 🙂) and a wide range of nonfacial stimuli (e.g., objects). We focus on facial emoji use in eWOM, a highly popular but understudied phenomenon in which facial expressions are illustrated in written text through "iconic visual images" (Danesi, 2016, p. 62). The literature on textual paralanguage in general (e.g., Luangrath et al., 2017) and emoji use in particular (e.g., Derks et al., 2008; Rodríguez-Hidalgo et al., 2017; Schwille, 2018) suggests that facial emojis convey *affect* that emotionally intensifies an online message and *information* concerning the meaning of a message. Affect and information are key drivers of persuasion (Petty & Cacioppo, 1986). Specifically, in terms of affect, due to their resemblance to facial expressions (Danesi, 2016), facial emojis may arouse consumers and therefore increase persuasion. In terms of information, what information a facial emoji conveys and, thus, whether it increases or decreases persuasion may depend on the emoji function. In particular, a facial emoji usually adopts one of two functions in eWOM: replacing (e.g., "This product is 🙂") or reiterating (e.g., "This product is fine 🙂") written language (Luangrath et al., 2017; Schwille, 2018)[1]. The distinction between replacing and reiterating is a relevant but often overlooked aspect of facial emoji use. For example, a slightly smiling emoji (🙂) that replaces a verbal expression in an online post stating "This product is 🙂" may provide ambiguous information about how the sender evaluates the product. This is because, according to the Emojipedia (2021), that emoji may convey that something is "fine" or be used in a "positive" or "friendly" manner, but it can also be used in a "passive-aggressive" or "ironic" manner. Thus, consumers may question whether the product is fine or if the sender's intention is to be ironic. In contrast, when the emoji reiterates a verbal expression ("This product is fine 🙂"), the preceding verbal expression helps clarify the emoji's meaning, allowing the emoji to convey additional information about the sender's product evaluation.

Research on emojis has recently gained momentum. Li et al. (2018) and Smith and Rose (2020), for example, found that firms can enhance consumers' attitudes toward a service employee by using facial emojis in computer-mediated service encounters. Moreover, Das et al. (2019) and McShane et al. (2021) demonstrated that emojis in ads and brand posts increase purchase intention and brand engagement. Exploring the negative effects of emoji use, Bashirzadeh et al. (2022) showed the negative behavioral outcomes when consumers are exposed to emojis and animations (e.g., GIFs) in the same message. Furthermore, Wu et al. (2022) found negative effects of emojis with multiple meanings on review helpfulness. Finally, Abell et al. (forthcoming) reported that smiley faces in restaurant logos decrease healthfulness perceptions and price expectations.

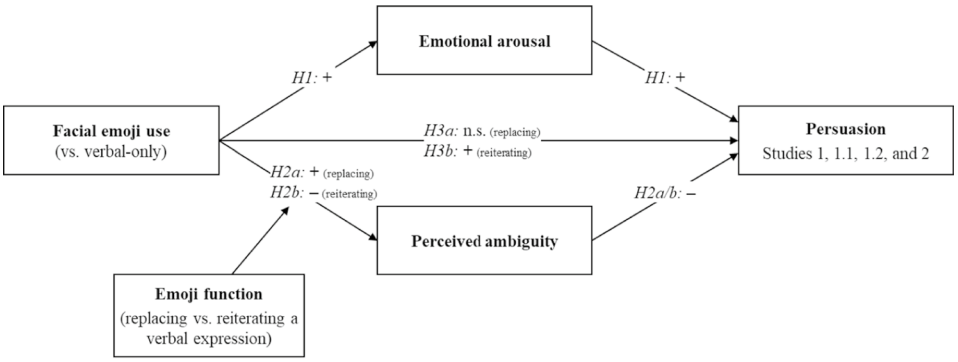
These studies, however, do not differentiate between facial emojis used to replace written language and those used to reiterate it. Li et al. (2018), for example, examine service-related online interactions in which facial emojis are used both to replace and to reiterate verbal expressions, thus preventing conclusions from being drawn about the distinct effects of the two emoji functions on persuasion. Accordingly, this research addresses the following questions: (1) How do facial emojis that replace a verbal expression in eWOM and those that reiterate a verbal expression in eWOM differ in terms of influencing persuasion? (2) What mechanisms account for this effect? (3) Which factors related to the message and the relationship between the sender and the recipient enhance the persuasive power of facial emojis? In addition to consumers, companies also employ facial emojis in their communications. This is supported by our initial fieldwork (see Web Appendix B), which shows that facial emojis are used in online brand communications (in 6% of brand posts), albeit to a lesser extent than in eWOM (in 23% of consumer posts). Thus, we ask the following question: (4) Is the persuasive impact of facial emoji use in eWOM generalizable to online brand communications?

In addressing these questions, this research draws on emotions as social information (EASI) theory (van Kleef, 2009) as well as previous literature on textual paralanguage (Luangrath et al., 2017) and emoji use (e.g., Rodríguez-Hidalgo et al., 2017; Schwille, 2018) and theorizes that facial emoji use affects persuasion through both an *affective-reaction process* and an *informational process*. We define persuasion as "the extent to which a person's attitudes, intentions, or behavior are, without duress, influenced by communications from others" (Touré-Tillery & McGill, 2015, p. 94). In terms of the affective-reaction process, we assume that facial emojis increase emotional arousal (i.e., "the level of energy characterizing an emotional experience"; Yin et al., 2017, p. 447), which leads to greater persuasion. The informational process, however, may depend on an emoji's function in eWOM. A replacing facial emoji may convey an ambiguous meaning and therefore enhance perceived ambiguity (i.e., the extent to which a recipient is uncertain about what information a message provides; Gershoff et al., 2007), ultimately decreasing

[1] Guided by this notion, we analyzed 10,000 posts on the Facebook pages of ten well-known brands (e.g., Coca-Cola and Disney). We found that approximately every fourth post contained a facial emoji, with 55.1% of facial emojis replacing and 44.9% reiterating a verbal expression (see Web Appendix B for details on our initial fieldwork).

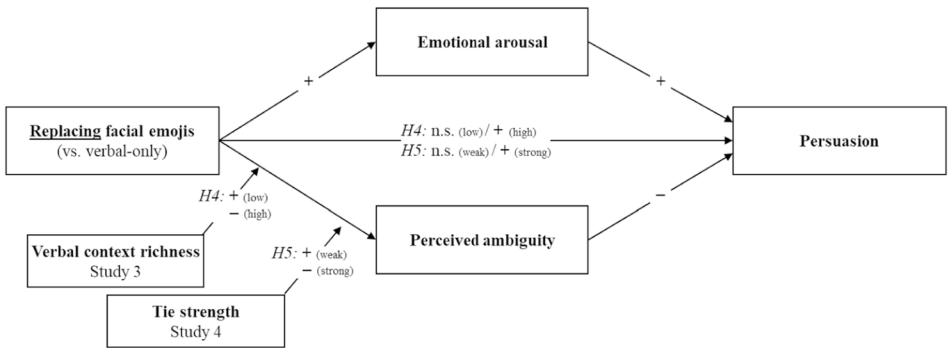
Fig. 1 Conceptual framework

Part A: Key effects of facial emoji use in eWOM



Validation for facial emoji use in online brand communications: Studies 5, 5.1, 6

Part B: Moderating influences of verbal context richness and tie strength on the persuasive effect of replacing facial emojis



Validation of the moderating influence of tie strength in the context of communicating with a matching/mismatching generation: Study 4.1

persuasion. In contrast, a reiterating facial emoji may convey an unambiguous meaning, adding information about how the sender evaluates a product, decreasing ambiguity and, ultimately, increasing persuasion. Both the emotional-arousal and ambiguity pathways may determine the net effect on persuasion. Figure 1 (Part A) depicts the key relationships in our conceptual framework: the parallel mediation that accounts for the persuasive impact of facial emojis in eWOM and its dependence on whether the emojis replace or reiterate a verbal expression. We test these relationships with facial emoji use in consumer–consumer interactions (i.e., eWOM) and validate them for brand–consumer interactions (i.e., online brand communications).

Thus, replacing facial emojis have a potentially negative effect on persuasion through perceived ambiguity. Therefore, we further examine two important boundary conditions (high verbal context richness and eWOM from strong ties) in which we assume that the negative effect of replacing facial emojis on persuasion through ambiguity reverses into a positive effect. Figure 1 (Part B) shows the moderating influences of verbal context richness and tie strength on the effect of replacing facial emojis on persuasion.

From a managerial perspective, this work provides guidance in three important domains. First, this research offers advice on how tracking facial emoji use helps *identify persuasive eWOM*. For example, we show that facial emojis can be leveraged in eWOM to better analyze consumer choices and the adoption of new products and services through peer-to-peer influence. Second, we illuminate how facial emojis can *stimulate the creation of persuasive eWOM*, which is associated with an increase in sales (Babić Rosario et al., 2016). Third, extending our investigation to facial emoji use in online brand communications suggests that brands should carefully consider the use of facial emojis, particularly the emoji's function (replacing vs. reiterating a verbal expression), in online interactions. Specifically, we offer advice regarding how facial emojis can be used to *design persuasive social media posts and digital ads*.

Theoretically, this research makes four contributions. First, we shed light on the persuasive power of facial emojis in eWOM, thereby addressing the call for research on "how consumers evaluate… non-textual… eWOM" (Babić Rosario et al., 2020, p. 428). Specifically, we suggest that facial emojis convey both denotative (i.e., literal) and connotative meanings (i.e., associative judgments). Accordingly, consumers derive information and affect from the use of facial emojis in eWOM, and both aspects are relevant to persuasion (Petty & Cacioppo, 1986). Importantly, dual coding theory proposes that individuals process non-textual (e.g., pictorial) and textual entities using distinct systems, with pictorial cues being easier and faster to process than textual cues (Paivio, 1971; Scheinbaum et al., 2017). However, recent studies indicate that pictorial cues can also be more "ambiguous and open to interpretation than text" (Morgan et al., 2021, p. 568). This point is especially critical when pictorial cues replace or reiterate written text. By investigating the moderating role of emoji function (replacing vs. reiterating a verbal expression), we show that facial emojis themselves neither increase nor decrease the ambiguity of eWOM. Instead, whether the emoji replaces or reiterates a verbal expression is critical in determining whether eWOM becomes more or less ambiguous and thus more or less persuasive.

Second, drawing on EASI theory, which has rarely been applied in eWOM contexts, as well as previous literature on textual paralanguage (Luangrath et al., 2017) and emoji use (e.g., Rodríguez-Hidalgo et al., 2017), we illuminate the two key processes (i.e., affective-reaction and informational) underlying the persuasive impact of facial emoji use in eWOM. This is important because previous studies have focused on only one of the two processes. Smith and Rose (2020), for example, examined whether emoji use in service settings spills over into affective reactions. Focusing on the informational process, Li et al. (2018) showed that consumers perceive service employees who use (vs. do not use) emojis as higher in warmth but lower in competence. Considering both *affective-reaction* and *informational* processes is essential to uncovering the potentially counteracting effects of facial emoji use. Specifically, for replacing facial emojis, the emotional-arousal effect may be positive, and the ambiguity effect may be negative, resulting in a non-significant net persuasive effect. For reiterating facial emojis, the emotional-arousal effect and the ambiguity effect may both be positive, leading to a positive net persuasive effect. Thus, examining both processes simultaneously provides explanations that may have gone undetected.

Third, we contribute to the literature by identifying two notable situations (high verbal context richness and eWOM from strong ties) in which consumers may more accurately infer the meaning of replacing facial emojis, leading to greater persuasion. This is important because it shows that the verbal and social context in which the emoji is embedded can allow for more accurate inferences about the meaning that the emoji conveys. Thus, by highlighting the fact that consumers consider the verbal and social context, we add to the knowledge about how consumers interpret textual paralanguage in eWOM.

Fourth, we expand our investigation to facial emoji use in online brand communications. Therefore, we examine meaningful online consumer behavior relevant to marketers (e.g., Twitter "likes" and retweets; click-through rates of digital ads). We show that the persuasive effects of facial emojis are not restricted to consumer–consumer interactions but also occur when brands use facial emojis in social media interactions and digital advertising. Thus, we contribute to the recent literature (Lee, 2021) by showing that brands can use similar language, specifically facial emojis, to communicate persuasively with consumers in online interactions.

Theoretical background and hypotheses

EASI theory

To explain how facial emoji use in eWOM affects persuasion, we draw on EASI theory (van Kleef, 2009). The basic premise of the theory is that a sender's emotional display can have important consequences for observers' behavior (van Kleef et al., 2011). EASI theory is relevant to our setting for three reasons. First, it examines the effect of "a source's emotional expressions on recipients' attitude formation and change" (van Kleef et al., 2015, p. 1136), thus focusing on interpersonal effects, in contrast with well-known models that examine intrapersonal effects, such as the influence of individuals' affective state on their susceptibility to messages (Schwarz & Clore, 1983). The theory is, thus, well suited to our context, in which eWOM recipients gauge the sender's emotional expressions to inform their product evaluation. Second, EASI theory applies in settings in which electronically mediated facial expressions (i.e., facial emojis) are used to express emotion (van Kleef, 2017). The theory is not limited to emotional displays from human faces, which have received considerable attention in the literature (Duclos et al., 1989). Third, EASI theory has been validated in several persuasion contexts and is therefore suitable for examining persuasion, which is the focus of this research.

According to EASI theory, senders' facial expressions influence observers through two processes: an *affective-reaction process* and an *informational process.* The affective-reaction process entails that emotional expressions can elicit affective reactions in observers that may influence the observer's attitudes and behaviors (van Kleef, 2009). The informational process captures the notion that seeing another person expressing emotions can provide relevant information

about how the sender evaluates a situation, which, in turn, may influence the observer's attitudes and behaviors (van Kleef, 2009). Notably, both positive and negative facial expressions trigger affective-reaction and informational processes (van Kleef et al., 2011). For example, van Kleef et al. (2015) show that people's attitudes toward a topic become more positive (negative) after seeing a happy (sad) facial expression. Overall, the core principles of EASI theory serve as a theoretical foundation for the following reasoning.

The affective-reaction process of facial emoji use in eWOM

Consistent with EASI theory, the literature on the interpersonal effects of emotion has shown that emotional displays are affective-laden stimuli that influence the subjective evaluation of a target stimulus (De Houwer et al., 2001). This effect is driven by emotional contagion, which is "the tendency to "catch" other people's emotions" (van Kleef et al., 2011, p. 118; see also Hatfield et al., 1994). Specifically, emotional displays can trigger affective reactions in observers that, often unconsciously, influence the observer's feelings about and attitudes toward a target (van Kleef, 2009). Importantly, affective reactions are "often treated as having two dimensions—valence and arousal" (Storbeck & Clore, 2008, p. 1826; see also Russell, 1980), and emotional displays influence both of these properties. In fact, "just as the positive and negative components of affective states may transfer from the one person to the other through emotional contagion processes, the arousal associated with affective states may also transfer from one person to the other" (Damen et al., 2008, p. 2698). Thus, emotional arousal refers to an important facet of affective reactions. We focus on emotional arousal because we investigate whether using a facial emoji to express the evaluation of a product/service is more emotionally intense than using a verbal term, and emotional arousal has been established in previous literature to capture how intensely individuals react to online messages (e.g., Berger, 2011; Yin et al., 2017).

Thus, owing to their resemblance to real facial expressions, facial emojis may serve as affective cues that transfer arousal to observers. Therefore, we propose that compared with verbal emotion terms, facial emojis in eWOM increase emotional arousal, which, in turn, should enhance persuasion. This notion is supported by prior studies showing that an increase in emotional arousal enhances the persuasiveness of online messages (Yin et al., 2017). Hence:

H1 Facial emoji use in eWOM (vs. verbal-only eWOM) increases emotional arousal, which in turn increases persuasion (regardless of whether the emoji replaces or reiterates a verbal expression).

The informational process of facial emoji use in eWOM

EASI theory suggests that emotional expressions not only convey affect but also transmit "information about what is on the expresser's mind" and, thus, help recipients "make sense of the situation and determine a fitting course of action" (van Kleef, 2017, p. 213). Drawing from the literature on semiotics (e.g., Leigh et al., 2006) and recent work on facial emoji use (Danesi, 2016; Schwille, 2018), we propose that facial emojis convey two levels of meaning: the *denotative* (i.e., literal) meaning and the *connotative* meaning (i.e., associative judgments). A facial emoji's denotative meaning refers to the information typically given in a dictionary (e.g., 😋 means delicious; Emojipedia), whereas its connotative meaning refers to subjective associations and evaluative judgments that arise from experiences, beliefs, and prejudices related to the context in which the emoji is typically used (e.g., 😋 elicits associations of smacking noises; Danesi, 2016). EASI theory, however, states that emotional expressions provide information about the expresser only as long as the meaning of the "expressions can be accurately perceived" (van Kleef, 2017, p. 213). Accordingly, we propose that the emoji's function in eWOM (i.e., replacing or reiterating a verbal expression) influences whether the emoji's meaning is accurately perceived and, thus, whether the emoji increases or decreases the perceived ambiguity of eWOM.

Replacing facial emojis When a facial emoji replaces a verbal expression, the denotative meaning of the facial expression that the emoji depicts may be less accurately perceived. This is because when processing a facial expression, people spontaneously generate a "verbal translation" of the expression (Alvarado, 1996). Importantly, facial expressions are inherently ambiguous if no additional information is available with which they can be interpreted (Hassin et al., 2013). The Emojipedia (2021) indicates that facial emojis, on average, convey more than four different and potentially even opposing meanings. Thus, the denotative meaning of recipients' verbal translation of the facial emoji is less precise than the denotative meaning transmitted by verbal emotional expressions. Hence, the emoji provides less precise information (i.e., connotative meaning) about how the sender evaluates the use or consumption of a product or service.

Therefore, eWOM recipients may, for example, spontaneously generate a "verbal translation" of the facial emoji in a message that reads "This food is so 😋" as "delicious" but also "goofy" or "joking." The emoji thus conveys an ambiguous denotative meaning and, in consequence, elicits ambiguous associations with the depicted facial expression (e.g., smacking noises or boisterous laughter). Such ambiguity may result in the recipient questioning how the

sender actually evaluates the food. Replacing facial emojis (vs. verbal-only eWOM) thus lead to recipients being less able to assess what information an online post provides, which increases the perceived ambiguity of eWOM. In turn, increased ambiguity may reduce persuasion. This notion is supported by previous research showing that online messages that allow for multiple and potentially conflicting interpretations reduce the understanding of those messages (Moffett et al., 2021). Hence:

H2a A facial emoji that replaces a verbal expression in eWOM (vs. verbal-only eWOM) increases perceived ambiguity, which negatively affects persuasion.

Reiterating facial emojis When a facial emoji reiterates a verbal expression, however, recipients can accurately perceive the denotative meaning of the emotional expression the emoji depicts. This is because the verbal expression preceding the emoji clarifies the emoji's denotative meaning. As noted previously, facial emojis add connotative meaning to an utterance, as facial expressions are better suited than words to convey connotative meaning (Osgood, 1966), and we expect this to disambiguate eWOM. For example, consumers draw more associations with someone smacking his or her lips than with text stating that the food is delicious. Thus, a facial emoji that reiterates a verbal expression (e.g., "This food is so delicious 😋") elicits associations that words do not evoke (e.g., smacking noises), transmitting information about the sender's evaluation of the food that is not provided by the verbal expression alone.

A facial emoji that reiterates a verbal expression in eWOM (vs. verbal-only eWOM) therefore allows recipients to better infer how the sender evaluates the use or consumption of a product or service, thus decreasing perceived ambiguity. Because unambiguous information increases persuasion (Moffett et al., 2021), we hypothesize the following:

H2b A facial emoji that reiterates a verbal expression in eWOM (vs. verbal-only eWOM) decreases perceived ambiguity, which positively affects persuasion.

Net persuasive effect of facial emoji use in eWOM

The "net effect" of facial emoji use on persuasion depends on both the affective-reaction process and the informational process. Consistent with EASI theory, we expect these two processes to be relatively balanced in strength and to not influence each other. Specifically, both processes can be clearly distinguished as "one belongs to the family of cognitive processes and the other to the family of affective processes" (van Kleef et al., 2011, p. 122). Considering both processes is essential in accounting for the potential counteracting effects of facial emoji use (e.g., when both processes cancel one another out), which would remain undetected if only one process was examined. In this context, the literature on mediation analysis emphasizes the importance of examining countervailing indirect effects, even when there is no total "effect to mediate" (Zhao et al., 2010, p. 199; see also Agler & Boeck, 2017). This allows us to shed light on the overall "net effect" and uncover "theoretically interesting indirect effect[s]" (Zhao et al., 2010, p. 199). Specifically, given the two indirect effects, we propose that replacing facial emojis should not have an overall effect on persuasion because the positive indirect effect through emotional arousal and the negative indirect effect through ambiguity may cancel one another out. A reiterating facial emoji, however, should lead to greater persuasion due to the positive indirect effects through emotional arousal and ambiguity. Hence:

H3a A facial emoji that replaces a verbal expression in eWOM (vs. verbal-only eWOM) has no overall effect on persuasion.

H3b A facial emoji that reiterates a verbal expression in eWOM (vs. verbal-only eWOM) leads to greater persuasion.

When facial emojis that replace a verbal expression increase persuasion

In the following sections, we consider situations in which a facial emoji that replaces a verbal expression no longer increases but rather decreases perceived ambiguity (see Fig. 1, Part B). Specifically, we examine situations in which receivers can rely on additional sources to more accurately perceive the denotative meaning the emoji conveys than they would otherwise. These sources may relate to the verbal context in which the expression is embedded (Motley, 1993) or the type of relationship between the sender and receiver (Stinson & Ickes, 1992). Thus, we investigate verbal context richness and tie strength as potential moderators. We propose that in situations of high verbal context richness or eWOM from strong ties, the negative effect of a replacing facial emoji on persuasion through perceived ambiguity reverses.

Verbal context richness Verbal context richness refers to the detailed information provided in a message in terms of "a concrete summary, or an episodic description" (Krishnamurthy & Sujan, 1999, p. 57) of what the message sender intends to convey. This may include informative phrases, sentences, and discourses (Ordenes et al., 2017). The level of verbal context richness in a message influences individuals' understanding

of the linguistic elements embedded in that message (Ortony et al., 1978). In particular, the verbal context in which a linguistic element is used activates related schemata (e.g., a particular mindset) that shape the meaning individuals associate with a certain element (Tulving et al., 1982). Thus, individuals use a "representation of what has gone before as a conceptual framework for interpreting" (Ortony et al., 1978, p. 467) the meaning that linguistic elements convey. Motley (1993), for example, demonstrated that providing verbal context in addition to facial expressions (e.g., display of sadness paired with a short story about an accident) clarifies the meaning that the facial expression intends to convey.

Thus, we propose that in situations of high verbal context richness, consumers can more accurately perceive the denotative meaning that a replacing facial emoji depicts. Although there is no direct accompanying verbal expression (as when the emoji reiterates a verbal expression), the verbal context preceding the emoji provides a specific framework that consumers can use to narrow the emoji's denotative meaning. As a result, the emoji (vs. verbal-only eWOM) induces precise connotative associations with the depicted facial expression, thereby decreasing perceived ambiguity and, ultimately, increasing persuasion. Thus, we hypothesize the following:

H4 In situations of high verbal context richness, facial emojis that replace a verbal expression in eWOM (vs. verbal-only eWOM) decrease perceived ambiguity, which positively affects persuasion. In situations of low verbal context richness, facial emojis that replace a verbal expression in eWOM (vs. verbal-only eWOM) increase perceived ambiguity, which negatively affects persuasion.

Tie strength Tie strength (i.e., strength of the relationship) between the eWOM/WOM sender and recipient has received considerable attention in the literature. For example, previous studies have shown that consumers are more likely to spread negative WOM with strong ties and positive WOM with weak ties (Dubois et al., 2016; Zhang et al., 2014). Furthermore, messages from strong (vs. weak) ties are perceived as more trustworthy and useful (Brown & Reingen, 1987) and are therefore more likely to enhance consumers' purchase intentions (Baker et al., 2016), their desire to try a new experience (Goode et al., 2016), and the referral likelihood (Ryu & Feick, 2007). Most relevant to this research, tie strength can also influence the interpretation of a message (Lee & Kronrod, 2020). Specifically, interpersonal ties grant "access to information that otherwise would not be readily available" (Grewal et al., 2020, p. 108). Thus, when consumers interact with others with whom they feel strongly connected, such as family and close friends, they are already fairly familiar with the other's style of communication (Kashima et al., 2007). Through repeated interactions, consumers develop their own "lexicon" for interpreting others' facial expressions more accurately (Stinson & Ickes, 1992). Sternglanz & Depaulo (2004), for example, find that close friends (vs. strangers) can better identify the facial expressions of others describing emotional experiences.

Accordingly, we propose that strong ties share a mutual "lexicon" for interpreting others' digital facial expressions, allowing eWOM recipients to better infer the denotative meaning conveyed by a facial emoji that replaces a verbal expression. In these situations, the facial emoji adds an unambiguous connotative meaning—similar to facial emojis that reiterate a verbal expression—leading to lower perceived ambiguity and, ultimately, greater persuasion.

H5 For eWOM from strong ties, facial emojis that replace a verbal expression in eWOM (vs. verbal-only eWOM) decrease perceived ambiguity, which positively affects persuasion. For eWOM from weak ties, facial emojis that replace a verbal expression in eWOM (vs. verbal-only eWOM) increase perceived ambiguity, which negatively affects persuasion.

Empirical overview

Across a series of ten studies employing field, lab, and online data, we test the parallel mediation proposed to account for the persuasive impact of facial emoji use in eWOM and its dependence on whether the emoji replaces or reiterates a verbal expression (H1–H3; Study 1); rule out alternative accounts (Study 1.1) and validate the proposed effects for negative facial emojis (Study 1.2); validate the effects in the field (Study 2); examine two relevant moderators, verbal context richness (H4; Study 3) and tie strength (H5; Study 4, Study 4.1); and validate the effects of facial emoji use in online brand communications (Study 5, Study 5.1, Study 6).

Data quality To achieve high-quality data, we established specific parameters prior to data collection. First, we predetermined sample sizes for our studies (at least 40 participants per cell) based on previous emoji research (e.g., Li et al., 2018). We used power analyses (Faul et al., 2009) to confirm adequate power in all studies (see Web Appendix C). Second, following Hulland et al. (2018), three to five participants were asked to provide feedback for each survey to ensure comprehensibility. Third, we included two attention checks in all studies (except field studies) to account for inattentiveness. Fourth, careful pretesting ensured that displayed emojis conveyed the same meaning as replaced or reiterated verbal expressions (see Web Appendix D).

Persuasion measures In line with previous research (e.g., Cian et al., 2020), we used different persuasion measures

across our studies. This research focuses on meaningful behavioral outcomes to present compelling evidence for the proposed effects (e.g., product choice, "likes" and retweets, click-through rates [CTR]; Hulland & Houston, 2021). We selected the specific manifestation of persuasion in light of the study context. Table 1 provides a summary of the studies' objectives, stimuli, and key findings.

Study 1: Persuasive effects of facial emoji use in eWOM

Study 1 investigates the impact of facial emoji use on persuasion through emotional arousal and perceived ambiguity as well as the dependence of that impact on the emoji's function in eWOM (replacing vs. reiterating a verbal expression; H1, H2a/b). In addition, we capture the net persuasive effect of facial emoji use in eWOM (H3). We assess persuasion by measuring consumers' choices among three lemonade brands (Cian et al., 2020).

Method

Design and sample The lab study consisted of a single-factor between-subjects design with three conditions (verbal-only vs. facial emoji use [replacing vs. reiterating]). A total of 132 college students from a large public university participated for course credit (51% female; $M_{age} = 22.50$, SD = 2.96).

Procedure We selected a mock consumer Facebook post about a relatively unknown lemonade ("Liba"). We chose Facebook because it is a popular channel for eWOM in which emoji use is a common practice (Kaye et al., 2016). To create the post to present to participants, we adapted one basic post to the respective coding conditions. In all conditions, the post stated that the lemonade from "Liba" was "really delicious," but we coded the evaluative attribute differently. In the verbal-only condition, we coded it verbally ("really delicious"). In the replacing emoji condition, we coded it nonverbally using the "face savoring food" emoji ("really 😋"). In the reiterating emoji condition, we coded it verbally and nonverbally, with the emoji following the verbal expression ("really delicious 😋"). The stimuli mimicked real Facebook posts, and we introduced them as screenshots of such posts. We blurred parts of the screenshots to keep participants' attention on the relevant aspects. Web Appendix E presents stimuli material for all studies.

Participants were randomly assigned to one of three conditions and shown the Facebook post regarding "Liba" lemonade. Subsequently, we presented a selection of lemonade brands, including "Liba" and two other brands ("Alwa" and "Vilsa"), and asked participants to choose one of these brands. To highlight the incentive-compatible design, we informed participants that they would receive a sample of the chosen lemonade after the study. None of the participants reported having prior knowledge of the lemonade brands. Moreover, we assessed emotional arousal with two semantic differential items (r = .62; e.g., "mellow/fired up"; Yin et al., 2017). We measured perceived ambiguity of the eWOM message with three semantic differential items (α = 0.74; e.g., "unambiguous/ambiguous"; White & Simpson, 2013). See Web Appendix F for all measures. In all studies, exploratory factor analysis revealed that all constructs loaded onto separate dimensions, evidencing discriminant validity. We also included two attention checks that asked participants to remember what platform the message was written on and whether an emoji was used. We excluded six participants who did not answer these questions correctly, which left a final sample of 126. Ultimately, we informed participants that they would receive an additional compensation of 2€ because their selected lemonade was out of stock.

Results

We first examined the direct effects on emotional arousal and perceived ambiguity as well as the net effect on persuasion and then tested whether both mechanisms explained the net effect.

Emotional arousal As hypothesized in H1, ANOVA ($F(2, 123) = 9.45$, $p < .001$, $\eta^2 = 0.133$; see Fig. 2) showed that compared with the verbal-only condition (M = 4.85, SD = 1.31), emotional arousal was higher in both the replacing emoji condition (M = 5.78, SD = 1.07; $t(123) = 3.59$, $p < .001$, d = 0.77) and the reiterating emoji condition (M = 5.85, SD = 1.11; $t(123) = 3.94$, $p < .001$, d = 0.82).

Perceived ambiguity An ANOVA ($F(2, 123) = 26.88$, $p < .001$, $\eta^2 = 0.304$; see Fig. 2) showed that compared with the verbal-only condition (M = 2.08, SD = 1.04), ambiguity was higher in the replacing emoji condition (M = 2.83, SD = 1.06; $t(123) = 3.76$, $p < .001$, d = 0.71) and lower in the reiterating emoji condition (M = 1.39, SD = 0.53; $t(123) = 3.51$, $p < .001$, d = 0.84). This supports H2a/b.

Product choice A chi-square test (see Fig. 2) showed that the number of participants choosing Liba did not differ in the replacing emoji and verbal-only conditions ($P_{replacing}$ = 56.1% vs. P_{verbal} = 53.7%, $\chi^2(1) = 0.05$, $p = .824$) but was higher in the reiterating emoji condition ($P_{reiterating}$ = 81.8%

Table 1 Overview of studies

Study	Hypotheses/Goal	Data	Stimulus	DVs	Results
Facial emoji use in eWOM:					
Study 1	H1–H3: Testing key effects	Lab experiment: 126 students	Lemonade	Choice	Facial emoji use increases emotional arousal. The effect of facial emoji use on ambiguity is contingent on whether the emoji replaces or reiterates a verbal expression.
Follow-up Study 1.1 (Web Appendix H)	H1–H3: Ruling out alternative accounts	Online experiment: 165 MTurk workers	Bluetooth speaker	Product liking	The effects of facial emoji use on persuasion cannot be explained by emphasis and processing fluency.
Follow-up Study 1.2 (Web Appendix I)	H1–H3: Validation for negative eWOM	Lab experiment: 145 students	Local restaurant	Choice of cash or gift card	The persuasive effects of facial emoji use are robust for negative eWOM.
Study 2	H3: Validation for real eWOM on Facebook	Online field study: 118 Facebook users	Netflix show	Facebook "likes"	Compared with verbal-only eWOM, eWOM with facial emojis that reiterate a verbal expression increases "likes."
Moderation: When do facial emojis replacing a verbal expression in eWOM increase persuasion?					
Study 3	H4: Moderating role of verbal context richness	Online experiment: 157 Clickworkers	Juice	Behavioral intention	In situations of high verbal context richness, a replacing facial emoji decreases ambiguity and positively affects persuasion.
Study 4	H5: Moderating role of tie strength	Online experiment: 191 students	E-book reader	Deal sharing	Facial emojis that replace a verbal expression decrease ambiguity and lead to greater persuasion for eWOM from strong ties.
Follow-up Study 4.1 (Web Appendix K)	H5: Moderating role of tie strength in the context of matching/mismatching generations	Online experiment: 372 Prolific workers	E-book reader	Deal sharing	Matching and mismatching generations: replacing facial emojis decrease ambiguity and lead to greater persuasion for eWOM from strong ties.
Facial emoji use in online brand communications:					
Study 5	H3: Validation for brand Twitter posts	Online field study: 2,137 tweets	Tweets from popular brands	Twitter "likes" and retweets	In brand tweets: compared with verbal-only tweets, those with facial emojis that reiterate a verbal expression increase "likes" and retweets.
Follow-up Study 5.1 (Web Appendix M)	H1–H3: Validation for brand Twitter posts	Online experiment: 245 MTurk workers	Travel destination	Link click	In brand tweets: facial emoji use increases emotional arousal. The effect of facial emoji use on ambiguity is contingent upon whether the emoji replaces or reiterates a verbal expression.
Study 6	H3: Validation for real Facebook ads	Online field study 7,948 Facebook users	Headphones	Click-through rate	In social media advertising: reiterating facial emojis can lift click-through rates.

vs. $P_{verbal} = 53.7\%$, $\chi^2(1) = 7.77$, $p = .005$). Overall, these results support H3a/b.

Mediation analysis We expected the choice to be due to the effects of facial emojis through emotional arousal and perceived ambiguity. Thus, we employed multicategorical mediation analyses (see Fig. 2, PROCESS Model 4, Hayes, 2018) and created two dummy variables: $D_{replacing}$ compared the replacing emoji condition with the verbal-only condition, and $D_{reiterating}$ compared the reiterating emoji condition with the verbal-only condition. To test for moderated mediation, we examined the difference between these indirect effects (Fairchild & MacKinnon, 2009). We report bias-corrected bootstrap confidence intervals (CIs) based on 5,000 samples.

As hypothesized in H1, we obtained positive indirect effects on choice through emotional arousal for both the replacing emoji (D = 0.444, SE = 0.235, 95% CI [0.109; 1.027]) and reiterating emoji conditions (D = 0.478, SE = 0.253, 95% CI [0.116; 1.094]). The difference between these two indirect effects was not significant ($D_{reiterating} - D_{replacing} = 0.034$, 95% CI [−0.208; 0.343]), indicating that facial emoji use (regardless of emoji function) positively affected the choice of the reviewed lemonade through emotional arousal. Consistent with H2a/b, the indirect effect through perceived ambiguity was negative for the replacing emoji condition (D = −0.462, SE = 0.294, 95% CI [−1.205; −0.068]) and positive for the reiterating emoji condition (D = 0.425, SE = 0.243, 95% CI [0.073; 1.024]). The difference between these effects was significant, indicating moderated mediation ($D_{reiterating} - D_{replacing} = 0.887$, 95% CI [0.171; 2.079]). Thus, both the indirect effect through emotional arousal and the indirect effect through perceived ambiguity explained the net effects of replacing facial emojis and reiterating facial emojis on product choice.

To estimate whether the parallel mediation model substantially increases the explained variance compared to a simpler model including only one mediator, we computed the R^2 change. The analysis revealed a significant improvement in the amount of variance explained when both mediators were included (perceived ambiguity only: Pseudo-R^2 = 0.11 to 0.16: $\Delta\chi^2 = 7.41$, $p < .01$; emotional arousal only: Pseudo-R^2 = 0.11 to 0.16: $\Delta\chi^2 = 7.13$, $p < .01$). We obtained consistent results (all $ps < 0.01$) in all other studies (see Web Appendix G).

Discussion

Study 1 provides initial evidence for the persuasive effects of facial emoji use in eWOM. Confirming H1, replacing and reiterating facial emojis increase persuasion by increasing emotional arousal. Moreover, confirming H2a/b, the emoji's function in eWOM determines whether the persuasive effect through perceived ambiguity is positive or negative: a replacing facial emoji decreases the number of participants choosing the reviewed brand by increasing ambiguity. However, a reiterating facial emoji increases this number by decreasing ambiguity. Thus, in confirmation of H3a/b, replacing facial emojis do not have an overall effect on product choice, whereas reiterating facial emojis stimulate the selection of the reviewed product.

Follow-up Study 1.1: Ruling out alternative explanations One might argue that the persuasive power of facial emojis is driven by repetition-induced emphasis because an emoji that reiterates also emphasizes the key idea of a message. Furthermore, one might assume that a pictorial cue makes previously verbalized information easier to process (i.e., when a facial emoji reiterates a verbal expression) because it graphically illustrates the key idea of a message (Paivio, 1971), thereby driving persuasion. We empirically rule out both of these alternative accounts in Follow-up Study 1.1 (N = 165) by using a different eWOM post, emoji (😍), and persuasion measure (i.e., product liking). We present a detailed analysis of this study in Web Appendix H.

Follow-up Study 1.2: Validation for negative facial emojis Using a negative facial emoji (😓), Follow-up Study 1.2 (N = 145) provides evidence that the persuasive impact of facial emoji use is generalizable for negative eWOM. The detailed analysis is presented in Web Appendix I.

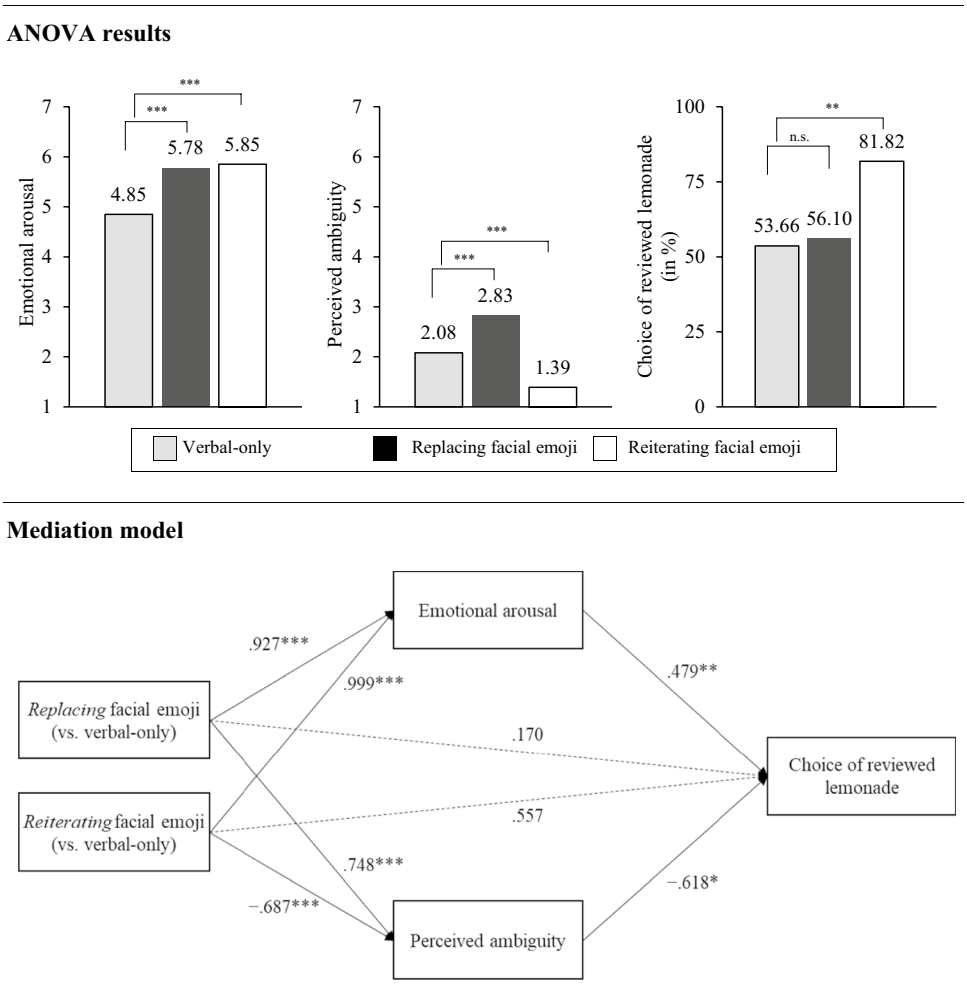
Study 2: Effect of facial emoji use on actual consumer behavior on Facebook

Employing real-world data from a Facebook field experiment, Study 2 sheds further light on the net effect of facial emoji use on persuasion (H3a/b) and examines whether consumers are more likely to "like" a Facebook post when it contains a facial emoji. In the recent literature (e.g., McShane et al., 2021), "likes" have been used as an important measure of persuasion.

Method

Design and sample We conducted an online field experiment using a single-factor between-subjects design with three conditions (verbal-only vs. facial emoji use [replacing vs. reiterating]). We recruited 118 Facebook users (38% female; $M_{age} = 34.16$, SD = 10.01) on Amazon Mechanical Turk (MTurk) and compensated them monetarily. The recruitment conditions specified that respondents would have to post Facebook status updates at least once a week.

Fig. 2 Persuasive effects of facial emoji use (Study 1)



* $p < .05$, ** $p < .01$, *** $p < .001$.

Procedure The study comprised two phases. In the first phase, we asked respondents to recall a funny Netflix show they had recently watched. Then, we randomly allocated respondents into one of the three conditions and asked them to post a specific status update on Facebook. In all conditions, respondents posted an update stating, "Yesterday, I watched [comedy show] on Netflix. It was so funny. Don't you agree?" We used the "face with tears of joy" emoji (😂) to replace or reiterate the evaluative attribute ("so funny") in the two conditions in which emojis were used. In the second phase, we asked respondents to sum up the number of times the status update was "liked" 24 h after posting. To receive compensation, participants uploaded a screenshot of their post showing the number of likes so that we could verify the number provided. Participants who did not follow our instructions (e.g., uploaded a nonvalid screenshot) were not considered. Respondents also provided additional measures, which we used as covariates in the analysis (i.e., number of Facebook friends, average time spent on Facebook per week, average number of broadcasted posts/comments per week, and average number of received likes/comments/shares per post). We ran all analyses with and without covariates and obtained similar results. In the following section, we report the covariate-free analysis.

Results and discussion

Overall, posts received an average of 4.16 "likes," which is comparable to the number of "likes" found in other studies for a similar 24-hour time horizon (e.g., McGraw et al., 2015). Most importantly, an ANOVA on "likes" revealed significant differences across conditions ($F(2, 115) = 4.85$, $p = .010$, $\eta^2 = 0.078$). While the verbal-only ($M = 3.02$, $SD = 3.21$) and replacing emoji conditions did not differ ($M = 3.34$, $SD = 4.41$; $t(115) = 0.29$, $p = .774$, $d = 0.08$), posts received more "likes" in the reiterating emoji condition than in the verbal-only condition ($M = 6.15$, $SD = 6.56$; $t(115) = 2.85$, $p = .005$, $d = 0.61$), supporting H3a/b.

Employing actual "liking" behavior, Study 2 replicates the findings of Study 1 in a natural eWOM setting. Specifically, the results reveal that replacing facial emojis do not have persuasive consequences, while reiterating facial emojis increase the number of "likes" on a status update.

Study 3: Moderating influence of verbal context richness

Thus far, we have found that in common eWOM settings, replacing facial emojis increase perceived ambiguity, which, in turn, negatively affects persuasion. We have argued, however, that in some situations, consumers can derive an emoji's denotative meaning even when it replaces a verbal expression. Study 3 explores such a situation by investigating how verbal context richness influences the effect of replacing facial emojis on the intention to try a new juice, which serves as a meaningful operationalization of persuasion (Lee & Kronrod, 2020). We expect that in cases of high verbal context richness, replacing facial emojis (vs. verbal-only eWOM) decrease perceived ambiguity, which positively affects behavioral intention (H4).

Method

Design and sample We employed a 2 (verbal-only vs. facial emoji replacing) × 2 (low vs. high verbal context richness) between-subjects design. We recruited 162 panelists from Clickworker in exchange for monetary compensation (48% female; $M_{age} = 23.98$, SD = 3.72).

Procedure We randomly assigned participants to one of the four conditions and presented them with a consumer Facebook post about a new juice from a fictitious brand. We manipulated verbal context richness by varying the amount of verbal context preceding the product evaluation in the post (Goh et al., 2013). In the high-context-richness condition, the post stated, "The Freshfruits juice has a great taste. It is refreshing and not too sweet. This is a juice I really love." In the low-context-richness condition, the message stated, "The Freshfruits juice is a juice I really love." For the replacing emoji condition, we used the "smiling face with heart-eyes" emoji (😍) to replace "really love." After reading the post, participants rated three items on behavioral intention (e.g., "What is the likelihood that you will actually try this juice?" 1 = "not likely at all," 7 = "very likely"; α = 0.82; Lee & Kronrod, 2020). Then, participants responded to items measuring emotional arousal (r = .55) and ambiguity (α = 0.71). As a manipulation check, they assessed the verbal context richness of the post ("How much verbal context information does this post contain?"; 1 = "few," 7 = "very much"; adapted from Goh et al., 2013). Based on two attention checks, we dropped five panelists, which left a final sample of 157 participants.

Results

Manipulation check As expected, participants in the condition of high (vs. low) verbal context richness perceived the verbal context richness to be higher ($M_{high\ richness} = 4.39$, SD = 1.23 vs. $M_{low\ richness} = 2.84$, SD = 1.50; F(1, 155) = 50.10, $p < .001$, $\eta^2 = 0.244$).

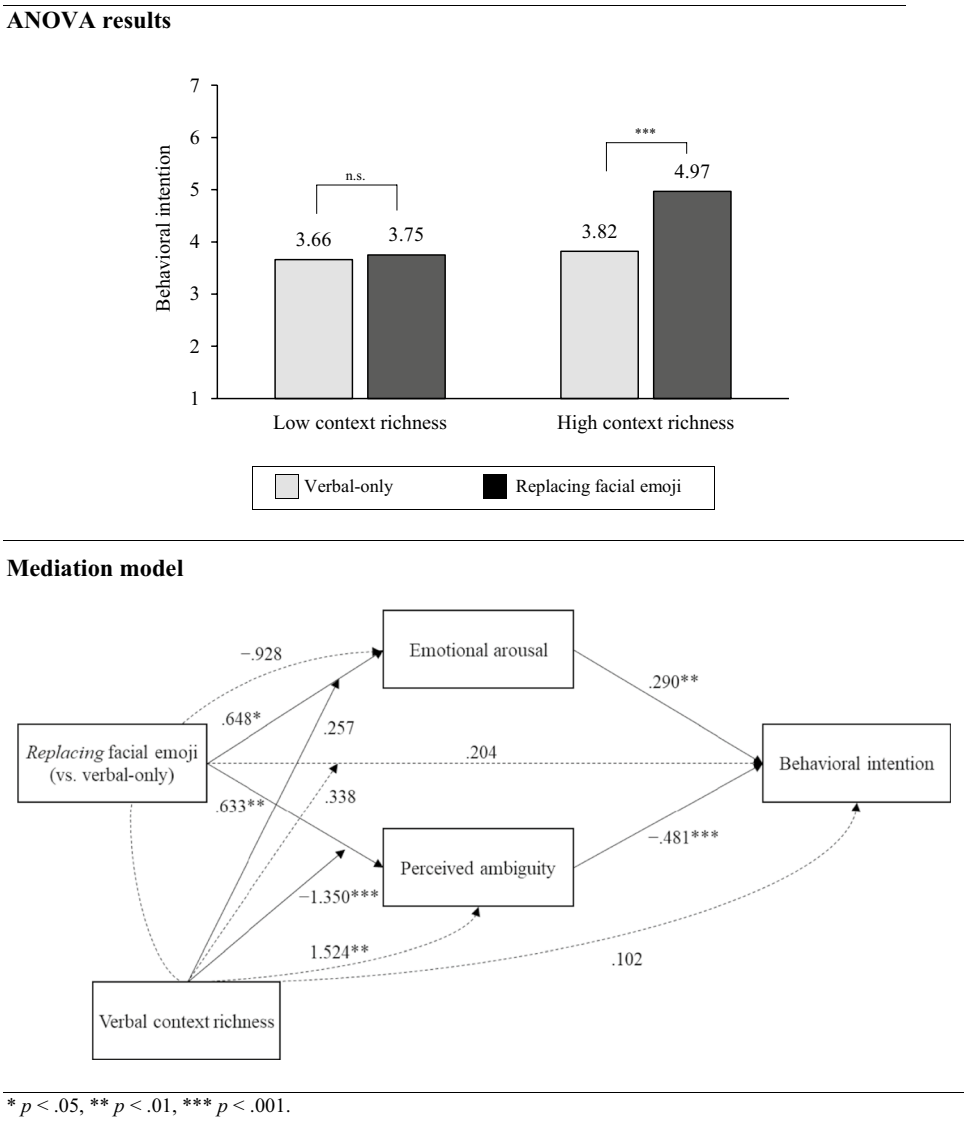
Behavioral intention A 2 × 2 ANOVA revealed a significant main effect of replacing facial emojis (F(1, 153) = 8.36, $p = .004$, $\eta^2 = 0.052$), a main effect of verbal context richness (F(1, 153) = 10.48, $p = .001$, $\eta^2 = 0.064$), and a significant interaction (F(1, 153) = 6.16, $p = .014$, $\eta^2 = 0.039$; see Fig. 3). For high verbal context richness, behavioral intentions were higher in the replacing emoji condition (M = 4.97, SD = 0.93) than in the verbal-only condition (M = 3.82, SD = 1.60; F(1, 153) = 14.67, $p < .001$, $\eta^2 = 0.088$). In contrast, for low verbal context richness, the replacing emoji (M = 3.75, SD = 1.37) and verbal-only (M = 3.66, SD = 1.42) conditions did not differ (F(1, 153) = 0.08, $p = .775$, $\eta^2 = 0.001$).

Mediation analysis We ran a moderated mediation analysis (PROCESS Model 8; see Fig. 3) with emotional arousal and perceived ambiguity as parallel mediators and verbal context richness as the moderator. Most importantly, in support of H4, verbal context richness significantly influenced the indirect effect on behavioral intention through perceived ambiguity (index of moderated mediation = 0.649, SE = 0.212, 95% CI [0.296; 1.124]). The effect was positive for high verbal context richness (D = 0.344, SE = 0.118, 95% CI [0.145; 0.604]) and negative for low verbal context richness (D = −0.305, SE = 0.142, 95% CI [−0.624; −0.061]). We also found a positive indirect effect of replacing facial emojis on behavioral intention through emotional arousal for both high (D = 0.263, SE = 0.115, 95% CI [0.070; 0.519]) and low verbal context richness (D = 0.188, SE = 0.097, 95% CI [0.023; 0.395]). Thus, both the moderated indirect effect through perceived ambiguity and the indirect effect through emotional arousal explain the previously reported differences in the behavioral intention associated with replacing facial emojis for high and low verbal context richness (see Web Appendix J for further details of the mediation analysis).

Discussion

By investigating the persuasive impact of facial emojis that replace a verbal expression in situations with high and low

Fig. 3 Moderating influence of verbal context richness (Study 3)



* $p < .05$, ** $p < .01$, *** $p < .001$.

verbal context richness, we show when consumers can better narrow the denotative meaning of replacing facial emojis. The results reveal a situation in which the preceding verbal context can serve as a means for inferring the facial emoji's denotative meaning more accurately. Here, a replacing facial emoji can decrease perceived ambiguity, which, in turn, leads to greater persuasion—similar to the effect of a reiterating facial emoji.

Study 4: Moderating influence of tie strength

In this study, we explore another important situation in which facial emojis that replace a verbal expression may decrease perceived ambiguity and thus lead to greater persuasion. We examine how the tie strength between the eWOM sender and recipient influences the impact of replacing facial emojis on the tendency to share a deal announced in a Facebook post with others. We propose that for eWOM from strong ties, replacing facial emojis decrease perceived ambiguity and, therefore, increase deal sharing (H5).

Method

Design and sample This online study employed a 2 (verbal-only vs. facial emoji replacing) × 2 (strong vs. weak ties) between-subjects design. We recruited 192 college students (61% female; $M_{age} = 24.43$, SD = 4.40) from a large public university in exchange for course credit.

Procedure To manipulate tie strength (adapted from Lee & Kronrod, 2020), we asked participants to write down the name of either a close friend (strong-tie condition) or a

casual acquaintance (weak-tie condition). Then, participants read a Facebook post and imagined that this post was written by the previously listed person. In the verbal-only condition, participants read, "The new e-book reader from Poetry is currently 25% off with a discount code. I bought the reader and think it's really awesome." In the replacing emoji condition, we replaced "really awesome" with a corresponding facial emoji ("really 😍"). Afterward, we asked participants to provide the name of others they wanted to inform about the deal (adapted from Lee & Kronrod, 2020). We expected that participants who perceived the post as persuasive would indicate a greater number of people with whom they would like to share the deal. Moreover, we measured emotional arousal (r = .59) and perceived ambiguity (α = 0.88). As a manipulation check, participants rated how close they felt to the sender (1 = "not at all close," 7 = "very close"; Dubois et al., 2016). Finally, we thanked and debriefed the participants, including telling them that Poetry was a fictitious brand. We dropped one participant who did not pass the attention checks, which left a final sample of 191 students.

Results

Manipulation check Participants in the strong-tie condition felt closer to the sender than did participants in the weak-tie condition ($M_{strong\ tie} = 5.72$, SD = 1.70 vs. $M_{weak\ tie} = 3.23$, SD = 1.91; F(1, 189) = 90.30, $p < .001$, $\eta^2 = 0.323$). Thus, our manipulation was successful.

Deal sharing A 2 × 2 ANOVA revealed a main effect of replacing facial emojis (F(1, 187) = 5.88, $p = .016$, $\eta^2 = 0.030$), a main effect of tie strength (F(1, 187) = 8.81, $p = .003$, $\eta^2 = 0.045$), and an interaction (F(1, 187) = 8.16, $p = .005$, $\eta^2 = 0.042$). In the strong-tie condition, participants were more likely to share the deal when the post included a replacing facial emoji ($M_{replacing} = 5.45$, SD = 2.85 vs. $M_{verbal} = 3.63$, SD = 2.42; F(1, 187) = 14.17, $p < .001$, $\eta^2 = 0.070$). However, in the weak-tie condition, the replacing emoji condition (M = 3.44, SD = 2.12) and the verbal-only condition did not differ (M = 3.59, SD = 2.04; F(1, 187) = 0.09, $p = .762$, $\eta^2 = 0.000$).

Mediation analysis We ran a moderated mediation analysis (PROCESS Model 8) with emotional arousal and perceived ambiguity as parallel mediators and tie strength as the moderator. In support of H5, tie strength influenced the effect on deal sharing through perceived ambiguity (index of moderated mediation = 0.378, SE = 0.136, 95% CI [0.143; 0.675]). The effect was positive for strong ties (D = 0.177, SE = 0.075, 95% CI [0.052; 0.344]) and negative for weak ties (D = − 0.200, SE = 0.075 95% CI [− 0.388; −0.059]). In addition, we found a positive indirect effect of replacing facial emojis on deal sharing through emotional arousal for strong ties (D = 0.201, SE = 0.075, 95% CI [0.070; 0.357]) and weak ties (D = 0.148, SE = 0.074, 95% CI [0.032; 0.319]). Thus, both the moderated indirect effect through ambiguity and the indirect effect through emotional arousal explain the previously described differences in deal sharing with regard to replacing facial emojis for strong-tie messages and weak-tie messages (see Web Appendix J).

Discussion

Study 4 shows that for eWOM from strong ties, replacing facial emojis decrease perceived ambiguity and thus lead to greater persuasion. Specifically, the findings suggest that previous interactions with others (i.e., strong ties) can help consumers interpret those people's digital facial expressions, thus serving as a reference against which facial emojis' denotative meaning can be interpreted.

Follow-up Study 4.1: Moderating influence of tie strength in the context of communicating with a matching/mismatching generation

Participants in Study 4 imagined that the post they read was written by a close friend or an acquaintance. We did not control for whether participants thought of an individual from the same (i.e., matching) generation or from a different (i.e., mismatching) generation[2]. This is important because generations differ in terms of "tastes, orientations, beliefs and dispositions" (Buckingham, 2006, p. 4). These differences can manifest in different levels of acceptance and understanding of "innovative, informal styles of language that are emerging on the internet—emoticons and so on—and in the changing conventions of language use" (Buckingham, 2006, p. 10). This may lead to matching generations having a more extensive and precise "shared lexicon" than mismatching generations. Consequently, Follow-up Study 4.1 addresses the question of whether tie strength influences the persuasive effect of replacing facial emojis in both contexts, i.e., communicating with a matching generation and with a mismatching generation.

Design, sample, and procedure This online study (N = 406 Prolific workers; born between 1997 and 2012 [Generation Z]) employed a 2 (verbal-only vs. facial emoji replacing) × 2 (strong vs. weak ties) × 2 (matching vs. mismatching generation) between-subjects design. The procedure was similar to that in Study 4. To manipulate tie strength and matching/mismatching generation, we asked participants to provide the name of either a close friend/family member (strong-tie condition) or a casual acquaintance (weak-tie condition)

[2] We thank an anonymous reviewer for proposing to examine matching vs. mismatching generations.

that was either of the same (i.e., matching) generation or a different (i.e., mismatching) generation. Then, participants read the same post as in Study 4 about a special deal for an e-book reader and imagined that it was written by the listed person. We used the same measures as in Study 4.

Key results We ran a moderated mediation analysis (PROCESS Model 12). In the following, we focus on the results for the ambiguity pathway (see Web Appendix K for the emotional-arousal pathway). For the matching condition, in support of H5, we found that tie strength influenced the indirect effect on deal sharing through ambiguity. The effect was positive for strong ties (D = 0.246, SE = 0.096, 95% CI [0.089; 0.462]) and negative for weak ties (D = − 0.274, SE = 0.102, 95%, CI [− 0.496; −0.102]; index of conditional moderated mediation = 0.519, SE = 0.167, 95% CI [0.230; 0.884]). Likewise, for the mismatching condition, tie strength influenced the indirect effect on deal sharing through ambiguity. The effect was positive for strong ties (D = 0.151, SE = 0.079, 95% CI [0.025; 0.330]) and negative for weak ties (D = − 0.174, SE = 0.078, 95% CI [− 0.352; −0.049]; index of conditional moderated mediation = 0.325, SE = 0.127, 95% CI [0.120; 0.616]).

Discussion Study 4.1 shows that for both communicating with a matching and a mismatching generation, tie strength influences whether replacing facial emojis convey more or less ambiguous information and thus increase or decrease persuasion. Importantly, a possible more extensive "shared lexicon" in the matching condition does not eliminate the moderating influence of tie strength. Specifically, irrespective of whether consumers are of the same (i.e., matching) generation or a different (i.e., mismatching) generation, we find previous interactions with others (i.e., strong ties) to help understand others' digital facial expressions.

Study 5: Facial emoji use in brand posts on Twitter

Study 5 is the first of three studies that expand our investigation to facial emoji use in brand–consumer interactions. There is initial support for the notion that the persuasive effects of facial emoji use in eWOM (see Fig. 1) can be generalized to online brand communications. Specifically, EASI theory states that "the persuasive power of emotional expressions could be wielded by managers, lawyers, consultants, mediators, politicians, advertisers, health educators, and other professionals" (van Kleef et al., 2015, p. 1137). Moreover, prior research has shown that brands can have distinctive human-like personality traits (Aaker, 1997), and recent conceptual work suggests that brands may use textual paralanguage on social media similar to the way consumers do (Luangrath et al., 2017). To empirically test the net persuasive effect of facial emoji use in online brand communications (H3a/b), in Study 5, we create a unique dataset based on the scraped tweets of ten well-known brands. By analyzing the number of "likes" and retweets as key dependent variables, we employ natural online behavior.

Method

Using Twitter's public application programming interface (API), we scraped 2,137 English-language tweets from ten well-known brands (Amazon, BMW, Lego, Mercedes Benz, Nescafé, Pepsi, Spotify, Starbucks, Toyota, and YouTube) over a period of six months extending from September 20, 2021, to March 20, 2022. The brands were selected based on a focus group that associated at least some facial emoji use with those brands. Specifically, focus group participants (N = 5; 60% female; M_{age} = 25.80) were asked to name ten brands that they believed use facial emojis in their communications. We focused on the ten brands that received the most mentions.

Facial emoji use Unicode, the computer industry consortium responsible for the encoding of computer text characters, offers a list of universal emojis. To code our key independent variable, we thus created a dictionary containing the Unicodes of the facial emojis listed on Emojipedia (2021) and matched the emoji used in the tweet with its definition in the dictionary. Afterward, three coders who were unaware of our research focus independently characterized the function of every facial emoji as either replacing or reiterating a verbal expression.

Dependent variables We captured the number of "likes" and retweets per tweet as our key dependent variables. Since brands typically design Twitter posts to be "liked" and shared and thus engage a high number of consumers, "likes" and retweets can be considered adequate measures of persuasion (McShane et al., 2021).

Covariates To control for several factors that may also influence consumers to "like" and share tweets, we tracked additional variables. Specifically, using Linguistic Inquiry and Word Count (LIWC 22), we captured the emotionality (LIWC 22 category: emotion) and valence (LIWC 22 category: tone) of each tweet. Furthermore, we examined the number of nonfacial emojis using a similar procedure as for our key independent variable (i.e., facial emoji use). Moreover, we counted the number of words in the tweets and calculated the tweet age based on the date the tweet was posted. Finally, we tracked the number of links, media (e.g.,

videos), and hashtags in the tweets; the followers for each brand; and whether the brand post was a retweet.

Results

The distribution of followers, "likes," and retweets was highly skewed, so we took the log for our analyses. A small number of tweets did not receive any "likes" or tweets, and because the log of zero is not defined, we calculated the log of (number of likes/retweets + 1) to retain these tweets (adapted from Chen & Berger, 2013). Then, we created two dummy variables (replacing facial emoji vs. verbal-only and reiterating facial emoji vs. verbal-only) and estimated the effects of both variables on "likes" (Model A in Web Appendix L) and retweets (Model B in Web Appendix L) using ordinary least squares regression. The results show that while controlling for relevant covariates, replacing facial emojis did not significantly influence the number of "likes" ($\beta = 0.011$, $p = .199$) or the number of retweets ($\beta = 0.015$, $p = .474$). However, reiterating facial emojis positively influenced the number of "likes" ($\beta = 0.033$, $p < .001$) and retweets ($\beta = 0.068$, $p = .001$), thus supporting H3a/b.

Discussion

Study 5 used real-word brand–consumer interactions from Twitter to provide initial evidence that the proposed effects of facial emoji use are generalizable to online brand communication contexts. Specifically, reiterating facial emojis in brand posts on Twitter increased "likes" and retweets, but replacing facial emojis did not yield significant effects. These results are similar to the findings of our previous studies.

Follow-up Study 5.1 To provide evidence for the proposed underlying mechanisms of facial emoji use in online brand communications and replicate the findings of Study 5 in a controlled setting, we conducted a preregistered (https://aspredicted.org/44S_YLY) online experiment (N = 245) using the "star-struck" emoji (🤩) to replace or reiterate a verbal expression in a tweet from a fictitious brand (see Web Appendix M). The results show that the two proposed key mechanisms, emotional arousal and perceived ambiguity, are also valid in online brand communication, thus supporting H1 and H2a/b.

Study 6: Facial emoji use in online advertising

The goal of Study 6 was to shed further light on the effects of facial emoji use in online brand communications, particularly online advertising.

Method

This preregistered online field study (https://aspredicted.org/25H_2T4) utilized a between-subjects design with three conditions (verbal-only vs. facial emoji use [replacing vs. reiterating]). We created a fictitious brand and developed three ads that promoted new headphones on Facebook. We used the "face with tongue" emoji (😛) to replace or reiterate "fun" in a sponsored post stating, "Our new headphones now help you fall asleep. This is guaranteed fun." Facebook users who saw the ad could click on the post to navigate to the Facebook page of our brand. We budgeted approximately 60€ ($65.40) for the ad in each of the three experimental conditions (i.e., 187.10€ [$203.95] in total), and 7,948 users viewed one of the three ads. We measured the number of impressions and clicks for each ad, which allowed us to compare click-through rates (i.e., the ratio of clicks per impression; CTRs) as a measure of persuasion (Cian et al., 2020).

Results and discussion

A chi-square test showed significant differences across the three conditions ($\chi^2(2) = 8.88$, $p = .012$). More specifically, there were no differences in CTRs between the replacing emoji condition (3.5%) and the verbal-only condition (3.0%; $\chi^2(1) = 1.05$, $p = .307$). However, the CTR was higher in the reiterating emoji condition (4.5% vs. 3.0%; $\chi^2(1) = 8.46$, $p = .004$), thus supporting H3a/b. Furthermore, in terms of costs per click, the reiterating emoji ad (0.55€ [$0.60]) outperformed the replacing emoji ad (0.68€ [$0.74]) and the verbal-only ad (0.73€ [$0.80]), indicating that reiterating emoji ads are more persuasive than replacing emoji ads and text-only ads.

In sum, Study 6 demonstrates the generalizability of facial emoji use in online advertising contexts. In particular, by using managerially relevant metrics, such as CTR and costs per click, we show that reiterating facial emojis can make online ads more persuasive.

General discussion

This research demonstrates that facial emoji use shapes persuasion through two processes: emotional arousal and perceived ambiguity. While the effect through emotional arousal is generally positive, the effect through perceived ambiguity depends on the emojis' function in eWOM: replacing facial emojis increase ambiguity and therefore reduce persuasion, whereas reiterating facial emojis decrease ambiguity and therefore enhance persuasion. Both the emotional-arousal and ambiguity pathways determine the net persuasive effect. We also illuminate two situations (high verbal context richness and eWOM from strong ties) in which even replacing

facial emojis can increase persuasion. Finally, we demonstrate that the persuasive power of facial emojis is generalizable to online brand communications.

Theoretical implications

Our research provides four important theoretical implications. The first relates to the finding that facial emojis can have persuasive power in eWOM and that an emoji's function in eWOM (replacing or reiterating a verbal expression) is a major driver in this regard. Specifically, we contribute to the stream of research that investigates factors that influence the persuasiveness of eWOM (Berger & Schwartz, 2011) by providing a novel perspective on what makes eWOM persuasive, thereby responding to calls to further investigate nontextual stimuli in eWOM (Babić Rosario et al., 2020). Our results suggest that models that evaluate eWOM should capture facial emojis included in the message and differentiate between emojis that replace verbal expressions and those that reiterate them. This distinction is highly important because it determines when facial emoji use has favorable or unfavorable persuasive consequences for other consumers.

Second, we extend the growing stream of research on the interpersonal effects of emotion (van Kleef, 2009, 2017), which predominantly focuses on emotional displays in offline settings (e.g., in sports, organizations, and negotiations). By examining the interpersonal effects of facial emojis in eWOM, we transfer the theory to online, written, one-way communications in which posts are encountered by thousands of recipients. Specifically, we reveal that facial emoji use affects persuasion through an affective-reaction pathway and an informational pathway.

Most interestingly, with respect to the informational pathway, the findings suggest that facial emojis convey denotative and connotative meanings and therefore add to the understanding of eWOM. Importantly, the emoji's function influences whether the emoji conveys ambiguous or unambiguous meaning and, thus, whether it helps or hurts persuasion. Our findings thus challenge the current assumption that emojis generally disambiguate online communication (Kaye et al., 2016). Specifically, because there is no preceding verbal expression that facilitates the understanding of a replacing facial emoji, its denotative meaning is ambiguous, which hurts the persuasiveness of the message. This implies that facial emojis, per se, are ambiguous and reduce the clarity of eWOM if their inherent ambiguity is not resolved. Moreover, the finding that a reiterating facial emoji decreases ambiguity suggests that the emoji conveys information not provided by the verbal message. We show that the emoji increases associations with the depicted facial expression (i.e., connotative meaning), which further clarifies the sender's evaluation.

While previous studies on facial emoji use focused on either the affective-reaction (Smith & Rose, 2020) or informational (Li et al., 2018) pathway, we demonstrate the importance of examining these two pathways simultaneously because they have opposing (in the case of replacing facial emojis) or similar (in the case of reiterating facial emojis) effects on persuasion. Considering both pathways of facial emoji use may directly improve researchers' ability to extract meaningful insights from eWOM via automated text analysis. Specifically, the finding that facial emojis increase emotional arousal may help fine-tune lexicon-based approaches, such as the "evaluative lexicon" (Rocklage et al., 2018). For example, it is reasonable to assign facial emojis higher emotionality scores than their corresponding emotional terms (e.g., 🙂 vs. fine). Furthermore, the finding that facial emojis affect perceived ambiguity with regard to emoji function adds to the knowledge on how nonverbal cues influence the meaning of electronically mediated communication.

Third, we identify two situations (i.e., high verbal context richness and eWOM between strong ties) in which a replacing facial emoji has an overall positive effect on persuasion. Our findings show that replacing facial emojis require additional verbal context or implicit knowledge of how the sender employs emojis to convey meaning. Therefore, models that strive to estimate the persuasive impact of replacing facial emojis should consider both the verbal context in which the emoji is embedded (e.g., extracting context-related concepts via text mining tools) and the sender-recipient relationship (e.g., through social network analyses).

Fourth, by showing that the persuasive impact of facial emoji use is generalizable to online brand communications, we extend the growing literature on how brands can more effectively "cut across digital clutter" (Swaminathan et al., 2020, p. 36). In particular, our findings imply that in brand posts that are similar to eWOM posts in terms of style and content, facial emoji use yields persuasive effects for brand–consumer interactions and consumer–consumer interactions. Thus, by empirically examining brands' direct use of facial emojis, we complement recent conceptual work (Luangrath et al., 2017) that suggests that brands, like consumers, may employ textual paralanguage (e.g., facial emojis) to effectively communicate online.

Managerial implications

This work offers important advice for managers in terms of (1) tracking/identifying persuasive eWOM, (2) stimulating the creation of persuasive eWOM, and (3) crafting persuasive online brand communications.

Tracking/identifying persuasive eWOM Regarding how to identify eWOM that highly influences consumer behavior, our findings show that the use of facial emojis is important.

Specifically, facial emojis reiterating a verbal expression make eWOM more persuasive, while facial emojis replacing a verbal expression carry the risk of not increasing persuasion. Thus, we suggest marketers track eWOM that employs a reiterating facial emoji. Leveraging facial emoji use to identify persuasive eWOM can help marketers in several ways.

For one, facial emoji use can help better predict the transmission rates of online posts because it influences the number of "likes" a post receives (see Study 2). This is especially important for new product development and product adoption through peer-to-peer influence (as shown for a new e-book reader in Study 4). Specifically, new products mentioned in posts that include reiterating facial emojis are noticed more quickly, which is essential for innovations. Moreover, tracking facial emoji use in eWOM helps identify response-worthy messages (i.e., negative comments that include a reiterating facial emoji; see Study 1.2). This is critical because brands are faced with an enormous amount of messaging from consumers, requiring the effective allocation of available resources to respond to that messaging. Finally, tracking facial emoji use can be relevant for social media (e.g., Facebook) and review platforms (e.g., TripAdvisor) that employ algorithms to rank the "most relevant" posts. Specifically, our findings suggest that the identification of the most persuasive posts requires a consideration of the facial emoji's presence and function, as well as the verbal context and the social context in which it is embedded.

Stimulating the creation of persuasive eWOM Our findings can help marketers leverage facial emojis to stimulate the creation of persuasive eWOM. Specifically, marketers and online platforms can adopt (review-) writing guidelines that consider the opportunities and threats of facial emoji use and show best-practice reviews (e.g., as seen on Trustpilot). Writing guidelines are common practice in the marketplace. Twitter, for example, recommends using emojis at the end of a sentence and not repeating the same emoji more than 2–3 times in a post. On a related note, we caution against the popular approach of asking consumers to use emojis to evaluate a product or brand (e.g., "Using an emoji, tell us what you think of the 2018 Ford EcoSport"). As the nonverbal information conveyed in such a context is not clarified by verbal information, consumers' comments may be ambiguous.

To further minimize ambiguity in online messages, we advise platforms (e.g., Facebook) and websites that encourage review writing (e.g., Walmart) to ensure that facial emojis are understood by providing a "translation" when a user long-presses on the emoji (on smartphones) or hovers the mouse over the emoji (on PCs). In this context, we caution against the use of the novel feature offered by instant messaging applications that offer to automatically replace words in messages with the corresponding emojis in the context of consumer-brand interactions.

Crafting persuasive online brand communications This research provides important insights into how firms can design persuasive social media posts and online advertising. We demonstrate that reiterating facial emojis have the potential to increase the persuasiveness of online brand communications, while replacing facial emojis may exhibit certain drawbacks in this regard. This point is highly relevant; the findings of Study 6, for example, illustrate the fact that the effective use of reiterating facial emojis in online ads results in important cost savings. Specifically, the cost of generating clicks for digital ads was more than 20% lower when reiterating facial emojis were used (cost per click: verbal-only: 0.73€ [$0.80]; replacing: 0.68€ [$0.74]; reiterating: 0.55€ [$0.60]). Beyond the context of social media posts and online advertising, recent insights suggest that our findings are also relevant with regard to implementing effective e-mail marketing campaigns (Scheinbaum et al., 2017) and designing persuasive brand logos Abell et al. (forthcoming).

Based on our findings for facial emoji use in eWOM, which are generalizable to online brand communications, we offer marketers two strategies for decreasing the potential drawbacks of facial emoji use, particularly replacing facial emoji use (e.g., Coca-Cola: "New flavor. New reason to 😊"). Specifically, firms can provide a rich verbal context (e.g., more context information in online posts/ads that specifies the details that surround the consumption of the reviewed/advertised product), which facilitates the interpretation of the meaning of facial emojis (see Study 3). Furthermore, we recommend that brands consistently use similar emojis to build a relationship with their audience that involves greater mutual understanding. That is, recipients can better develop their own "lexicon" for interpreting a facial emoji in a brand post when brands use facial emojis consistently (see Study 4).

In addition to making marketers aware of the risk that replacing facial emojis can backfire, we also suggest adapting artificial intelligence (e.g., chatbots) to make better use of facial emojis. For example, Sephora, a multinational retailer of personal care and beauty products, already uses facial emojis in bot conversations (e.g., in Facebook Messenger). Establishing rules (e.g., using only reiterating facial emojis) for the strategic use of facial emojis in AI online communications will make a brand's communication efforts more effective.

Limitations and future research directions

We hope that this work sparks further research that addresses the limitations herein. First, the primary focus of this research is the ambiguity pathway of facial emoji use and two potential boundary conditions related to this process. Thus, we suggest that future studies investigate boundary conditions for the emotional-arousal pathway. An important boundary condition could be the number of facial emojis used. Since the use of more than one emoji may further intensify the message, it could be argued that emotional arousal increases with the number of emojis. In this context, scholars might also consider the nonlinear effects of the number of emojis. Future studies should also consider emoji type as a potential boundary condition. It could be that nonfacial emojis trigger less emotional arousal than facial emojis. This is because they do not depict a specific facial expression, and a picture does not necessarily transmit more emotional arousal than a word conveying the same literal meaning. Second, this work investigates facial emoji use in eWOM, brand posts on Twitter, and digital advertising. However, there are further interesting contexts, and we encourage future studies to explore facial emoji use in e-commerce and customer reward programs. Third, while the current work provides evidence for the persuasive impact of a brand's use of facial emojis in online communications, there may be factors influencing the persuasive power of facial emojis that we did not consider, such as the perceived competence of the sender (Li et al., 2018). In Study 5, we investigated ten brands from different sectors that were associated with at least some facial emoji use. However, for other brands, facial emoji use might not be common, and future research should examine the effects of facial emojis for these brands. Fourth, future research could explore whether product type moderates the relationship between facial emojis and persuasion. Given the emotional nature of purely hedonic products, it may be that facial emojis have a stronger persuasive effect in the case of highly hedonic products than for purely utilitarian products. Fifth, we find evidence that multimodal messages (e.g., reiterating facial emojis and text) increase persuasion. Future research may focus on other communication formats (e.g., TV advertising, multisensory advertising) that also use multimodal messages and, for example, combine sound and text.

In conclusion, this work provides important insights into how facial emojis, arguably the fastest-growing language in the world, affect the persuasiveness of eWOM, an important source of information for consumers, as well as online brand communications. We hope that this work inspires others to further explore the impact of facial emojis in marketing and beyond.

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Data availability The datasets generated during and/or analyzed during the current study are available from the authors on reasonable request.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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